U.S. Preventive Services Task Force Update: For Today’s Practice

David Glenn Weismiller, MD, ScM, FAAFP

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Learning Objectives

1. Become familiar with recent U.S. Preventive Services Task Force updates to key clinical preventive services.
2. Know where and how to obtain further details about the recommendations and underlying scientific evidence.
3. Develop strategies for systematically integrating current USPSTF recommendations into practice.

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Dr. Weismiller is a graduate of Jefferson Medical College of Thomas Jefferson University in Philadelphia, Pennsylvania, and completed his residency at the University of Virginia Health Sciences Center in Charlottesville. He practices family medicine at the new medical school of the University of Nevada, Las Vegas, where he provides full-scope care that includes inpatient and maternity care. A proponent of “reflection in practice” and “learner-centered instruction,” he is recognized nationally for his work in continuing medical education and faculty development. Having taught board review programs for the American Academy of Family Physicians (AAFP) for more than 20 years, he is the founding and current chair of the AAFP’s Family Medicine Board Review Express™ live course. He is a frequent presenter at AAFP Family Medicine Experience (FMX) and teaches American Board of Family Medicine (ABFM) Knowledge Self-Assessments throughout the country. Dr. Weismiller is the author of numerous publications on issues related to women’s and children’s health, and he is an advocate for empowering individuals to make sound health care choices.

Associated Session

• U.S. Preventive Services Task Force Update: Ask the Expert
United States Preventive Services Task Force (USPSTF)

- The USPSTF was convened by the Public Health Service to rigorously evaluate clinical research in order to assess the merits of preventive measures, including screening tests, counseling, immunizations, and preventive medications.
  - Topic Index (A to Z)
  - AHRQ ePSS (Mobile Application) – Input patient's characteristics to find applicable recommendations
    - Recommendations for adults
    - Recommendations for children and adolescents
  - Affordable Care Act: USPSTF A and B Recommendations

Affordable Care Act-2010

- Grade A and B recommendations MUST be covered WITHOUT cost sharing requirements for patients in non-grandfathered insurance plans.

Visual Representation

- Simplicity (excludes childhood and pregnancy-related topics)
- Familiarity (such as a visual format similar to the CDC vaccine schedule)
- Concise presentation
- Informative
- Easily disseminated

Adult Preventive Health Care Schedule

(Swenson and Ebell, AFP May 1, 2016)

http://www.aafp.org/afp/2016/0501/p738.html
Definitions of USPSTF Recommendation Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
<th>Suggestions for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>The USPSTF recommends the service; there is high certainty that the net benefit (i.e., benefits minus harms) is substantial.</td>
<td>Offer or provide this service.</td>
</tr>
<tr>
<td>B</td>
<td>The USPSTF recommends the service; there is moderate certainty that the net benefit is moderate to substantial.</td>
<td>Offer or provide this service.</td>
</tr>
<tr>
<td>C</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>
<td>Offer or provide this service for selected patients depending on individual circumstances.</td>
</tr>
<tr>
<td>D</td>
<td>The USPSTF recommends against the service; there is moderate or high certainty that the service has no benefit or that the harms outweigh the benefits.</td>
<td>Discourage use of the service.</td>
</tr>
<tr>
<td>I</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>
<td>Followed patients should understand the uncertainty about the balance of benefits and harms.</td>
</tr>
</tbody>
</table>

Health Promotion and Screening

- USPSTF recommends that prevention be discussed at each patient visit
- Risk stratification
  - Age, sex, family history (genetic), SES, lifestyle choices, environmental factors, and medical issues
- Patient education
- Counseling

Steps in Administering Health Promotion and Counseling

- Define health risks.
- Determine the stage of readiness of the patient.
- Advocate and commend behavior change.
- Assist in identification of a target behavior; identify barriers versus benefits.
- Reinforce health benefits of behavior change.
- Offer resources, strategies, and support; create plan of action and monitoring mechanisms.

Integrating Evidence-Based Clinical and Community Strategies to Improve Health

- Prevention Strategies
  - Screening, Counseling, Preventive Medication
- Health System Change
- Community
  - Group Education
  - Policy Change
- Environmental Change

Health Promotion and Prevention

- Effective health promotion
  - Lifestyle modification: 3 leading causes of preventable morbidity in the US
    - Tobacco Use, Obesity, Excessive Alcohol Use
  - Counseling
- Prevention
  - Primary
  - Secondary - Screening
    - Done in asymptomatic persons
  - Tertiary
  - Quaternary
    - Set of health activities to mitigate or avoid the consequences of unnecessary or excessive intervention of the health system. It is the practice of “first do no harm.”
An Opportunity for Integration
21st Century Annual Wellness Visit

• Review of the three leading causes of preventable morbidity
  – Tobacco use
  – Obesity (Nutrition and Physical Activity)
  – Alcohol use

• Prevention
  – Primary
  – Secondary
  – Tertiary
  – Quaternary

2016/2017 At-A-Glance

• Screening
  – Impaired Visual Acuity in Older Adults (March)
  – COPD (April)
  – Colorectal Cancer (June)
  – Syphilis Infection in Nonpregnant Adults and Older Adults (June)
  – Lipid Disorders in Children and Adolescents (July)
  – Skin Cancer (July)
  – Latent Tuberculosis Infection (September)
  – Genital Herpes Infection (December)
  – Obstructive Sleep Apnea (January 2017)
  – Gynecological Conditions: Periodic Screening with the Pelvic Examination (March 2017)
  – Celiac Disease (March 2017)
  – Preeclampsia (April 2017)
  – Thyroid Cancer (May 2017)
  – Obesity in Children and Adolescents (June 2017)

• Preventive Medication
  – Aspirin to Prevent Cardiovascular Disease and Colorectal Cancer (April)
  – Statin Use for Primary Prevention of Cardiovascular Disease in High-Risk Adults (November)
  – Folic Acid (January 2017)

• Primary Care Intervention
  – Breastfeeding (October)

I Recommendations

• Current evidence is insufficient to assess the balance of benefits and harms:
  – Screening for impaired visual acuity in adults 65 years or older
  – Screening for lipid disorders in children and adolescents 20 years or younger
  – Visual skin examination by a clinician to screen for skin cancer in asymptomatic adults
  – Obstructive Sleep Apnea
  – Celiac Disease
  – Gynecological Conditions: Periodic Screening with the Pelvic Examination

What this statement DOES NOT mean…

• The USPSTF has clarified that it is recommending neither for nor against screening with pelvic examination for gynecologic conditions other than cervical cancer, gonorrhea, or chlamydia.

Background

• Many conditions that can affect women’s health are often evaluated through pelvic examination.
• Pelvic examination is a common part of the physical examination; in 2012, 44.2 million pelvic examinations were performed in the United States.
• It is unclear whether performing screening pelvic examinations in asymptomatic women has a significant effect on disease morbidity and mortality.
**Recommendations of Others**

<table>
<thead>
<tr>
<th>Organization</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>American College of Physicians</td>
<td>Recommends against performing screening pelvic examinations in asymptomatic, nonpregnant adult women</td>
</tr>
<tr>
<td>American Academy of Family Physicians</td>
<td>Performing screening pelvic examinations in asymptomatic, nonpregnant adult women is not recommended</td>
</tr>
<tr>
<td>American College of Obstetricians and Gynecologists</td>
<td>Recommends performing pelvic examinations annually in all patients 21 years and older. While it found no evidence to support or refute the benefit of annual pelvic examination or speculum and bimanual examination in asymptomatic, low-risk patients, it concluded that the decision to perform a complete examination at the time of the periodic health examination should be a shared decision between the patient and clinician.</td>
</tr>
<tr>
<td>Well-Woman Task Force (convened by ACOG)</td>
<td>Recommends that for women 21 years and older, external examination may be performed annually and that inclusion of speculum examination, bimanual examination, or both in otherwise healthy women should be a shared, informed decision between patient and clinician.</td>
</tr>
</tbody>
</table>

**AES Question**

1. A 40-year-old asymptomatic male patient sees you for a routine annual visit. He mentions that his father recently passed away from complications related to COPD, and is concerned about his own risk for this condition. The most appropriate screening tool to help direct this patient’s management is? (Choose one)
   A. Spirometry
   B. Peak-flow testing
   C. A chest radiograph
   D. Chest CT
   E. No screening for COPD

**COPD**

**Screening**

- There is NO data to support the use of tests to screen asymptomatic patients for COPD.
- NONE of these tests are indicated to detect COPD in asymptomatic patients.

**COPD...What is it?**

- Airway inflammation
- Airflow obstruction (not fully reversible)
- 3rd leading cause of death in people >45 yrs of age
- Death rate of 41.5/100,000
- Smoke exposure (primarily tobacco)
COPD

- Diagnosis is based on
  - Signs and symptoms
    - Confirmed by spirometry
- Prevalence
  - Estimated at 3-12% (>5% USPSTF)
    - 18.9% (Tinkelman et al)
    - 30% (other studies)

Hallmark symptoms
- Cough (85%)
- Increased sputum production (45%)
- DOE (70%)
- Wheezing (40%)
- Exercise intolerance

Less commonly reported symptoms
- Fatigue
- Edema
- Chest tightness
- Weight loss
- Increased nocturnal awakenings
- Decreased quality of life

Primary Risk Factor | Other Risk Factors
--- | ---
Cigarette Smoking | Advancing age
- 80% of deaths are directly attributable to smoking
- Second-hand smoke exposure
- 12-13 times more likely to die from COPD than non-smokers
- Chronic exposure to environmental or occupational pollutants
| Alpha-1-antitrypsin deficiency
| Childhood history of recurrent respiratory infections
| Family history of COPD

Cancer of Large Intestine

- Most frequent internal neoplasm in the US
  - Second most frequent cause of cancer death
    - 5%-6% lifetime risk (1 in 17)
  - More common in Western nations
  - Equal frequency in men and women
  - African Americans and Caucasians equally affected
    - African Americans have a higher mortality

Cancer of Large Intestine

- Histology
  - 95% Adenocarcinoma
    - Progression from adenoma (adenomatous polyp) to carcinoma – may take 10 years
- Polyps
  - < 1 cm: < 1% chance of CA
  - 1-2 cm: 10%-20% chance of CA
  - > 2 cm: 30%-50% likelihood
    - Detecting and removing polyps early CAN PREVENT much colon cancer
- Early Detection of CRC – decreased mortality
Risk Factors

- **Non-modifiable**
  - Family or personal history of CRC or advanced adenomas
  - Personal history of IBD
  - Personal history of hereditary polyposis syndromes

- **Modifiable**
  - Smoking
  - Obesity
  - Inactivity
  - Heavy alcohol use
  - Red meat (500g/week)

Recommendation of the USPSTF on Screening for CRC

<table>
<thead>
<tr>
<th>Population (Adult Age)</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-75*</td>
<td>Screen with high sensitivity fecal occult blood testing (FOBT), sigmoidoscopy, or colonoscopy (GRADE A)</td>
</tr>
<tr>
<td>76-85</td>
<td>Do not screen (GRADE C)</td>
</tr>
<tr>
<td>&gt; 85</td>
<td>Do not screen (GRADE D)</td>
</tr>
</tbody>
</table>

- Screening tests – equally acceptable
- 2016 recommendation focuses on BEING SCREENED as opposed to screening test to be used

* American College of Gastroenterology recommends starting at age 45 in blacks

AES Question

2. A 54-year-old male sees you for a health maintenance visit. He inquires about the options for colorectal cancer screening. He has not had any screening tests performed in the past and has no personal or family history of colon cancer. You explain to him that there are several alternatives, but according to the U.S. Preventive Services Task Force, recommendations regarding the optimal screening intervals vary by test. He opts for fecal occult blood testing. You recommend he repeat this test at which one of the following intervals?

A. Yearly
B. Every 3 years
C. Every 5 years
D. Every 10 years

Stool-Based Tests

<table>
<thead>
<tr>
<th>Screening Method</th>
<th>Frequency</th>
<th>Evidence of Efficacy</th>
<th>Other Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>gFOBT</td>
<td>Every year</td>
<td>RCTs with mortality and pox; High sensitivity versions (eg, Hemoccult SENSA) have superior test performance characteristics than older tests (eg, Hemoccult II)</td>
<td>Does not require bowel preparation, transportation to and from the screening examination (test is performed at home)</td>
</tr>
<tr>
<td>FIT</td>
<td>Every year</td>
<td>Test characteristic studies; Improved accuracy compared with gFOBT; Can be done with a single specimen</td>
<td>Does not require bowel preparation, transportation to and from the screening examination (test is performed at home)</td>
</tr>
<tr>
<td>FIT-DNA</td>
<td>Every 1 or 3 y</td>
<td>Test characteristic studies; Specificity is lower than for FIT, resulting in more false-positive results, more diagnostic colonoscopies, and more associated adverse events per screening test; Improved accuracy compared with FIT per single screening test</td>
<td>There is insufficient evidence about appropriate longitudinal follow-up of abnormal findings after a negative diagnostic colonoscopy; may potentially lead to overly intensive surveillance due to false positives and subsequent exams over the genetic component of the test</td>
</tr>
</tbody>
</table>

Direct Visualization Tests

<table>
<thead>
<tr>
<th>Screening Method</th>
<th>Frequency</th>
<th>Evidence of Efficacy</th>
<th>Other Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonoscopy</td>
<td>Every 10 y</td>
<td>RCTs with mortality and pox; Modeling suggests it provides less benefit than when combined with FIT or compared with other strategies</td>
<td>Does not require bowel preparation, transportation to and from the screening examination (test is performed at home)</td>
</tr>
<tr>
<td>CT colonography</td>
<td>Every 5 y</td>
<td>Test characteristic studies; There is insufficient evidence about the potential harm of associated extracolonic findings, which are common</td>
<td></td>
</tr>
<tr>
<td>Flexible sigmoidoscopy</td>
<td>Every 5 y</td>
<td>RCTs with mortality and pox; Modeling suggests it provides less benefit than when combined with FIT or compared with other strategies</td>
<td></td>
</tr>
<tr>
<td>Flexible sigmoidoscopy with FIT</td>
<td>Flexible sigmoidoscopy every 10 y plus FIT every year</td>
<td>Test availability has declined in the United States; Potentially attractive option for patients who want endoscopic screening but want to limit exposure to colonoscopy</td>
<td></td>
</tr>
</tbody>
</table>

USPSTF COLORECTAL CANCER SCREENING

<table>
<thead>
<tr>
<th>Benefit</th>
<th>FIT*</th>
<th>gFOBT</th>
<th>FIT-DNA</th>
<th>Fecal occult blood testing sensitivity per 1,000 screened</th>
<th>Colorectal cancer deaths averted per 1,000 screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life years gained per 1,000 screened</td>
<td>244</td>
<td>247</td>
<td>246</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>Colorectal cancer deaths averted per 1,000 screened</td>
<td>22</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Hemorrhage (Proxy)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifetime number of colonoscopies per 1,000 screened</td>
<td>1757</td>
<td>2253</td>
<td>2289</td>
<td>4049</td>
<td></td>
</tr>
<tr>
<td>Additional burden</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifetime number of non-colonoscopy tests per 1,000 screened</td>
<td>15,778</td>
<td>12,927</td>
<td>15,484</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
AGA

- Do not repeat colorectal cancer screening (by any method) for 10 years after a high-quality colonoscopy that does not detect neoplasia.

Key Recommendations

**CRC Screening**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>SOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal cancer screening should begin at 50 years of age in average-risk individuals</td>
<td>A</td>
</tr>
<tr>
<td>AAFP recommends screening with FIT, flexible sigmoidoscopy, or colonoscopy starting at age 50 years and continuing until age 75 years</td>
<td>B</td>
</tr>
<tr>
<td>The American College of Gastroenterology recommends that colorectal cancer screening begin at 45 years of age in black patients</td>
<td>C</td>
</tr>
<tr>
<td>Average-risk patients with normal findings on colonoscopy should have repeat colonoscopy in 10 years</td>
<td>C</td>
</tr>
<tr>
<td>Patients with small, distal hyperplastic polyps are considered to have a normal colonoscopy result and should have repeat colonoscopy in 10 years</td>
<td>C</td>
</tr>
<tr>
<td>Repeat surveillance colonoscopy in 5 to 10 years for low-risk polyps</td>
<td>C</td>
</tr>
<tr>
<td>Repeat surveillance colonoscopy in 3 years for high-risk polyps</td>
<td>C</td>
</tr>
</tbody>
</table>

Syphilis Infection

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Evidence grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic, nonpregnant adults and adolescents who are at increased risk for syphilis infection</td>
<td>Recommends screening for syphilis infection in asymptomatic persons who are at increased risk for infection</td>
<td>A</td>
</tr>
</tbody>
</table>

Syphilis

**USPSTF 2016**

- Strongly recommends that persons at increased risk for syphilis be screened (Grade A)
  - Men who have sex with men
  - Men/women living with HIV (high rates of co-infection)
  - History of incarceration
  - History of commercial sex work
  - Male < 29 years of age (high prevalence areas)
- Recommends AGAINST screening persons NOT at increased risk

Diagnosis of Syphilis

- Definitive test
  - Dark-field microscopy
- Nontreponemal serology
  - RPR and VDRL (screening)
    - Correlates with disease activity (4-fold decline [two dilutions] in titer by 6 months); rarely (+) for life
- Treponemal antibody
  - FTA-ABS (confirmation test)
    - Correlates poorly with disease activity; not used to assess treatment response; may remain (+)
- VDRL-CSF for neurosyphilis
  - Highly specific, low sensitivity

Primary and Secondary Syphilis Rates by County United States 2015

In 2015, 1,811 (57.7%) of 3,141 counties in the United States reported no cases of primary and secondary syphilis.
Syphilis Surveillance Data  
**CDC -October 2016**

- Trend data show rates of syphilis are increasing at an alarming rate (19 percent in 2015). While rates have increased among both men and women, men account for more than 90 percent of all primary and secondary syphilis cases.
- Men who have sex with men (MSM) account for 82 percent of male cases where the sex of the sex partner is known.

Syphilis: Treatment  
**CDC 2015**

- Benzathine PCN G
  - 2.4 million units IM
  - Preferred drug for treatment of ALL stages EXCEPT late latent/tertiary neurosyphilis
- Desensitization if PCN allergy
  - Documented limited data on alternatives – doxycycline/tetracycline – advise 14-day course
  - Emergence of azithromycin-resistant T. pallidum – should not be routinely used to treat
- Jarisch-Herxheimer
  - Acute febrile reaction occurring in first 24 hrs after treatment

Syphilis: Treatment  
**CDC 2015**

- Late latent/tertiary
  - Benzathine PCN G
    - 7.2 million units administered as 3 doses of 2.4 million units IM q week
- Neurosyphilis
  - Aqueous crystalline PCN G
    - 18-24 million units/day, administered as 3-4 million units IV q 4 hours or continuous infusion for 10-14 days
  - Procaine penicillin
    - 2.4 million units IM once daily plus probenecid 500 mg po QID for 10-14 days

Genital Herpes Infection: Serologic Screening

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Evidence grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic adolescents and adults, INCLUDING those that are pregnant</td>
<td>Recommends against routine serologic screening for genital HSV infection in asymptomatic adolescents and adults, including those who are pregnant</td>
<td>D</td>
</tr>
</tbody>
</table>

**Population Recommendation Evidence grade**

Asymptomatic adolescents and adults, INCLUDING those that are pregnant

**Genital Herpes Infection: Serologic Screening**

**Population**
- Asymptomatic adolescents and adults at increased risk for infection
  - Recommends screening for latent tuberculosis infection in populations at increased risk

**Late Tuberculosis Infection**

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Evidence grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic adolescents and adults at increased risk for infection</td>
<td>Recommends screening for latent tuberculosis infection in populations at increased risk</td>
<td>B</td>
</tr>
</tbody>
</table>

**AES Question**

3. A 52-year-old male with diabetes mellitus of 10 years’ duration presents for a pre-employment TB skin test. His test will be read as positive if on evaluation in two days the area of induration is greater than how many millimeters?

A. 5 mm  
B. 7 mm  
C. 10 mm  
D. 12 mm

**Latent Tuberculosis Infection**

**Population**
- Asymptomatic adolescents and adults at increased risk for infection
  - Recommends screening for latent tuberculosis infection in populations at increased risk

**TB tests are generally not needed for people with a low risk of infection.**
Who Needs TB Testing?

- Testing indicated for higher-risk populations including:
  - Contact with a patient with active TB
  - HIV infection or immune suppression
  - People from a country where TB disease is common (most countries in Latin America, the Caribbean, Africa, Asia, Eastern Europe, and Russia)
  - Occupational or social situations at risk (homeless shelters, prison or jails, or some nursing homes)
  - Use of illicit substances
  - Those with symptoms (unexplained weight loss, fevers, night sweats, cough for at least 2 weeks, hemoptysis)

Testing for M. Tuberculosis Infection

- Mantoux tuberculin skin test (TST)
  - Injection of PPD into skin that produces delayed-type hypersensitivity reaction in persons with M. tuberculosis infection
- Interferon-Gamma Release Assays (IGRAs)
  - QuantiFERON® Gold (QFT-G), T-Spot
  - Blood test that measures and compares amount of interferon-gamma (IFN-γ) released by blood cells in response to antigens

IGRAs

- CDC recommends that IGRAs can be used in all circumstances in which the TST is currently used, including contact investigations
- A positive test should prompt the same evaluation and management as a positive TST
- NO reason to follow a (+) IGRA with a TST

Pros
- Requires a single visit
- Results available within 24 hours
- No reader bias
- No booster phenomenon
- Not affected by BCG (Bacille Calmette-Guérin) vaccination

Preferred method for:
- Poor compliance with TST
- Prior BCG vaccine

Cons
- Must be processed within 8-16 hours (30 hours with T-Spot)
- Errors in collection or transportation
- Limited data on the use of IGRAs:
  - Children younger than 5 yrs; persons recently exposed to M. tuberculosis; immunocompromised persons (TST preferred in those settings)
- Expensive

Reading a TST

- Measure reaction in 48 to 72 hours
- Measure induration, not erythema
- Record reaction in millimeters, not "negative" or "positive"
- Ensure trained health care professional measures and interprets the TST
  - Positive TST reactions can be measured accurately for up to 7 days
  - Negative reactions can be read accurately for only 72 hours

TB Skin Testing

> 5 mm is considered positive if:
- HIV sero-positive
- Recent TB direct contact
- CXR shows prior inactive TB
- Immunosuppressed patients
  - Prednisone > 15 mg/day
  - TNF-α antagonists
  - Organ transplant recipients
TB Skin Testing

> 10 mm is considered positive if:

- Diabetic
- Renal failure
- Cancer
- Recent immigrant (< 5 yrs) from high-risk country
- High-prevalence area
- Long-term care facility
  - Resident or employee
- Inmate
- IV drug user
- Children < 4 yrs of age
- Mycobacteriology lab personnel

> 15 mm is considered positive if:

- Any person with no known risk factors
  - Even if prior BCG vaccination

Booster Phenomenon

- Some people infected with *M. tuberculosis* may have a negative reaction to the TST if many years have passed since they became infected.
- They may have a (+) reaction to a subsequent TST because the initial test “stimulates” their ability to react to the test.
  - *This may incorrectly be interpreted as a skin test conversion!*
- [The two-step test is indicated for serial testing situations, to prove this latent “wake up” is not a new infection/conversion.]

Two-Step Skin Testing

- If an initial TST result is classified as positive, consider them infected and treat accordingly.
- If an initial TST result is negative, a second test is repeated 1-3 weeks later.
  - If the second TST is also negative, the person is classified as not being infected.
  - If the second TST is positive, it probably represents a boosted reaction, indicating that the infection was most likely in the past and not recent.

Work-Up of Positive TST or IGRA

- Check CXR for active disease
  - If CXR Negative (latent tuberculosis)
    - **Isoniazid** (INH) for 6-9 months (9 mo is preferred)
      - Daily or intermittently (twice weekly)
      - Use directly observed therapy (DOT) for intermittent regimen
    - Rifampin daily for 4 months, consider adding pyridoxine
    - Monthly exams for signs of hepatitis and medication adherence, check liver transaminases if indicated

Aspirin Therapy

- Decisions about aspirin therapy should take into account the patient’s overall risk for stroke, heart disease, and gastrointestinal bleeding
Data Synthesis - USPSTF

- Two good-quality and 9 fair-quality randomized, controlled trials were identified.
  - In analyses of all doses, aspirin reduced the risk for nonfatal myocardial infarction (MI) (relative risk [RR], 0.78 [95% CI, 0.71 to 0.87]) but NOT nonfatal stroke; aspirin showed little or no benefit for all-cause or cardiovascular mortality.
  - Benefits began within the first 5 years. Older adults achieved greater relative MI reduction, but no other effect modifications were found in analyzed subpopulations.
  - In trials with aspirin doses of 100 mg or less per day, the reduction in nonfatal MI benefit persisted (absolute risk reduction, 0.15 to 1.43 events per 1000 person-years) and a 14% reduction in nonfatal stroke benefit was noted, but NO benefit was found for all-cause mortality (RR, 0.97 [CI, 0.85 to 1.01]) or cardiovascular mortality (RR, 0.97 [CI, 0.85 to 1.10]).

Statin Use for Primary Prevention of CVD in High-Risk Adults

- CVD can lead to MIs and CVAs, and is a leading cause of death in the US — accounts for 1 of every 3 deaths in adults.
- High cholesterol is a significant risk factor for CVD.
- Statin drugs help prevent the formation of cholesterol.
  - Most effective in lowering LDL, but can also help lower TGs and raise HDL.
  - Help prevent MIs and strokes in ages 40-75, who have a risk factor for CVD (i.e., high cholesterol, hypertension, diabetes, or smoking), and have an elevated risk of having a CV event in the next 10 years.

Statin Use for Primary Prevention of CVD

- Although statin use may be beneficial for the primary prevention of CVD events in some adults with a 10-year CVD event risk of less than 10%, the likelihood of benefit is smaller because of a lower probability of disease and uncertainty in individual risk prediction. Clinicians may choose to offer a low- to moderate-dose statin to certain adults without a history of CVD when all of the following criteria are met: 1) they are aged 40 to 75 years; 2) they have 1 or more CVD risk factors (i.e., dyslipidemia, diabetes, hypertension, or smoking); and 3) they have a calculated 10-year risk of a cardiovascular event of 7.5% to 10%.
### Statin Use for Primary Prevention of CVD

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Evidence Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults 76 years and older with no history of CVD</td>
<td>Concludes that the current evidence is insufficient to assess the balance of benefits and harms of initiating statin use for the primary prevention of CVD events and mortality in adults 76 years and older without a history of heart attack or stroke.</td>
<td>I</td>
</tr>
</tbody>
</table>

### New Cholesterol Guidelines - 2013

- **New guidelines** identify four groups of primary- and secondary-prevention patients in whom physicians should focus efforts to reduce ASCVD
- **Among the controversial issues:**
  - The so-called **Risk Calculator** – Overestimates MI and stroke by perhaps by 75-150%
  - New equation for estimating a patient's risk of having an atherosclerotic cardiovascular disease event in the next 10 years based on pooled results from five large cohort studies. The equation considers age, sex, total and HDL cholesterol, systolic blood pressure, blood pressure treatment, diabetes, and smoking
- **Recommendation that statins be used as primary prevention that have drawn fire from AAFP and Cholesterol**
  - CVD risk assessment tool has not been validated and may overestimate risk. The risk cut-off of 7.5%, rather than 10%, will significantly increase the number of individuals on statins
  - Many of the recommendations were based on expert opinion, although the key points are evidence-based
  - Seven of the 15 members of the guideline panel had conflicts of interest

### Recommended Treatment

<table>
<thead>
<tr>
<th>Group</th>
<th>Treatment</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>(+) ASCVD</td>
<td>High-intensity statin therapy</td>
<td>50% reduction in LDL-C</td>
</tr>
<tr>
<td>LDL-C &gt; 190mg/dL</td>
<td>High-intensity statin therapy</td>
<td>50% reduction in LDL-C</td>
</tr>
<tr>
<td>Diabetes and aged 40-75</td>
<td>Moderate-intensity therapy</td>
<td>30%-49% reduction in LDL-C</td>
</tr>
<tr>
<td>&gt; 7.5% 10-year risk* of</td>
<td>High-intensity therapy</td>
<td>50% reduction in LDL-C</td>
</tr>
<tr>
<td>ASCVD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-75 years of age with</td>
<td>Moderate- or high-intensity therapy</td>
<td>Goal as above</td>
</tr>
<tr>
<td>10-year risk* of clinical events &gt; 7.5% AND an LDL-C anywhere from 70-169</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* New global risk assessment tool developed by the expert panel. Designed to assess the risk of an initial CV event and includes participants from racially and geographically diverse cohorts. The new pooled cohort equations predict the future risk of CV disease and also stroke.

### AES Question

4. Which of the following is a reason to suspend or avoid breastfeeding?

A. Mastitis
B. Mild to moderate hyperbilirubinemia in the infant
C. Use of amoxicillin to treat a sinus infection in the mother
D. Active tuberculosis in the mother
Breastfeeding

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Evidence Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant women, new mothers, and their children</td>
<td>Recommends providing interventions during pregnancy and after birth to support breastfeeding</td>
<td>B</td>
</tr>
</tbody>
</table>

NOTHING BAD comes from Breastfeeding!

Breastfeeding Supports

- Nutrition
- Oral Rehydration
- Birth Spacing and Fertility
- Growth and Development
- Maternal Health and Survival
- Immunization
- Reduced Cancers and Chronic Diseases

Folic Acid for the Prevention of Neural Tube Defects

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>All women planning or capable of pregnancy</td>
<td>Take a daily supplement containing 0.4 to 0.8 mg (400 to 800 µg) of folic acid.</td>
<td>A</td>
</tr>
</tbody>
</table>

- One half of all pregnancies in the USA are unplanned. Clinicians should advise all women who are capable of pregnancy to take daily folic acid supplements.
- Critical period for supplementation starts 1 month before conception, continues through the first 2 to 3 months of pregnancy.
- Randomized trials conducted in settings without food fortification - supplementation with MVI containing 0.8 mg (800 µg) of folic acid reduces the risk of NTDs.
- Observational studies done before implementation of food fortification laws report a reduction in NTDs in women taking supplement containing 0.4 mg (400 µg) of folic acid.

Preeclampsia

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant women with blood pressure measurements throughout pregnancy</td>
<td>Screening for preeclampsia in pregnant women</td>
<td>B</td>
</tr>
</tbody>
</table>

- Preeclampsia is a complex syndrome. Can quickly evolve into a severe disease that can result in serious, even fatal health outcomes for the mother and infant.
- Ability to screen for preeclampsia using blood pressure measurements is important to identify and effectively treat a potentially unpredictable and fatal condition.
- USPSTF found adequate evidence that the well-established treatments of preeclampsia result in a substantial benefit for the mother and infant by reducing maternal and perinatal morbidity and mortality.

Thyroid Cancer

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>Recommends AGAINST screening* for thyroid cancer in asymptomatic adults.</td>
<td>D</td>
</tr>
</tbody>
</table>

- In 2013, the incidence rate of thyroid cancer in the United States was 15.3 cases per 100,000 persons, which is a significant increase from 1975, when the incidence rate was 4.9 cases per 100,000 persons.
- Increase was 6.7% per year from 1997 to 2009, but the rate of increase has slowed to 2.1% per year in recent years (2009–2013).
- Meanwhile, the change in mortality rate has increased by only about 0.7 deaths per 100,000 persons each year.
- Most cases of thyroid cancer have a good prognosis. The 5-year survival rate for thyroid cancer overall is 98.1% and varies from 99.9% for localized disease to 55.3% for distant disease.
- * Neck palpation or ultrasound

Obesity in Children and Adolescents

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children and adolescents 6 years and older</td>
<td>Recommends that clinicians screen for obesity in children and adolescents 6 years and older offer or refer to comprehensive, intensive behavioral interventions to promote improvements in weight status.</td>
<td>B</td>
</tr>
</tbody>
</table>
Obesity

**Weight Status Category** | **Percentile Range**
--- | ---
Underweight | Less than the 5th percentile
Healthy weight | 5th percentile to less than the 85th percentile
Overweight | 85th to less than the 95th percentile
Obese | Equal to or greater than the 95th percentile

What do we see?

- 17% of children and adolescents aged 2-18 years in the US
- Obesity is associated with poor cardiovascular and metabolic outcomes during childhood (e.g., high BP, abnormal lipids, insulin resistance)
- Other issues associated with obesity: Asthma, OSA, orthopedic problems, PCOS, hepatic steatosis
- Low self-esteem, impaired quality of life, teasing and bullying

Long-term

- Often leads to obesity in adulthood, which leads to poor health outcomes
  - 80% of adolescents with obesity will have obesity as adults
  - 64% of preadolescents with obesity also had obesity as adults

Bottom-line

- Multicomponent interventions targeting lifestyle change to limit weight gain or decrease weight (include parents)
  - Assist participants in identifying goals, self-monitoring, and problem solving to accomplish their selected goals.

Components of Effective Intervention

- According to the USPSTF, comprehensive intensive behavioral interventions to promote improved weight status:
  - Involve at least 26 patient contact hours
  - May include sessions that target both the child and his or her parents
  - Provide information on healthy eating and safe exercise
  - May entail discussions about using stimulus control, such as limiting access to tempting foods and screen time
  - Incorporate supervised physical activity
Intervention

- Benefit of behavior therapy may be increased if parents, rather than the child, are given the primary responsibility for behavior change.
- There have been many trials that focused on changing levels of physical activity and/or sedentary behavior, but they have been too small to provide conclusive evidence.
- While physical activity is universally recommended because of its proven health benefits, the contribution to weight loss is not as clear in childhood.
  - Children should be encouraged to increase their levels of physical activity, even if there is no great benefit in terms of weight reduction.

Draft Statements

<table>
<thead>
<tr>
<th>Issue</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening: Adolescent Idiopathic Scoliosis</td>
<td>I</td>
</tr>
<tr>
<td>Behavioral Counseling: Healthful Diet and Physical Activity for Cardiovascular Disease Prevention in Adults WITHOUT Known Risk Factors</td>
<td>C</td>
</tr>
<tr>
<td>Treatment: Menopausal Hormone Therapy for Prevention of Chronic Conditions in Postmenopausal Women</td>
<td>D</td>
</tr>
<tr>
<td>Screening: Obesity in Children and Adolescents Six Years of Age and Older</td>
<td>B</td>
</tr>
<tr>
<td>Screening: Vision in Children Six Months to Five Years</td>
<td>3-5 years B &lt; 3 years I</td>
</tr>
<tr>
<td>Screening: Prostate Cancer</td>
<td>C</td>
</tr>
</tbody>
</table>

Prostate Cancer

- Prostate cancer is found most often in men over 50, with 80% of those with prostate cancer being over age 65 (SOR C)
  - Autopsy Studies
    - 1/3 of men ages 40-60 have prostate cancer
    - 3/4 of men over 85 have prostate cancer
- US Statistics - 2017

Prostate Cancer Screening

- Do not use prostate-specific antigen (PSA)-based screening for prostate cancer of men in the general population
  - Applies to healthy men of all ages
  - Results from 5 well-controlled clinical trials; does not reduce mortality
  - From 1986-2005, one million men received surgery, radiation therapy, or both
    - 5/1000 died soon after surgery
    - 10-70/1000 suffered serious complications
    - 200-300/1000 suffered impotence

Ten Leading Cancer Types for the Estimated Cancer Deaths by Sex, United States, 2017

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung &amp; bronch</td>
<td>29,960</td>
<td>7,300</td>
</tr>
<tr>
<td>Colorectal</td>
<td>27,350</td>
<td>15,920</td>
</tr>
<tr>
<td>Breast</td>
<td>40,610</td>
<td>11,920</td>
</tr>
<tr>
<td>Prostate</td>
<td>22,110</td>
<td>5,000</td>
</tr>
<tr>
<td>Pancreas</td>
<td>20,780</td>
<td>3,900</td>
</tr>
<tr>
<td>Liver &amp; intrahepatic duct</td>
<td>19,930</td>
<td>5,800</td>
</tr>
<tr>
<td>Larynx</td>
<td>15,500</td>
<td>4,000</td>
</tr>
<tr>
<td>Leukemia</td>
<td>12,380</td>
<td>4,000</td>
</tr>
<tr>
<td>Melanoma</td>
<td>11,300</td>
<td>4,300</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>9,900</td>
<td>3,600</td>
</tr>
<tr>
<td>Brain &amp; other nervous system</td>
<td>9,600</td>
<td>3,400</td>
</tr>
</tbody>
</table>

Previous and Current Analysis

- Largely based on the results of two randomized trials of PSA screening
  - US Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial (PLCO)
  - European Randomized Study of Screening for Prostate Cancer (ERSPC)
- Both trials now have up to 15 years of follow-up
  - Important because lead time means that any benefits of screening on prostate cancer mortality would take a decade or longer to occur.

Prostate Cancer Trials

- ERSPC (European Randomized Study of Screening for Prostate Cancer)
  - PSA-based screening reduced the rate of cancer death by 21% after a median follow-up of 11 years
  - Failed to show a reduction in all-cause mortality
  - To prevent 1 death, 1055 men need screening and 37 cancers need to be detected

Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial (PLCO)

  - Screening was associated with a 22% increase in diagnosis after 7 years of follow-up
  - Offered annual PSA test for 6 years and DRE for 4 years
  - No mortality benefit of prostate cancer screening
  - 76,855 men

- J Natl Cancer Inst 2012;104:12
  - 13 years of follow-up
  - No mortality benefit

So why the change?…

- The positions of guideline groups on the usefulness of screening depends largely on which trial’s results they rely on.

Both studies have limitations…

ERSPC

- Strictly speaking — not one but seven trials.
- Seven study centers in different countries agreed to pool their data to increase the study’s statistical power.
  - In countries such as Sweden, PSA screening appeared to reduce prostate cancer mortality.
  - In Finland, it made no difference.
- Screening group was more likely than control participants to receive curative treatment with radical prostatectomy, even after adjusting for differences in cancer stages across groups, which could have exaggerated any benefits of the screening itself.
- Conducted during a time when PSA screening was already occurring in the general US population, meaning that most of the “control” group received one or more PSA tests at some point during the trial.
  - This effect would tend to dilute any true benefit of screening.

PLCO

- Conducted during a time when PSA screening was already occurring in the general US population, meaning that most of the “control” group received one or more PSA tests at some point during the trial.
  - This effect would tend to dilute any true benefit of screening.

So…

2012

- Judged that the ERSPC and PLCO trials, together, suggested that PSA screening MAY prevent a cancer death in 0 to 1 men per 1000 screened
- Harms side: 100-120 of these men will have at least one false-positive test result
- Treatment of 110 additional men diagnosed with prostate cancer leads to 29 more men developing erectile dysfunction and 18 developing urinary incontinence

2017

- More weight given to the ERSPC data
- Estimates that PSA screening prevents a prostate cancer death in 1 to 2 men per 1000 men screened, based on the trial’s number-needed-to-invite-to-screening of 781.
- Harms of screening have NOT changed, except that fewer men with low-risk prostate cancer – the more indolent tumors most likely to be overdiagnosed – receive initial curative treatment, instead opting for active surveillance.
PSA Screening Discussion

- Inform of the gaps in the evidence
- Counsel regarding potential risk factors before deciding whether to be tested
  - No definitive evidence to support a change in the current USPSTF prostate cancer screening recommendations based on any of “this” patient’s risk factors
    - ? Blacks
    - ? Family history
  - Information could be incorporated into a discussion about the benefits and harms of screening

Recommendations of others

### Prostate Cancer Screening

<table>
<thead>
<tr>
<th>Organization</th>
<th>Recommendation</th>
<th>Age to start</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Urological Association</td>
<td>PSA with DRE; strongly recommends shared decision-making</td>
<td>55-69 (q 2 years may be preferred) (If estimated life expectancy is greater than 10 years)</td>
</tr>
<tr>
<td>American Cancer Society (2010)</td>
<td>Informed decision making PSA (with or without DRE)</td>
<td>50 (average risk); 45 (higher risk including AA and men with a first-degree relative diagnosed with prostate CA &lt; age 65); 40 (appreciably higher risk, e.g. multiple family members diagnosed with prostate cancer &lt; age 65)</td>
</tr>
<tr>
<td>American College of Preventive Medicine</td>
<td>Discuss potential benefits and harms of PSA; consider patient’s preferences and individualize screening decisions</td>
<td>50</td>
</tr>
<tr>
<td>American Academy of Family Physicians</td>
<td>Against PSA-based screening in asymptomatic men in the general population regardless of age (Under review; pending USPSTF recommendation)</td>
<td>-</td>
</tr>
<tr>
<td>American College of Physicians</td>
<td>Currently developing a guidance statement on this topic</td>
<td>-</td>
</tr>
</tbody>
</table>

Practice Recommendations

- There is NO data to support the use of tests to screen asymptomatic patients for COPD.
- Screen for syphilis infection in asymptomatic persons who are at increased risk for infection.
- Screen for latent tuberculosis infection in populations at increased risk.
- CRC recommendation focuses on BEING SCREENED as opposed to screening test to be used.
- Decisions about aspirin therapy should take into account the patient’s overall risk for stroke, heart disease, and gastrointestinal bleeding.
- STATIN THERAPY – IT IS BEYOND the numbers.
- Breastfeed.
- All women of childbearing age should consume a minimum of 400ug synthetic folic acid per day. (Take a multivitamin daily.)

Barriers

- Practicalities of organizing staff and practice to systematically implement
- Reaching affected patients in a practice or community; limited systems to address prevention during every visit with every patient
- Time and reimbursement for prevention remain major issues – improving

Thank you
Questions