Overview of Preventive Medicine for Family Physicians

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Why Prevention?

- Prevents morbidity and mortality
- Saves money—yes, but only for certain services and diseases—immunizations, tobacco cessation
- Is just as cost effective relative as treatment—yes, for most recommended services
- Prevention has now become an important aspect of quality of care
Why is Prevention Difficult?

- Not enough time in the day
- Can’t keep track of what needs to be done as the field becomes increasingly risk factor based
- Need an automated system to track and prompt.
- Take advantage of the Medi-Cal and Medicare EHR Incentive Programs
  - medi-cal.ca.gov
  - www.cms.gov/ehrincentiveprograms
Levels of Prevention

- **Primary**: Prevent preclinical disease
  - e.g. immunizations, counseling about safe behaviors

- **Secondary**: Detect preclinical disease and prevent symptoms from developing
  - e.g. checking lipids, cancer screening

- **Tertiary**: Prevent recurrence or progression of symptomatic disease
  - e.g. tamoxifen to prevent breast cancer recurrence, laser treatment to prevent retinal hemorrhages in diabetic retinopathy
Types of Prevention

- Screening
- Immunization
- Chemoprevention
- Counseling
What to Study for the Test

- **Screening and Chemoprevention:** Know the recommendations of the US Preventive Services Task Force (USPSTF)—which are basically adapted by the American Academy of Family Physicians. These are summarized on the tables in this syllabus.

- **Immunizations:** Know the recommendations of CDC’s Advisory Committee on Immunization Practices (ACIP). See the tables in this syllabus.

- **Counseling:** Perhaps the least important area for the test, but probably most important area for practice. USPSTF recommendations provide a basic foundation.
US Preventive Services Task Force

- Task force members are independent volunteers who are experts at assessing evidence and are from primary care specialties. They do not go beyond the evidence.
- Recommendations are updated periodically online at: http://www.USPreventiveServicesTaskForce.org.
- Also a free interactive PDA program are available at: http://www.epss.ahrq.gov.
- Recommendations now built into the Affordable Care Act and A and B recommendations must be covered by insurers.
US Preventive Services Task Force Recommendation Grades

- A—High certainty that the benefit is substantial—Do it.
- B—At least moderate certainty of moderate benefit—Do it
- C—Moderate certainty that benefit is small—Don’t do except on an individual basis
- I—Insufficient evidence to assess benefits and harms—Do it only with an informed patient
- D—Moderate or high certainty of no benefit or of harm—Don’t do it.

You need to know the do’s (A’s & B’s) and don’ts (D’s)
Criteria for Effectiveness of Screening Tests

- The test must be able to detect the target condition at an earlier stage than without screening and with sufficient accuracy to avoid producing large numbers of false positive and false negative results.
- Screening for and treating persons with early disease should improve the likelihood of favorable health outcomes compared to treating patients when they present with signs or symptoms of disease.
Sensitivity and Specificity of Tests

- Accurate screening tests need high rates of both sensitivity and specificity.
- **Sensitivity**--the ability to detect true positives. If sensitivity is poor, many patients with disease will be missed and falsely reassured.
- **Specificity**--the ability to avoid false positive results. If specificity is poor and/or the condition is rare, most positive results will be false and patients unnecessarily alarmed.
# Screening Test Characteristics

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>Positive</th>
<th>Negative</th>
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| **TEST**       | **True Positive**         | **False Positive**        | Positive Predictive Value  
|                | **False Negative**        | **True Negative**         | TP/(TP+FP)                  |
|                | Sensitivity =             |                           | Negative Predictive Value  
|                | TP/(TP+FN)                 |                           | TN/(TN+FN)                  |
|                | Specificity =             |                           |                           | TN/(FP+TN)                  |
Number Needed to Screen (NNS)

- The number of patients that must be screened for a given length of time to prevent 1 death
- NNS is lower for common conditions with good treatments.
  - HTN NNS=43 patients over 5.6 yrs.
  - Hypercholesterolemia NNS=126 patients over 4.3 yrs
- NNS is high for less common conditions without good treatments
  - Colorectal CA (FOBT) NNS=808 patients over 8.5 yrs
  - Breast CA (50-59) NNS=351 patients over 10 yrs
  - Breast CA (40-49) NNS=749 patients over 10 yrs
Colorectal Cancer Screening

• Three Acceptable Options:
  • *Fecal Occult Blood Test* (high sensitivity) annually, or
  • *Flexible Sigmoidoscopy* every 5 years with fecal occult blood test every 3 years, or
  • *Colonoscopy* (not virtual) every 10 years

• When:
  • 50-75 years — Yes (may be reasonable <50 for those with 1° relatives who developed cancer at a younger age or those with multiple affected 1° relatives)
  • 76-85 years — Grey area (use discretion)
  • 86 years and older — Don’t do it
Breast Cancer Screening

• Mammography---every 2 years at 50-75 years. <50 and >75 years are grey areas (use discretion).

• Alternate technologies—insufficient evidence.

• Clinical Breast Exam, and teaching Breast Self-Exam---insufficient evidence to recommend

• BRCA Genetic Testing---screen women who have family members with breast, ovarian, tubal, or peritoneal cancer with 1 of several screening tools designed to identify a family history. If positive refer for genetic counseling.
BRCA Mutation Screening for Breast and Ovarian Cancer Risk

- Did any of your first-degree relatives have breast or ovarian cancer?
- Did any of your relatives have bilateral breast cancer?
- Did any man in your family have breast cancer?
- Did any woman in your family have breast and ovarian cancer?
- Did any woman in your family have breast cancer before age 50 years?
- Do you have 2 or more relatives with breast and/or ovarian cancer?
- Do you have 2 or more relatives with breast and/or bowel cancer?

From FHS-7. Reference *BMC Cancer*. 2009;9:283
Cervical Cancer Screening

Pap Testing--every 3 years 21-65. With added HPV testing every 5 years ages 30-65 is acceptable.

Recommend against Pap:

- < 21
- >65 if consistently normal
- hysterectomy with cervix removal unless high grade cervical lesion.

Recommend against HPV if <30
Lung Cancer Screening

- Annual low dose CT screening if 55-80 years of age and currently smoke or have stopped smoking in the last 15 years.
- Discontinue screening if patient develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.
Other Cancer Screening in Normal Risk Populations

• **Recommend Against**
  - Thyroid
  - Testicular
  - Bladder
  - Pancreatic
  - Ovarian—except if increased genetic risk
  - Prostate

• **Insufficient Evidence**—oral, skin
Cardiovascular Screening

- **Blood Pressure Screening**
  - q 1 yr. for >40, or overweight, obese, borderline HTN.
  - q 3-5 yrs. for 18-39 if normal. Confirm abnormal with ambulatory monitoring.
  - Under 18 insufficient evidence

- **Cholesterol Screening**
  - All men >35 and women >45
  - Men 20-35, Women 20-45 if risks for CAD
  - Under age 20—insufficient evidence

- **EKG, ETT in Asymptomatic Adults**
  - Average Risk—recommend against
  - Intermediate or High Risk—insufficient evidence

- **Non-traditional (CRP, homocysteine, CAC in electron beam CT)**
  - Insufficient evidence at all risk levels
Cardiovascular Screening

- **Abdominal Aortic Ultrasound**
  - Men 65-75 who have ever smoked (100 cigarettes)
  - Men 65-75 who have never smoked—use discretion
  - Women 65-75 who have ever smoked—inadequate evidence
  - Women who have never smoked—recommend against

- **Carotid Artery Stenosis or Peripheral Arterial Disease Screening**—recommend against

- **Anemia** (pregnant women)—insufficient evidence
Diabetes and Obesity Screening

Diabetes

• Adults—every 3 years ages 40-70 who are overweight or obese with FBS, Hgb A1c, OGT. Gestational—after 24 weeks of gestation.

• Children—no recommendation, although American Diabetes Association has recommended every 2 years starting at 10 if BMI $\geq 85\%$ and 2 risk factors.

Obesity

• Adults—BMI measurement for all (overweight $\geq 25$, obesity $\geq 30$)

• Children—BMI 6 years and older (overweight 85-95\%, obesity $\geq 95\%$)
Infectious Disease Screening

- Chlamydia and Gonnorhea—sexually active females <24. Males—insufficient evidence
- HIV—15-65 years of age and others at high risk. Also, all pregnant women.
- Syphilis—high risk only. Normal risk—recommend against
- Tuberculosis—high risk only. Normal risk—insufficient evidence
- Hepatitis B—high risk only. Normal risk—no recommendation.
- Hepatitis C—one time screening if born between 1945-1965. Also screening of high risk.
- Bacteriuria—normal risk—recommend against
Sensory Screening

- Adult hearing--insufficient evidence
- Adult vision--insufficient evidence
- Adult glaucoma—insufficient evidence
Childhood Screening

- Newborn (PKU, thyroid, hemoglobinopathy)—recommended.
- Newborn Hearing—recommend
- Hyperbilirubinemia—insufficient evidence
- Anemia—Normal risk—insufficient evidence. High risk (premature, low birth weight)—recommended
- Hip Dysplasia—insufficient evidence
- Strabismus, Amblyopia, Acuity—3-5 years at least once
- Speech and Language Delay—insufficient evidence
- Scoliosis—recommend against
Chemoprevention

- **Aspirin**
  - Men aged 45-79 when “benefits for MI prevention outweigh risks of GI bleeding”
  - Women aged 55-79 when “benefits for stroke prevention outweigh risks of GI bleeding”
  - Women after 12 weeks gestation if high risk for preeclampsia

- **Folic Acid**—recommended for women capable of or planning pregnancy.

- **Hormone Replacement**—recommend against

- **Tamoxifen/Raloxifene**—recommended for women with increased risk (≥ 3% in 5 years) of breast cancer and normal VTE risk. Recommend against for normal breast cancer risk.

- **Fluoride supplementation**—recommended for preschool children >6 mo. if insufficient in water supply

- **Vitamin D and Calcium**—recommended for fall prevention ≥ 65 yrs.

- **Vitamin Supplementation to prevent CHD or Cancer**—insufficient evidence.
Mental Health/Cognitive Function

- Depression Screening
  - Recommended ≥ 12 years of age in practices with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up.
  - Insufficient evidence < 12 years of age
- Autism
  - 18-30 months. Insufficient evidence
- Cognitive Impairment Screening
  - Insufficient evidence
- Domestic Violence Screening
  - Recommended for women of childbearing age
  - Elderly—insufficient evidence
Substance Abuse

- Alcohol Misuse Screening
  - Recommended for adults
  - Insufficient evidence for adolescents and children

- Drug Use
  - Insufficient evidence for adolescents and children
Counseling

Recommended

- Tobacco initiation (children and adolescents)
- Tobacco cessation (all ages, particularly pregnant women)
- Alcohol misuse (adults)
- Weight loss programs for obese
- Intensive counseling for health diet and physical activity if overweight or obese and other CVD risk factors
- Dietary advice for persons with diet-related chronic illnesses
- Skin cancer prevention if fair skin ≤ 24 yrs.

Insufficient Evidence in Normal Risk

- Physical activity or healthy diet for CVD prevention
- Vehicle restraint use
- Child maltreatment
Immunizations: Children 0-6 years

- **Rotavirus:**
  - Start at 6 weeks. RV-1 at 2 and 4 months. RV-5 at 2, 4, and 6 months

- **Influenza:**
  - Begin at 6 months (IIV) and continue yearly
  - 2 doses at 4 weeks apart on the first round up to age 8.
  - No live vaccine (LAIV) before age 2, hx wheezing, immunosuppres

- **Varicella and MMR:**
  - Doses at 12-15 months and at 4-6 years, at least 1 month apart

- **Hepatitis A:**
  - 2 doses: beginning at 12-23 months, 6-18 months apart

- **Hepatitis B:**
  - 3 doses: at birth, 1-2 months and 6-18 months

- **Haemophilus and Pneumococcal:**
  - 3 doses at 2, 4, and 6* months and booster at 12-15 months

- **Diptheria, Tetanus, and Acellular Pertussis**
  - 3 doses at 2, 4, and 6 months and boosters at 15-18 mo and 4-6 yr

- **Inactivated Polio**
  - 3 doses at 2, 4, and 6-18 months and booster at 4-6 years
Immunizations: Children 7-18 years

- Age 11-12 (boys and girls): Tdap, Meningococcal and begin HPV series. Second and third HPV at 1-2 mo. and 6 months, respectively, after first HPV. 9vHPV, 4vHPV, and 2vHPV may be given to girls, but only 9vHPV or 4vHPV for boys.
- Age 16 (boys and girls): meningococcal booster
- High Risk—Pneumococcal, Hepatitis A
- Don’t forget about annual influenza vaccine
- Don’t forget about catch-up vaccines—Hepatitis B, Polio, MMR, Varicella
Immunizations: Adults

- Tdap once only, then Td every 10 years for life
- Varicella – 2 doses for all adults if non-immune and not previously vaccinated. Adults born in US before 1980 (except health care workers or pregnant) or history of zoster are considered immune.
- HPV 3 doses until 26. 2\textsuperscript{nd} and 3\textsuperscript{rd} doses 1-2 mo. and 4 mo. After 1\textsuperscript{st}
- Zoster – 1 dose after 60 regardless of prior exposure to varicella
- Influenza – Yearly for all ages. No LAIV after 49 years.
- Pneumococcal--At 65, PCV13 followed at least 1 year later with PPSV23 one time only. If PPSV23 received first, then PCV13 at least 1 year later.
  - Start younger for some chronic illnesses and conditions, including diabetes and smoking with PCV13 followed by PPSV23 with revaccination with PPSV23 5 years later. See CDC guidelines
- Measles, Mumps, Rubella—Born after 1956 without laboratory documented immunity—1 dose. 2\textsuperscript{nd} dose 4 weeks later if in post-secondary education, work in health care facility, or plan to travel internationally.
- Hepatitis A,B and Haemophilus—for high risk
Final Words of Advice

- Review the Immunization Tables in your syllabus and check the CDC website for more details
- Look over the USPSTF materials in your syllabus and USPSTF website for more details
- Use common sense from your clinical practice

GOOD LUCK ON THE EXAM!