

# GENERAL INTERNAL MEDICINE & HEALTH SERVICES RESEARCH CASE CONFERENCE TEACHING MODULE

## Preventive Medicine Week 1 Prepared by Jodi Friedman, M.D.

Note: This is the first of 3 wks of prevention topics. This is not intended to cover all of prevention.

### General Concepts:

What is preventive medicine? What is the difference between primary and secondary prevention (give examples of each)? What types of preventive services are there (broad categories of interventions)? Where do recommendations for preventive services generally come from? How do recommendations from US Preventive Services Task Force (USPSTF), ACP-ASIM, and the Canadian Task Force on Preventive Health Care (CTF) generally differ from recommendations from various subspecialty organizations?

- *Preventive medicine may be defined as medical services designed to protect and promote health prospectively.*
- *Primary prevention refers to making an intervention that results in preventing a disease from developing (e.g. tetanus immunization, smoking cessation). Secondary prevention refers to detecting a disease in an early and presymptomatic stage and making an intervention that prevents the disease from further development (e.g., mammography to detect a non-palpable malignancy and the subsequent eradication of the cancer, identification and removal of an adenomatous polyp on endoscopy). Really all screening tests are forms of secondary preventive services unless you are screening for risk factors for a disease (like cholesterol screening as a form of primary prevention of CAD).*
- *Preventive services can be broken down into four broad categories: screening, counseling, immunizations and chemoprophylaxis.*
- *Preventive services recommendations come from a variety of sources, although there are really three groups that stand out as providing “gold standard” authoritative, evidence-based recommendations: USPSTF, ACP-ASIM, and CTF. USPSTF has provided perhaps the most comprehensive recommendations for preventive services in clinical practice, and all recommendations are accompanied by a rating of the strength of the recommendation based on the strength of the evidence available in the literature.*
- *All three of these organizations recommend relatively fewer interventions than various subspecialty societies (like ACS, NCI, AHA, etc.) because of a more rigorous requirement of proof of efficacy compared to these other organizations. In general, these groups have placed a greater emphasis on selective interventions to be offered to individuals at higher risk for certain conditions, as opposed to performing complete histories, physical and batteries of tests indiscriminately. The periodic health exam should be used as a time to gather data about risk factors which can then guide what screening, counseling and interventions should be provided.*

### Case:

VP is a 56 yo African American male who comes in for a “check up.” He was just promoted to vice president of a large company, so he has decided he now needs an “executive physical”. His best friend was just diagnosed with lung cancer, and he wants to be fully checked out so he can be sure he doesn’t have cancer, heart disease or any other dangerous disorder.

His PMH is significant for HTN, diagnosed 8 yrs ago, which has been well-controlled on dyazide. His only other medication is Advil occasionally for tension headaches. He has a 30 pack-year smoking history, but he quit 4 years ago. He has approximately 4-5 drinks per week and has no h/o IVDU. He plays soccer about twice a month, but does not otherwise exercise regularly and he has a very high stress job. He is

divorced for 5 years, and is currently monogamous with a woman for the past year. Prior to this, he has had approximately 10 female sexual partners over the last 5 years, and he has not used condoms regularly.

His family history is significant for diabetes in his father and his aunt, and HTN in both of his parents. There is no h/o prostate cancer, colorectal cancer or lung cancer. His ROS is completely negative, except that he is very fearful of developing lung cancer. He has a completely normal physical exam except that he is moderately overweight.

What preventive services will you recommend for VP? (consider screening tests, counseling, immunizations and chemoprophylaxis)

**Screening:**

- **Cardiovascular** – check blood pressure (in the absence of HTN it should be checked at least every 2 years), check lipid panel (in absence of HTN at least every 5 years). CAD - The U.S. Preventive Services Task Force (USPSTF) recommends **against routine screening** with resting electrocardiography (ECG), exercise treadmill test (ETT), or electron-beam computerized tomography (EBCT) scanning for coronary calcium for either the presence of severe coronary artery stenosis (CAS) or the prediction of coronary heart disease (CHD) events in adults at low risk for CHD events. Rating: [D recommendation](#). Rationale: The USPSTF found at least fair evidence that ECG or ETT can detect some asymptomatic adults at increased risk for CHD events independent of conventional CHD risk factors (go to [Clinical Considerations](#)), and that ETT can detect severe CAS in a small number of asymptomatic adults. Similar evidence for EBCT is limited. In the absence of evidence that such detection by ECG, ETT, or EBCT among adults at low risk for CHD events ultimately results in improved health outcomes, and because false-positive tests are likely to cause harm, including unnecessary invasive procedures, over-treatment, and labeling, the USPSTF concluded that the potential harms of routine screening for CHD in this population exceed the potential benefits. Resting ECG is important in patient diagnosed with HTN, but not effective screening test. At 65 yo, this patient should be screened for AAA (men who have smoked between ages 65-75).
- **Metabolic** – check a glucose. USPSTF recommends periodic screening for DM in patients with HTN or hyperlipidemia
- **Colorectal cancer (CRC)** – begin screening at age 50 yo in all adults of average risk (Grade A recommendation). USPSTF states that there is insufficient data to determine which strategy (annual FOBT, q 5 year sigmoidoscopy, both, or q 10 year colonoscopy) is best in terms of the balance of benefits and potential harms. CRC screening is likely to be cost-effective (less than \$30,000 per year of life gained) regardless of the strategy chosen. Clinicians should talk to patients about the benefits and potential harms associated with each option before selecting a screening strategy. Of note, colonoscopy is the most sensitive and specific test for detecting cancer and large polyps, but it is associated with greater risks and inconvenience to patients (overnight bowel prep, risks of conscious sedation, longer recovery time, risk of hemorrhage or perforation). It is not known whether the potential added benefits of colonoscopy relative to other screening alternatives are large enough to justify the added risks and inconvenience for all patients. (Leibermann's and Imperiale's studies published in NEJM a few years ago suggested that 1.5 – 2.7% of the population screened for CRC have proximal adenomas or cancers that sigmoidoscopy alone missed - - although adding annual FOBT might decrease this number by half)
- **Prostate cancer** – USPSTF concludes that the evidence is insufficient to recommend for or against routine screening with PSA or digital rectal exam. There is good evidence that PSA screening can detect early-stage disease, but inconclusive evidence that early detection improves health outcomes. Recent evidence does suggest that radical prostatectomy can reduce prostate cancer mortality in men whose cancer is detected clinically, but it is uncertain if early treatment of the types of cancers found by screening yields similar results. The risks of screening include frequent false-positive results and unnecessary anxiety, biopsies, and potential complications of treatment of some cancers that may never have affected a patient's health. Best approach should be to discuss these risks and benefits and lack of definitive evidence with your patient before deciding

- on whether or not to screen. Individuals most likely to benefit from screening include African American men and men with a family history of a first-degree relative with prostate cancer.
- **HIV** – unprotected heterosexual sex is a risk factor for HIV and this patient should be encouraged to have an HIV checked.

**Counseling:**

- Safe sex
- Regular exercise – work up to goal of 20-30 min of physical activity most days of the week.
- Weight loss – especially important for diabetes prevention.
- Healthy diet – variety of fruits and vegetables, limit saturated fats.
- Seat belt use, bicycle/motorcycle helmet use.
- Stress reduction.

**Immunizations:**

- Flu shot every year (starting at age 50)
- Tetanus-diphtheria every 10 years
- Other recommendations to review (not for this patient): pneumovax- at 65 or earlier if chronic lung or heart disease, or immunocompromised; zoster (zostavax) – once at age 60; hep B (3 shot series)- if sex with men, sex with sex-workers, health care professional or work with blood products, IVDU; hep A(2 shot series) - similar to hep B risk factors plus travel to endemic areas, military personnel

**Chemoprophylaxis:**

- Aspirin – USPSTF found good evidence that aspirin decreases the incidence of CHD in adults who are at increased risk for heart disease (but no known heart disease – primary prevention), but there is also good evidence that it increases the incidence of GI bleeding, and there is fair evidence it increases the incidence of hemorrhagic stroke. They conclude that the balance of benefits and harms is most favorable in patients at high risk for CHD (5-yr risk of greater than or equal to 3%), but is also influenced by patient preferences. They strongly recommend that clinicians discuss aspirin chemoprevention with adults who are at increased risk for CHD. (Go to [Clinical Considerations](#)). The optimum dose of aspirin is not known, benefits have been demonstrated with doses of 75mg qd to 325mg every other day. There have been 5 clinical trials – meta-analysis showed that aspirin therapy reduced the risk of CHD by 28%, with no significant difference in total mortality or stroke.

If not already covered in your discussion of the case, address the following questions:

- How do you discuss prostate cancer screening with your patients? Which patients are most likely to benefit from screening?

Should discuss potential risks, benefits and lack of definitive evidence before beginning screening (see above)

- What are the general recommendations for colorectal cancer screening? What is the best method for screening? What is “virtual colonoscopy”? Do you recommend it if it is available?

See above. Virtual colonoscopy is CT colography. Some studies have reported an 85-90% sensitivity, but this accuracy is unlikely to be replicated outside of research settings. Patients show a lot of interest in this potential “non-invasive” test, however, the colon still needs to be prepped the same way (actually even more aggressively for a good quality study), the test is quite uncomfortable as the colon needs to be insufflated with air throughout the exam, and if the test is positive, then the patient needs to undergo a colonoscopy for biopsy/treatment. Clinical outcomes have not yet been studied with CT colography screening. **The USPSTF concludes that the evidence is insufficient to assess the benefits and harms of computed tomographic colonography and fecal DNA testing as screening modalities for colorectal cancer.**

What will you tell him about lung cancer screening?

- *The previous recommendations by the USPSTF on lung cancer screening were published in 1996. At that time, USPSTF recommended against lung cancer screening (as did all of the other major groups) based on strong evidence from several RCTs showing no improvement in morbidity or mortality from lung cancer with either regular CXR or sputum cytology screening. With the advent of high resolution CT for lung cancer screening, USPSTF reviewed new data and updated their recommendations in 2004: The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against screening asymptomatic persons for lung cancer with either low dose computerized tomography (LDCT), chest x-ray (CXR), sputum cytology, or a combination of these tests.*

**Rating: I Recommendation.**

*Rationale: The USPSTF found fair evidence that screening with LDCT, CXR, or sputum cytology can detect lung cancer at an earlier stage than lung cancer would be detected in an unscreened population; however, the USPSTF found poor evidence that any screening strategy for lung cancer decreases mortality. Because of the invasive nature of diagnostic testing and the possibility of a high number of false-positive tests in certain populations, there is potential for significant harms from screening. Therefore, the USPSTF could not determine the balance between the benefits and harms of screening for lung cancer.*

*This patient should get a lot of positive reinforcement about his smoking cessation.*

- What are the risks and benefits of aspirin therapy for preventing cardiovascular disease? Are there any RCT's of aspirin for the primary prevention of cardiovascular disease? What do these show? What are the USPSTF recommendations on aspirin use?

*See above.*