PREVENTIVE MEDICINE

Med 601
John Sheffield, M.D.

Introduction

The primary objective of Preventive Medicine is to reduce the burden of suffering for the major preventable diseases. For the discussion here, we will not specifically address factors affecting health such as safe housing, poverty and access to health care but will focus on clinic-oriented interventions. This includes risk modification (e.g. tobacco cessation, diet, and exercise), vaccinations, and screening of diseases. One of the goals is to understand the risks and benefits of screening, the inherent limitations of the available tests and the controversies surrounding many screening studies.

Learning goals:

- To know the major preventable diseases affecting different demographic populations.
- To understand the principles of screening.
- To know the current immunization recommendations for adults.
- To understand the theories of behavioral change and to begin to develop an effective approach.
- To know where to look up the latest evidence and recommendations for preventive measures.

Reading material:

The articles provided on the website are not meant to be comprehensive by any means; you will need to consult other sources such as the following:

- Dr. Paauw's Internal Medicine Clerkship Guide
- The Guide to Clinical Preventive Services by the US Preventative Services Task Force.
  - http://www.ahrq.gov/ Then click on the link to 'Preventive Services.'
- Screening and Testing to Detect Cancer. National Cancer Institute.
  - http://www.cancer.gov/cancertopics/screening
- Up-To-Date Online. Access from the Healthlinks Care Provider Toolkit.
  - http://healthlinks.washington.edu
- CDC Immunization Guidelines. http://www.cdc.gov.offcampus.lib.washington.edu/vaccines/

Screening Principles / Prostate Cancer

A 52-year-old man comes to clinic for routine follow-up. He has heard a lot about PSA testing and wonders whether he should have the test. His father was diagnosed with prostate cancer at age 75.

1. What characteristics of a disease make it suitable for population-based screening interventions? What would ideal conditions for screening be in terms of:
   - disease prevalence and severity?
   - screening test performance?
   - treatment?
2. How does prostate cancer screening with PSA measure up to these ideals?
3. According to best estimates, men of what age are most likely to benefit from screening?
4. What are the risks of screening for prostate cancer?
5. How do we measure the accuracy of a screening test? What are the definitions of sensitivity, specificity, positive and negative predictive values?
6. Define lead-time and length biases

Breast Cancer

A 44-year old woman returns for follow-up. In the last year, her 48-year-old sister was diagnosed with breast cancer, and she is concerned about her own risk. Her menarche occurred at age 13, and she has never been pregnant. At age 40, she underwent a breast biopsy that found benign fibrocystic changes. She performs breast self-examination monthly. Her exam in the office is normal.

1. Review the risk factors that your patient has for developing breast cancer
2. How reassuring are her negative breast self-exams and your own exam in the office?
3. How do the risks and benefits of mammography in women aged 40-49 compare with those in women aged 50-69?

Your patient's 71-year-old mother is also concerned about breast cancer.

4. What are the potential benefits of mammography in women older than 69?
5. Who should **not** be screened with mammography?

Young Woman at College Entry

An 18-year old woman comes to clinic prior to entering college. From prior visits, you know that she smokes one pack of cigarettes daily, exercises infrequently, and is sexually active with men; her contraceptive of choice is condoms. She has had annual Pap smears for two years, and both have been normal. She requests that you complete a physical examination form, perform her annual Pap smear and bimanual exam, and document completion of required immunizations.

1. Which aspects of her health care would you discuss and what counseling would you offer?
2. Which immunizations are required for college entry?
3. At what age should women initiate cervical cancer screening? How often should Pap tests be performed?
4. Would you perform any additional tests?

Older Woman Establishes Primary Care

A 65-year old nun is referred to establish primary care. She has not seen a physician since her appendix was removed at age 12. She walks briskly for 30 minutes on most days, is a non-smoker and non-drinker, and takes no medications. Her parents and a younger brother are alive and well. Her blood pressure is normal, she has no lymphadenopathy or goiter, and her cardiovascular, chest, and abdominal exams are also normal.

1. Would you perform a Pap smear? Who does **not** require Pap testing? When is it OK to stop screening?
2. Which immunizations would you recommend?
3. Which lab tests would you order?

Middle-Aged Man with Hyperlipidemia
An asymptomatic 42-year old man has the following fasting lipid panel: total cholesterol 256, HDL 28, LDL 168, triglyceride 300.

1. What additional coronary risk factors should be reviewed?
2. Which aspects of the physical examination deserve special attention?
3. Which additional lab tests would you order?
4. What would your target LDL be under the following circumstances?:
    - no additional risk factors
    - diabetes
    - smoker with SBP 160 (on no antihypertensive treatment)
    - patient is a woman
    - angina
5. What counseling would you provide regarding exercise and diet?
6. You decide to treat his hyperlipidemia. Which drug would you choose?

Colorectal Cancer Screening
The USPSTF recommends screening all adults age 50 and older for colorectal cancer. Fecal occult blood testing (FOBT), flexible sigmoidoscopy every 5 years (with or without FOBT), and colonoscopy every 10 years are all recommended strategies. There are insufficient data to determine which strategy is best.

FOBT reduced the risk of death due to colorectal cancer in a placebo-controlled trial. In a case-control study, flexible sigmoidoscopy reduced the risk of death from cancers within the reach of the scope by 59%. A study of one-time screening with FOBT and flexible sigmoidoscopy found that these methods missed 24% of cases of advanced neoplasia compared with colonoscopy.

1. Name 3 causes of false positive and false negative hemoccult tests.
2. What are the limitations and risks of flexible sigmoidoscopy?
3. What risk factors would make you more likely to recommend screening with colonoscopy?

In a randomized, placebo-controlled trial, screening for colorectal cancer with hemoccult cards in patients older than 50 was associated with a 33% reduction in 13-year mortality due to colorectal cancer. The 13-year mortality due to colorectal cancer in the population assigned to screening was 0.59% as compared with 0.88% in the unscreened population (absolute risk reduction 0.29%).

4. How many people need to be screened with hemoccult cards for 13 years in order to prevent one death from colorectal cancer?

<u>Extra credit</u>
In a separate study assessing the reliability of hemoccult testing among patients with a prior history of colorectal cancer, hemoccult testing had the following accuracy: sensitivity 33%, specificity 95%.

5. What is the positive predictive value (PPV) of the hemoccult test in the general population (estimated prevalence of disease = 0.5%)? What would the PPV if the prevalence was 5.0%?

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