

# Screening for Cancer in Light of New Guidelines and Controversies

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# Screening Tests

- The 2 major objectives of a good screening program are: (1) detection of disease at a stage when treatment can be more effective than it would be after the patient develops signs and symptoms, and (2) identification of risk factors that increase the likelihood of developing the disease.
- To fulfill these objectives, a screening test and the disease it screens for must meet the following criteria:
  - The disease in question should constitute a significant public health problem, meaning that it is a common condition with significant morbidity and mortality.
  - have a readily available treatment with a potential for cure that increases with early detection.
  - The test for the disease must be capable of detecting a high proportion of disease in its preclinical state
  - be safe to administer
  - be reasonable in cost
  - lead to demonstrated improved health outcomes
  - be widely available, as must the interventions that follow a positive result

# USPSTF

- The leading independent panel of private-sector experts in prevention and primary care
- Conducts rigorous, impartial assessments
- Considered the “gold” standard for clinical preventive services
- The following is a brief summary of their recommendations

# USPSTF Recommendations

Grade	Definition	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer or provide this service.
B	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.	Offer or provide this service.
C*	The USPSTF recommends against routinely providing the service. There may be considerations that support providing the service in an individual patient. There is at least moderate certainty that the net benefit is small.	Offer or provide this service only if other considerations support the offering or providing the service in an individual patient.
D	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.	Discourage the use of this service.
I Statement	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.	Read the clinical considerations section of USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

# Cervical Cancer

- PAP smear & HPV testing
- USPSTF
  - PAP smear strongly recommended in sexually active females with a cervix – A
  - 50% of cervical cancers are found in women who have never been screened
  - 10% of cancers occur in women who have not been screened within the past 5 years

# When to Start/Stop/Frequency

- **When to begin PAP testing?**
  - Start at age 21 with immunocompetent female regardless age of sexual initiation or other risk factors - A
- **Frequency of testing** (USPSTF, ACS)
  - Every 3 years if normal - A
  - Screening women  $\geq 65$  years old with prior adequate screening & normal PAP – D
    - No history of CIN2+ within last 20 years & with 3 consecutive normals & no abnormal in 10 yrs (with latest within past 5 yrs)
    - Once stopped never resume for any reason (even new sexual partner)

# Cervical Cancer Screening

- **HPV testing**

- HPV testing in women < age 21 - D
- Consider reflex testing ages 21 – 29 if PAP smear abnormal - A
- Routine co-testing (cytology & HPV) should not be used in patients <30 years old - D
- 30-65 use co-testing (cytology and HPV test) if women want to extend testing interval to 5 years - A

# Cervical Cancer Screening

- Screening women with hysterectomy for known benign cause – D
- If a history of cancer or if negative cytology cannot be documented
  - Continue to screen for at least 20 years



# Breast Cancer Screening

- The USPSTF recommends biennial screening mammography for women aged 50 to 74 years.  
Grade: **B recommendation**.
- **ACS, ACOG, ACR recommend annual screening  $\geq$  age 40**
- The decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take patient context into account, including the patient's values regarding specific benefits and harms.  
Grade: **C recommendation**.
- The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of screening mammography in women 75 years or older.  
Grade: **I Statement**.

# Breast Cancer Screening

- **The USPSTF recommends against teaching breast self-examination (BSE).**  
Grade: D recommendation.
- **The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of clinical breast examination (CBE) beyond screening mammography in women 40 years or older.**  
Grade: I Statement.
- **The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of either digital mammography or magnetic resonance imaging (MRI) instead of film mammography as screening modalities for breast cancer.**  
Grade: I Statement.

# Breast Cancer Screening

- **Breast Self Exam (BSE)**
  - Randomized trials have not demonstrated reduction in breast cancer or all cause mortality
  - Did increase number of biopsies
    - USPSTF, American Cancer Society (ACS), National Cancer Institute (NCI) & American College of Physicians (ACP) no longer recommend BSE & discourage teaching it
- **Clinical Breast Exam (CBE)**
  - No decrease in cancer

# BRCA Gene

- Approximately 5-6% of all cases of breast cancer are related to BRCA mutation
- Commonly occurs in premenopausal women and is frequently bilateral
- Affects three generations or more and can include women from the paternal side of the family
- Lifetime risk of breast cancer (%)
  - General population 11-12%
  - Positive family history 20-25%
  - Positive BRCA 37-85%

# Lung Cancer Screening

- **USPSTF**

- Annual Low dose CT scan in persons age 55-80 who have a 30 pack-year smoking history who currently smoke or have quit within past 15 years
- Stop annual screening once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability to have surgery

# Lung Cancer Screening

- ACCP & ASCO Recommendation
  - For smoker/former smoker (if quit < 15 years); aged 55 – 74 with 30+ pack-years
    - LDCT should be offered in setting that can deliver comprehensive care provided to the National Lung Screening Trial participants
    - If criteria cannot be met or severe co morbidities – screening not be done
    - 96.4% of CT abnormalities were false +
    - AAFP: insufficient evidence for or against screening

# Colorectal Cancer Screening

## Lifetime risk:

- In general population: 2.5-5%
- With positive family Hx. 5-10% (2-3 times higher)
- Mortality rate is declining
- African Americans and Hispanics have 50% greater chance of dying from colorectal cancer

# Colorectal Cancer Screening

- 75% of all colorectal cancers occur in those without an excess of risk factors
- Adenomatous polyps and presentation of malignant focus
  - <1 cm - 1% cancer focus
  - 1-2 cm - 5-10% cancer focus
  - >2 cm - 50% cancer focus
- Average of 5-6 years for transformation of a large polyp (>1 cm) to cancer



# Colorectal Cancer Screening

- **Methods**

- Fecal occult blood testing (FOBT) – yearly
- Sigmoidoscopy – q 5 years and FOBT – q 3 years
- Colonoscopy – q 10 years

- **USPSTF**

- Recommends screening age 50-75 (Grade A Recommendation)
- Recommends against routine screening in adults age 76 to 85. May be considerations to screen individual patients (Grade C Recommendation)
- Recommends against screening older than 85 (Grade D Recommendation)
- 1<sup>st</sup> degree relative <60 yrs or >2 relatives of any age with CRC initiate colonoscopy age 40 or 10 years before youngest case diagnosed
- Insufficient data regarding CT colonography and fecal DNA testing

# Colorectal Cancer Screening

- Patients with small hyperplastic polyps - 10 years
- Patients with 1-2 <1 cm tubular adenoma with low-grade dysplasia - 5-10 years
- 3-10 adenomas, any adenoma > 1 cm, or any adenoma with villous features or high-grade dysplasia - 3 years initially, then q 5 years
- > 10 adenomas - < 3 years
- Sessile adenomas that are removed piecemeal - q 2-6 months to verify complete removal
- Following curative resection - 1 year, 3 year and then 5 years
- Personal history of CRC - 1 yr, if normal 3 yrs, if normal 5 yrs

# Prostate Cancer Screening

- Second leading cause of cancer-related deaths in males
- Incidence rises rapidly each decade of life after 50
- Occurs more frequently among men with a family history of prostate cancer
- Incidence and mortality rates of prostate cancer are declining
- Men in the U.S. have a 15% lifetime risk of having prostate cancer but only a 3% risk of dying from the disease

# Prostate Cancer Screening – Low Risk

- USPSTF
  - Recommends against PSA-based screening for prostate cancer (May, 2012)
- American Cancer Society
  - Involve men in decision-making process; if choose to be screened then PSA +/- DRE starting at age 50 for normal risk
- American Urological Society
  - Inform men of risks/benefits; recommendation is for shared decision making for men age 55-69 at normal risk. No checking after 70.

# Prostate Cancer Screening – High Risk

- High-risk patients include African-Americans, patients with two or more first-degree relatives, and men who are known or likely to have BRCA-1 mutation
- ACS and AUA recommend having discussion regarding screening at age 40 in high risk patients
- The decision made on an individual basis after consultation between the physician and the patient

# Ovarian Cancer Screening

- **USPSTF**
  - Against testing with any procedure in asymptomatic women – D
  - Trial of 78,216 women with CA-125 & pelvic sonograms ineffective in delaying mortality
    - Did identify abnormalities that led to harm due to testing & unnecessary surgery

# Ovarian Cancer Screening

- For asymptomatic women who do not require PAP smear (i.e. hysterectomy for benign disease or age > 65)
  - No benefit of routine pelvic exam
- If woman has BRCA1 or BRCA2 mutation & declines risk reducing salpingo-oophorectomy (RRSO) surgery
  - Screen with CA-125 and Transvaginal Ultrasound every 6 -12 months after age 30

# Testicular Cancer

- **USPSTF**
  - No evidence testicular self-exam is beneficial
  - Against screening adolescents or adults – D



# Pancreatic Cancer Screening

- An equal number are diagnosed and die yearly
- Risk factors include age, smoking, pancreatitis, diabetes and family history
- 5-10% are linked to inherited genes
- No effective screening tests
- 1 & 5 year survival is 25% and 5% respectively
- ACS recommends maintaining a healthy weight with increased consumption of fruits, vegetables, and whole grains

# Genetic Testing

- No genetic testing without genetic counseling