PEARLS in CLINICAL PREVENTIVE MEDICINE

CURRENT US PREVENTIVE SERVICES TASK FORCE AND HEALTHY PEOPLE 2030 HIGHLIGHTS

1

Objectives

Describe the roles of the USPSTF and Healthy People 2030

Describe methods to access current recommendations

Review several common recommendations using case study examples, considering
- Epidemiology of condition, screening guidelines (past, current, updates), and other groups' recommendations

2

U.S. Preventive Services Task Force

Created in 1984

Sixteen volunteer members appointed by the Secretary of HHS

Preventive medicine, primary care, behavioral health, nursing

Convened by the Agency for Healthcare Research and Quality (AHRQ)

Provides yearly report to Congress
- Makes evidence-based recommendations for preventive services
- Identify evidence gaps and priority areas that require further examination

Assigns letter grade to each recommendation

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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 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.	Offer or provide this service for selected patients depending on individual circumstances.
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.

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359 published recommendations

Type of preventive service
- Counseling
- Preventive medication
- Screening

Health condition
- Cancer, Injury Prevention, Mental health etc

Age group
- Adolescent, Adult, Pediatric, Senior

Sex/gender/pregnancy

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Healthy People 2030

Healthy People initiative began in 1979- currently on 5th iteration

US Department of HHS, Office of Disease Prevention and Health Promotion

Set national goals on specific, measurable public health objectives

Developed by workgroups made up of subject matter experts

Objective categories
- 20 Health conditions
- 14 Health behaviors
- 10 Populations

https://health.gov/healthypeople

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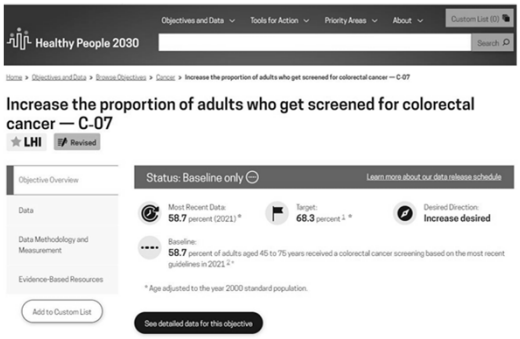

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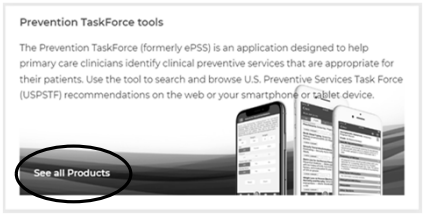
Tools

United States Preventive Services Taskforce (uspreventiveservicestaskforce.org)



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Apple or Android app store

Widget

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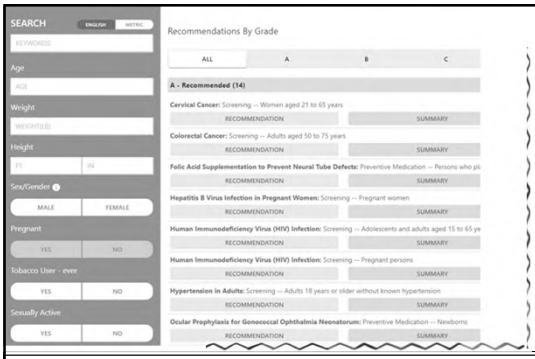

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Case #1

41 year old female accountant
Married, sexually active, monogamous, not pregnant
Never tobacco user
No significant past medical history
Family history positive
Height 5'4" and weight 180 lbs

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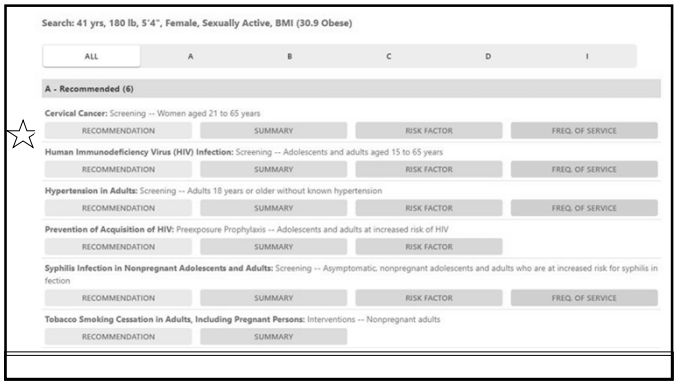

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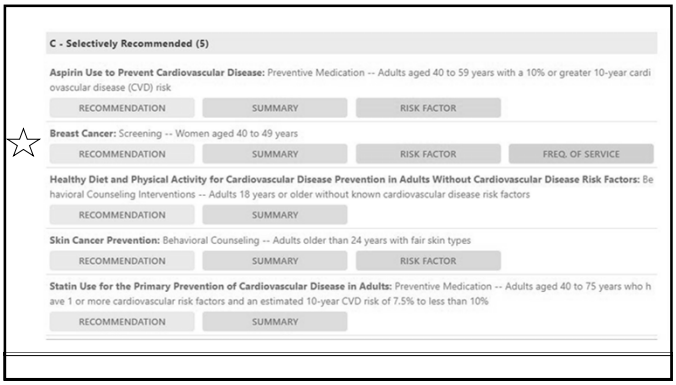

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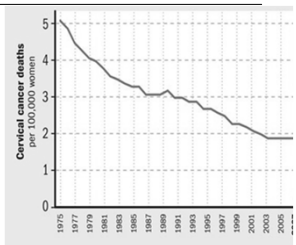
Cervical cancer

Epidemiology in US
- Incidence 13,960 new cases
- 4,310 deaths

Screening methods
- 1920's* Cervical cytology
- 1996 Liquid based cytology
- Cytology + HPV and other STIs

Better understanding of cervical cancer has driven updated screening recommendations



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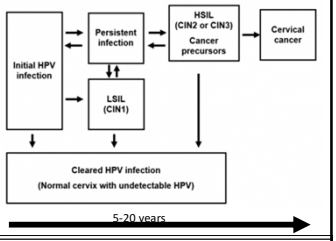
Attributed to human papillomavirus (HPV) infection
- Types 16 and 18 account for 66%
- Types 31, 33, 45, 52, and 58 account for 15%

80% lifetime risk of infection

90% of infections clear within 2 yrs
- Cervical intraepithelial neoplasia (CIN) 2 regresses in 40%



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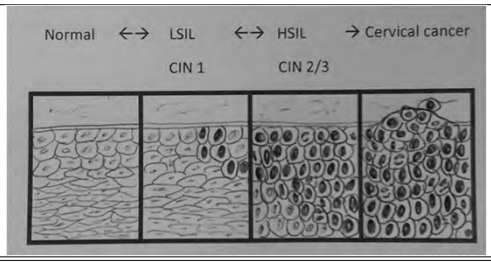
Progression of cervical dysplasia



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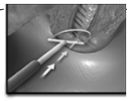
Risks of screening

Overdiagnosis
- Additional diagnostic procedures
  - Colposcopy
  - Biopsy

Overtreatment of early cervical changes
- Premature rupture of the membranes
- Preterm delivery
- Low birth weight



Lieb et al. Pregnancy outcome and risk of recurrence after tissue-preserving loop electrosurgical excision procedure (LEEP) Arch Gynecol Obstet 2023:307(4):1137-1143

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Cervical cancer- Current vs previous recommendations- 2018 (A)

Women aged 21-65 years

Age 21-29 years
- cervical cytology every three years

Age 30-65 years
- Every 3 years with cytology alone or
- Every 5 years with high risk human papillomavirus (hrHPV) testing alone or
- Every 5 years co-testing (HrHPV plus cytology)

Discontinue at age 65 in women who have had adequate prior screening and are not at high risk

Previous recommendations
- 1996:"regular" Pap tests (at least every three years) for all women who have been sexually active and who have a cervix
- 2003: Screening can be delayed until 3 years after onset of sexual activity or age 21
- 2012: begin screening at age 21

USPSTF update in progress

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Cervical cancer- applicable populations

Does not apply to individuals at high risk for cervical cancer
- Previous diagnosis of high-grade precancerous cervical lesion* or cervical cancer
- In utero exposure to diethylstilbestrol
- Compromised immune system including HIV infection

Guidelines apply regardless of sexual history or HPV vaccination status

Screening not indicated in women who have had a hysterectomy with removal of the cervix and no history of high-grade precancerous lesion* or cervical cancer

* cervical intraepithelial neoplasia [CIN] grade 2 or 3

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Future considerations

Adherence to cervical cancer screening does not meet recommendations
- 72.4% of eligible women 21-65 up to date*
- Healthy People 2030 target 84.3%

2021 72.4% women 21-65 UTD

Most cases of cervical cancer are in women who were not adequately screened/treated

Incidence of precancerous lesions and cervical cancer is declining since advent of HPV vaccine

*National Health Interview Survey, 2021


HPV vaccine study finds zero cases of cervical cancer among women vaccinated before age 14

Statnews, accessed February 5, 2024

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Cervical cancer- Other recommendations

American Cancer Society
- Cervical cancer testing (screening) should begin at age 25.
- Aged 25 to 65 should have a primary HPV test* every 5 years (preferred) or co-testing with HPV assay plus cytology every 5 years or cytology alone every 3 years.
- Discontinue screening at age 65 in women who have had regular screening in the past 10 years with normal results and no history of CIN2 or more serious diagnosis within the past 25 years
- Screening is not indicated after total hysterectomy unless the hysterectomy was done as a treatment for cervical cancer or serious pre-cancer

American Society for Colposcopy and Cervical Pathology (ASCCP)
- Endorses the 2018 USPSTF Statement and supports the ACS cervical cancer screening guidelines

American College of Obstetricians and Gynecologists
- Endorses the 2018 USPSTF and the 2012 ASCCP guidelines

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Knowledge check

A 22 year old asymptomatic woman asks you about getting tested for cervical cancer (she has never been screened before). You inform her that the USPSTF currently (2018) recommends:

A. No screening if she has never had sexual intercourse

B. Screening with cervical cytology every three years

C. Screening with cervical cytology annually

D. No screening if she is up to date with the HPV vaccine

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Knowledge check

A 22 year old asymptomatic woman asks you about getting tested for cervical cancer (she has never been screened before). You inform her that the USPSTF currently (2018) recommends:

A. No screening if she has never had sexual intercourse

B. Screening with cervical cytology every three years

C. Screening with cervical cytology annually

D. No screening if she is up to date with the HPV vaccine

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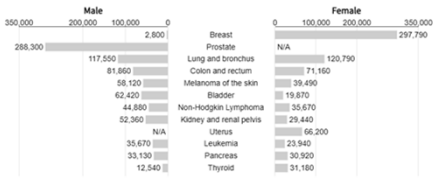
Breast cancer- burden

Most frequently diagnosed non-skin cancer in US

About 300,000 new cases/year in US
- 99% in women

2023 estimated 43,170 deaths
- 7.1% of all cancer deaths



Source: Cancer Facts & Figures 2023, American Cancer Society (ACS), Atlanta, Georgia, 2023.

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Benefits vs risks of screening mammography

Benefit of screening
- Detect early-stage breast cancer
- More aggressive tumors more common in younger women
- Incidence in women aage 40-50 is increasing

Potential harms/pitfalls
- False positive results
  - Additional imaging or surgeries, anxiety
  - Dense breast tissue more common in younger women
- Radiation exposure

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Breast cancer- Current recommendations

Breast cancer screening (2016)
- Biennial mammogram age 50-74 (B)
- Age 40-49(C)
- Draft recommendation published May 2023
  - **Begin screening at age 40**

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Breast cancer- applicable populations

Asymptomatic women aged 40 years or older who do not have preexisting breast cancer or a previously diagnosed high-risk lesion

Not at high risk due to BRCA (BReast CAncer) or other genetic mutations
- Breast cancer: medications to decrease risk (2019, Update in progress)
- BRCA-related cancer: risk assessment, genetic counseling, and genetic testing (2019)

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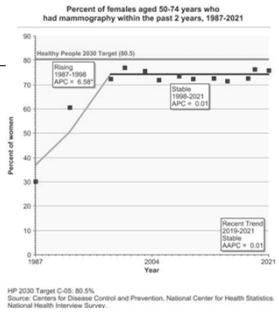
Breast cancer- screening rates

HP 2030

Women aged 50-74 years who have a screening mammogram every other year

2021- 75.6%

Target 80.3%



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Breast cancer- Other recommendations

American Cancer Society

- Women age 45-54 years yearly mammogram
  - Option to begin screening at age 40
  - At age 55 and up may elect screening every other year
- High risk women age 30 and over
  - Mammogram and MRI every year
  - Risk assessment – *BRCA1 or BRCA2*, family history, history of chest radiation therapy

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Case #2

46 year old male corrections officer

Unmarried, sexually active, multiple partners of both sexes

Smoking history 1 pack per day for 20 years

No significant past medical history

No significant family history

Height 5'10" and weight 165 lbs

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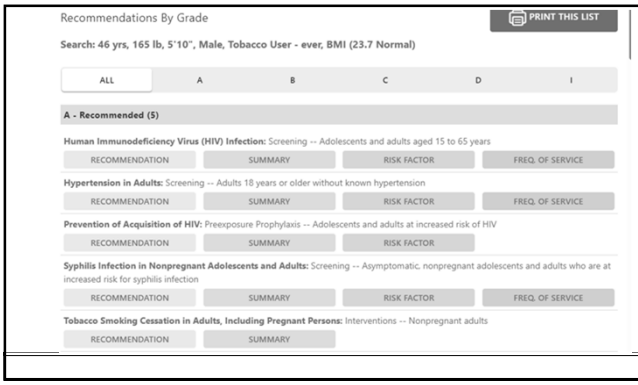

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Colorectal cancer- epidemiology

Second leading cause of cancer deaths in US

Incidence

- About 106,590 new cases of colon cancer (54,210 in men and 52,380 in women)
- About 46,220 new cases of rectal cancer (27,330 in men and 18,890 in women)
- 10.5% occur < age 50
- Incidence at age 40 to 49 years has increased by almost 15% from 2000-2016

Five-year survival rates for colon cancer

- Localized 91%
- Regional 73%
- Distant 13%

*American Cancer Society

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Colorectal cancer- Current recommendations (2021)

Adults aged 50 to 75 years (A recommendation)

Adults aged 45 to 49 years (B recommendation)

Selectively offer screening for colorectal cancer in adults aged 76 to 85 years (C recommendation)

Tests:
- gFOBT yearly
- FIT yearly
- FIT-DNA every 1-3 years
- Flexible sigmoidoscopy every 5 y
- Flexible sigmoidoscopy with FIT every 10 y plus FIT yearly
- Colonoscopy every 10 y
- CT colonography every 5 y

Replaces 2016 recommendation to screen from age 50 to 75 (A recommendation)

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Colorectal cancer- applicable populations

Asymptomatic adults aged 45 and over at average risk

Does not apply to people at increased risk
- Prior diagnosis of CRC or adenomatous polyps
- Diagnosis of inflammatory bowel disease (ulcerative colitis, Crohn's disease)
- Personal or family history of genetic disorders such as Lynch syndrome or familial adenomatous polyposis

Starting and stopping age- rationale
- Incidence 40-49 years 20.0 new cases/100,000
- 50-59 years 47.8 new cases/100,000
- 60 years and older 105.2 new cases/100,000

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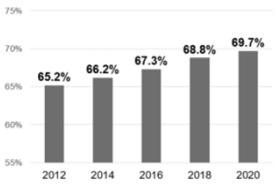
Colorectal cancer- screening rates

69.7% of adults aged 50-75 (Behavioral Risk Factor Surveillance System)

58.7% of adults aged 45-75 years in 2021 (National Cancer Institute, National Health Interview Survey)

HP 2030 Target 68.3%



Percentage of US adults age 50-75 years up to date with CRC screening, BRFSS 2012-2020

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Colorectal cancer- Other recommendations

American Cancer Society
- people at average risk* of colorectal cancer **start regular screening at age 45**.
- For people **ages 76 through 85**, the decision to be screened should be based on a person's preferences, life expectancy, overall health, and prior screening history

U.S. Multi-Society Task Force of Colorectal Cancer (MSTF)
- Panel representing American College of Gastroenterology, the American Gastroenterological Association, and the American Society for Gastrointestinal Endoscopy
- Tiered approach
- 2021 update endorses CRC screening at age 45
- *American Journal of Gastroenterology* 112(7):p 1016-1030, July 2017. | *DOI:* 10.1038/ajg.2017.174 Accessed January 24, 2024

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Knowledge check

Which of the following statements is true regarding a 35 year old otherwise asymptomatic patient recently diagnosed with Crohn's disease, according to USPSTF guidelines?

A. Screening for colorectal cancer should begin at age 50

B. Screening for colorectal cancer should begin at age 45 with any approved modality

C. Screening for colorectal cancer should begin at age 45 with colonoscopy preferred

D. USPSTF routine screening guidelines do not apply to this patient

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Knowledge check

Which of the following statements is true regarding a 35 year old otherwise asymptomatic patient recently diagnosed with Crohn's disease, according to USPSTF guidelines?

A. Screening for colorectal cancer should begin at age 50

B. Screening for colorectal cancer should begin at age 45 with any approved modality

C. Screening for colorectal cancer should begin at age 45 with colonoscopy preferred

D. USPSTF routine screening guidelines do not apply to this patient

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Case #2*

56 year old male corrections officer

Unmarried, sexually active, multiple partners of both sexes

Smoking history 1 pack per day for 20 years

No significant past medical history

No significant family history

Height 5'10" and weight 165 lbs

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Prostate cancer

Most commonly diagnosed non-skin cancer in men in the US

About 11% (1 in 8) men will be diagnosed with prostate cancer during their lifetime

About 299,010 new cases

About 35,250 deaths

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Prostate cancer 5-year survival

These numbers are based on men diagnosed with prostate cancer between 2013 and 2019.

SEER* Stage	5-year Relative Survival Rate
Localized	>99%
Regional	>99%
Distant	34%
All SEER stages combined	97%

American Cancer Society/National Cancer Institute

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Prostate cancer screening

Published, 2018- Update in progress

Men aged 55-69 years
- Grade C
- The decision to be screened for prostate cancer should be an individual one.

Men 70 y and older
- Grade D
- Screening not recommended

Updated 2012 (D), 2008 (I/D), 2002(I), 1996 (D)

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PSA- Prostate Specific Antigen

FDA- 1986 (monitoring progression of prostate cancer)
- 1994 approved in for use in conjunction with DRE

Limitations
- Tends to fluctuate
- Normal varies by age
- Low specificity
  - 25% of men with elevated PSA who have a prostate biopsy are diagnosed with prostate cancer

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Randomized Clinical Trials

PLCO: Prostate, Lung, Colorectal, and Ovarian Cancer

ERPSC: European Randomized Study of Screening for Prostate Cancer

Göteborg-1

Göteborg-2

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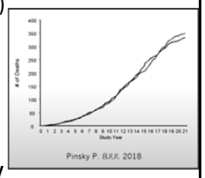
PLCO

Mortality Results from a Randomized Prostate-Cancer Screening Trial (*NEJM*, 2009)

- 76,693 men in US enrolled 1993-2001; annual screening vs "usual care"
- Screening: annual PSA x 6 years and DRE for 4 years
- Usual care included screening in some cases
- **After 7 to 10 years of follow-up, PC mortality rate was very low and did not differ significantly between the two study groups.**



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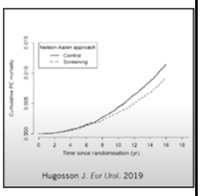
ERPSC

Screening and prostate-cancer mortality in a randomized European study (*NEJM,* 2009)

- 182,000 men aged 50-74 years, PSA vs no screening, 9 year follow up
- Rate ratio for death from PC in screening group 0.80 (0.65-0.98)
- 1410 men screened an 48 additional cases treated to prevent one death from PC
- **Conclusion: "PSA-based screening reduced the rate of death from prostate cancer by 20% but was associated with a high risk of overdiagnosis"**
- **Benefit increased with longer follow up**



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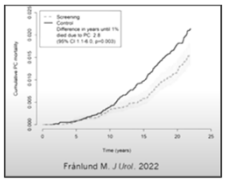
Göteborg-1 and Göteborg-2

Göteborg-1

- 20,000 men aged 50-64
- Enrolled 1995-2014
- Randomized to screening with biennial PSA or control
- At 18 years, RR reduction of 12% (5-26%)
- "Organized screening reduces PC mortality but is associated with overdiagnosis"
- At 22 years follow up, RR of PC mortality was 0.59
- Benefit was greater in younger age groups

Göteborg-2

- Enrollment beginning September 2015
- Testing group:
  - Normal PSA- rescreen after 1,2,4, or 8 years depending on PSA
  - Elevated PSA- Prostate MRI, with further randomization to standard or targeted biopsies



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Risks vs benefits

Benefits

- Reassurance
- Early detection
  - Reduced risk of prostate cancer metastasis
  - Reduced risk of prostate cancer death

Risks

- False positives
- Overdiagnosis
  - Most men with modestly elevated PSA do not have cancer on biopsy
- Overtreatment
  - Sexual function
  - Urinary function
  - Bowel function

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Rationale for or against routine screening

Against

- Low specificity of serum PSA
- Harms of diagnostic procedures
- High prevalence of small, low-grade lesions
  - 50% of men age 60 and over
- Number needed to screen to prevent one death

For

- Longer follow up in RCTs resulted in lower number needed to screen
- Evidence in some RCTs that screening reduces prostate cancer mortality
- Risk of complication of diagnostic and therapeutic interventions varies
- Intention-to- screen (PLCO)
  - Many in the control group were also screened
- ERPSC did show ↓ mortality

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Other groups' recommendations

American Cancer Society

- Informed clinical decision
- Age 50 for men at average risk and are expected to live at least 10 more years
- Age 45 for men at high risk (African American men, men with a first-degree relative diagnosed with prostate cancer at an early age (younger than age 65).
- Age 40 for men at even higher risk (> one first-degree relative who had prostate cancer at an early age)

American Urological Association

- Shared clinical decision-making
- Baseline/begin screening with PSA between age 45-50 years
- Age 40 for men at increased risk
- Early Detection of Prostate Cancer: AUA/SUO Guideline (2023) - American Urological Association (auanet.org)

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Research needs and gaps

Comparing different screening strategies and different screening intervals

Developing longer-term follow-up of screening and diagnostic techniques, including risk stratification tools, use of baseline PSA level as a risk factor, and use of non–PSA-based adjunctive tests

Screening for and treatment of prostate cancer in African American men, including understanding the potential benefits and harms of different starting ages and screening intervals and the use of active surveillance

How to better inform men with a family history of prostate cancer about the benefits and harms of PSA-based screening for prostate cancer

Refining active prostate cancer treatments to minimize harms

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Suggestions

Shared clinical decision making

Don't screen men who won't benefit

Don't biopsy without compelling reason

Don't treat low-risk disease

If treatment is indicated, refer to high-volume provider

*Memorial Sloan Kettering Cancer Center Grand Rounds in Urology, Feb 1, 2019. The USPSTF Prostate Cancer Screening Recommendation: A Swinging Pendulum (youtube.com)

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Lung cancer- epidemiology

Second most common non-skin cancer in men and women in the US

About 90% of cases attributed to smoking

About 234,580 new cases of lung cancer (116,310 in men and 118,270 in women)*

About 125,070 deaths from lung cancer (65,790 in men and 59,280 in women)

Leading cause of cancer death in the US, accounting for about 1 in 5 of all cancer deaths

*American Cancer Society, 2024 estimate

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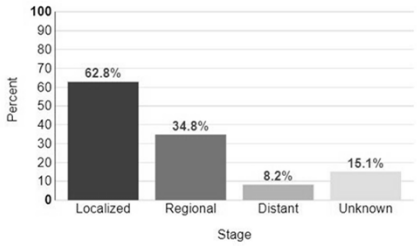
5-year survival, lung cancer, by stage



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Lung cancer screening (B)

Current recommendation (2021)

- Annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 55 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years
- Discontinue once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery

Previous recommendations

- 1996: Routine screening of asymptomatic persons for lung cancer with chest radiography or sputum cytology is not recommended (D)
- 2004: evidence is insufficient to recommend for or against screening (I)
- 2013: annual screening at age 55-80 years with 30 PY smoking history, currently smoke or quit <15 y (B)

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Lung cancer screening

Low-dose computed tomography (low-dose CT)

Two RCTs

- Nederlands-Leuvens Longkanker Screenings Onderzoek (NELSON)
- National Lung Screening Trial (NLST)

Decrease in cancer-related mortality of 20%

Limitations:

- Sensitivity of 93.8% and a specificity of 73.4%
- False positives may lead to invasive procedures

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Lung cancer screening

Compliance with recommended screening

4.5% (2015)
- National Health Interview Study

5.8% (2022)
- American Lung Association

Healthy People 2030 goal 7.5%

Barriers to implementation
- Lack of knowledge
- Lack of documentation of smoking history
- Health insurance coverage
- Perceived harm of screening

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Lung cancer-Other recommendations

ACS
- Annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or used to smoke

American Association for Thoracic Surgery
- Annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 55 to 79 years who have a 30 pack-year smoking history
- Screening should be offered starting at age 50 years with a 20 pack-year history if there is an additional cumulative risk of developing lung cancer of 5% or greater over the following 5 years (e.g. environmental/occupational exposures, family history, comorbid conditions)

American College of Chest Physicians
- Annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 55 to 77 years who have a 30 pack-year smoking history and currently smoke or have quit in the last 15 years

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Knowledge check

For which of the following individuals would annual lung cancer screening be recommended, according to current (2021) USPSTF guidelines?

A. A 75 year old with a 30 pack year smoking history who quit 30 years ago

B. A 49 year old current smoker with a 20 pack year smoking history

C. A 65 year old current smoker with a 20 pack year smoking history

D. A 69 year old with a 30 pack year smoking history who quit 5 years ago, complaining of unintended weight loss and hemoptysis

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Knowledge check

For which of the following individuals would annual lung cancer screening be recommended, according to current (2021) USPSTF guidelines?

A. A 75 year old with a 30 pack year smoking history who quit 30 years ago

B. A 49 year old current smoker with a 20 pack year smoking history

C. A 65 year old current smoker with a 20 pack year smoking history

D. A 69 year old with a 30 pack year smoking history who quit 5 years ago, complaining of unintended weight loss and hemoptysis

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