Prevention and Screening to Ensure Healthy Populations

A collaboration between primary care and specialists to improve early detection and prevention strategies for major cancers.

Breast Cancer: Key Statistics

316,950

New Cases

15.5% of all cancer diagnoses (2025)

42,170

Deaths

6.8% of all cancer deaths (2025)

91.7%

Survival Rate

5-year survival

Breast cancer is the second most common cancer in US women after skin cancer and the second leading cause of cancer mortality after lung cancer.

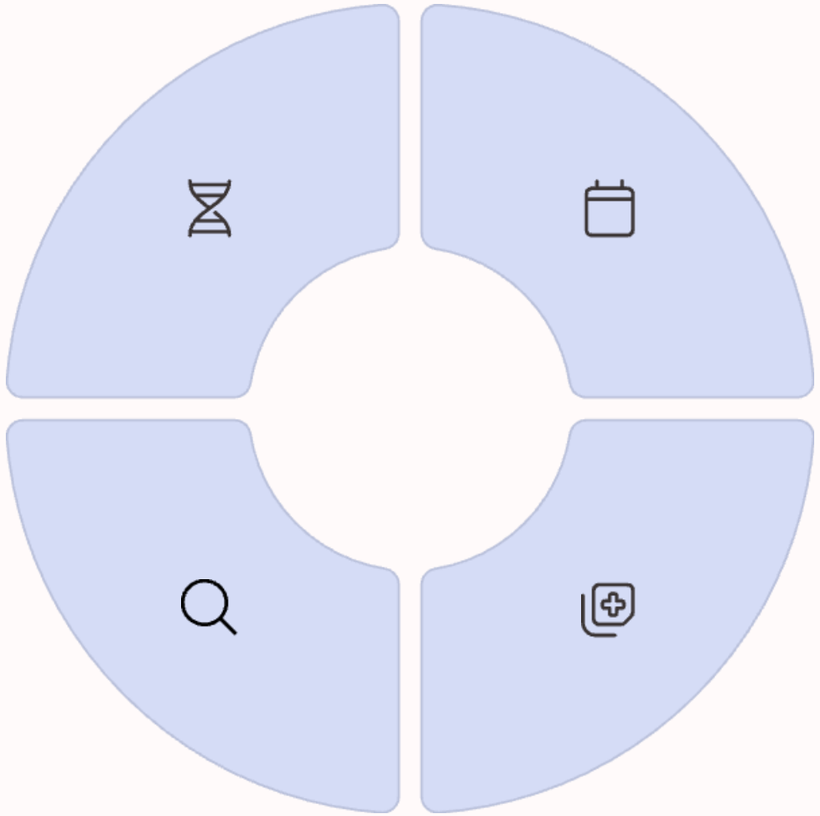
Breast Cancer Risk Factors

Genetic Factors

- Family history of breast/ovarian cancer
- Known deleterious gene mutations
- Ashkenazi Jewish heritage
- Black

Lifestyle Factors

- Higher BMI
- Alcohol consumption
- Smoking



Reproductive History

- Early menarche
- Late menopause
- Nulliparity
- Not breastfeeding

Medical History

- Prior breast biopsy with specific pathology
- Dense breasts
- Prior chest irradiation

Average Risk Screening Recommendations

American College of Physicians (2019)

- Ages 40-49: Discuss risks and benefits
- Ages 50-74: Biennial screening
- Age 75+: Discontinue screening

USPSTF & ACOG (2024)

- Ages 40-74: Biennial screening mammography
- Age 75+: Insufficient evidence
- Dense breasts: Insufficient evidence for supplemental screening

High Risk Screening Recommendations: American College of Radiology

Population at Risk	Current Recommendation (2023)
Genetic mutation carriers	Annual DM ± DBT (age 40 if annual MRI; age 30 if not), Annual MRI (25-30y)
Calculated lifetime risk ≥20%	Annual DM ± DBT, Annual MRI (Age 30)
History of chest/abdominal radiation treatment at young age	Annual DM ± DBT, Annual MRI (Age 25 or 8y after treatment)
PH of breast cancer before age 40	Annual DM ± DBT, Annual MRI if dense breasts or if diagnosed before age 50
History of atypia/LCIS before age 40	Annual DM ± DBT, Consider annual MRI if other risk factors (From age at diagnosis)
Dense breast tissue	Annual DM ± DBT, Annual MRI, Consider CEM or ultrasound
All women, especially Black, minority, and those of Ashkenazi Jewish descent	**Risk assessment by age 25**

CEM = contrast-enhanced mammography; DBT = digital breast tomosynthesis; DM = digital mammography; LCIS = lobular carcinoma in situ; MRI = contrast-enhanced breast MRI; PH = personal history

Clinical Breast Exams: Mixed Recommendations

ACOG Position

May offer to asymptomatic, average-risk women as part of shared decision-making approach.

ACP Position

Does not recommend clinical breast exams.

ACS Position

Does not recommend clinical breast exams.

USPSTF Position

Does not recommend clinical breast exams.

Breast Cancer Screening Benefits

- 2016 USPSTF meta-analysis demonstrated breast cancer mortality reductions:
  - 12% for women ages 39-49
  - 14% for ages 50-59
  - 33% for ages 60-69
  - 20% for ages 70-74
- Swedish Two-County Trial found 15% overall mortality reduction for women 40-74, with greatest benefit in those with dense breasts or family history.

Cervical Cancer: Key Statistics

13,360

New Cases

0.7% of all new cancer diagnoses in 2025

4,320

Deaths

0.7% of all cancer deaths in 2025

68%

Survival Rate

5-year survival rate

Cervical Cancer Screening Recommendations - USPSTF/ACOG

Ages 21-29

- Cervical cytology (Pap test) alone every 3 years

Ages 30-65

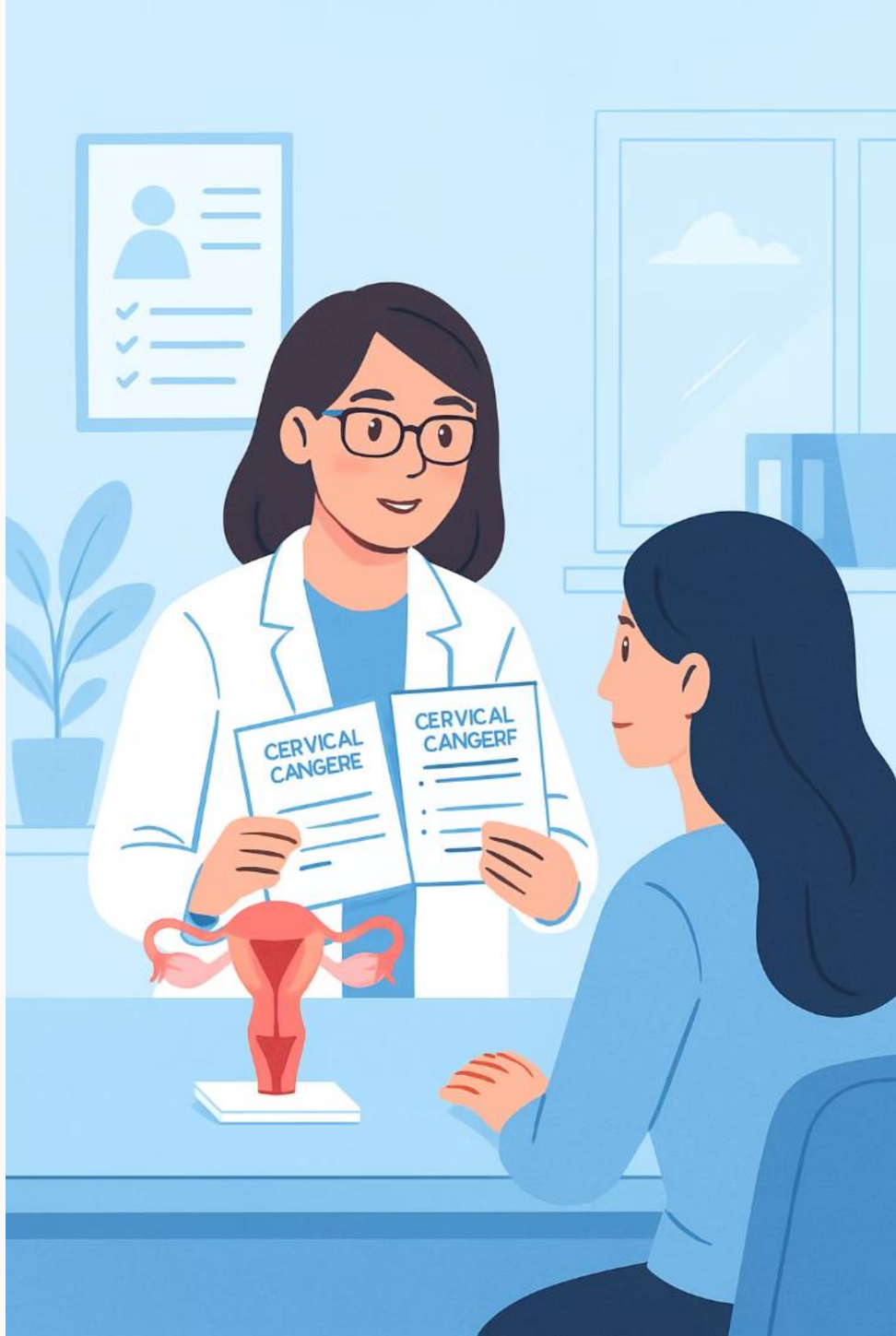
- Cytology alone every 3 years, OR
- hrHPV testing alone every 5 years, OR
- Cotesting every 5 years

After Age 65

- Discontinue if adequate prior screening and not high risk

Post-Hysterectomy

- No screening if cervix removed and no history of high-grade lesions



ACS Cervical Cancer Screening Recommendations

- **Ages 25-65** Preferred: Primary hrHPV testing every 5 years
- **Alternative Options** Cotesting every 5 years or cytology alone every 3 years
- **After Age 65** Discontinue if adequate prior screening and not high risk

Cervical Cancer Screening Benefits

Mortality Reduction

US cervical cancer deaths decreased from 2.8 to 2.3 per 100,000 women between 2000-2015.

hrHPV Testing Advantage

European trials showed greater reduction in cervical cancer incidence compared to cytology alone.

Single Round Impact

India trial: one round of hrHPV screening reduced mortality by nearly half.

Organized Programs

European programs reduced mortality by 41-92% among screening attendees vs. non-attenders.

Self vs. Clinician-Collected HPV Samples

2019 IMPROVE Trial (n=1,878)

Self-sampling relative sensitivity for CIN2+ (high-grade lesions) was 0.96 and for CIN3+ (precancerous lesions) was 0.99 using PCR-based HPV assays.

Relative specificity of 1.00 for both CIN2+ and CIN3+, indicating equivalent false positive rates between collection methods.

2018 Arbyn Meta-analysis (56 Studies)

Found slightly lower pooled sensitivity ratio of 0.88 for CIN2+ and 0.89 for CIN3+ when using self-collection versus clinician collection.

Showed marginally lower specificity ratio of 0.96 for both CIN2+ and CIN3+, with PCR-based assays showing better performance than signal-amplification methods.

2022 Coldman Meta-analysis (23 Studies)

Reported 88.7% overall agreement between self-collected and clinician-collected samples (95% CI: 85.2-91.3%).

Kappa value of 0.72 indicates substantial agreement, with highest concordance seen in studies using validated sampling devices and clear patient instructions.

Direct-to-Consumer HPV Testing Options

Everlywell

Mail-in vaginal swab testing for 14 high-risk HPV types. Results in 5 days through secure online portal.

LetsGetChecked

Tests for 14 hrHPV strains with physician review of all positive results. Includes free physician consultation.

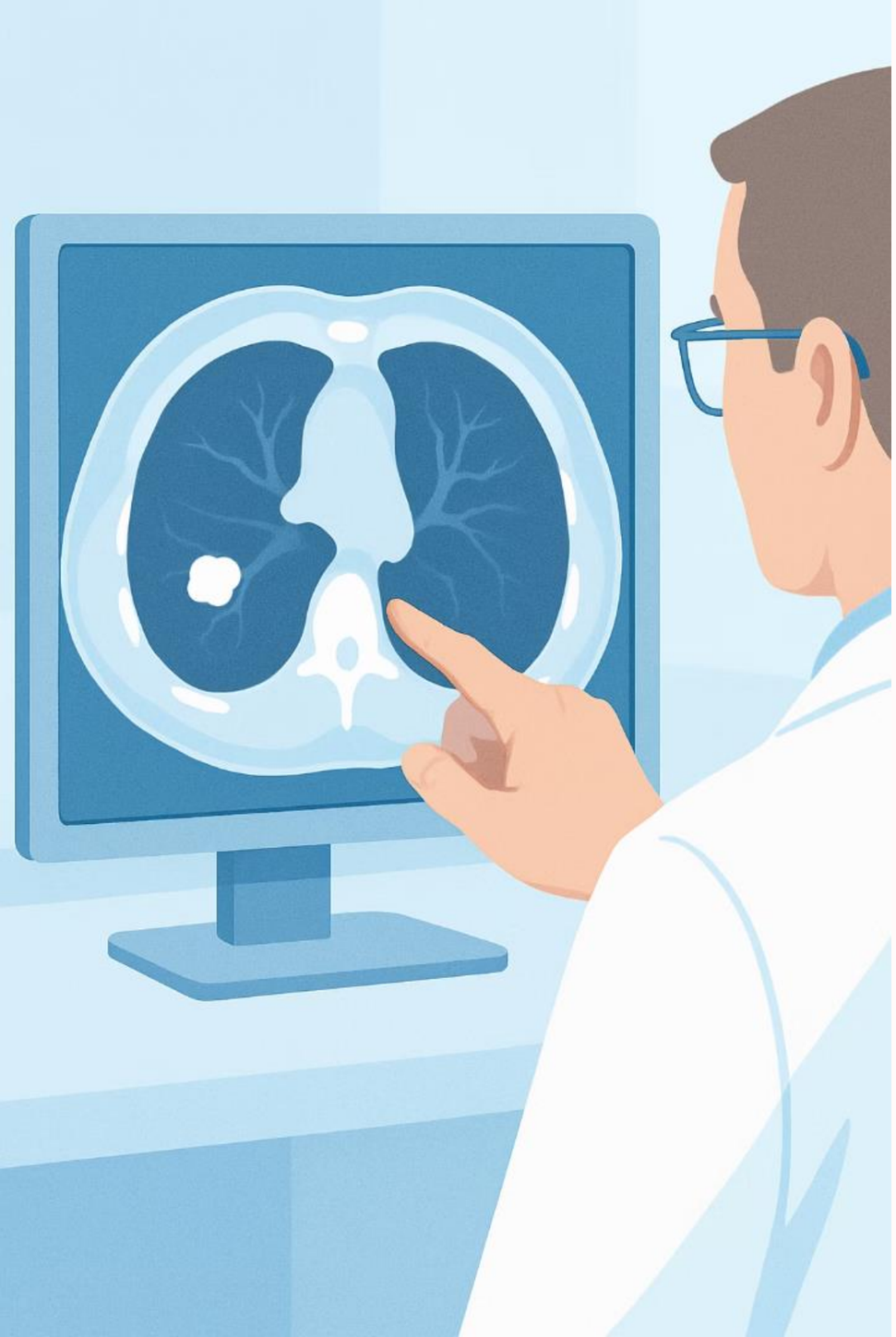
Nurx

Comprehensive HPV screening kit includes STI testing options. Provides follow-up care recommendations for positive results.

MyLAB Box

Detects high-risk HPV strains 16 and 18 plus 12 other types. CLIA-certified lab processing with telemedicine support.

At-home testing increases screening accessibility for underserved populations. Most direct-to-consumer tests are PCR-based, matching clinical sensitivity shown in studies.



Lung Cancer

226,650

New Cases

11.1% of all new cancer diagnoses in 2025

124,730

Deaths

20.2% of all cancer deaths in 2025

28.1%

Survival Rate

5-year survival rate

Landmark Lung Cancer Screening Trials

Evidence Base

- USPSTF reviewed 223 publications including seven randomized control trials
- Only NLST and NELSON had adequate power

National Lung Screening Trial (NLST)

- Demonstrated 20% reduction in lung cancer mortality with annual LDCT compared to chest radiography in high-risk individuals

NELSON Trial

- Showed 24% reduction in lung cancer mortality with LDCT screening in high-risk populations

USPSTF Lung Cancer Screening Guidelines

Previous Recommendation (Pre-2021)

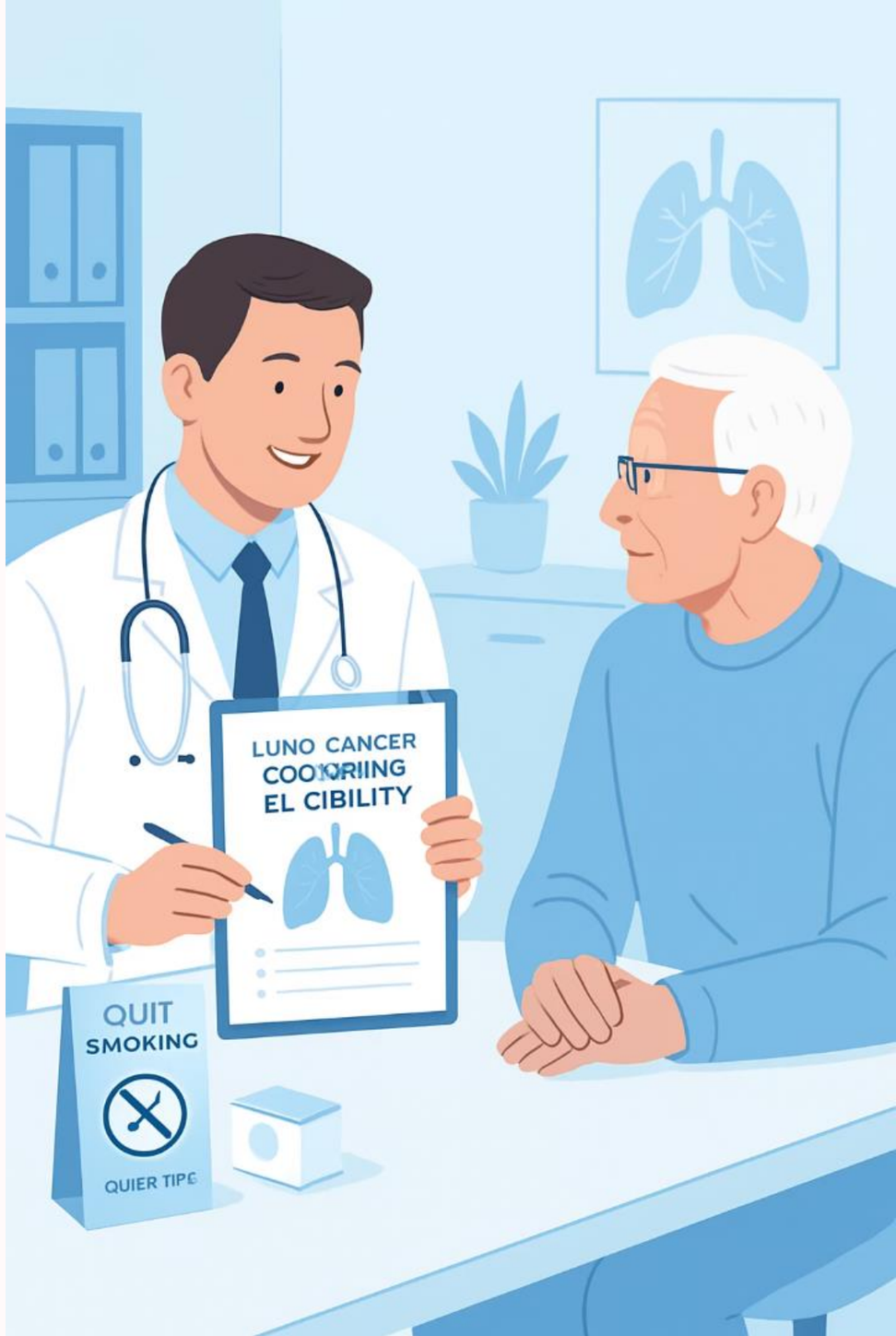
- Ages 55-80 years
- ≥30 pack-year smoking history
- Current smoker or quit within past 15 years
- Annual LDCT screening

Updated Recommendation (2021)

- Ages 50-80 years
- ≥20 pack-year smoking history
- Current smoker or quit within past 15 years
- Annual LDCT screening

Supporting Organizations

American College of Chest Physicians and American Thoracic Society have adopted the same recommendations.



Benefits of Lung Cancer Screening

Earlier Detection

Identifies lung cancer at more treatable stages

Incidental Findings

May detect other conditions like coronary artery disease

Mortality Reduction

20-24% reduction in lung cancer deaths

Smoking Cessation

Screening visits provide opportunity for intervention

Colon Cancer: Key Statistics

154,270

New Cases

7.6% of all new cancer diagnoses in 2025

52,900

Annual Deaths

8.6% of all cancer deaths

65.4%

5-Year Survival

Relative survival rate across all stages

Colorectal cancer remains the third most common cancer in both men and women.

Colon Cancer Screening Recommendations

Multiple organizations have established guidelines for colorectal cancer screening, with recent trends favoring earlier initiation at age 45.

Organization	Starting Age	Preferred Methods	Screening Intervals
ACS	45 years	Multiple options	Varies by method
ACG	45 years	Colonoscopy or annual FIT	10 years or annually
ACP	50 years	Individualized selection	Varies by method
USPSTF	45-75 years	Multiple options	Varies by method

High-risk individuals should begin screening at age 40 or 10 years before the youngest affected relative's diagnosis age.

Colorectal Cancer Screening Modalities

1. Colonoscopy: Gold standard examination allowing direct visualization and polyp removal. Recommended every 10 years.

2. Fecal Immunochemical Test (FIT): Non-invasive stool test detecting hidden blood. Performed annually.
3. Flexible Sigmoidoscopy: Examines lower colon portion only. Recommended every 5-10 years.
4. Multitarget Stool DNA Test: Detects altered DNA from cancer cells. Performed every 3 years.
5. CT Colonography: Virtual colonoscopy using low-dose radiation imaging. Recommended every 5 years.

Colorectal Cancer Screening Benefits

69%

Reduced Incidence

Screening colonoscopy dramatically lowers overall colorectal cancer occurrence.

68%

Mortality Reduction

Regular screening significantly decreases colorectal cancer deaths.

Colonoscopy offers a powerful advantage: simultaneous screening and treatment. When polyps are found, they can be removed immediately, preventing cancer development.

Prostate Cancer: Key Statistics

313,780

New Cases

15.4% of all new cancer diagnoses in 2025

35,770

Annual Deaths

5.8% of all cancer deaths

97.9%

5-Year Survival

Relative survival rate across all stages

Prostate cancer remains one of the most common cancers in men, with high survival rates when detected early.

Prostate Cancer Screening Recommendations

All major organizations emphasize shared decision-making for prostate cancer screening, balancing benefits against potential harms.

Organization	Age Range	Recommendation	Screening Interval
USPSTF	55-69 years	Shared decision-making (Grade C)	Not specified
AUA	55-69 years	Shared decision-making	Every 2 years
ACP	55-69 years	Shared decision-making	At least 2 years
ACS	50+ years	Discussion based on life expectancy	Variable by PSA level

High-risk men (Black men, family history) should begin discussions at age 45 per ACS guidelines.

Screening is generally not recommended for men aged 70+ or with limited life expectancy.

Prostate Cancer Screening Controversy

PSA screening presents a complex balance between potential benefits and harms.

Major Screening Studies

European Study (ERSPC): Showed modest mortality reduction with PSA screening.

PLCO Trial: Found no mortality benefit from PSA screening.

Key Concerns

Overdiagnosis: High rates lead to unnecessary treatments and complications.

Clinical Approach

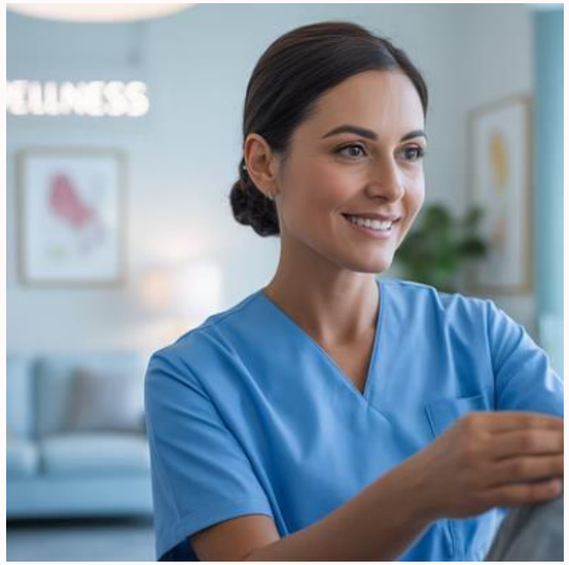
Risk-Benefit Analysis: Drives the shared decision-making approach recommended by guidelines.

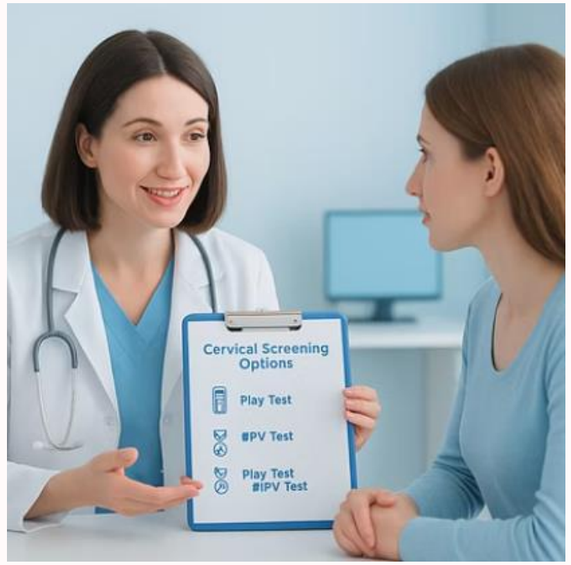
Key Risks of Cancer Screening

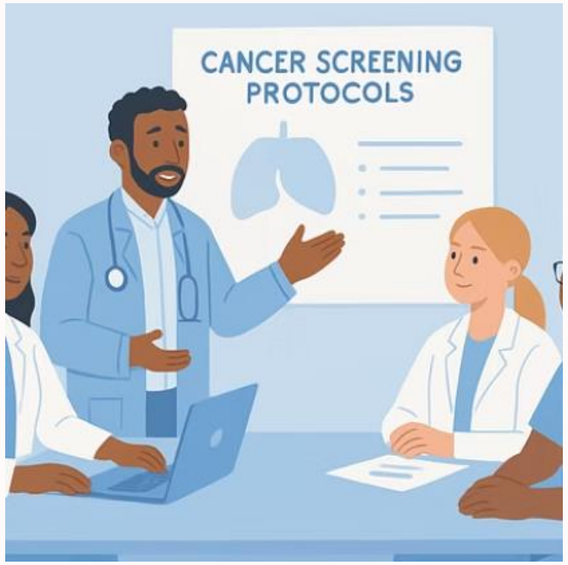
- False Positives: Up to 50% of women screened with mammography experience at least one false positive over 10 years

- Overdiagnosis: Detection of cancers that would never cause symptoms or death during a patient's lifetime
- Procedure Complications: Colonoscopy carries small risk of bleeding (1.6/1000) or perforation (0.85/1000)
- Radiation Exposure: LDCT lung screening delivers low but cumulative radiation doses with repeated screening
- Psychological Distress: Anxiety and worry between abnormal screening result and diagnostic resolution

Key Takeaways for Clinical Practice







1 Risk Stratification

Tailor screening recommendations based on individual risk factors.

2 Shared Decision-Making

Discuss benefits and risks of screening with patients.

3 Stay Current

Guidelines evolve as new evidence emerges.

4 Multidisciplinary Approach

Collaboration between primary care and specialists optimizes screening outcomes.