



# Breast and Cervical Cancer: Screening Guidelines and Recommendations

Bethany Panchal, MD, FAAFP  
Associate Professor of Family Medicine  
May 11, 2021

**No Disclosures**

# Objectives

- Outline the screening recommendations for breast and cervical cancers
- Understand cancer screening guideline differences for normal and high risk individuals
- Define the breast and cervical cancer screening needs of transgender patients
- Review web-based resources for calculating cancer risk scores for individuals

# Breast Cancer Statistics

- Most commonly diagnosed cancer in US women
- 2<sup>nd</sup> highest cancer related death in US women
- The American Cancer Society 2021 estimates for the United States
  - 281,550 new cases of invasive breast cancer will be diagnosed in women
  - 49,290 new cases of ductal carcinoma
  - 43,600 women will die from breast cancer
- **1 in 8** women in the US will develop invasive breast cancer in the course of her lifetime

# Breast Cancer Screening Recommendations



# Breast Cancer Screening

## *Normal Risk Guidelines*

---

- 2016 USPSTF screening guidelines (update in progress)
  - Biennial mammograms for women age 50 – 74 (B recommendation) (AAFP supports)
  - Decision to start mammography before age 50 should be an individual one (C recommendation)
- 2015 American Cancer Society
  - Annual screening mammo between age 45 – 54
  - Biennial from age 55 up
  - Women age 40 – 45 should be given choice

# Breast Cancer Screening

*Continued*

---

- 2019 American College of Physicians recommendations
  - Age 50 – 74: Most significant benefit is for biennial mammography – reduce mortality
  - Age 40 – 49: should be discussed, though harms may outweigh benefits
  - Women 75 and older or life expectancy less than 10 years should not be screened
  - All ages: Clinical breast exam not recommended

# Guidelines continued

- American College of Obstetricians and Gynecologists (ACOG)
  - Offer annual or biennial starting at age 40
  - Annual or biennial from age 50 – 74
  - 75 y/o and older – shared decision making
- National Comprehensive Cancer Network (NCCN) and American College of Radiologists (ACR)
  - Annual mammography starting at age 40 - 74



## Comparison of Breast Cancer Screening Guidelines for Women at Average Risk

Recommendation parameter	USPSTF and AAFP	ACOG	ACR	ACS	NCCN
<b>Breast examination</b>					
Breast self-examination	Recommends against teaching patients	Encourages breast self-awareness	—	Encourages breast self-awareness	Encourages breast self-awareness
Clinical breast examination	Insufficient evidence	May be offered every 1 to 3 years from 25 to 39 years of age and then annually	—	Not recommended	Recommends every 1 to 3 years from 25 to 39 years of age and then annually
<b>Mammography (by age)</b>					
40 to 44 years	Individual decision	Offer annual or biennial (individual decision)	Annual	Offer annual (individual decision)	Annual
45 to 49 years	Individual decision	Offer annual or biennial (individual decision)	Annual	Annual	Annual
50 to 54 years	Biennial	Annual or biennial	Annual	Annual	Annual
55 to 74 years	Biennial	Annual or biennial	Annual	Biennial, option to continue annually	Annual
When to stop mammography	Insufficient evidence for continued screening in women 75 years and older	Shared decision-making in women 75 years and older	Discontinue when life expectancy is < 5 to 7 years	Discontinue when life expectancy is ≤ 10 years	Discontinue when life expectancy is ≤ 10 years
<b>Special considerations</b>					
Adjunct MRI for high-risk women	Insufficient evidence	Offer annual mammography and MRI starting at 30 years	Annual mammography and MRI starting at 30 years	Offer annual mammography and MRI starting at 30 years	Annual mammography, clinical breast examination every six to 12 months, consider annual MRI starting at 30 years
Women with dense breasts	Insufficient evidence	Insufficient evidence	Consider ultrasonography plus mammography	Insufficient evidence	Counsel on risks and benefits of supplemental screening

AAFP = American Academy of Family Physicians; ACOG = American College of Obstetricians and Gynecologists; ACR = American College of Radiology; ACS = American Cancer Society; MRI = magnetic resonance imaging; NCCN = National Comprehensive Cancer Network; USPSTF = U.S. Preventive Services Task Force.

Information from references 3 and 26-33.

# Screening Evidence Summary

*How does screening affect Mortality?*

---

- Modeling studies report the number needed to screen (NNS) with traditional mammography to prevent one BC death
  - 746 for women age 40 – 49
  - 351 for women age 50 – 59
  - 233 for women age 60 – 69
  - 377 for women age 70 – 79

# Screening Evidence Summary

---

- RCTs indicate much higher NNS
  - USPSTF study calculated that per 10,000 women screened
    - 3 BC deaths avoided over 10 years in women age 40 to 49
    - 8 deaths avoided in women 50 to 59
    - 21 deaths avoided in women 60 to 69
    - 13 deaths avoided in women 70 to 74

# Potential Harms to Screening

---

- False Positives
  - Higher with annual vs. biennial (61% vs 42%)
  - Dense breasts
  - Age 40 – 49
  - Combined hormone therapy
- Over diagnosis
- Anxiety and distress
- Pain

# Screening for High Risk

## *Risk factors*

---

- Strongest risk factors
  - Older age
  - Gene mutations (BRCA)
  - Childhood history of chest radiation
  - Family history
  - Increased breast density
- Most women who are diagnosed with invasive BC have no risk factors

# Determining Risk

---



- Multiple tools to help assess risk
  - Breast Cancer Risk Assessment Tool (Gail Model) - <https://bcrisktool.cancer.gov/>
  - International Breast Cancer Intervention Studies (Tyrer-Cuzick or IBIS model) - <https://ems-trials.org/riskevaluator/>
  - Breast Cancer Surveillance Consortium (BCSC) model - <https://tools.bcsc-scc.org/BC5yearRisk/calculator.htm>
- Tools can help physicians and patients determine individual plan for screening, genetic testing or chemoprevention
- Negative predictive values for these tools is 97% or more

# Screening Recommendations for high risk

(*>20% lifetime risk*)

---

- ACS
  - Offer annual mammography and MRI with contrast
  - Starting age 30
- ACOG
  - Clinical breast exam every 6 – 12 months between 25 – 29 y/o
  - Annual MRI with contrast age 25 and up
  - Annual mammography from 30 y/o
- ACR
  - Annual mammo and MRI at age 30

# Recommendations for high risk

(*>20% lifetime risk*)

---

- NCCN
  - CBE every 6 – 12 months at age 21
  - Annual MRI at age 25
  - Annual mammogram at age 30
  - If history of chest radiation – CBE every 6 – 12 months from 10 years after last radiation – then follow recommendations above
- USPSTF/AAFP
  - Insufficient data to recommend breast MRI for screening



# How to Screen

---

- Breast Exams
- Mammography
- Ultrasound
- MRI

# Clinical and Self Breast Exams

- USPSTF and AAFP recommend against teaching self breast exam
- ACOG, NCCN, ACS encourage breast self awareness
  - Out of 361 breast cancer survivors who participated in the 2003 National Health Interview Survey, 43% reported detecting their own cancers
- Clinical breast exams
  - ACS recommends against
  - ACOG recommends offering every 1-3 years
  - NCCN recommends annually
  - USPSTF and AAFP – insufficient data

# Mammography

- Gold standard for initial screening
- Most studied and only one showing decrease BC mortality
- 2D (Standard) vs 3D (digital tomosynthesis)
- Choice depends on availability
- Digital or tomosynthesis better for more dense breasts due to increased sensitivity

# Automated Whole Breast Ultrasound (ABUS)

- Creates 3D picture of breast using US
- Can be used in women with dense breasts in addition to mammo (thus higher risk for breast cancer and mammogram false positives)
- American College of Radiology recommends considering in addition to mammo based on trial showing improved detection rates in women with **dense breasts** (higher sensitivity) compared to mammo alone
  - 75% for US with mammo
  - 52% for mammo alone
- Also means increased false positive rate

# MRI

- Increased sensitivity of 71% to 100% for detecting breast cancer in high-risk women vs. mammography's sensitivity of 16% to 40% in the same population
- MRI is less specific (81% to 99%) compared with mammography (93% to more than 99%), resulting in higher rates of false-positives
- Recommendations for screening MRIs are for women with > 20% lifetime risk only at this time



# Shared Decision Making

---

- Annual vs Biennial Mammography
- Age of initiation
- Age of stopping



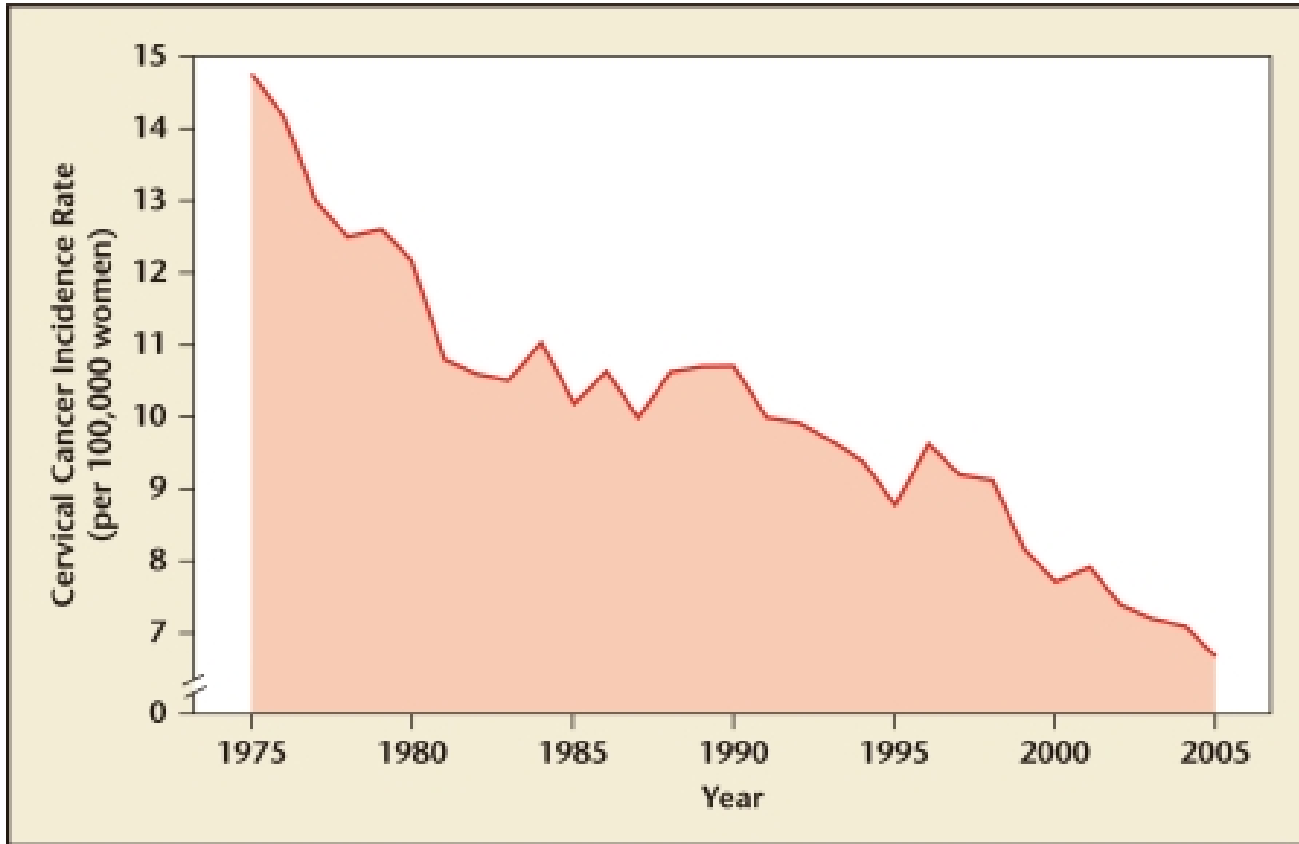


# Cervical Cancer Statistics

- American Cancer Society 2021 estimates
  - 14,480 new cases in the US
  - 4,290 deaths
- The risk for development of precancerous lesions varies by high risk HPV type
- High risk HPV types cause 99.7% of cervical cancers with 70% of these caused by HPV types 16 and 18

# History Lesson

- 1930-40s cervical cancer was a leading cause of death in women
- Pap test developed and implemented in the 50s in US
- Cervical Cancer incidence has decreased by 70% since



Decrease in cervical cancer incidence rates in the United States over the past quarter century. Data from SEER Cancer Statistics Review, 1975–2005.

# Changes in screening

- During the 90s, conventional Pap test was replaced with liquid-based cytology due to increased sensitivity
- HPV was discovered on cervical cancer tissue in 1983
- Persistent infection with hrHPV (mostly 16 or 18) is the cause for almost all cervical cancers
- The long period between HPV infection and the development of cervical cancer has made it possible for screening to be effective in reducing both incidence and mortality

# Primary Prevention

## VACCINATE!!

- HPV vaccine is recommended for ALL patients between 9 – 26 y/o
  - Should be given routinely between 11 – 12 y/o
- Offer for at risk patients up through age 45
  - At risk = any new sexual partners

# Cervical Cancer Screening

---

- Primary goal is to detect treatable cervical abnormalities and precancers
  - Cervical intraepithelial neoplasm 2 – 3
  - Adenocarcinoma in situ
- Secondary goal – detect invasive disease

# Cervical Cancer Screening

*Normal Risk Guidelines: 2018 USPSTF*

---

- Start at age 21
- Cytology every 3 years from age 21 – 29
- Cytology every 3 or HRHPV testing + cytology (cotest) every 5 years from age 30 – 65
- Stop if hysterectomy (with removal of cervix) and no history of high grade lesion (cervical intraepithelial neoplasm 2-3) or cervical cancer
- Stop after age 65 if adequate previous screening and not otherwise at high risk for cervical cancer

# Cervical Cancer Screening

## *2020 ACS and ASCCP Guidelines*

---

- Start at age 25
- Age 25 – 65: HPV test every 5 years (preferred), cotest every 5 yrs or cytology alone every 3 yrs (acceptable)
- Age 65 and up: no testing if previous testing series all normal



# When to stop

*What is adequate screening?*

---

- 2 consecutive negative HPV or Cotesting results
- 3 consecutive negative cytology results
- Within last 10 years, with last test being within the recommended interval for the test used (within 5 for HPV or cotest, within 3 for cytology only)
- Do not apply for individuals under current surveillance for abnormal results

# When to stop

---

- Individuals older than age 65 without conditions limiting life expectancy for whom sufficient documentation of prior screening is not available should be screened until criteria for screening cessation are met
- May be discontinued for any individual with a limited life expectancy

# Cytology vs HPV testing

- Cytology – examination of cervical cells under microscopy
- Primary HPV test – detects DNA of specific HPV types
- Cotesting – Combines above for two tests in one sample
- RCT show cytology alone is less sensitive than hrHPV only or co-testing for CIN 2 and 3.
- However hrHPV alone also had more false positives = higher rates of colposcopy

# Self Collection

---

- HPV testing
- Research done in resource
- Revealed higher compliance
- Cervicovaginal sample
  - Tampon
  - Dacron or cotton swab
  - Cytobrush
  - Cervicovaginal lavage



# Cervical Cancer Screening

## *Special Populations*

---

- Women with past cervical pre-cancer (CIN 2-3) or cancer lesions should continue screening for 20 years past the last abnormal screen
- More intensive screening depending on individual patient history and risk factors – annually, biannually?

# So who is at higher risk – who to screen differently

---

- HIV positive
- Immunosuppressed (transplant recipients, immunosuppressant therapy)
- CDC/NIH recommendations
  - Age < 30: Cytology screening only should start within 1 year of the onset of sexual activity or by age 21
  - Every 6-12 month until 3 negative tests in a row, then every 3 years
  - Age >30
    - Cytology alone or cotesting annually (at dx of HIV) x 3, then every 3 years
    - Continue until limited life expectancy (less than 10 years)

# At Risk Populations: Transgender Patients

---

- LGBTQ+ patients are less likely to have breast and cervical cancer screening completed
- Face more disparities in screening compared to cisgender females
  - Misgendered during visit
  - Discomfort of providers
  - Inadequate or insufficient cervical samples
    - testosterone effect on histology
    - patient discomfort

# Approach to Transgender Patients

---

- Personal awareness and cultural humility –
  - Explore your triggers, biases, world views, etc.
- Educate yourself
- Know your audience
  - Sex assigned at birth, pronouns, gender identity, sexual orientation
- Judgement free zone
- Ask permission and set the stage
- Standardize and normalize your information gathering process



# Screening for Transgender Patients

---

- Screening recommendations are based on patient's current anatomy and based on current guidelines based on presence of relevant anatomy
- Transgender females with breast tissue and transgender males who have not undergone complete mastectomy should receive screening mammography based on guidelines for cisgender persons
- Providers should be proficient in examination techniques
  - maximize patient autonomy
  - minimize gender dysphoria and/or pain.
- Self-swabs for high-risk HPV may provide a more acceptable, evidence-based, alternative to Pap smears but there remains a need for further research, to inform changes in policy

# More Specifically

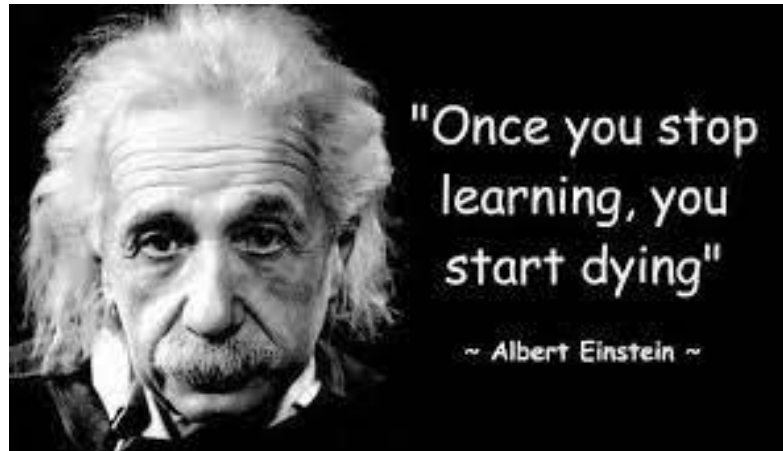
---

- Lack of consensus
- Transgender women on hormones should start mammogram screening starting at the age of 50 if they have been on estrogen for at least 5 years
  - May need to start earlier given additional risk factors
- Transgender men who have undergone mastectomy may want to have routine chest exams given mammography would not be possible

# Conclusion

---

- As research continues to progress, cancer screening guidelines will change
- Understand different perspectives affect the guideline statements
- Patient centered medicine means shared decision making
- Keep learning



# Thank You



[wexnermedical.osu.edu](http://wexnermedical.osu.edu)

Twitter: [@BethPanchalMD](https://twitter.com/BethPanchalMD)

# References

---

1. [https://www.breastcancer.org/symptoms/understand\\_bc/statistics](https://www.breastcancer.org/symptoms/understand_bc/statistics)
2. <https://uspreventiveservicestaskforce.org/uspstf/recommendation/breast-cancer-screening>
3. Hoover LE. Breast Cancer Screening: ACP Releases Guidance Statements. *Am Fam Physician*. 2020 Feb 1;101(3):184-185. PMID: 32003948.
4. Khan M, Chollet A. Breast Cancer Screening: Common Questions and Answers. *Am Fam Physician*. 2021 Jan 1;103(1):33-41. Erratum in: *Am Fam Physician*. 2021 Mar 1;103(5):263. PMID: 33382554.
5. Breast cancer risk assessment and screening in average-risk women. Practice Bulletin No. 179. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2017;130:e1–16.
6. Klein DA, Paradise SL, Goodwin ET. Caring for Transgender and Gender-Diverse Persons: What Clinicians Should Know. *Am Fam Physician*. 2018 Dec 1;98(11):645-653. PMID: 30485050.
7. Fontham, ETH, Wolf, AMD, Church, TR, Etzioni, R, Flowers, CR, Herzig, A, Guerra, CE, Oeffinger, KC, Shih, Y-CT, Walter, LC, Kim, JJ, Andrews, KS, DeSantis, CE, Fedewa, SA, Manassaram-Baptiste, D, Saslow, D, Wender, RC, Smith, RA. Cervical cancer screening for individuals at average risk: 2020 guideline update from the American Cancer Society. *CA Cancer J Clin*. 2020; 70: 321- 346. <https://doi.org/10.3322/caac.21628>

8. Gibb RK, Martens MG. The impact of liquid-based cytology in decreasing the incidence of cervical cancer. *Rev Obstet Gynecol.* 2011;4(Suppl 1):S2-S11.
9. National Cancer Institute, authors. SEER Cancer Statistics Review, 1975–2005.
10. Melnikow et al. Screening for Cervical Cancer With High-Risk Human Papillomavirus Testing: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. *JAMA.* 2018;320(7):687-705.
11. Connolly D, Hughes X, Berner A. Barriers and facilitators to cervical cancer screening among transgender men and non-binary people with a cervix: A systematic narrative review. *Prev Med.* 2020 Jun;135:106071. doi: 10.1016/j.ypmed.2020.106071. Epub 2020 Mar 31. PMID: 32243938.
12. Charkhchi P, Schabath MB, Carlos RC. Modifiers of Cancer Screening Prevention Among Sexual and Gender Minorities in the Behavioral Risk Factor Surveillance System. *J Am Coll Radiol.* 2019 Apr;16(4 Pt B):607-620. doi: 10.1016/j.jacr.2019.02.042. PMID: 30947895.
13. McDowell M, Pardee DJ, Peitzmeier S, Reisner SL, Agénor M, Alizaga N, Bernstein I, Potter J. Cervical Cancer Screening Preferences Among Trans-Masculine Individuals: Patient-Collected Human Papillomavirus Vaginal Swabs Versus Provider-Administered Pap Tests. *LGBT Health.* 2017 Aug;4(4):252-259. doi: 10.1089/lgbt.2016.0187. Epub 2017 Jun 30. PMID: 28665783.
14. Brown B, Poteat T, Marg L, Galea JT. Human Papillomavirus-Related Cancer Surveillance, Prevention, and Screening Among Transgender Men and Women: Neglected Populations at High Risk. *LGBT Health.* 2017 Oct;4(5):315-319. doi: 10.1089/lgbt.2016.0142. Epub 2017 Sep 6. PMID: 28876211.
15. Sonnenblick EB, Shah AD, Goldstein Z, Reisman T. Breast Imaging of Transgender Individuals: A Review. *Curr Radiol Rep.* 2018;6(1):1. doi:10.1007/s40134-018-0260-1