

UNDERSTANDING YOUR RISK FOR BREAST CANCER

Kathie-Ann Joseph, MD, MPH
Assistant Professor of Surgery
Medical Director, Women at Risk
Columbia University Medical Center

Who Gets Breast Cancer?

- Breast cancer is the most common cancer among women, accounting for nearly one of three cancers diagnosed in American women.
- 192,370 cases of invasive cancer will be diagnosed in 2009 and an additional 47,100 cases of *in situ* breast cancer.

Who Gets Breast Cancer?

- 40,170 women will die from breast cancer
- 2.5 million women living in the US have been treated for breast cancer.

Who Gets Breast Cancer?



- 77% of new cases and 84% of breast cancer deaths occur in women 50 and older.
- After age 40, white women are more likely to be diagnosed with breast cancer than black women, however,
- Black women are more likely to die from breast cancer than white women.

Breast Cancer Risk Factors

Most women who develop breast cancer have no known risk factors other than being a woman and getting older.

Risk of Breast Cancer Increases with Age

If current age is...	Then the probability of developing breast cancer in the next 10 years is:†	or 1 in:
20	0.05%	2,044
30	0.40%	249
40	1.49%	67
50	2.77%	36
60	3.45%	29
70	4.16%	24

*Among those free of cancer at beginning of age interval. Based on cases diagnosed 1995-1997. Percentages and "1 in" numbers may not be numerically equivalent due to rounding.

†Probability derived using NCI DEVCAN software.

American Cancer Society Surveillance Research, 2001.

**Every woman should be aware
of her own personal risk factors
for the development of breast
cancer.**

Slightly Elevated Risk Factors (Relative Risk: 1.5 to 2)

- Early menarche (< age 12)
- Late menopause (> age 50)
- Benign breast biopsy

Moderately High Risk Factors (Relative Risk: 2 to 3)

- 1st-degree relative 50 years or older with postmenopausal breast cancer
- Never having had children
- First child after age 30

High Risk Factors (Relative Risk: >3)

- Past history of breast cancer
- Atypical hyperplasia on breast biopsy
- 1st-degree relative with premenopausal breast cancer
- Personal history of *BRCA* genetic mutations

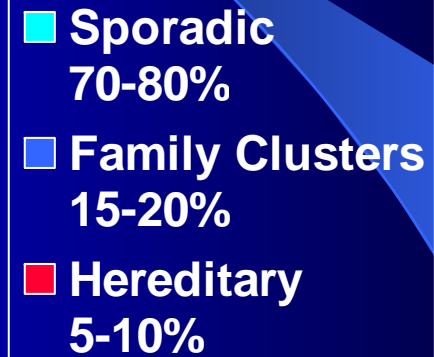
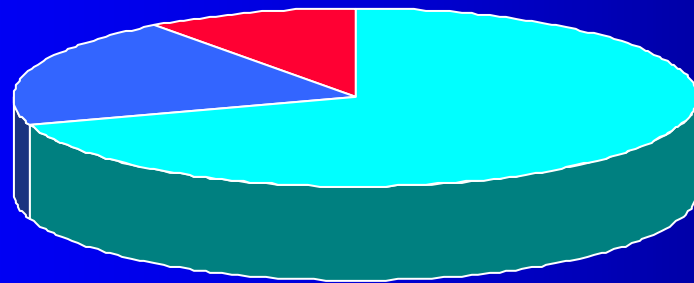
Risk Factors You Cannot Change

- Gender
- Aging
- Family History
- Genetic Risk Factors
- Menstrual periods
- Personal History of Breast Cancer
- Previous Breast Biopsy
- Previous breast radiation

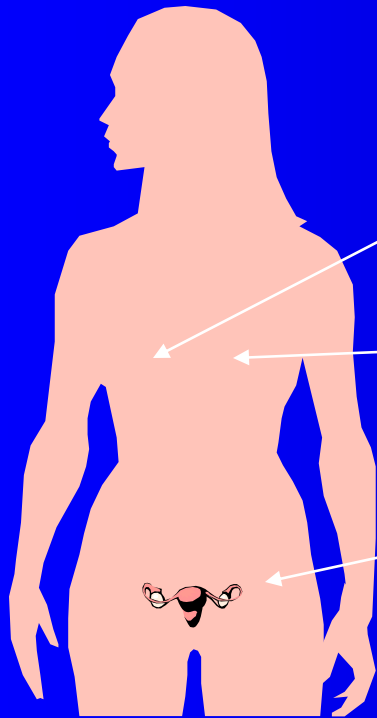
Lifestyle-Related Risk Factors

- Hormone Replacement Therapy
- Breast Feeding
- Obesity
- Alcohol
- Physical Activity
- High-fat diets

How Much Breast Cancer is Hereditary?



BRCA 1-Associated Cancers: Lifetime Risk



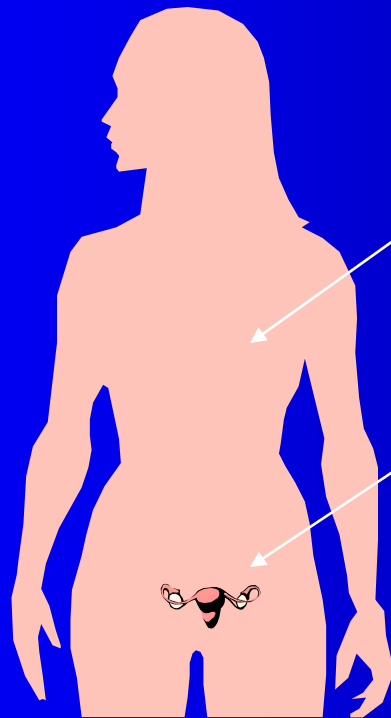
Breast Cancer 50-85%
(often early age at onset)

Second Primary Breast Cancer 40-60%

Ovarian Cancer 15-45%

**Possible increased risk of other cancers
(eg, prostate, colon)**

BRCA 2-Associated Cancers: Lifetime Risk



Breast Cancer (50-85%)

Ovarian Cancer (10-20%)

Increased risk of male breast cancer (6%), prostate and pancreatic cancers (magnitude unknown)

Risk Factors

Inherited Breast Cancer

- **Inherited breast cancer (IBC) represents only 5-10% of total breast cancer cases.**
- **Families with IBC exhibit a multigenerational pattern of breast cancer with early onset of disease, more bilateral cases than expected, and an excess of other cancers, especially ovarian cancer.**

Epidemiologic Risk Assessment Models

- Gail model
- Claus model

The Gail Model

Calculates a woman's 5-year and lifetime risk of developing breast cancer

Includes:

- Current age
- Number of 1st-degree female relatives with a history of breast cancer
- Age at first live birth, or nulliparity
- Number of breast biopsies
- History of atypical hyperplasia
- Age at menarche
- Race

Limitations of the Gail Model

- Should not be used with women who have history of LCIS, DCIS, or invasive breast cancer.
- May underestimate the risk in women who have 2nd-degree relatives with breast cancer or who are known *BRCA* carriers.
- May overestimate risk with women who are > 50 with history of two or more breast biopsies or who were under age 20 at first live birth.
- Not validated for African-American, Hispanic, and other subgroups of women.

Genetic Testing

Factors that indicate increased likelihood of BRCA mutations:

- Family history of multiple cases of early-onset breast cancer
- Personal or family history of ovarian cancer at any age
- Breast and ovarian cancer in the same woman
- Bilateral breast cancer
- Ashkenazi Jewish heritage
- Family history of male breast cancer

Limitations of Genetic Testing

- A lengthy process
- Not error-proof
- Expensive
- Raises ethical concerns

Breast Cancer in African-American Women

- Researchers at the University of Pennsylvania looked at black and white women who had family histories of breast cancer
- They found that AA women with a family history of breast cancer were significantly less likely to be referred for genetic counseling

Breast Cancer in African-American Women

- White women were five times more likely to be offered genetic counseling and this difference could not be explained by income, education level, risk for BRCA1 or BRCA2, attitude toward genetic testing, or discussions with primary doctor regarding testing

GINA LAW

- Genetic Information Nondiscrimination Act (May 2008)
- Prohibits groups and individual health insurers from using a person's genetic information in determining eligibility or premiums
- Prohibits an insurer from requesting or requiring that a person's genetic information in making decisions regarding hiring, firing, job assignments, and the like
- Prohibits employers from requesting, requiring, or purchasing genetic information about persons or their family members

MAMMOGRAM

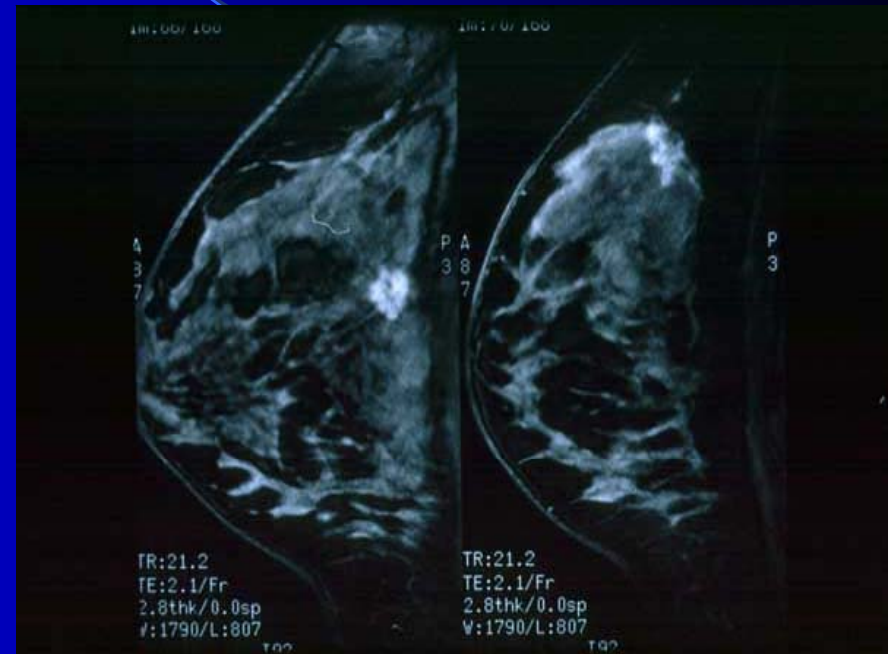


ULTRASOUND



Screening Breast MRI in High Risk Women

- Finds cancers missed by mammography in 3%
- Performs better than mammography
- Rarely misses cancer (DCIS)
- False positive rate 6%



American Cancer Society Screening Guidelines

- Annual Mammograms starting at age 40
- Annual Clinical Breast Exam for women 40 and older and approximately every 3 years for women in their 20s and 30s
- Monthly Self Breast Exams are recommended

If you are high risk.....

- You should begin screening 10 years prior to the youngest case of breast cancer in the family.
- If a woman's mother developed breast cancer at the age of 41 **DO NOT WAIT** until 40 to begin screening. Start screening at 31.

If you are high risk.....

- Clinical breast exam every 6 to 12 months
- Monthly self breast exam starting age 18-21
- Ultrasound in young women should be considered in addition to mammography.
- Known BRCA mutation carriers and young women with breast cancer should consider MRI for screening.

Some Non-Risk Factors

- Cyclical breast pain
- Fibroadenomas
- Hair dyes
- Underwire bras
- Deodorants and antiperspirants
- Screening mammograms

<https://familyhistory.hhs.gov>

THANK YOU!

