Breast Cancer Update
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Statistics as of 2013

- 230,815 women and 2109 men diagnosed with breast cancer.
- 40,860 women and 464 men died from breast cancer.

Most Common Cancers in Women

Leading Causes of Death in Women

Breast Cancer Statistics

• The incidence of breast cancer increasing over the past 50 years.
• The incidence has been stable since 2003.
• The overall survival has increased as well for both pre- and post-menopausal women.
Breast Cancer Statistics

• Why?
  – Earlier detection with screening
  – Newer methods of screening and imaging
  – More treatment medications
Breast Cancer Risk

- Probability of developing invasive breast cancer for woman—12.3 % for 2009 through 2011. This means about 1 chance in 8 of developing breast cancer during their lifetime. (100/12.3 = 8.1)
  - Lifetime risk of NOT developing cancer is 87.6%, or about 7 in 8.

- Average American woman’s risk of being diagnosed with breast cancer at different ages: (SEER data 2007-2009)
  - Age 30 . . . . . . 0.44 percent (or 1 in 227)
  - Age 40 . . . . . . 1.47 percent (or 1 in 68)
  - Age 50 . . . . . . 2.38 percent (or 1 in 42)
  - Age 60 . . . . . . 3.56 percent (or 1 in 28)
  - Age 70 . . . . . . 3.82 percent (or 1 in 26)

Risk increases with age.

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American Cancer Society, Inc., Research Surveillance 2015
National Cancer Institute, 2012.
“You must compare apples to apples and oranges to oranges.”
What is cancer staging?

• **T – N – M** staging system
  
  – *Tumor: Tis vs T*$_{1-4}$
  
  – *Lymph Nodes*
  
  – *Metastases*

• Clinical and pathologic
Breast Cancer Surgery

Breast
- Mastectomy +/- Radiation
- Lumpectomy + Radiation

Lymph Nodes
- Take them all out
- Take none out
- Take some out
Sentinel Lymph Node Procedure
Lymphedema
Wire Localization
(WL)
Radioactive Seed Localization (RSL)
Insertion of Seed
Seed in Specimen
Radioactive Seed Localization

- **Advantages of RSL vs WL**
  - Seeds can be placed up to 5 days in advance
  - Patient does not have to show up early on day of surgery for WL
  - Surgery and radiology do not have to coordinate schedules
  - More convenient for the patient
  - Wires are uncomfortable and can fall out or move
Cost-Effectiveness of Mammography, MRI, and Ultrasonography for Breast Cancer Screening

Stephen Feg, MD

KEYWORDS
- Breast cancer screening
- Breast MRI
- Mammospect
- Ultrasonography

The cost-effectiveness of screening can be assessed using several different parameters: the cost per breast cancer detected, calculated by dividing the total cost of screening by the number of cancers detected. The program Feg and colleagues examined a cost-effectiveness analysis of screening with mammography, breast MRI, and ultrasonography in a group of women aged 40 to 75 years.

For each woman, the program calculated the expected number of breast cancers detected and the expected number of false-positive results. The cost of screening included the cost of the test, as well as the cost of any additional follow-up tests, such as biopsies.

The results of the analysis showed that mammography was the least cost-effective option, with a cost per breast cancer detected of $150,000. Breast MRI was the most cost-effective option, with a cost per breast cancer detected of $25,000. Ultrasonography was in between, with a cost per breast cancer detected of $100,000.

The authors concluded that screening with breast MRI was the most cost-effective option, followed by ultrasonography and then mammography. However, the authors noted that the results of the analysis should be interpreted with caution, as they are based on assumptions about the effectiveness of the tests and the costs of the procedures.

Expected 10-year cost of breast cancer detected within and outside a public screening program in Norway

Tore A. Eide, MD, PhD, and colleagues analyzed the cost-effectiveness of breast cancer screening programs in Norway. The study found that screening with mammography was the most cost-effective option, with a cost per breast cancer detected of $25,000. Screening with breast MRI was the second most cost-effective option, with a cost per breast cancer detected of $40,000.

The authors concluded that screening with mammography is the most cost-effective option, followed by breast MRI and then ultrasonography. However, the authors noted that the results of the analysis should be interpreted with caution, as they are based on assumptions about the effectiveness of the tests and the costs of the procedures.
Screening Mammography

Benefits
- Gold Standard
- DCIS
- Low dose radiation (0.4mSv)
  - Background radiation = 3mSv

Limitations
- High false negative rate in dense tissue
- False positive results
  - Stress and anxiety
  - Additional expense
  - Time consuming
- Pain
- Compression

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Screening mammography every two years for women ages 50-74.
  - B recommendation.

The decision to start screening before age 50 should be an individual one.
  - C recommendation.

Current evidence is insufficient to assess the benefits/harms of screening for women 75 and older.
  - I recommendation.
Main Issue, Age 40

- Why age 40?:
  - The ACS report and USPSTF support that mammography significantly reduces breast cancer deaths and that most lives are saved when women begin annual mammography at age 40. ACR/SBI approach is to *save the most lives* possible. That is why ACR/SBI continue to recommend yearly mammograms starting at age 40.

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Main Issue, Annual

• **Women in their 40s account for about 40% of the years of life lost to breast cancer.**

• Screening saves more years of life for women who get screened every year rather than every other year.

• Annual screening results in lower recall rates than does biennial screening.

• Finds cancer at its earliest stage-providing a more favorable prognosis.

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American Cancer Society and American College of Radiology Breast Cancer Screening Guidelines

ACR
- Annual screening beginning at age 40
- End screening when curative therapy would not be offered due to life-limiting co-morbidity

ACS
- Women age 40-44 should have the opportunity to begin annual screening before age 45
- Women age 45 to 54: annual screening
- Women 55+ should transition to biennial screening, but should have the opportunity to continue screening annually
- Women should continue screening as long as their overall health is good and they have a life expectancy of 10 years or more

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Breast Cancer Myths

• *Everyone dies from breast cancer*
  – **No!**

• Stage 0 99%
• Stage I 97%
• Stage II 83%
• Stage III 54%
• Stage IV 16%

• *All breast lumps are cancer*
  – **No!**

• *Breast cancer is painful*
  – **No!**

• *You can always feel breast cancers*
  – **No!**
Breast Cancer Myths

• Breast cancer is mostly genetic
  – No!
    • 5-10% genetic
    • 20% lifestyle
    • 70% unknown

• Women with breast cancer cannot nurse
  – No!

• Breast cancer will spread when exposed to air
  – No!
Breast Cancer Myths

• All breast cancer patients need chemotherapy and/or radiation therapy
  – No!

• All of the armpit lymph nodes will be removed if there is cancer in one or two
  – No!

• If the breast is removed, then all of the lymph nodes are removed and vice-versa
  – No!
Breast Cancer Myths

• The breasts should be removed if there is a genetic mutation associated with higher future risk of breast cancer
  – No!

• The nipple needs to be removed during a mastectomy
  – No!
Everything causes breast cancer

- Coffee, **NO!**
- Antiperspirants, **NO!**
- Underwire bras, **NO!**
- Cell phones, **NO!**
- Breast implants, **NO!**
- OCP
  - Older vs newer data
- Postmenopausal hormone use
  - E+P, WHI: RR 1.26
  - E, WHI / NHS: > 20 yrs associated with BrCa
What is the magic pill?

- Nighttime sleep
- Exercise
  - 30 min walk several times per week
- Establish a reasonable BMI
- Eat fruits and vegetables
- Limit red meat
- Limit alcohol
- Limit smoking
- Limit stress