Considerable controversy and confusion has arisen since the U.S. Preventative Services Task Force (USPSTF) released its 2016 recommendations on screening for breast cancer.
Today’s Objectives

- Discuss some of the research that impacted the USPSTF recommendations
- Review the most recent recommendations and compare and contrast recommendations from
  - The American Cancer Society (ACS)
  - American College of Obstetricians and Gynecologists (ACOG)
  - American College of Radiology
  - American Academy of Family Physicians
  - National Comprehensive Cancer Network Guidelines (NCCN)
- Determine what is the best screening frequency based on your patient's personal and family history of cancer.

The Research That Impacted the USPSTF Recommendations

- USPSTF Commissioned a series of systematic reviews in support of their recommendations:
  1. Addressed the effectiveness of screening in reducing breast cancer-specific and all-cause mortality as well as the incidence of advanced breast cancer and treatment related morbidity.
  2. Summarized the evidence about test performance of 3-D mammography as a primary screening strategy
  3. Evaluated the evidence on additional imaging with ultrasound and MRI in women with dense breast, the performance characteristics of these diagnostic tests and their benefits and harm in women with dense breasts who otherwise have negative screening mammograms, as well as the dense breast classification system and its reproducibility.
In addition to the systematic reviews they commissioned a report from the Cancer Intervention and Surveillance Modeling Network (CISNET), Breast Cancer Working Group on:

1. Optimal starting and stopping ages.

2. Intervals for screening mammography.

3. Breast density, breast cancer risk, comorbidity level affects, the balance of benefit and harms of screening mammography.

4. Estimation of radiation-induced breast cancer cases and deaths associated with different screening mammography strategies over the course of a woman’s lifetime.

Breast cancer is the second-leading cause of cancer death among women in the United States.

In 2018-232,000 women were diagnosed and 40,000 died.
Burden of Disease

- 128 new cases of breast cancer and 22 deaths per 100,000 each year
  - 1.25 cases per 1,000 women
  - 1 death in 5,000 women
- It is most frequently diagnosed among women aged 55-64.
- The mean age at diagnosis is 64.
  - This is unchanged since the late 1970s.
- The median age at death is 68.

What Did the Evidence Show?

- For women at average risk for breast cancer
  - Most of the benefit of mammography results from biennial screening during ages 50-74.
  - Of all the age groups, women 60 to 69 are most likely to avoid breast cancer death through mammography screening.
  - The number of deaths averted in women 40-49 is smaller than in older women and the number of false-positive results and unnecessary biopsies is larger.
  - In addition, all women undergoing regular screening are at risk for the diagnosis and treatment of non-invasive and invasive cancer that would otherwise not become a threat to their health, or even apparent, during their lifetime (an “over diagnosis”).
What Did the Evidence Show?

- Age is the Most Important Risk factor for Breast Cancer
- Mammography reduced breast cancer mortality in women aged 40-74.
  - The number of deaths averted increases with age
    - Women aged 40-49 benefit the least
    - Women aged 60-69 benefit the most
    - Direct evidence about the benefit of screening mammography in women aged 75 years or older is lacking.

Interestingly

- Women aged 40 to 49 who have one first degree relative (mother, sister) have a risk for breast cancer similar to a woman age 50-59 without a family history
What Did the Evidence Show?

- Screening for breast cancer with mammography results in harms for women aged 40-74
  - Diagnosis and treatment of non-invasive and invasive cancer that would otherwise not have become a threat to a women’s health or even apparent, during her lifetime.
  - False-positive results that lead to unnecessary and sometime invasive testing.
  - Potential psychological harms (anxiety).
  - False-negative results may provide false reassurance.
  - Radiation induced breast cancer and resulting death (number is “predicted” to be low).

What Did the Evidence Show?

- Inadequate evidence on the benefits and harms of 3-D mammography.

- Inadequate benefits and harms for additional screening with ultrasound, MRI, 3-D mammography or other methods in women with dense breast tissue on an otherwise negative screening mammogram.

- There is no information about the accuracy of these methods, or on the effects of their use on health outcomes, i.e.: breast cancer incidence, mortality, or over diagnosis rates.
The USPSTF Assessment Concluded

- With moderate certainty that the net benefit of screening mammography in women aged 50-74 is moderate.
- With moderate certainty that the net benefit of screening mammography in the general population of women aged 40-49 years, while positive, is small.
- That the evidence on mammography in women age 75 years and older is insufficient and the balance of benefits and harms cannot be determined.

Clinical Considerations – Benefits of Screening over a 10-year period

- Screening 10,000 women aged 60-69 will result in 21 fewer breast cancer deaths.
- Screening 10,000 women aged 50-59 will result in 8 fewer cancer deaths.
- Screening 10,000 women aged 40-49 will result in 3 fewer breast cancer deaths.
- Detecting and treatment of invasive and non-invasive cancer that would never have been detected, or threatened health, in the absence of screening. (Existing science does not allow for the ability to determine what proportion of cancer diagnosed by mammography reflects over diagnosis.)

- The best estimate is that 1 in 3 women diagnosed with breast cancer today are being treated for cancer that would never have been discovered or caused her health problems in the absence of screening.

- 1 in 5 women diagnosed with breast cancer over approximately 10 years will be over diagnosed.

1 in 8 women diagnosed with breast cancer with biennial screening from age 50-75 will be over diagnosed and the number increases with earlier start age or with annual mammography.

For every woman who avoids a death from breast cancer through screening, 2 to 3 women will be treated unnecessarily.

The same number of biopsies are performed as a result of screening mammography in women aged 40-49 as in those aged 60-69, but more biopsies will result in a diagnoses of invasive breast cancer in the older age group.

There are a greater number of False-positives and false-negative results.
The likelihood of avoiding a breast cancer death with regular screening mammography increases with age.

Benefit occurs gradually rather than abruptly at any particular age.

For women in their 40s, the number who benefit from starting regular screening mammography is small and the number experiencing harm is larger compared with older women.

Must balance a very important but infrequent benefit (reduction in breast cancer death against more common harms).
Biennial screening mammography for women aged 50 to 74 years.

The decision to start screening mammography in women prior to age 50 should be an individual one.

Women who place a high value on the potential benefits and harms may choose to begin biennial screening between the ages of 40 and 49.

Insufficient evidence to assess the balance of benefits and harms of screening mammography in women aged 75 years or older.

Insufficient evidence to assess the balance of benefits and harms of adjunctive screening with ultrasound, MRI and 3-D mammography in women with dense breast and negative screening mammography.
American Cancer Society
2015 Screening Guidelines for Women w/Average Risk

- Women should undergo regular screening mammography starting at age 45.
- Women aged 45 to 54 should be screened annually.
- Women aged 55 and older should transition to biennial screening or have the opportunity to continue screening annually.

- Women should have the opportunity to begin annual screening between the ages of 40 and 44 years.
- Women should continue screening as long as their overall health is good and they have a life expectancy of 10 years or longer.
Women aged 40 to 74 should be screened annually with clinical breast exams and mammography.

Women aged 75 or older should decide, in consultation with their provider, whether or not to continue mammographic screening.

Women aged 40 to 74 should be screened annually with mammography.

In Women aged 75 or older - screening with mammography should stop when life expectancy is less than 5 to 7 years on the basis of age or comorbid conditions.
Women aged 50 to 74 should be screened biennial with mammography.

Women aged 40 to 49 – decision to start screening is an individual one.

In Women aged 75 or older – evidence is insufficient to assess the balance of benefits and harms of screening with mammography.

Screening is most important for women who are:
- Likely to develop breast cancer
- For those who early treatment is more effective in reducing mortality.

What about Women at Risk?

American Academy of Family Physicians - 2016
WE Must Determine a Patient’s Risk

- Assess for major risk factors to identify women at:
  - Average risk (most women)
  - Moderate risk
  - High Risk

- Categories are based on lifetime risk of being diagnosed with breast cancer NOT dying from breast cancer.

Factors to Determine Risk

- Personal history of breast, ovarian or peritoneal (including tubal) cancer.

- Family history of breast, ovarian or peritoneal cancer.

- Genetic predisposition (BRCA or other genetic marker).

- Radiotherapy to the chest between the ages of 10 and 30.
Women who don’t have any of the risk factors.

Average lifetime risk of being diagnosed with breast cancer is approximately 12.4% (1 in 8).

For patients with one or more of the risk factors:

- Risk prediction tools are available and can help assess whether the patient has a greater risk.
- Some patients with a family history of breast cancer still have an average risk.
Risk Prediction Tools

- USPSTF recommends one of five simple screening tools for women with a family history of breast, ovarian or peritoneal (including tubal) cancer to determine those who may need referral to genetic counselor for possible genetic testing.
  - Ontario Family History Risk Assessment Tool
  - Manchester Scoring System
  - Referral Screening Tool
  - Pedigree Assessment Tool
  - Family History Screen

Average Risk

- Less than 15% Lifetime Risk
  - Breast cancer incidence rises with age.
    - It is quite low under age 40.
    - The risk of developing breast cancer in the next ten years is low.
    - Benefits of screening may not outweigh the costs, emotional stress, inconvenience and potential over treatment as a result of screening.
    - The absolute benefits of screening, when measured by number of deaths due to breast cancer are relatively low.
    - Mammography may miss up to 20% of underlying breast cancers.
  - Shared decision making may be the best approach.
Patient Education available through upToDate:

- Breast Cancer Screening (The Basics)
  - 6th to 6th grade reading level

- Breast Cancer Screening (Beyond the Basics)
  - 10th to 12th grade reading level

15-20% Lifetime Risk

- Women who have a family history of breast cancer in a first-degree relative (mother, sister), but do not have a known genetic mutation.
  - Begin mammography screening and frequency as average risk women
  - Start screening earlier if 1st degree relative was diagnosed premenopausal.
High Risk

- Those with a BRCA mutation or other susceptibility gene.
- Those with a history of chest wall radiation.
- Those with a calculated risk of developing breast cancer >20%.
  - Refer to high-risk screening clinic.
  - Include both annual mammogram and annual breast MRI scheduled six months apart.
  - For women who are unable to undergo MRI, send for screening ultrasound.

NCCN

Those with BRCA 1 or BRCA 2 Mutation or with a 1st degree relative w/BRCA 1 or 2 mutation

- NCCN guidelines recommends:
  - Under the age of 25, women should have a clinical breast exam every year.
  - Aged 25-29, women should have a clinical breast exam every 6-12 months, MRI every year, mammogram every year if MRI not available.
  - Aged 30 and older, women should have a clinical breast exam every 6-12 months, mammogram every year, and MRI every year.
NCCN guidelines recommends that Women with a history of LCIS have:
- Clinical breast exam 6-12 months starting at age 30.
- Mammogram every year starting at age 30.
- Talk with health care provider about starting at age 30.

NCCN guidelines recommends that Women with a history of Atypical Hyperplasia have:
- Clinical breast exam 6-12 months starting at age 30.
- Mammogram every year starting at age 30.
- Talk with health care provider about starting at age 30.
NCCN guidelines recommends:
- clinical breast exam every year 1-4 times per year for the first 5 years after treatment ends and then every year starting year 6.
- Mammogram every year.
- Talk with your health care provider about MRI.

What About Women at Higher Risk? – Dense Breast Tissue
- NCCN guidelines recommends:
  - clinical breast exam every 1-3 years ages 25-39 and then annually starting at age 40.
  - Mammogram every year starting at age 40.
  - Talk with your health care provider about MRI.
NCCN – Women ages 35 and older with a 5-year risk of invasive breast cancer of 1.7% or higher

- NCCN guidelines recommends:
  - Clinical breast exam every 6-12 months.
  - Mammogram every year starting at age 40.
  - MRI is not recommended.

NCCN – Women with Greater Than 20% Average Lifetime Risk for Invasive Cancer Based Mainly Family History

- NCCN guidelines recommends:
  - Clinical breast exam every 6-12 months starting 10 years younger than youngest breast case in family, but not younger than 30.
  - Mammogram every year starting 10 years younger than youngest breast case in family, but not younger than 30.
  - MRI every year starting 10 years younger than youngest breast case in family, but not younger than 30.
In Conclusion:

- **Shared Decision Making**
  - The clinician helps the average and moderate-risk patient to make an informed, value-based decision about whether to have screening.
  - It is important to discuss:
    - The patient's risk of developing breast cancer
    - Potential benefits and harm of screening
      - Risks of false positives and risks of false negatives.
    - Patient's values.
  - The clinical refers High Risk patients to genetic counselors and/or high risk screening clinic for close surveillance.