Breast Cancer Screening

One of the most controversial aspects of medicine in the last ten years has been breast cancer screening. Breast cancer will affect one in eight women who live to age 80 and accounts for 23% of all cancers in women. Those numbers are frightening, but the benefit of screening weighed against the cost has been a large driver of the conversation in the new healthcare world we live in. I will try to summarize what I think you should consider when deciding whether and how often you should get a mammogram.

Any discussion of screening really needs to start with a discussion of risk. Although we all know people affected with breast cancer, not everyone is at the same risk. Age is the largest risk factor with 10 year risk of 1.5%, 2.3%, 3.5 %, and 3.85% for the ages of 40, 50, 60 and 70 respectively. This simply means that a woman in her forties has a 1.5% chance of getting breast cancer in that decade of life, with the other decades listed above.

As a woman ages, that risk continues to rise, but there are many other factors to consider. Late menopause (after age 55) or not having children, increase your risk between 40 and 50 %. Post-menopausal obesity, lack of exercise, and more than one alcoholic beverage a day also increase risk between 40 and 50 %. Factors such as family history may trigger the need for genetic screening for the BRCA gene which could increase risk up to 65%. Below is a chart of risk factors taken from a recent Annals of Internal Medicine article. To understand this, a relative risk (RR) of 1 is average risk. Anything over that is increased risk. For example, postmenopausal obesity has an RR of 1.5 meaning there is a .5 or 50% greater likelihood of an obese women to get breast cancer compared to normal weight subjects.

Table 1. **Risk Factors for Breast Cancer**

Risk Factor	*Approximate RR**
History of chest radiation	26.0
History of breast cancer	Varies
Extremely dense breasts compared with fatty breaststst	4.5
History of biopsy with atypical hyperplasia	3.7
Two first-degree relatives with breast cancer compared with none	3.5
One first-degree relative with breast cancer compared with none	2.5
Menopause after age 55 years compared with before 45 years	2.0
Nulliparity or first full-term pregnancy at age 30 years or older	2.0
History of a benign breast biopsy compared with no breast biopsy	1.7
Menarche before age 12 years compared with after age 14 y	1.5
Postmenopausal obesity (BMI >30 kq/m ') compared with normal weight (BMI <22 kg/m^2)	1.5
Heterogeneously dense or extremely dense breasts compared with fatty or fibroglandular breaststst	1.3
Current use of combination menopausal hormone therapy compared with never users	1.2
Moderate alcohol use compared with abstention	1.1

8MI = body mass index; RR = *relative risk.*
* RR *estimate is based on evidence synthesis. From references* 6 *through 11.*
t *Definition* of *the comparison group greatly alters the* RR *estimate.*
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Screening for breast cancer is done via a mammogram (discussions on ultrasound and MRI for higher risk women are beyond the scope of this article). There have been eight large trials of mammography for breast cancer screening encompassing 600,000 women, and in aggregate they show an almost 20% reduction in mortality from breast cancer. The largest reduction was for women in the sixth decade of life. Sadly, there is little data for women over the age of 70.

An even bigger debate is when we should start screening and should they be done annually or biennially. Starting mammography in the fourth decade of life reduces mortality about 15%. The concern has been that younger women (due to increased breast density) have more false positive exams than older women. This creates a need for more biopsies and possibly increased anxiety over the results. Overall, screening mammography in average risk women in their forties prevents one death for every one thousand women screened when compared to women in their fifties. This does not mean you should not do it, but it is worth talking about whether it is best for you.

Stopping mammography based on age is an uncomfortable subject and there is little data on women over the age of 75. That being said, 26% of breast cancer deaths are attributable to women over the age of 74. Currently the guidelines call for discontinuing mammography at age 80. This was picked because the cost effective benefit to screening with less than 10 years of life expectancy is not good and life expectancy is never an easy conversation to have. I feel that screening should be performed as long as you are in good health, expected to live at least five more years, and are interested in having it done.

The debate over annual versus biennial screening really comes down to cost. Biennial screening is about 80% as effective as annual screening. This means that 20% of the tumors will be missed. Biennial screening also tends to leave women with larger more advanced stage cancer than annual screening. The down side is there is with more testing comes a greater chance of false positive results. The risk of a false positive result is 61 % over ten years of annual screening versus 42% for biennial. This leads to more procedures and biopsies in the annually screened patients. It is a complicated decision, but one that should be made by you and your doctor, not the accountants or insurance companies.

One last word on tomosynthesis or 3D mammograms. This newer technology offered by most radiology facilities will give greater accuracy in detection. Its greatest benefit is for women with dense breasts. Higher breast density is a risk factor for cancer and also makes evaluation of standard mammography more difficult. 3D mammograms are perfect for these women. The downside in performing these on everyone is that it may not be covered by your insurer, and there is greater radiation exposure. Couple this with a lack of data from studies showing any benefit in women without dense breasts and you are left with a new technology that is not for everyone right now.

Below you will find a chart on different societies recommendations for breast cancer screening. I generally follow the American Cancer Society recommendations, but am a strong proponent of yearly mammography. A great tool for women in their forties is www.breastscreeningdecisions.com. This site has great information about deciding when to start screening and I encourage all women to look at it because it is very informative. No matter what, breast cancer screening is a personal decision that should be made by you and your doctor only. Keep Obamacare and insurance companies out of it as you make this decision.

***Table* 5. Professional Society Recommendations for Breast Cancer Prevention and Screening'**

Organization, Guideline Oate	*Chemoprevention in Women* at *Increased Risk, Guideline Oate*	*Screening Start Age*	*Mammographic Screening Interval*	*Screening Conclusion Age (Stop Screening* at *This Age)*
U.S. Preventive Services Task Force, 2016	Discuss tamoxifen or raloxifene, 2013	50 y; discuss at 40 y	Biennial	75 y
American College of Obstetrics and Gynecology	No statement	40 y	Annual	None
American College of Radiology	No statement	40 y	Annual	5-7 y of remaining life expectancy
Canadian Task Force on Preventive Health Care, 2011	Discuss tamoxifen, 2001	50 y	Every 2-3 y	75 Y
American Cancer Society, 2015	Discuss, 2011	45 y; discuss 40-44 y	Annual 45-54; Biennial 55-79	80 y or 10 Y of remaining life expectancy
American Society of Clinical Oncology	Discuss: tamoxifen, raloxifene, exemestane, 2013	No statement	No statement	No statement
American Academy of Family Practice, 2010	Discuss, 2013	50 y; discuss at 40 y	Biennial	75 y

* *"Discuss" indicates that* a *discussion should* take *place between the patient and the provider on individual risks and preferences.*
"Date" *refers* to *date* of *guideline regarding screening; prevention guidelines generally have* a *different date.*