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# How to choose: Enhancing Shared Decision Making in Breast Cancer Screening

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How to choose: Enhancing Shared  
Decision Making in Breast Cancer Screening

By

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Of the Requirements for the Degree  
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**Abstract**

Breast cancer is the most common cancer in women. Mammography screening has shown improvement in early detection leading to early treatment of breast cancer and thus reducing morbidity and mortality rates related to breast cancer. However, the contradictory guidelines put forth by the American Cancer Society, American College of Obstetricians and Gynecologists, and United States Preventive Services Task Force have posed a compelling problem in the health care system, especially for primary care providers: What guideline recommendation should be followed? Review of the three sets of guidelines, including the systematic reviews from which they were formed, and outside studies were reviewed for further information on the benefits and harms of screening mammography. The research results of the three guidelines were inconsistent; one set of guidelines did not present stronger evidence than another. With the mindset of individualized patient care, a patient education brochure was developed as a process to educate patients and have them take an active role in their health through engaging in the interactive tool and with their primary care provider, strengthening overall patient-primary care provider relationships.

**Introduction**

Over 40,000 people died from breast cancer alone in 2016.<sup>1</sup> There were an estimated 246,660 new cases of breast cancer in women, making breast cancer the most common cancer in women, and 2,600 cases of breast cancer in men in 2016. Breast cancer is the second leading cause of death related to cancer in women. Age is the most significant risk factor for breast cancer.<sup>2</sup> Other risk factors include having a first degree relative with a history of breast cancer, inherited mutations in BRCA1 and BRCA2 genes, use of menopausal hormone therapy, diabetes

mellitus type II, and physical inactivity.<sup>1,2</sup> Despite known risk factors, the decrease in breast cancer morbidity and mortality has been due to mammography screening in average risk women and more aggressive screening in women who pose a higher risk of breast cancer.<sup>1</sup> An average risk woman is defined as a woman who is physically active without a history of a 1<sup>st</sup> degree relative with breast cancer, no inherited mutations in BRCA1 or BRCA2, has not used menopausal hormone therapy, and does not have diabetes mellitus type II. The most common symptom of breast cancer is a mass found in the breast, however many individuals present asymptotically. Due to the high incidence of breast cancer, many guidelines have been formulated on when to begin screening. There are currently three guidelines widely used in clinical practice, but pose a challenge for primary care providers due to the guidelines conflicting statements on initiation and frequency of screening.

Mammography screening is the most effective tool used for the detection of breast cancer. It detects breast cancer at early stages, and in turn, along with the subsequent advancement of medical care, breast cancer can be treated more effectively.<sup>1</sup> The sensitivity and specificity of 2D mammograms in asymptomatic women are 75% and 94.9% respectively.<sup>3</sup> Mortality rates have decreased since the recommendation of regular mammography screening has been implemented in standard medical care for women. From 2003 to 2012, there has been a 1.9% decrease in deaths due to breast cancer.<sup>1</sup> Currently, there are three sets of guidelines used most frequently in the United States from respected organizations including the American College of Obstetricians and Gynecologists (ACOG), American Cancer Society (ACS), and United States Preventive Services Task Force (USPSTF). The guidelines have conflicting recommendations specifically on when to begin mammography screening in average risk women and the frequency of screening. This creates confusion for patients and primary care providers.

Many health care systems choose one guideline and have their primary care providers use this as the standard of care. For example, Mayo Clinic uses the previously updated American Cancer Society guidelines. Table 1 provides a summary of a sampling of health care systems in Minnesota and the breast cancer recommendations to which they use as the standard of care. All three guidelines advise patients to talk with their primary care providers, thus primary care providers must engage in shared decision making, assess dimensions of the decision when to get a mammogram, and assist patients in making the best personal decision.

With the short amount of time a primary care provider has with a patient during a clinic visit, it becomes a challenge for the primary care provider to adequately assess the patient's risk of breast cancer, the patient's personal values and feelings around mammography, and make an informed decision about when to begin screening mammography for each patient. Due to this challenge and the differing breast cancer screening guidelines, a literature review was completed to assess the strengths and weaknesses of each clinical guideline to best meet the needs for each individual patient. A brochure was developed to educate patients on mammography screening and the current existing guidelines. The brochure can then be used as a tool for primary care providers to begin the conversation about mammography screening decisions. The development of the brochure resulted from a review of the formulation of the differing guidelines, associated risks and harms of mammography screening, and a patient assessment of personal risk and values toward mammograms.

### **Background: Literature Review**

In the last two years, 66.8% of women in the United States have chosen to get a mammogram imaging screening.<sup>4</sup> This percentage increases with age up to age 74, when breast

cancer screening guidelines recommend the reduction in frequency of screening. Since the development of mammography, this screening modality has become increasingly important as the imaging provided from a mammogram is considered the gold standard of care. While guidelines encourage patients to be familiar with their body and any changes that occur, clinical and self-breast examination have fallen out of favor.<sup>1,2,9</sup> This is due in part to unnecessary follow-up and procedures most commonly being additional mammography imaging leading to possible false results. Due to the risks and benefits of mammography screening and the increasing prevalence of breast cancer, guidelines have been developed from three credible health organizations and revised since mammograms were first introduced into medical practice.

To begin with, the ACOG guidelines recommend women begin breast cancer mammography screening at age 40. The guidelines continue to suggest women should undergo screening via mammography imaging yearly. The most recent ACOG recommendations were published in 2009. In 2016 these guidelines underwent a systematic review and the evidence collected was insignificant and therefore no changes were made.<sup>5</sup> Next, the ACS guidelines recommend women begin breast cancer mammography screening at age 45. The guidelines further recommend that women receive a mammogram every year. These recommendations were updated in October of 2015, noting the significant change of the starting age of mammography at 45 instead of their previous recommendation of age 40.<sup>6</sup> The third set of guidelines, USPSTF, recommend women begin breast cancer mammography screening at age 50. Unlike the previous two guidelines, USPSTF recommends biennial mammography screening.<sup>2</sup> Table 2 compares the three guidelines including the age to initiate screening and the frequency of screening.

From 2015-2016, each of the guidelines underwent a review. ACS made a major change of initiating breast cancer screening mammography at age 45 instead of the previously recommended age of 40.<sup>7</sup> Each organization completed a systematic review of evidence and graded their guidelines. Table 3 summarizes each systematic review including the date, method of review, evidence scale, and the changes, if any, that were made to the guidelines.<sup>7,8,9</sup>

When considering mammography screening there are many harms but also several benefits patients and primary care providers should be aware of. One of the challenges when deciding on which guideline to utilize, is weighing out these harms and benefits. A patient should be educated on the harms and benefits and work with the primary care provider to make an informed patient centered decision. The most significant harms associated with mammography screening are the impacts from false negatives, misdiagnosis and over diagnosis. False negative results give reassurance of no cancer to a patient when cancer is present. This leads to delayed diagnosis, potentially more severe morbidities, and possibly death from breast cancer.<sup>11</sup> Misdiagnosis and over diagnosis are similar. Misdiagnosis refers to an incorrectly classified tumor, meaning it could be a less severe or more severe form of cancer than what the patient is diagnosed with.<sup>2</sup> Over diagnosis refers to the behavior of the tumor. Perhaps the tumor does not progress as expected, such as in ductal carcinoma in situ (DCIS), but was treated as a more severe tumor resulting in over treatment of the cancer.<sup>2,11</sup> Just as with false negatives, results from misdiagnosis and over diagnosis can lead to increased morbidities and mortality that may have been otherwise prevented.

Other potential harms can result from false positives, unnecessary biopsies and follow-up, and radiation exposure. False positive results are the most common and may be the heaviest weighted risk. A false positive result may lead to a higher recall rate and increase the number of



unnecessary biopsies.<sup>10</sup> Due to the implemented follow-up from a false positive result, increased anxiety and psychological harms have also been noted in patients.<sup>11</sup> The cumulative risk of a false positive increases when mammography is started at a younger age.<sup>10</sup> Dense breast tissue is also a risk factor for a false positive result. A woman's breast tissue is denser before menopause, and becomes less dense after completion of menopause.<sup>12</sup> False biopsies are due to a positive mammogram finding and the need to rule in or out cancer. If the biopsy is negative for cancer, the biopsy is considered false and thus leading to unnecessary treatment.<sup>2</sup> Unnecessary treatments not only includes a false biopsy but also women undergoing radiation and chemotherapy without ever having breast cancer. Unnecessary biopsies have been reported in 1.1% of women who had a positive result and underwent a biopsy.<sup>13</sup> In addition, there is a small amount of ionizing radiation exposure from a mammogram. An average mammogram includes 2 views of each breast which amounts to 0.4mSv of radiation.<sup>6</sup> For comparison, a single view chest x-ray is 0.2 mSv and a chest CT is 8.0 mSv.<sup>14</sup> Although the radiation is a low amount and radiation induced cancer morbidities are uncommon, it is necessary to keep in mind that it is possible. It is also important to note patient history of radiation exposure due to other medical injuries, illnesses, or occupation that put the patient at an increased risk of radiation induced cancer.

Psychosocial aspects of mammography also need to be considered in all patients. Primary care providers should recognize patients' personal feelings and attitudes toward screening. There is some pain and discomfort associated with a mammogram. Although minimal, patients may be nervous about it, especially if their pain tolerance is low.<sup>15</sup> Anxiety of having a mammogram is also common in patients.<sup>11</sup> Worry over the results of not only a positive mammogram, but also the implications, as previously mentioned, that occur because of a positive test, may increase

anxiety about mammography screening. By educating and informing patients on mammograms, anxiety could potentially be reduced.

Although there are many harms that can result from mammography screening, there are many benefits that also need to be weighed in the decision making process. The benefits of mammography screening are first and foremost, early detection of breast cancer leading to a reduction of morbidity and mortality related to breast cancer. Early detection of breast cancer includes the detection of DCIS and early, slow growing cancers. DCIS is not likely to develop into cancer, but is found with invasive cancer 25% of the time. There is a correlation between the size of DCIS and invasion of the associated cancerous tumor; larger lesions have a higher risk of invasive cancer.<sup>11</sup> The earlier these lesions are detected, the sooner treatment can begin. There is potential to remove these lesions before developing into breast cancer through mammography screening. Early detections also increase the number of treatment options available to patients for treating the breast cancer. Some of these options include mastectomy, chemotherapy, radiation, and endocrine therapy. With early detection and effective treatment options, there is a reduced number of deaths from breast cancer.<sup>2</sup> From 2003 to 2012, breast cancer death rates have declined by 1.9% because of early detection via mammogram and thus treatment.<sup>1</sup> There is also reduced anxiety in patients from not having breast cancer which is a positive factor in patients' overall health and well-being. Another benefit of mammography screening is the establishment of a patient relationship with a primary care provider through face to face contact and a discussion of mammography screening.<sup>16</sup>

## Methods

Initially, each set of guidelines from ACS, ACOG, and USPSTF were reviewed in detail. The three guidelines were then compared and contrasted to understand the discrepancies and how that could lead to confusion in patients and among primary care providers. The systematic reviews of how each guideline was developed were also reviewed. Each systematic review was examined in detail to determine how the evidence for each guideline was formed. The grading systems were different for each guideline, so it was important to understand and compare between the three organizations. Each set of guideline recommendations were based on evidence that was found to be statistically significant for each recommendation the individual organization put forth.

The next topic researched was the benefits and harms of mammograms. PubMed was used to initiate this search. Key terms including “benefit,” “risk,” “harm,” “outcome,” “screening,” and “breast cancer” were used. From initial studies found, each reference section was reviewed and subsequent articles were found. Formation of a benefit versus harm risks were then compared. More specific searches included mammography screening age for women. Key terms such as “frequency,” “age,” and “regularity” were used. The final search was to examine patient-primary care provider relationships. The keywords “conversation,” “patient-provider,” and “relationship,” and “outcome” were used to find information on the benefit of meeting with a primary care provider in discussion of developing a plan for mammography screening.

When choosing to use an article or not, the type of study was first looked at. Studies that were not from peer-reviewed journals were excluded. Studies that included data of mammography from the US were included. Studies from Canada were compared against the US in the outcomes and guidelines. Canadian health care is similar to the United States, but there

were differences in how studies were implemented based on the Canadian health care standards. Opinion articles, magazine and media articles were also excluded for bias and inaccurate data extraction.

After collection and review of the research pertaining to ACS, ACOG, and USPSTF guidelines, a patient education brochure was created. The purpose of the brochure was educating patients on breast cancer and to set a foundation for a conversation to be had between a primary care provider and a patient at a preventative health visit. There were two main challenges faced when writing the brochure. One challenge posed was to write the brochure in lay language to include patients of all education levels and backgrounds. Another challenge was writing in gender inclusive language that included consideration for transgender and gender non-conforming individuals. The brochure was specifically developed for Family Tree Clinic in St. Paul, MN. Family Tree Clinic is a non-profit clinic providing reproductive and sexual health services. The brochure is intended for patients to look, read, and interact with while in the waiting room and therefore be prepared and involved in the conversation with their primary care provider about development of a plan for mammography screening.

## **Discussion**

The first aspect of the brochure was to provide statistics for patients to establish a precedence of how relevant breast cancer is in the United States. It also helps to grab patients' attention to the issue and begin thinking about how they would individually like to proceed with screening. Next, patient education on mammograms was incorporated. Questions such as 'What is a mammogram?', 'What is the purpose of mammography screening?', and 'What can be found on a mammogram?' were answered in a clear and concise manner. Next, the three organizations

and their corresponding guideline recommendations for starting age and frequency of mammography were provided in a table similar to Table 1 found in the appendix. After the guidelines were summarized, a table comparing risks and benefits was created based on the research. It was important to have an equal number of risks and benefits to minimize any immediate assumptions of more risks or more benefits to mammography screening. Risks included in the brochure consisted of a small amount of radiation exposure, a false positive including a definition and consequences of a false positive result, false negative results including a definition and specificity percentage explained in lay terms, pain and discomfort during a mammogram, and increased anxiety of follow-up due to a false positive result. On the contrary, benefits of mammograms included in the brochure were early detection of breast cancer, mammograms being the best tool for detecting breast cancer, establishment of a patient-primary care provider relationship, reduced deaths from breast cancer, and reduced anxiety about breast cancer and future mammograms. In total, there were five risks and five benefits included in the table. The risks and benefits were listed in the table side by side to make comparison easier for patients.

The front side of the brochure was focused on educating the patient. On the reverse side of the brochure, the patient could assess their personal risk and values through answering yes/no statements. The first section was assessing if a patient was at average risk for breast cancer. There were five statements to assess risk in patients (Figure 1). These questions align with known risk factors for breast cancer. If a patient answer was yes to any of these statements they were instructed to discuss their answers with their primary care provider in their appointment as they may have an increased risk. The second set of statements assessed a patient's personal feelings and values about mammography screening (Figure 1). The final statement was

purposely left as an open-ended statement to address any feelings not addressed in the two assessments that the patient has concerns about. Similar to the risk assessment, if a patient answer was yes to any of the statements, they were encouraged to further discuss their thoughts and feelings toward mammograms with their primary care provider.

The final portion of the brochure provided a quick link to a risk calculator that asked the patient questions and calculated their risk over 5 years. The website portrayed the results in a picture format and an easy to understand explanation was also provided. This risk calculator was followed by an ending statement and blank space for patients to write down any further questions or concerns about mammography screening that they still have. A complete version of the patient education brochure can be found in Figure 1 of the appendix.

Through review of each guideline, there was no statistically significant evidence proving or disproving the guideline recommendations. ACS, ACOG, and USPSTF have all completed systematic reviews and analyzed significantly statistical evidence in formation of their guidelines. The biggest factor noted between the difference in the guidelines is false positive results. The consequences from a false positive are significant and numerous. Recalling from the literature review section, false positives can result in false biopsies and unnecessary treatment. A false positive risk is increased with dense breast tissue and younger start age for screening due to an increased number of mammograms during a lifetime. Each organization sets different weight to a false positive. For example, ACOG recommends to begin screening at age 40, thus having a higher threshold for false positives. From ACOG's recommendation, it can be implied that they are more concerned with the detection of breast cancer than the number of false positives received through mammography screening. By beginning mammography screening earlier, there is an increased risk of false positives. Consequently, by starting mammography screening later

there is an increased risk for missing early breast cancer such as DCIS and detecting a further advanced stage breast cancer that could have potentially harsher effects than if detected earlier.

The heaviest weighted benefit is a reduction in breast cancer morbidity and mortality. This reduction is due to the early detection and treatment of breast cancer. A mammogram is the most effective tool used to screen for breast cancer. A mammogram has been proven more effective than monthly self-examinations and clinical breast exams.<sup>2</sup> Mammography screening has reduced mortality rates in the United States by 36% from 1989 to 2012.<sup>1</sup> The 36% decline is equivalent to about 249,000 breast cancer deaths avoided. With the decline in mortality seen over the years resulting from the effectiveness of mammography screening in detecting cancer, mammograms have changed United States medical practice through the implementation of the screening in women over 40 years of age.

There are potential consequences from having three guidelines to which US health care utilizes. Americans are receiving different recommendations depending on which health care system they are receiving medical care at. There may also be a difference among primary care providers, if their health care employer leaves it up to primary care providers to choose which guideline they believe is best to adhere to. As mentioned in the methods section, opinion articles were excluded in the writing of this paper, however there were many articles written by primary care providers about their opinions on the guidelines, which guideline they prefer, and their thoughts about the changes in the guidelines, such as the starting age adjustment from 40 to 45 in the ACS guidelines, to which there is a strong debate between primary care providers.

Through thorough research into each guideline and its' recommendations and the formation of a patient education brochure, a primary care provider is adequately prepared to discuss breast cancer screening mammography with patients. By having the patient read and

actively participate in the brochure, it will hopefully encourage discussion from the patient perspective. To begin the conversation, the primary care provider would sit down with their patient and briefly go through the brochure to assess patient risk-level for breast cancer, understanding of breast cancer mammography screening, and personal values around screening. Specifically, they should assess understanding of the differing guidelines and the risks and benefits associated with mammography.

Once the primary care provider is satisfied with patient comprehension, the conversation can continue in discussion of the two assessment sections. The first section, assessing risk, will help the primary care provider to decipher out any concerning risk factors, or red flags, the patient may have for breast cancer. Next, the primary care provider can address the patients' feelings and values toward mammography. At this time in the conversation, the primary care provider will have established a good rapport with the patient, encouraging the patient to trust and feel comfortable talking about their feelings formed from the information they have received via the patient education brochure. The primary care provider can address any misconceptions or concerns the patient may have. The primary care provider will then address any further questions the patient has written down or that have been provoked throughout the current conversation. Meaningful conversation has taken place, and the patient and primary care provider can make a shared and well-informed decision that is individualized to the patient circumstance about when to begin mammography screening.

## **Conclusion**

The ACS, ACOG, and USPSTF have contradictory breast cancer screening guidelines, but each is currently used in United States health care. There is not one guideline



recommendation that is significantly better or worse than the other. The factors, including harms and benefits, are weighted differently in each guideline, resulting in the differing recommendations on mammography screening. Patient education and individualization is vital in determining which guideline fits each patient presentation. It is important for primary care providers to stay up to date on changes made to the guidelines.

All health care decisions should be made with the patient's best interest in mind. The patient-centered brochure is a tool with the potential for utilization by all patients. It was developed to be inclusive for use with transgender and gender non-conforming patients, and can set a foundation of knowledge that prepares a patient for a conversation with their primary care provider about mammography screening. The tool is also interactive, including assessment statements to answer as well as a risk calculator to calculate a numerical personal risk, giving the patient the confidence to take control of their health decision making.

Although there cannot be direct statements drawn from the review of each of the three guidelines, preferences toward guidelines are seen. For example, health care systems, such as Mayo Clinic have their primary care providers abide to the recommendation of beginning mammography screening at age 40. Other health care systems including Allina Health System and Fairview Health System suggest having a plan in place by the time a patient is 40 years old. Some health systems take a hybrid approach and incorporate numerous sections of the guidelines into their own guidelines. It is also important to note that the guidelines are always changing. As new studies are completed and analyzed, the guidelines may change in one direction or the other.

One note of importance is ACOG used ACS guidelines as a strong factor in their systematic review in formulation of their guidelines. ACS updated their guidelines and made the monumental change of recommending starting age of mammography screening to be 45 years

old. The review completed by ACOG was done in early 2015 before ACS published their updated guidelines later in 2015. Because of ACOG's reliance and use of ACS guidelines in their systematic review, a change in their guidelines may be possible in the coming years as they reassess breast cancer mammography screening start age.

Another topic briefly mentioned, but not covered in detail in the paper and patient brochure is the frequency to which mammography screening should be completed. There are the same risks and benefits that are weighed out in this choice as there were in when to begin mammography screening. More research should be completed to determine whether a woman should have a mammogram yearly or biennially. Although there are differing guidelines, a broad statement can be made that in younger screening, women age 40-55, yearly screening is generally accepted. After the age of 55, women can choose to get mammograms every other year. Although there is slight discrepancy between the health organization guidelines, this general recommendation is a combination of the three guidelines. This factor of mammogram frequency is difficult to study due to the length of time a study would need to be conducted to determine outcomes of mammography screening frequency. Due to the length of time, there is also a large associated cost.

Further research could be conducted in looking at current patient education tools. There are many online tools that calculate an individual's 5-year, 10-year, and lifetime risk using the Gail model. Most clinics have educational materials on mammography screening, but Family Tree Clinic is unique in that it strives for individualized patient decisions. Future studies could include patient satisfaction and an assessment of knowledge gained through the brochure.

This research is applicable to family medicine practice and specifically to women's health medical practice. The three guidelines, ACS, ACOG, and USPSTF, are used and respected

in United States health care today. With the three guidelines having conflicting views, it creates some confusion for patients and primary care providers. This could have a potential detrimental impact on mammography screening and overall women's health. Mammography screening is a vital aspect of women's health and wellness. It is important for primary care providers to take the time to sit down with each patient to develop an individualized and shared patient-primary care provider decision in when to begin mammography screening for breast cancer.

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## Appendix

Table 1. Use of recommendations from ACS, ACOG, and USPSTF guidelines on breast cancer screening.

<b>Health Primary care providers in Minnesota</b>	<b>Position on breast cancer screening</b>
Mayo Clinic	Begin yearly mammograms at age 40
Fairview Health System	Develop a plan by age 40, starting yearly mammograms no later than age 50
Health Partners	Begin to discuss a plan at age 40
Park Nicollet	Begin yearly mammograms at age 40
Allina Health System	Talk with primary care provider

Table 2. Breast cancer guideline recommendations for mammography screening.

	<b>US Preventive Services Task Force</b>	<b>American Cancer Society</b>	<b>American College of Obstetricians and Gynecologists</b>
Starting Age	50	45	40
Frequency	Biennial	Yearly	Yearly

Table 3. Systematic review summary of ACOG, ACS, and USPSTF guidelines.

<b>Guideline</b>	<b>Last reviewed/updated</b>	<b>Methods of data collection/analysis</b>	<b>Evidence Scale</b>	<b>Changes to guidelines</b>
ACOG <sup>8</sup>	2016	<ul style="list-style-type: none"> <li>• 2 independent reviewers</li> <li>• Key questions to focus evidence</li> </ul>	<ul style="list-style-type: none"> <li>• Poor, fair, good</li> <li>• Guidelines: not graded</li> </ul>	No changes made to guidelines
ACS <sup>7</sup>	October 2015	<ul style="list-style-type: none"> <li>• 2 independent reviewers</li> <li>• Statistical analysis of data</li> </ul>	<ul style="list-style-type: none"> <li>• High, moderate, low, very low<sup>a</sup></li> <li>• Guidelines: strong or qualified<sup>b</sup></li> </ul>	Yes: beginning age of mammography from 40 to 45 years old
USPSTF <sup>9</sup>	April 2015	<ul style="list-style-type: none"> <li>• 2 independent reviewers</li> <li>• Key questions</li> </ul>	<ul style="list-style-type: none"> <li>• Key questions: good, fair or poor</li> <li>• Guidelines: A, B, C, D, or I<sup>c</sup></li> </ul>	No changes made to 2009 guidelines

<sup>a</sup> A high recommendation meant the reviewers were very confident the true effect was close to the estimated effect. Very low recommendation meant the reviewers had little confidence in the effectiveness estimate

<sup>b</sup> A strong recommendation is one most patients should receive whereas a qualified recommendation means the majority of patients would want the recommendation, but many would not.

<sup>c</sup> “A” means the benefit of the guideline was substantial and effectiveness decreases with letter grade; “D” instituting a negative effect. A grade of “I” meant the evidence was insufficient and thus could not be awarded a letter grade.

Figure 1. Patient education brochure information.

## Mammography Screening

### Breast/chest Cancer Statistics

- 1 in 8 people assigned female at birth are diagnosed with breast/chest cancer in their lifetime.<sup>1</sup>
- 8 in 1 million people assigned male at birth are diagnosed with breast/chest cancer in 2016.<sup>2</sup>
- Breast/chest cancer is the most common cancer in people assigned female at birth.<sup>2</sup>
- Breast/chest cancer is the second leading cause of death among people assigned female at birth.<sup>2</sup>
- Over 2.8 million breast/chest cancer survivors are alive in the United States today.<sup>2</sup>

### What is a mammography screening?

A screening mammogram is an x-ray of breast/chest tissue that looks for breast/chest cancer in people assigned female at birth without any signs or symptoms present.

### What is the purpose of getting a mammogram?

To detect and diagnose breast/chest cancer at an early stage. At an early state, breast/chest cancer is easier to treat in order to reduce chance of disease related to breast/chest cancer and to reduce deaths from breast/chest cancer.

### What can be found on a mammogram?

A mass of breast/chest tissue that is abnormal compared to normal breast/chest tissue. The mass can be benign (non-cancerous) or malignant (cancerous).

### Mammogram recommendations

	US Preventive Service Task Force	American Cancer Society	American College of Obstetricians and Gynecologists
<b>Starting Age</b>	50	45	40
<b>Frequency</b>	Every two years	Every year	Every year

### Benefits and Risks of mammograms

Benefits	Risks
Early detection of breast/chest cancer	Small amount of radiation exposure from a mammogram
Mammograms are best tool for detecting breast/chest cancer	False-positive (a mass that is thought to be cancerous turns out to be non-cancerous) can lead to unnecessary treatment

Establishing a relationship with a primary care provider in discussing mammograms	False-negative (mammogram does not detect a cancerous mass) – mammograms find breast/chest cancer 75% of the time <sup>3</sup>
Reduced deaths from breast/chest cancer	Pain and discomfort during exam (from the mammogram machine)
Can reduced anxiety about breast/chest cancer and future mammograms	Increased anxiety if false-positive results

**When should I start getting a mammogram?**

**Here are some questions that may help you and your health care provider decide when to start mammography screening for breast/chest cancer:**

**Assessing your risk: mark yes or no to the statements below.**

1. I have a parent, sibling, or child who has been diagnosed with breast/chest cancer. Yes/No
2. I am 50 years of age or older and have never had a mammogram. Yes/No
3. I have had previous radiation to my chest related to another cancer. Yes/No
4. I have used menopausal hormone therapy. Yes/No
5. I have been told I have BRCA1 or BRCA2 gene. Yes/No

If you have answered yes to any of the above statements, you may have an increased risk of breast/chest cancer and should discuss your answers with your health care provider.

**Assessing your personal feelings and values about mammography screening: mark yes or no to the statements below.**

1. I want a mammogram. Yes/No
2. I am worried about the cost of the mammogram. Yes/No
3. I am worried about experiencing pain or discomfort during a mammogram. Yes/No
4. I am worried about a potential positive result from a mammogram. Yes/No
5. I am worried about radiation exposure from a mammogram. Yes/No
6. Other feelings I have toward mammograms are: \_\_\_\_\_

If you have answered yes to any of the above statements, you should talk with your health care provider about your preferences and feelings toward mammography screenings.

**By accessing the following website, you can calculate your present risk of breast/chest cancer:**

<http://breastscreeningdecisions.com/#/info>

**Please include any questions or concerns you have about mammography screening:**

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Resources for current statistics:

<sup>1</sup> Breast Cancer Research Foundation

<sup>2</sup> American Cancer Society – Cancer Facts and Figures 2016

<sup>3</sup>Kavanagh AM, Giles CG, Mitchell H, et al. The sensitivity, specificity, and positive predictive value of screening mammography and symptomatic status. *J Med Screen.* 2007;7(2):105-110.





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