



Joryn Harris

Andrew Cohen

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What is the Value of Mammogram Screenings?

On a chilly morning in September of 2007, I received news that no kid wants to hear. My mom and I were out walking through the persistent northwest drizzle when Mom told me that she had just been diagnosed with breast cancer. I stopped walking and stared in disbelief. Out of all the people at risk to get breast cancer, my mom was one of the lowest on the list. She had no history of the cancer in her family, she was active and healthy, and she had breast-fed all of her babies. Yet here she was, standing in front of me with an aggressive cancer attacking her body. Looking for something to blame, we decided the culprit could be the recent mammogram my mom had missed because she had a nursing baby at the time and her doctor had deemed it unnecessary. This “what if” of early detection became our haunting question, as we wondered what the difference could have been had she had that mammogram anyways.

Because of this experience, preventative measures gained a high level of respect in our family, and I took it for granted that mammogram screenings are always the right choice. My security in the value of such screenings was shaken however, by a recent study published by the *British Medical Journal* that questions whether mammogram screenings save lives. The study claims that “Annual mammography in women aged 40-59 does not reduce mortality from breast cancer beyond that of physical examination or usual care when adjuvant therapy for breast cancer is readily available” (Miller et al.). In some ways, I felt there was validity to this assertion. After all, my mom’s cancer wasn’t found via mammogram, and because her previous

mammogram was clear, she didn't feel too concerned about missing one when she was so low-risk. Yet at the same time, I continued to wonder whether or not my mom's experience could have been radically different and easier had she received that early detection screening. The only thing I was certain of was that this issue wasn't as black and white as I had previously supposed.

For much of its existence, mammography screening has long been a highly respected method of early detection. According to Celest Robb-Nicholson, a practicing physician, "Mammography screening has been the foundation of breast cancer prevention in this country since the 1980s" (Robb-Nicholson). The American Cancer Society has been recommending mammogram screenings, albeit at different ages and with varying regularity, since 1976. In 2002, the United States Preventative Services Task Force (USPSTF) was recommending mammogram screenings every 1-2 years for women 40 and over. By 2007, when my mom was diagnosed, there was a general sense of confidence in the value of mammogram screenings. My mom, much like the majority of her peers, took it in good faith that a regular screening was the best choice for her health, unless instructed otherwise by a personal physician.

This faith however, was about to be thrown into doubt. In 2009, the USPSTF updated their recommendations by suggesting that mammography be scaled back; including suggesting that regular mammogram screenings should not begin until age fifty. Despite these new guidelines, many respected cancer organizations, such as the American Cancer Society and the National Cancer Institute persist in recommending women start getting regular screenings at age 40. This was more than enough to cause uncertainty and added anxiety for a woman in her forties trying to make the best choice for her health, but the controversy and confusion didn't stop there. Early 2014 would bring the release of the study in the *British Medical Journal* that directly denies the value of screenings in reducing mortality. This release has been accompanied by a

variety of debates on both public and private stages as well as news articles offering arguments for either side.

These arguments have created great concern and uncertainty for women trying to make educated choices about their health, especially because there is so much contradictory information. Websites such as Breastcancer.org still insist that mammograms save lives, offering a friendly-looking number of 35% for women over fifty. The National Cancer Institute's website offers a fact sheet on mammograms that claims that "Screening mammography can help reduce the number of deaths from breast cancer among women ages 40 to 70" but they choose not to offer an actual number. Similar issues appear even when you look at the broader picture of the overall value of mammogram screenings. PBS Newshour featured a debate between two medical professionals on the value of screening mammography, and while one participant was confident in the high value of screening, the other was less certain. The latter participant, Dr. H. Gilbert Welch of the Dartmouth Institute, emphasized their difference at the end of the debate. "There's a lot of professional disagreement." He goes on to further explain, "It's a close call. [Screening Mammography] has probably some benefits, but it also has some harms" ("Debating the value and effectiveness of mammograms"). As I pondered this, I realized that the right question may not be whether mammograms save lives, but whether or not the risks outweigh the rewards, and just what risks and rewards are involved in the first place.

One of the most alarming hazards is the possibility of overdiagnosis. The *British Medical Journal's* study states that "22% of the screen detected invasive cancers in the mammography arm were overdiagnosed, representing one overdiagnosed breast cancer for every 424 women who received mammography screening in the trial" (Miller, et al.). This number sounds threatening whether or not you understand what overdiagnosis is, but understanding proves to

make the number even more disconcerting. A CNN article that focuses on this study explains that screenings can find cancerous cells that actually aren't dangerous, because they won't develop into a threatening tumor or disease. Because we can't distinguish these from other cancerous cells, treatment is given anyways, causing patients to undergo physically harmful procedures such as surgery and chemotherapy (Wilson).

This idea may sound somewhat oxymoronic to those who are unfamiliar with the idea of overdiagnosis – after all, how can cancerous cells not be harmful? Dr. H. Gilbert Welch of the Dartmouth Institute explains the concept in terms of turtles, rabbits and birds:

[The goal] is not to let any of the animals escape the barnyard pen to become deadly. But the Turtles aren't going anywhere anyway. They are the indolent, nonlethal cancers. The rabbits are ready to hop out at any time. They are the potentially lethal cancers, cancers that might be stopped by early detection and treatment. Then there are the birds. Quite simply, they are already gone. They are the most aggressive cancers, the ones that have already spread by the time they are detectable, the ones that are beyond cure. (qtd. in Wilson)

This analogy offers a look at diagnosis through a new and more complicated lens. I had previously believed that you either find cancer in time or you don't. I had never expected to learn that there is such a thing as detecting a cancer that you didn't need to worry about in the first place.

The suggestion that mammography can cause overdiagnosis creates one of the most powerful arguments against mammogram screenings. I have been an eye witness to the cost that treatment exacts from a body. My mother's cancer was advanced enough that she required 15 months of chemotherapy, radiation and a mastectomy surgery, and all I could do was watch as

this lifesaving treatment took away her hair, her breast, and her strength, among other things. Certainly these treatments are not ones that a woman would ever choose unless they were absolutely necessary. If mammograms are wrongly informing women that they need these treatments, then there is a very real risk involved, and women deserve to be informed of this inherent risk. This highlights the real flaw in mammography, which is the accuracy of the procedure. When it comes to detecting such dangerous and lethal diseases as cancer, accuracy is invaluable, both in finding cancer that is threatening, and in knowing when it has discovered cancerous cells that are not dangerous.

This inaccuracy leads to yet another problem, which is the issue of false positives. In addition to overdiagnosing some cancers, mammograms have been known to “find” a cancer that isn’t even there. This can lead to subsequent testing, that may include MRI’s, ultrasounds, or biopsies, when in the long run, there may not be any cancer to actually diagnose. While this issue seems somewhat less important than the overdiagnosis concern, this is still a problem worth considering. The initial inconvenience and anxiety during this retesting process is easy for all of us to imagine, but some studies are beginning to suggest that there are also long-term effects. One study published by the *Annals of Family Medicine* states that “Having a false positive is not harmless and causes undesirable outcomes in the long run.” The study explains that women with false positive tests reported anxiety and other negative effects that continued for up three years after their test (Brodersen and Siersma). This offers a new side of screenings that may not be acknowledged enough, and that is the mental and emotional side. For any woman, the testing process is emotionally difficult, and that difficulty only grows when a mistake such as a false positive occurs. Mammography, much like the disease it attempts to detect, can deeply affect a woman’s quality of life.

Ironically, quality of life is also a key term in arguments that favor mammogram screenings. Even if early detection does not reduce mortality, it would be hard to argue that early detection doesn't catch smaller tumors. This is important because, in general, a smaller tumor means a lower stage of cancer, and the lower the stage, the less aggressive and invasive the treatment needs to be. When it is caught early enough, a woman may only need surgery, or mild forms of drug therapy, but when it is caught later, necessary treatment can require various combinations of acutely unpleasant treatments, such as chemotherapy, radiation, and surgery. My mother was in this latter group, because her cancer was caught at stage three, and she lives with lasting side effects from her treatment. For her, there is no question that earlier detection and correspondingly lighter treatment would have resulted in a better quality of life.

This idea was emphasized by a study that was presented at the annual meeting of the Radiology Society of North America in December of 2013. This study found that "Patients who had more frequent screening mammography had a significantly lower rate of lymph node positivity – or cancer cells in the lymph nodes – as compared to women who went longer intervals between mammogram screening exams" ("Mammography Screening Intervals May Affect Breast Cancer Prognosis"). Dr. Lilian Wang, an M.D. interviewed in a news release about the study, clarifies why catching breast cancer before it reaches the lymph nodes affects quality of life. She explains that a cancer that has spread all the way to the lymph nodes usually has to be treated more intensely than one that is more localized. (qtd. in "Mammography Screening Intervals May Affect Breast Cancer Prognosis"). This adds a new layer of complexity to the subject by introducing the idea that screening value can be measured in improved quality of life, making early detection invaluable.

The argument in favor only grows more convincing when you focus on the people within the statistics. It's all fine and dandy to conduct studies that offer rates of mortality increasing and decreasing and claim to understand the issue, but statistics don't matter to you when you become a part of that number. Journalist Jenny Barnett, who got a breast cancer diagnosis at age forty-five, gets at this point in her memoir article. "[The United States Preventative Services Task Force] advised against routine breast-cancer screening for women at average risk before age 50. They said it wasn't worth it for the number of deaths prevented and the distress caused by tests and biopsies that prove normal. Apparently, women like me aren't statistically significant enough to be worth saving" (Barnett). Similar opinions were voiced from breast cancer survivors in response to a *New York Times* article announcing the *British Medical Journal's* release of the study against Mammography. In her letter to the editor, one woman states, "Regarding your article about the efficacy of mammograms in preventing cancer deaths, as a cancer survivor, I must point out that the 'slight' decrease in cancer deaths could be you" (Wolsky). These are the voices and stories that get left out of the discussion far too often, yet they belong to people who arguably possess the greatest authority on the subject, because they have firsthand experience.

In considering both the risks and rewards of mammography, I find myself wondering if we could improve the situation by altering our practice methods. Isn't there some way we can improve our practice now instead of waiting for a new technological advancement? A step in the right direction may be recommending mammogram screenings on a much more personal basis. One practicing physician, Celeste Robb-Nicholson, considers this in her article response to the USPSTF'S new guidelines on screening mammography. She acknowledges that "The USPSTF guidelines remind us that where breast cancer screening is concerned, one size (or frequency) doesn't fit all." She continues to explain in her article that she is recommending to her patients

that they know their own risks and make decisions on an individual basis (Robb-Nicholson).

This idea is certainly appealing, but it is still littered with complexities. For women to make personal mammogram decisions, they need to first be well educated on all the risks and rewards. Some may feel that doing the tedious research on mammography is just too daunting, and it is likely that when it is left entirely up to them, many won't ever undergo the research. If the education is left up to others, it will inevitably come with a price, whether from material and distribution or from valuable time contributions from physicians or others.

In the end, there is no easy solution, because we are dealing with a situation that is deeply complex. This complexity could cause some to simply give up on screening and walk away, but I don't believe that is an appropriate response. Instead, I find myself remembering an old proverb my mom used to quote. As a little kid, I got frustrated very easily by small mistakes, whether it was an off-key note in a song, or a blob of crayon straying outside of the lines, so my mom would try to reason with me by saying, "Don't throw out the baby with the bathwater." I was at first confused by this, unable to get past a mental image of a deranged mother blithely tossing baby and bathtub out the window. Mom had to patiently explain that the old adage really just meant that we cannot allow a small flaw or mistake to cause us to give up on an entire endeavor. This is relevant with issues like mammography as well. Screenings of any kind comes with both risks and rewards, but currently, they are the best tools we have. These screenings would be difficult to abandon even if we wanted to, and because of the value they bear to individuals, it seems there is something inherently wrong in attempting to do so. So we are left with the difficult task of proceeding as best as we can, whether that means striving to find better technology, choosing to get regular screenings, or choosing against them. In any case, the choice

to undergo a mammogram screening continues to be both vastly intricate and deeply personal, because the value varies for every individual.

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