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Mammography appears unlikely to save a woman's life

Welch HG. *Arch Intern Med.* 2011;doi:10.1001/archinternmed.2011.476.

The odds that a 50-year-old woman with screen-detected breast cancer avoids disease-specific death due to mammography are only 13%, leading researchers of a new study to conclude that "most women with screen-detected breast cancer have not had their life saved by screening."

Instead, they said overdiagnosis is likely in a woman or her cancer is likely to be discovered early, with no effect on mortality.

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"We considered a range of values: namely, that screening mammography reduces breast cancer mortality anywhere from 5% to 25%. The values toward the high end (20%-25%) reflect the randomized trial data from more than a quarter century ago," the researchers wrote. "Consequently, we believe that readers should focus on the values toward the low end, 5% to 10%, and recognize that the probability that a woman with screen-detected breast cancer has, in fact, avoided a breast cancer death because of screening mammography is now likely to be well below 10%."

According to the 2003 National Health Interview Survey, 60% of all **breast cancers** were detected by screening mammograms from 2001 to 2003. Researchers used DevCan 6.5.0, the NCI's software for analyzing SEER data, to estimate the 10-year risk for developing either invasive cancer or ductal carcinoma in situ and the 20-year risk for breast cancer death in American women aged 40, 50, 60 and 70 years. Absolute risk reduction in mortality due to mammography was calculated as the difference between the estimated 20-year risk for death without mammography and the current 20-year risk for death.

Researchers assumed that a mammogram reduces a 50-year-old woman's risk for death by 20%, and 64% of breast cancers are discovered by **mammography** in this age group. Thus, her observed risk for developing breast cancer in the next 10 years is 2,990/100,000, and her risk for developing a screen-detected breast cancer during that time is 1,910/100,000.

Based on those data, the researchers said, "The probability that a 50-year-old woman with screen-detected breast cancer avoids a breast cancer death because of mammography is 13%." Probability rises to 17% if mammography reduces mortality by 25%. The probability falls to 3% if mammography reduces disease-specific mortality by 5%.

Writing in an accompanying editorial, **Timothy J. Wilt, MD, MPH**, and **Melissa R. Partin, PhD**, of the Minneapolis VA Center for Chronic Disease Outcomes Research, and the University of Minnesota, said the study presented convincing evidence that the claim among cancer survivors that screening saved their life is "markedly exaggerated." Physicians should counsel their patients about the benefits and risks associated with screening.

"Preventive health care services, like cancer screening, can result in tremendous individual and public health benefits by identifying disease at early, more treatable stages or lowering a patient's risk of developing a disease altogether. However, they do not always provide the expected benefit and cause harms such as over-diagnosis and overtreatment," they said. "Indeed, every medical intervention - no matter how beneficial for some patients - will provide continuously diminishing returns when applied to individuals at lower risk of having clinically relevant disease."

PERSPECTIVE

I don't necessarily believe that women feel their lives were "saved" by having mammograms. Women understand that it is their doctors' treatment of their breast cancer that saved their lives and that the mammogram simply detected the cancer at the earliest possible stage. The researchers conclude that the probability that a 50 year-old woman with a screen-detected breast cancer avoids disease-specific death because of mammography is 13%. Thirteen percent is a high number in the world of cancer. Patients often choose to undergo cytotoxic chemotherapy for an estimated mortality reduction in the single digits, so there is no doubt that in most patients will do almost anything to minimize mortality risk and to maximize longevity. Welch and Frankel talk about over-diagnosis, that mammography discovers cancers that are unlikely to become problematic for the patient in the remainder of her lifetime. Unfortunately, at this point, our ability to predict a patient's longevity and the clinical course of her disease is limited. Until we can predict that, we can't walk away from mammography. In addition, most patients would like to avoid the treatments necessary to achieve a cure associated with stage 1 or stage 2 breast cancer, such as sentinel node biopsy, axillary node dissection, and chemotherapy. Clearly, screening mammogram can detect DCIS or subcentimeter invasive breast cancer and, therefore, the patient avoids the morbidity of the treatments required for the more advanced disease of a clinically palpable tumor.



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