Half a Million Breast Cancer Deaths Prevented Over Past 30 Years

Mammograms and better treatment are credited with averting 400,000 to 600,000 cancer deaths since 1989.

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Widespread mammography screening and improvements in treatment led to about half a million fewer women dying of breast cancer between 1989 and 2018, according to a study published in Cancer, the journal of the American Cancer Society.

R. Edward Hendrick, PhD, of the University of Colorado School of Medicine, and colleagues used data from the national Surveillance, Epidemiology and End Results (SEER) database to estimate the number of breast cancer deaths averted by screening mammography and improved treatment in the United States over the past three decades.

Breast cancer mortality rates for U.S. women increased by 0.4 percent per year from 1975 through 1990 but then started to decline, falling between 1.8 percent and 3.4 percent per year, the study authors noted as background. Screening and early detection have been credited with reducing breast cancer deaths, but some experts warn of the risk of “overdiagnosis” of early, slow-growing cancers that never would have resulted in death.

Screening mammography for early breast cancer detection came into wide use in the mid-1980s. A new type of hormone therapy, aromatase inhibitors, became available in the late 1990s. The first targeted therapy for breast cancer, Herceptin (trastuzumab), was approved for the treatment of metastatic disease in 1998 and for adjuvant, or post-surgery, therapy to prevent recurrence a decade later. Over the past five years, novel targeted therapies have been developed, including PARP inhibitors and CDK4/6 inhibitors.

Using different assumptions about what the breast cancer death rate for women ages 40 to 84 would be in the absence of improvements in screening and treatment, the researchers estimated the absolute number of deaths prevented in 2012 and 2015. They then used these figures to extrapolate the number of deaths averted in 2018, for which SEER data is not yet available. Based on the available data, they were not able to determine the separate contributions of early detection versus better treatment.

Estimates for the number of breast cancer deaths averted in 2012 ranged from 20,860 to 33,842,

depending on the assumptions used in the model, reflecting mortality reductions ranging from 38.6 to 50.5 percent. The absolute numbers and percentage changes were greater in 2015: between 23,703 and 39,415 deaths averted, reflecting a 41.5 to 54.2 percent decline. Finally, the projected number of deaths prevented in 2018 ranged from 27,083 to 45,726, reflecting a 45.3 to 58.3 percent drop.

Taken together, estimates for the cumulative number of breast cancer deaths averted between 1989 and 2015 ranged from 305,934 to 483,435, depending on the model's assumptions. Extending the estimate to 2018, the range was 384,046 to 614,484, the study authors calculated.

"Recent reviews of mammography screening have focused media attention on some of the risks of mammography screening, such as callbacks for additional imaging and breast biopsies, downplaying the most important aspect of screening—that finding and treating breast cancer early saves women's lives," Hendrick said in a press statement. "Our study provides evidence of just how effective the combination of early detection and modern breast cancer treatment have been in averting breast cancer deaths."

Click here to read the study abstract.

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