



American Association for Cancer Research

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To interview Philip Rosenberg, contact the NCI press office at ncipressofficers@mail.nih.gov or 301-496-6641. For a photo of Rosenberg, [click here](#). For other inquiries, contact Julia Gunther at julia.gunther@aacr.org or 267-250-5441. Visit our [newsroom](#).

U.S. Breast Cancer Cases Expected to Increase by as Much as 50 Percent by 2030

PHILADELPHIA — The total number of breast cancer cases in the United States is forecast to be 50 percent greater in 2030 than it was in 2011, when invasive and in-situ or screening-detected cancers are counted together, and this increase is driven mostly by a marked increase in cases of estrogen receptor (ER)–positive tumors and in women older than 70, according to research presented here at the [AACR Annual Meeting 2015](#), April 18-22.

“Managing this clinical burden will present a huge challenge,” said [Philip S. Rosenberg, PhD](#), a senior investigator in the division of cancer epidemiology and genetics at the [National Cancer Institute](#) (NCI). “The one silver lining is that we expect fewer ER–negative tumors, which include the most difficult-to-treat HER2–positive and triple-negative subtypes.”

According to Rosenberg, during the next several decades, 40 million American women who were born between 1946 and 1964 will face high absolute risks for postmenopausal breast cancer, which for the average woman is estimated to be 2 percent to 4 percent over a 10-year period. An additional 56 million women, most of them currently in their 20s and 30s, will be at substantial risk of premenopausal breast cancer, averaging 0.4 percent to 1.5 percent over a 10-year period.

With this study, Rosenberg and colleagues wanted to estimate the future incidence and burden of new cases of breast cancer according to in-situ, invasive, and ER status, in order to help the oncology community develop a proactive roadmap to optimize prevention and treatment strategies.

To do this, the researchers used nationally representative cancer surveillance data from the NCI Surveillance, Epidemiology, and End Results Program, population projections produced by the Census Bureau, and mathematical forecasting models to project the future numbers of breast cancer cases in the United States from 2011 to 2030. Because screening mammography has been well-accepted in the United States, the researchers forecast rising numbers of both invasive and in-situ tumor diagnoses, which are almost entirely detected via screening mammography.

The total number of new breast cancer cases classified as invasive and in-situ is expected to increase by about 50 percent from 283,000 in 2011 to 441,000 in 2030. Rosenberg and colleagues forecast that although the proportion of new breast cancer cases among women ages 50 to 69 is expected to decrease from 55 percent in 2011 to 44 percent in 2030, the proportion of cases in women ages 70 to 84 is expected to increase from 24 percent to 35 percent.

Data from the study forecast that the proportion of ER-positive invasive cancers will remain at about 63 percent; the proportion of ER-positive in-situ cancers, most of which are detected through screening mammography, will increase from 19 percent to 29 percent.

In contrast, the researchers forecast that the proportion of ER-negative cancers, both invasive and in-situ, will decrease from 17 percent of all tumors in 2011 to 9 percent in 2030. “The reasons for this decline remain unclear, but there are intriguing clues. For example, early age at first birth in the absence of breast-feeding is a particularly strong risk factor for early onset of ER-negative tumors. We know that in recent years, women have been delaying births and breast-feeding more often, both of which might partly explain the decline in this type of breast cancer,” Rosenberg explained.

“In sum, our results suggest that although breast cancer overall is going to increase, different subtypes of breast cancer are moving in different directions and on different trajectories,” Rosenberg said. “These distinct patterns within the overall breast cancer picture highlight key research opportunities that could inform smarter screening and kinder, gentler, and more effective treatment.”

This research was supported by the Intramural Research Program of the National Institutes of Health. Rosenberg declares no conflicts of interest.

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About the American Association for Cancer Research

Founded in 1907, the American Association for Cancer Research (AACR) is the world’s oldest and largest professional organization dedicated to advancing cancer research and its mission to prevent and cure cancer. AACR membership includes more than 35,000 laboratory, translational, and clinical researchers; population scientists; other health care professionals; and cancer advocates residing in 101 countries. The AACR marshals the full spectrum of expertise of the cancer community to accelerate progress in the prevention, biology, diagnosis, and treatment of cancer by annually convening more than 25 conferences and educational workshops, the largest of which is the AACR Annual Meeting with over

18,500 attendees. In addition, the AACR publishes eight prestigious, peer-reviewed scientific journals and a magazine for cancer survivors, patients, and their caregivers. The AACR funds meritorious research directly as well as in cooperation with numerous cancer organizations. As the Scientific Partner of Stand Up To Cancer, the AACR provides expert peer review, grants administration, and scientific oversight of team science and individual investigator grants in cancer research that have the potential for near-term patient benefit. The AACR actively communicates with legislators and other policymakers about the value of cancer research and related biomedical science in saving lives from cancer. For more information about the AACR, visit www.AACR.org.

Abstract Number: 1850

Title: Estrogen receptor status and the future burden of invasive and in-situ breast cancers in the United States

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Abstract Body:

Background: During the next several decades, 40 million American women born between 1946 through 1964 will face very high absolute risks of post-menopausal breast cancer, and 56 million women currently in their 20s and 30s will face substantial risks of pre-menopausal breast cancer. No study to date has predicted the future annual incidence rate and burden (number) of new cases in the United States (US) of both invasive and in-situ female breast cancers stratified by the estrogen receptor (ER) status of the tumor. However, such forecasts could help the oncology community develop a proactive roadmap to optimize prevention and treatment strategies.

Methods: We constructed forecasts for women ages 30 through 84 in 2011 through 2030 using cancer incidence data from the Surveillance Epidemiology and End Results Program, novel age-period-cohort (APC) forecasting models, and population projections from the US Census Bureau. We modelled 16 subsets of breast tumors defined by positive versus negative ER status (a correlate of tumor biology and standard clinical predictive marker), invasive versus in-situ behavior, and four age group (two pre-menopausal groups 30 - 39 and 40 - 49, and two post-menopausal groups 50 - 69 and 70 - 84). Screening mammography is recommended for women ages 50 - 74 by the US Preventive Services Task Force and starting at age 40 by the American Cancer Society; the age-group-specific models allowed the APC model parameters to implicitly reflect screening effects in the population. For each subset we applied a second-generation APC forecasting model incorporating JoinPoint regression of breast cancer birth cohort effects.

Results: The incidence of both invasive and in-situ ER+ tumors is expected to increase significantly during our forecast period. In contrast, the incidence of both invasive and in-situ ER- tumors is expected to decrease significantly. The total number of new tumors (invasive plus in-situ) is expected to rise more than 50% from 283,000 in 2011 to 441,000 in 2030 (plausible range from 353,000 to 466,700 cases). The proportion of new cases ages 70 - 84 is expected to increase from 24% to 35%, while the proportion ages 50 - 69 is expected to decrease from 55% to 44%. The proportion of ER+ invasive cancers is expected to remain the same near 63%, whereas the proportion of ER+ in-situ cancers is expected to increase from 19% to 29%. The proportion of ER- cancers (invasive and in-situ) is expected to decrease from 17% to 9%.

Conclusions: Breast cancer will continue to rise in the US through 2030, especially for ER+ in-situ tumors among older women. In contrast, ER- invasive and in-situ tumors will continue to fall. These results highlight a need to optimize case management among older women, and to better understand etiological factors responsible for declining ER- incidence rates.