



## More than one-third of tumors found on breast cancer screening represent overdiagnosis

📌 These findings are according to a new study, but the results are similar to those previously reported

The purpose of screening mammography is to detect tumors when they are small and nonpalpable in order to prevent more advanced breast tumors in women. Overdiagnosis, which leads to unnecessary treatment, refers to screen-detected tumors that will not lead to symptoms. Overdiagnosis cannot be measured directly and, therefore, understanding this concept is problematic for both women and clinicians.

### Observations from other types of cancer screening put overdiagnosis in perspective

To help us grasp the overall issue of overdiagnosis, we can consider screening mammography alongside cervical cancer screening and colon cancer screening. For instance, screening with cervical cytology has reduced the incidence of and mortality from

invasive cervical cancer.<sup>1</sup> Likewise, colonoscopy repeatedly has been found to reduce colon cancer mortality.<sup>2,3</sup> Decades of media messaging have emphasized the benefits of screening mammograms.<sup>4</sup> However, and in contrast with cervical cytology and colonoscopy, screening mammography has not reduced the incidence of breast cancer presenting with metastatic (advanced) disease.<sup>5</sup> Likewise, as the Danish authors of a recent study published in *Annals of Internal Medicine* point out, screening mammography has not achieved the promised reduction in breast cancer mortality.

### New data from Denmark highlight overdiagnosis concerns

Jørgensen and colleagues conducted a cohort study to estimate the incidence of screen-detected tumors that would not become clinically relevant (overdiagnosis) among women aged 35 to 84 years between 1980 and 2010 in Denmark.<sup>6</sup> This country offers a particularly well-suited backdrop for a study of overdiagnosis because biennial screening mammography was introduced by region beginning in the early 1990s. By 2007, one-fifth of the country's female population

aged 50 to 69 years were invited to participate. In the following years, screening became universal for Danish women in this age group.

For the study, researchers identified the size of all invasive breast cancer tumors diagnosed over the study period and then compared the incidence rates of advanced tumors (more than 20-mm in size at detection) with nonadvanced tumors in screened and unscreened Danish regions. The investigators took into account regional differences not related to screening by assessing the trends in diagnosis of advanced and nonadvanced tumors in screened and unscreened regions among women older and younger than those screened. This gave them a better estimate of the incidence of overdiagnosis.<sup>6</sup>

Jørgensen and colleagues found that breast cancer screening resulted in an increase in the incidence of nonadvanced tumors, but that it did not reduce the incidence of advanced tumors. They estimated that 39% of the invasive tumors found among women aged 50 to 69 were overdiagnosed.<sup>6</sup>

These Danish study results, that more than one-third of screen-detected tumors represent overdiagnosis, are

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similar to those found for studies conducted in the United States and other countries.<sup>7,8</sup> The lengthy follow-up after initiation of screening and the assessment of trends in unscreened women represent strengths of the study by Jørgensen and colleagues, and speak to concerns voiced by those skeptical of reported overdiagnosis incidence rates.<sup>9</sup>

Although breast cancer mortality is declining, the lion's share of this decline has resulted from improvements in systemic therapy rather than from screening mammography.

Widespread screening mammography has resulted in a scenario in which women are more likely to have a breast cancer that was overdiagnosed than in having earlier detection of a tumor destined to grow larger.<sup>5</sup> In the future, by targeting higher-risk women, screening may result in a better benefit:risk ratio. However, and as pointed out by Otis Brawley, MD, Chief Medical and Scientific Officer of the American Cancer Society, we must acknowledge that overdiagnosis is common, the benefits of screening have been overstated, and

some patients considered as "cured" from breast cancer have in fact been harmed by unneeded treatment.<sup>10</sup>

## My breast cancer screening approach

As Brawley indicates, we should not abandon screening.<sup>10</sup> I continue to recommend screening based on US Preventive Services Taskforce guidance, beginning biennial screens at age 50.<sup>11</sup> I also recognize that some women prefer earlier and more frequent screens, while others may prefer less frequent or even no screening. 🚫

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