

Benefits of NHS Breast Screening Program outweigh the small risk of overdiagnosis

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In the UK, breast cancer accounts for 31% of all new cancers diagnosed in women each year, with cases having increased by 4% in the last decade. Despite the rise in cases, deaths caused by breast cancer are

declining. This is in part due to early diagnosis of breast cancer through the NHS Breast Screening Program.

The NHS Breast Screening Program invites anyone registered with a GP as female aged 50-70 for a [screening](#) every three years. Breast cancer [screening](#) uses X-rays called mammograms to check breasts for signs of cancer. Despite the benefits of screening, there remains some debate over the potential harms of screening—notably overdiagnosis. Overdiagnosis is not the same as when a test finds something abnormal that turns out not to be cancer (a false-positive). Overdiagnosis is diagnosis of a real cancer which grows so slowly that it would never have actually given any symptoms.

Overdiagnosis may be a consideration when women are thinking about whether or not to participate in [breast cancer](#) screening. Until now, estimates of overdiagnosis have varied widely, ranging from less than 5% of screen detected cancers to more than 30%. When a cancer is diagnosed, we cannot tell whether it is overdiagnosed or not, so all cancers need treatment. It is important for women to have reliable estimates of overdiagnosis in order to make an [informed decision](#) on whether to be screened or not.

To quantify overdiagnosis in the NHS Breast Screening Program, Queen Mary researchers undertook a study of 57,493 breast cancer cases diagnosed in 2010 or 2011, matched with 105,653 controls.

They estimated the effect of screening on [breast cancer risk](#), and the results were combined with national incidence data to estimate absolute rates of overdiagnosis. Overdiagnosis was calculated as the cumulative excess of cancers diagnosed in women aged 50-77 attending three-yearly screening between ages 50 and 70 compared with women attending no screens.

The estimated number of cases of overdiagnosis in women attending all screens in the program was just under 3 per 1000, corresponding to an estimated 3.7% of screen detected cancers overdiagnosed.

This is considerably lower than has been suggested in the past. Authors conclude that the NHS Breast Screening Program is associated, at worst, with modest overdiagnosis of breast cancer.

Stephen Duffy, Professor of Cancer Screening, Queen Mary University of London and joint lead investigator, said:

"These results provide some reassurance that participation in the NHS Breast Screening Program confers only a low risk of an overdiagnosed breast cancer. Along with the results of our previous study of the effect of screening on breast cancer mortality, this indicates that the benefit of screening in preventing deaths from breast cancer outweighs the small risk of overdiagnosis."

Peter Sasieni, Academic Director of the Clinical Trials Unit and Professor of Cancer Prevention at King's College London, and joint lead investigator, says that "overdiagnosis is quite a complex issue. Had we stopped following women at age 70, nearly 1% of screened women would seemingly have been over-diagnosed, but by waiting another 7 years, more never-screened [women](#) will be diagnosed with breast cancer and the three-quarters of the excess cancers turn out to have been diagnosed early rather than over-diagnosed. What this means is that most previous studies have overestimated the harms of participating in [breast cancer screening](#) up to the age of 70."

The research was published in *Cancer Medicine*.

More information: A case-control study to evaluate the impact of the breast screening programme on breast cancer incidence in England,

Cancer Medicine (2022). [DOI: 10.1002/CAM4.5004](https://doi.org/10.1002/CAM4.5004)

Provided by Queen Mary, University of London

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