**Peer-reviewed Meta-Analysis People**

UNDER EMBARGO UNTIL 23:30 GMT THURSDAY 3 FEBRUARY 2022

**Aromatase inhibitors are better than tamoxifen at reducing the risk of breast cancer recurrence in premenopausal as well as postmenopausal women**

* Aromatase inhibitors reduce the risk of breast cancer recurrence by up to a third compared with tamoxifen.
* These drugs are as effective in women under 35, who have a higher risk of recurrence than older women.
* The main benefit was seen in the first five years.

A new study has shown that giving aromatase inhibitors instead of tamoxifen to premenopausal women with oestrogen receptor positive (hormone-sensitive) breast cancer significantly reduces the risk of breast cancer recurrence. The results have been published today in *The Lancet Oncology.*

For women with hormone-sensitive, operable breast cancer, giving tamoxifen treatment after surgery reduces the risk of dying from breast cancer within 15 years by about one third. Aromatase inhibitors, drugs which block oestrogen production, are even more effective than tamoxifen in postmenopausal women, reducing this risk by a further 30%.

For premenopausal women, however, aromatase inhibitors are ineffective, since the ovaries respond by increasing oestrogen production. However, this problem may be overcome by using treatments that suppress ovarian function, such as drug therapies or surgery. But until now, it was unclear whether aromatase inhibitors or tamoxifen were the most effective treatment for premenopausal women in reducing breast cancer recurrence.

Researchers from the [Early Breast Cancer Trialists’ Collaborative Group](https://www.ctsu.ox.ac.uk/research/ebctcg) (EBCTCG), based at Oxford Population Health (University of Oxford) and primarily funded by Cancer Research UK, combined all the available evidence to answer this question, since data from individual trials had been inconclusive. They combined data from four large-scale randomised controlled trials, which involved a total of over 7,000 women with early stage breast cancer, from countries across the world.

Each woman had received an ovarian suppressing treatment. In addition, they were randomly allocated to take an aromatase inhibitor or tamoxifen for three or five years. Over a median follow-up period of eight years, the researchers looked for differences between the two groups in breast cancer recurrence, and deaths from breast cancer or any cause.

**Key results:**

* Of the total study population, 888 (12.6%) of the women had a breast cancer recurrence. 418 deaths occurred, of which 54 were from causes unrelated to breast cancer.

**In women receiving ovarian suppression therapy**

* **Breast cancer recurrence was significantly reduced in the group who had received aromatase inhibitors instead of tamoxifen**. Overall, the risk was reduced by an average of a fifth (21%).
* **The main benefit was seen in the first five years, when the treatments differed, where the risk of recurrence was a third (32%) lower in the aromatase inhibitor group**. The absolute reduction in the risk of recurrence was 3.2%: 6.9% in the aromatase inhibitor group versus 10.1% in the tamoxifen group.
* There was no further benefit, or loss of benefit, between five to ten years.
* **Aromatase inhibitors were just as effective in women aged under 35**, who have a higher risk of recurrence than older women.
* There was no apparent difference in the number of deaths from breast cancer or any cause; however survival benefits from aromatase inhibitors may become apparent after a longer period of follow-up.

Known side effects of aromatase inhibitors include an increased risk of osteoporosis, which can cause bone fractures. In the analysis, a slightly higher proportion of women in the aromatase inhibitor group had a bone fracture over the follow-up period, compared with the tamoxifen group: 6.4% vs 5.1%. However, the frequency of bone fractures was low overall, and this can be mitigated through treatment with drugs that help to strengthen bones (bisphosphonates).

Tamoxifen can increase the risk of endometrial abnormalities, including uterine polyps and endometrial cancers. In this analysis, the five-year incidence of endometrial cancer was higher in the tamoxifen group (0.3%) compared with the aromatase inhibitor group (0.2%), but still rare overall.

Lead author, Rosie Bradley from Oxford Population Health said: ‘Our aim was to find out whether premenopausal women treated with ovarian suppression could benefit more from aromatase inhibitors than tamoxifen, and these findings conclusively show this is the case for preventing breast cancer recurrence.’

‘However, we need to follow patients for longer to find out whether breast cancer deaths are also reduced. Effects on quality of life need to be considered as well, and it is important that clinicians discuss with patients the potential benefits and risks for each treatment approach.’

Caroline Geraghty, specialist cancer information nurse at Cancer Research UK, said: ‘This finding has the potential to make a difference in the lives of thousands of women. Most breast cancers are hormone sensitive and treated with hormone therapy. Though there is potential for some side effects, aromatase inhibitors could increase the chance of these women remaining disease free – allowing them to return to normal life.’

‘Breast cancer recurrence is especially problematic in younger women, so it’s great news to see that the use of aromatase inhibitors is just as effective in women under the age of 35. We look forward to seeing the results of longer-term follow ups to see if aromatase inhibitors save lives.’

**Notes to editors:**

For further information or for interview requests, please contact Dr Caroline Wood, Oxford Population Health (University of Oxford): caroline.wood@ndph.ox.ac.uk

The study is published in *The Lancet Oncology:* [https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(21)00758-0/fulltext](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045%2821%2900758-0/fulltext) This link will go live once the embargo lifts. To view the manuscript before this, please contact Dr Caroline Wood, caroline.wood@ndph.ox.ac.uk

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**About Oxford Population Health**

Oxford Population Health (the Nuffield Department of Population Health) is a world-leading research institute, based at the University of Oxford that investigates the causes and prevention of disease. We have over 750 staff, students and academic visitors working in a number of world-renowned population health research groups, including the Cancer Epidemiology Unit (CEU), Clinical Trial Service Unit and Epidemiological Studies Unit (CTSU), and the National Perinatal Epidemiology Unit (NPEU), and other groups working on public health, health economics, ethics and health record linkage. Oxford Population Health is also a key partner in the Oxford University Big Data Institute.
<https://www.ndph.ox.ac.uk/>

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**About Cancer Research UK**

* Cancer Research UK is the world’s leading cancer charity dedicated to saving lives through research.
* Cancer Research UK’s pioneering work into the prevention, diagnosis and treatment of cancer has helped save millions of lives.
* Cancer Research UK receives no funding from the UK government for its life-saving research. Every step it makes towards beating cancer relies on vital donations from the public.
* Cancer Research UK has been at the heart of the progress that has already seen survival in the UK double in the last 40 years.
* Today, 2 in 4 people survive their cancer for at least 10 years. Cancer Research UK’s ambition is to accelerate progress so that by 2034, 3 in 4 people will survive their cancer for at least 10 years.
* Cancer Research UK supports research into all aspects of cancer through the work of over 4,000 scientists, doctors and nurses.
* Together with its partners and supporters, Cancer Research UK's vision is to bring forward the day when all cancers are cured.

*For further information about Cancer Research UK's work or to find out how to support the charity, please call 0300 123 1022 or visit* [*www.cancerresearchuk.org*](https://emea01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.cancerresearchuk.org%2F&data=01|01|stephanie.mcclellan%40cancer.org.uk|af53d28f41044bdb75b508d61d4a0d5a|4473892f71e046fc8dec273902b51349|1&sdata=M3R8l88hiespGhO6pL15ZSoJg%2BbYYKhsy7Ta2CgSqPY%3D&reserved=0)*. Follow us on* [*Twitter*](https://emea01.safelinks.protection.outlook.com/?url=http%3A%2F%2Ftwitter.com%2FCR_UK&data=01|01|stephanie.mcclellan%40cancer.org.uk|af53d28f41044bdb75b508d61d4a0d5a|4473892f71e046fc8dec273902b51349|1&sdata=rXrNWIuucBVk6gn7tuZCraXO0ZUazNFSRLrTSzdnFnk%3D&reserved=0) *and* [*Facebook*](https://emea01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.facebook.com%2Fcancerresearchuk&data=01|01|stephanie.mcclellan%40cancer.org.uk|af53d28f41044bdb75b508d61d4a0d5a|4473892f71e046fc8dec273902b51349|1&sdata=rVUKY0udeh9K%2BoIvJU2myqPHoKM0f0w3Z4uWqMRqBnU%3D&reserved=0)*.*