

What is breast cancer overdiagnosis?

Women who are told they have “Breast Cancer” are all given the same diagnosis – breast cancer – but they don’t all have the same disease. The way breast cancer behaves can be very different from one woman to another: for some women, breast cancer can be a group of abnormal cells that does not grow, or grows very slowly, and does not spread elsewhere in the body; for others it can be an aggressive tumour that can spread and be life-threatening. In the last few decades we’ve learned that the types of breast cancers that do not grow, or grow very slowly and do not spread, are more common than expected.¹ So they would never have an impact on a woman in her lifetime. When these types of cancer are detected by breast screening mammography, this is known as ‘overdiagnosis’. Overdiagnosis is more likely in older women because when other health problems (like heart disease) increase and fewer years of life remain it is more likely that women will die from these other

causes than from a breast cancer; that is, they die with the cancer rather than from it.

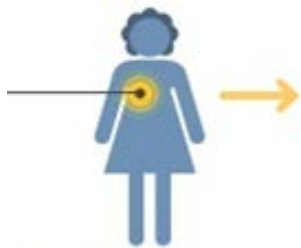
In some cases, women are diagnosed with changes called DCIS (ductal carcinoma in situ, also called Stage 0 breast cancer or pre-cancer because DCIS does not meet all the pathological criteria for cancer). DCIS means abnormal cell changes have been found, usually through screening, which are contained inside the milk ducts. DCIS does not spread and is not life threatening. However, some cases of DCIS are later followed by invasive breast cancer, which can spread and become life threatening. It is not certain how often this happens, so standard breast cancer treatment is used for DCIS as if it were potentially life threatening. This means that some, perhaps many, women with DCIS are overdiagnosed and overtreated. Some Stage 1 (early or localised) breast cancer is overdiagnosed and overtreated too, but this happens less commonly.

Overdiagnosis: an example

Imagine a woman called Maria who develops a small, slow-growing breast cancer in her 50s or 60s. The picture below shows two possible scenarios that could happen to Maria. Scenario 1 (top) is with screening, and scenario 2 (bottom) is without screening.

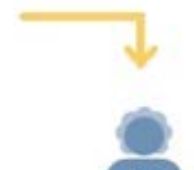
Scenario 1

Maria **DOES** have screening.



Cancer diagnosis and treatment

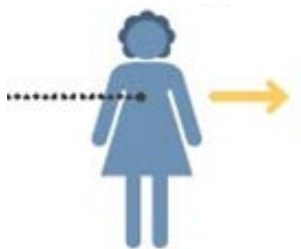
Her cancer is found. She is diagnosed and has treatment.



Maria lives to age 85, and then dies of heart disease.

Scenario 2

Maria **DOES NOT** have screening.



No cancer diagnosis, no treatment

Her cancer is never found and never affects her health.



Maria’s life span is the same, whether or not she has screening. So if she has screening, she experiences overdiagnosis (a diagnosis and treatment she does not need).

What causes overdiagnosed breast cancer?

Early detection programs (mostly using mammography screening) are designed to pick up the early signs of breast cancer. In some cases, this is beneficial when a cancer with the potential to become life threatening is detected and treated early. But research over the last 20 years has shown that some breast cancers detected early by screening would never have gone on to cause any health problems for these women, if they were left undetected and untreated. These are the overdiagnosed cancers described above. Years ago – before screening programs were introduced – these overdiagnosed cancers would never have been found. In many countries, including Australia, there have been big increases in the numbers of women being diagnosed with breast cancer (especially DCIS) since mammography screening was introduced. Researchers have now concluded that some of these women have been overdiagnosed.

What harm comes from breast cancer overdiagnosis?

An important harm caused by breast cancer overdiagnosis is overtreatment. The word overtreatment applies to cancers which are overdiagnosed, and don't need treatment because they were never going to cause any harm in the first place. The most common treatment for women who receive a diagnosis of breast cancer is surgery to remove part or sometimes all of the breast. Afterwards women may also have radiotherapy or hormone therapy to reduce the chance of breast cancer coming back. These treatments carry a risk of side effects. Common side effects of radiotherapy are tiredness, red dry skin, pain and swelling. Radiotherapy may increase the risk of heart disease and of other cancers developing later. Side effects of hormone treatments are vaginal dryness, low mood, weight gain, hot flushes, bone thinning and fractures. Other harms of overdiagnosis and overtreatment of breast cancer include emotional distress, increased anxiety, depression, insurance difficulties and unneeded financial costs.

What can we do to avoid breast cancer overdiagnosis?

As screening for breast cancer causes overdiagnosis, choosing not to be screened will prevent breast cancer overdiagnosis. However, as you may guess, choosing not to be screened may also mean giving up the possibility that breast screening may save your life by detecting a growing breast cancer early and enabling more effective treatment. So the question arises: how common is overdiagnosis compared to the chance that screening may save a woman from dying of breast cancer? An independent UK panel of experts estimated that 3 women are overdiagnosed with breast cancer for each woman that screening may save from dying of breast cancer (although the conclusion did not include all-cause mortality and risks of dying due to breast cancer treatments). But there isn't scientific agreement about how common overdiagnosis is. Some researchers estimate that it is less common and others estimate it is more common - within a range of 1 up to 10 women overdiagnosed for each woman that screening may save from dying of breast cancer. So it's a hard choice. The researchers at Wiser Healthcare have developed and tested a decision aid to help women decide whether to have mammography screening or not. If you would like to access this decision aid [you can see it here](#). This decision aid was tested in a randomised trial with about 900 women in the Australian community. The decision aid helped these women become better informed about overdiagnosis and breast screening in general.² The risk of breast cancer overdiagnosis can also be reduced by not starting screening until age 50 (rather than starting at age 40) and by stopping screening at 70 or 75 years of age rather than continuing to screen longer.

Trials are ongoing of approaches that may reduce breast cancer overdiagnosis and overtreatment caused by screening. These include trials of less intensive treatment for women with screen detected low risk DCIS ([LORIS](#)) and trials of new risk-based screening approaches ([WISDOM](#) and [MyPEBs](#)).

QUESTIONS WE CAN ALL ASK

To learn more about overdiagnosis or see a list of questions to ask your health professional, you can visit the Wiser Healthcare website.



1. Esserman L, Shieh Y, Thompson I. Rethinking screening for breast cancer and prostate cancer. JAMA. 2009;302(15):1685-1692.

2. Hersch J, Barratt A, Jansen J, et al. Use of a decision aid including information on overdiagnosis to support informed choice about breast cancer screening: a randomised controlled trial. Lancet, 2015 385:1642-1652.