



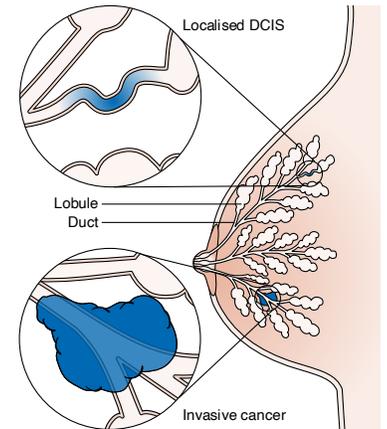
DCIS PRECISION News about Ductal Carcinoma In Situ (DCIS)

Ductal Carcinoma In Situ (DCIS) is a breast condition that is often found on mammograms. DCIS refers to abnormal cells found inside a milk duct. Research shows that at least 3 out of 4 women (75%) with DCIS that is not treated will not get a future invasive breast cancer. Almost all, however, still receive breast cancer treatment. There are types of DCIS that are considered low-risk or higher risk. This is why DCIS is sometimes called different names. PRECISION* is learning about DCIS risk to find women who may not need treatment. One of their published articles is explained here.

What is the science article about?

This study and article apply only to the less than 1 in 10 women with DCIS who may get a future invasive breast cancer after treatment. Researchers studied samples of breast tissue taken at surgery from women who were diagnosed with pure DCIS and treated. This group later developed an invasive breast cancer in the same breast even after they received surgery. Pure DCIS means that only DCIS was found during the first surgery.

Researchers compared a woman's original DCIS to the invasive breast cancer that later developed in this special group to see if both tumors were related or if the invasive breast cancer was a completely new cancer.



Why was this study done?

For years, doctors and researchers thought that most invasive breast cancers that happen after DCIS come from cells from the first pure DCIS. This is why most women with DCIS are offered surgery which is often followed with radiotherapy, and sometimes hormonal therapy to lower what has been commonly accepted as a woman's risk of a later invasive breast cancer.

It is not known, though, whether invasive breast cancers that develop after the diagnosis and treatment of DCIS are connected to the initial DCIS or not. This is important to be able to provide correct risk information to women with DCIS. This can help guide discussions with their doctors about treatment choices that may or may not include active monitoring.

How was this study done?

Invasive breast cancer can appear even up to 20 years after a diagnosis and surgery for the first DCIS. This happens in less than 1 in 10 women with DCIS (10%).

Because there are not many samples from women with DCIS who develop a future invasive breast cancer, researchers pooled samples from three countries: the UK, U.S. and the Netherlands. A total of 95 pairs of samples were collected from women who had DCIS, were treated, and then later developed invasive breast cancer in the same breast. The information about these women included up to 20 years of medical follow-up visits.

They looked at whether the cancer cells gained or lost critical genes (called genetic changes) that are known in DCIS and invasive breast cancer. They also looked at possible changes in the way DNA tells critical genes how to work in the body.

This was important because:

- If the first DCIS and the later invasive breast cancer are related, they share identical genetic changes. This fits with the current thought that any future invasive breast cancer comes from the first DCIS, so treatment is given to lower that risk.
- If the genetic changes are different, a later invasive breast cancer is not related to the first DCIS. This means that treatment for DCIS will not lower the risk of a future invasive breast cancer.

What are the results of this study?

Researchers found that many, but not all invasive breast cancers that develop after a first DCIS are related to each other:

- 2 out of 10 (20%) of the later invasive breast cancers were not genetically related to the first DCIS. This means that these invasive breast cancers were new, and that DCIS treatment did not lower risk of future invasive breast cancer.

What does it mean for women with DCIS?

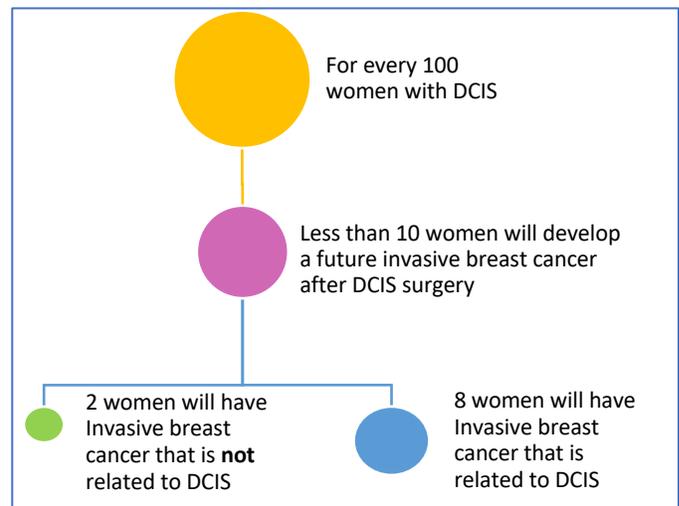
This study found that DCIS is not always linked to a future invasive breast cancer.

This is important because:

- The true recurrence risk once a woman is diagnosed with DCIS might be overestimated.
- 2 out of 10 cases (20%) are new cancers.
- Risk factors need to be identified to show which women with DCIS may be at risk for a new second breast cancer.
- It explains why it has been so hard to find biomarkers that predict which DCIS is likely to come back. This is the first time studies have shown that 20% of future invasive breast cancers are actually brand new cancers.

There are now different kinds of risk to consider for women who are diagnosed with DCIS:

1. The risk of having a future breast event, which is low, following DCIS.
For instance, the picture here shows that for every 100 women who get DCIS, less than 10 of them will have a future invasive breast cancer after surgery for DCIS.
2. The risk of having a brand new cancer. The picture shows that out of 10 women who develop a future invasive breast cancer:
 - About 2 out of every 100 women will have a new invasive breast cancer that is not related to their first DCIS. These women may not benefit from treatment of their primary DCIS.
 - About 8 out of every 100 women will have a recurrence of their first DCIS. These women are more likely to benefit from treatment for DCIS.



It is also important to consider any inherited risk and the genes that are included in the first DCIS. Currently, studies like the [ICICLE](#) study are looking into the effect of inherited genes and DCIS risk after a first diagnosis.

When was the study done?

The study was published in April 2022.

Official name of the article

“Genomic analysis defines clonal relationships of ductal carcinoma in situ and recurrent invasive breast cancer.”
By Lips E et al on behalf of PRECISION.* Nature Genetics. DOI: [10.1038/s41588-022-01082-3](https://doi.org/10.1038/s41588-022-01082-3).

The article can be found at:

[10.1038/s41588-022-01082-3](https://doi.org/10.1038/s41588-022-01082-3) and <https://www.dcisprecision.org/publications/>.