PROJECT INFORMATION

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Predicting the Impact of Treatment Options on Survival and Breast Conservation in Patients with Ductal Carcinoma In Situ (DCIS)

Principal investigator

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Organization

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What was the research about?

About 1 million women in the United States have been diagnosed with a condition called ductal carcinoma in situ, or DCIS. In DCIS, abnormal cells are found inside milk ducts in the breast. DCIS may or may not turn into cancer. Having DCIS increases a woman's risk of getting a second diagnosis of DCIS or cancer in either breast.

One way doctors treat DCIS is to remove the abnormal cells and some of the tissue around them. This surgery is called a lumpectomy. Sometimes a patient and her doctor decide to have a mastectomy to remove the entire breast. To kill any abnormal cells that surgery may have missed, doctors may also add radiation. Choosing what kind of surgery to have is personal. Patients must decide if keeping their breast is worth the higher risk of getting DCIS again or cancer. Having information about the risks and benefits of each treatment could help patients and doctors choose a treatment.

In this study, the research team looked at records from national databases to learn

- What patient traits, such as age or race, may affect a woman's risk of getting another DCIS or breast tumor in the other breast

- How likely it is that a woman who had treatment for DCIS will have a mastectomy if she has a second breast cancer

Next, the research team updated a computer model to predict the chances of survival, getting another DCIS, or getting breast cancer in the other breast. They compared the predicted outcomes from the model with data from other sources to see if the outcomes were like real patient experiences. The team used the model to create an online resource for women diagnosed with DCIS. This website allows women to see what's likely to happen after different treatments.

What were the results?

Patient traits. Traits linked to getting another DCIS or cancer in the other breast included

- Age
- Year of DCIS diagnosis
- Race
- Tumor size
- Type of estrogen receptors, which are proteins on cells that tell them to grow

Women treated in parts of the country where doctors often use radiation to treat DCIS were more likely to

have a mastectomy for a second DCIS, even if they had not been treated with radiation for the first one.

Predicting future outcomes. The computer model could accurately predict the chance that a woman would get DCIS or breast cancer within 10 years. The model successfully estimated how long women ages 45 and 60 would live after their first DCIS diagnosis. But the model overestimated how long women aged 70 years would live.

What did the research team do?

To build the computer model, the research team used data from other studies and databases. Next, the team used different data to check the computer model's results. They then developed the website.

What were the limits of the study?

Some information may be missing from the databases. For example, the databases may not list all the

patients who got a second breast tumor. Also, the databases didn't have information about patient preferences for different treatments. The results might be different if the databases had this missing information.

Future research could look at how a patient's actual choice for the first DCIS treatment may affect future outcomes.

How can people use the results?

The model can help predict future outcomes based on the initial treatment choice for DCIS. Doctors and patients could use the information from the model to help choose a DCIS treatment.

To learn more about this project, visit www.pcori.org/Punglia145.