

Better detection of a type of ovarian cancer could lead to better treatments

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Professor Bryan Hennessy is the study's senior author and associate professor at RCSI. Credit: RCSI

Scientists have found that a specific type of ovarian cancer could possibly benefit from existing platinum-based chemotherapy and new DNA repairing treatments, following better testing.

The study, led by researchers from RCSI University of Medicine and Health Sciences, is published in the *Journal of the National Cancer Institute* and was funded by St Luke's Institute for Cancer Research, North East Cancer Research and Education Trust (NECRET).

BRCA1 and BRCA2 are [genes](#) that prevent cancer by repairing damaged DNA. Inherited mutations in these [tumour suppressor genes](#) make someone much more likely to develop cancer in their lifetime, particularly breast and ovarian cancer.

Ovarian cancer patients with a mutated BRCA1 gene live longer with platinum chemotherapy and new DNA repairing treatments than patients who don't have the mutation. This led the researchers to investigate whether these treatments could also

benefit other ovarian cancer patients whose BRCA1 gene has been modified in a different way.

Instead of having an inherited mutated BRCA1 gene, some patients have this gene modified in a way that is thought to silence it. The researchers analysed 2,636 patients with ovarian cancer from 15 international studies to see if those with this silenced BRCA1 gene had similar outcomes to those with the [mutated gene](#).

They found that both the mutated and silenced BRCA1 gene were found in serous ovarian cancers and arise at a younger age compared to cancer patients without a mutated or silenced gene.

They also found that the patients with the silenced gene display faulty DNA repair more than the patients with the mutated gene. However, unlike those with the mutated BRCA1 gene, patients with the silenced gene did not respond any better to platinum chemotherapy or have a better prognosis than those with the normal functioning BRCA1 gene.

The researchers believe this difference was the case due to the different methods used in each study to detect the silenced gene. The studies that used a specific test found that patients with a BRCA1 silenced gene lived longer on the platinum chemotherapy treatments compared to those patients who did not have a silenced or mutated gene.

"We found that the studies that used a specific methylation PCR test showed the results that we would expect for those with truly silenced BRCA1 gene. This suggests that researchers need to refine and standardise the way they test for silencing of this gene," said Roshni Kalachand, an RCSI Ph.D. student and the study's lead author.

"This will enable them to detect 'true' cases of patients that have this gene silenced. Only then will

we be able to successfully treat this subgroup of ovarian cancer with drugs targeting DNA repair."

Professor Bryan Hennessy, the study's senior author and associate professor at RCSI, said: "Ovarian cancer ranks among the top ten diagnosed and top five deadliest cancers in most countries. Unfortunately, approximately 80% of patients present at an advanced stage of the disease.

"Therefore, it is critical that clinicians are provided with as many treatment options as possible which can target this disease, both as a stand-alone therapy and in combination with existing therapies."

Approximately 410 women in Ireland each year are diagnosed with ovarian [cancer](#). The main treatment for [ovarian cancer](#) is surgery, while other treatments include chemotherapy and radiotherapy.

More information: *Journal of the National Cancer Institute* (2020). [DOI: 10.1093/jnci/djaa070](https://doi.org/10.1093/jnci/djaa070)

Provided by RCSI

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