

Genomic analysis of prostate cancer indicates best course of action after surgery

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There is controversy over how best to treat patients after they've undergone surgery for prostate cancer. Does one wait until the cancer comes back or provide men with additional radiation therapy to prevent cancer recurrence? Now, a new study from Thomas Jefferson University shows that a genomic tool can help doctors and patients make a more informed decision.

"We are moving away from treating everyone the same," says first author Robert Den, M.D., Assistant Professor of Radiation Oncology and Cancer Biology at Thomas Jefferson University. "Genomic tools are letting us gauge which cancers are more aggressive and should be treated earlier with radiation, and which ones are unlikely to benefit from additional therapy."

Although surgery for [prostate cancer](#) is meant to be curative, in some men, the cancer can regrow. Doctors have developed high risk criteria based on clinical factors, but these criteria are imperfect predictors of cancer returning, or recurrence. Only about 50 percent of high risk patients ever go on to develop metastases, raising the question of whether those who receive additional therapy are being overtreated.

In an attempt to better understand how to treat their patient population, researchers led by Drs. Den and Adam Dicker, M.D., Ph.D., Chairman of the Department of Radiation Oncology at Jefferson, together with other members of the Kimmel Cancer Center Genitourinary team including Dr. Leonard Gomella, Chairman of the Department of

Urology, assessed whether a genomic test designed to predict prostate cancer metastasis could also predict which patients would most benefit from [radiation treatment](#) after surgery.

The test, called Decipher, from the genome diagnostics company GenomeDx, generates a gene signature from a patient's cancer tissue sample. Based on this signature, the test stratifies patients into high, intermediate and low risk for [cancer recurrence](#) and metastases.

The researchers tested the genomes from tumor samples of 139 patients who had received radiation therapy following prostate surgery at Jefferson. Using medical records, the researchers grouped the patients by the treatments they received after surgery, and matched their records to the results of the [genomic analysis](#).

The genomic analysis correctly predicted outcomes. The patients with a high Decipher score were more likely to develop metastases than those with a low score. In addition, those with a high Decipher score who received radiation earlier had longer survival than those who did not receive radiation immediately after surgery. The results showed that patients treated with radiation after surgery maintained low PSA levels for twice as long than those who were not treated with radiation.

"Our analysis suggests that genomic analysis scores could be used, in concert with other diagnostic measures such as PSA testing, to help determine which patients would benefit from additional [radiation therapy](#) and more aggressive measures, and which are less likely to benefit," says Dr. Den.

More information: R.B. Den, et al., "Genomic prostate cancer classifier predicts biochemical failure and metastases in patients after postoperative radiation therapy," *Int J Radiat Oncol Biol Phys*, 89:1038-46, 2014.

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