

# Why some prostate cancer returns

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The majority of men who receive one of the standard treatments for localized prostate cancer - surgery or radiation therapy - have an excellent outcome.

But for the small group whose prostate cancer returns, a new study offers insight as to why treatment isn't effective.

The study - a collaboration between researchers at the Josephine Ford Cancer Center at Henry Ford Hospital and Fox Chase Cancer Center - shows that men with a low oxygen supply to their tumor have a higher chance of the prostate cancer returning, as found by increasing prostate-specific antigen (PSA) levels following treatment.

"After several years of research, we were able to show that low levels of oxygen to the tumor are highly related to a patient's outcome. Those with lower oxygen levels to the prostate cancer did not respond as well to radiation therapy, and the cancer returned more often," says Benjamin Movsas, M.D., senior study author and chair of the Department of Radiation Oncology at Henry Ford Hospital. Moreover, recent studies suggest the same finding also appears to apply to [patients](#) treated with surgery.

Results from the study will be presented May 31 at the American Society of Clinical Oncology (ASCO) annual meeting in Orlando.

Prostate cancer affects one in six men in the United States, but according to the American Cancer Society only one in 35 will die of it. The

majority of all prostate cancer are diagnosed in men older than 65.

According to Dr. Movsas, oxygen being delivered to a tumor is critical to the treatment for many cancers. Radiation therapy, for example, creates free radicals that damage DNA in tumors, and oxygen acts as the mediator that perpetuates the free radicals.

That's why Dr. Movsas began his work nearly a decade ago to investigate low oxygen levels - also known as tumor hypoxia - in prostate [cancer tumors](#) while working at Fox Chase.

To measure the amount of oxygen being delivered to the tumors and surrounding areas, Dr. Movsas and his colleagues at Fox Chase used custom-made oxygen probes to test 57 patients with low or immediate risk of cancer prior to radiation therapy. The probe was used prior to "radioactive seeds" which were implanted in the prostate.

Dr. Movsas' initial research found that it is possible for prostate cancer tumors to have low oxygen levels. The next step was for the team to track the long-term correlation between low oxygen levels and PSA levels following treatment.

These new findings, being presented at ASCO, ultimately reveal that a tumor's oxygen supply can significantly predict a patient's outcome following treatment, independent from tumor stage or Gleason score, a classification of the grade of [prostate cancer](#). Of the 57 patients, the study found that eight experienced an increase in their PSA levels about eight years following treatment.

"By identifying patients at risk with low oxygen levels in prostate tumors, we're now able to build on this research and begin to explore novel treatment options for this small subset of patients. It's possible we'll find that these patients will do best with a combination of [radiation](#)

[therapy](#) and other novel approaches, such as angiogenesis therapy (targeting blood vessels) or possibly even gene therapy. That's where our research is taking us next," says Dr. Movsas. "Non-invasive methods to detect [oxygen levels](#) in tumors are also very important."

Source: Henry Ford Health System ([news](#) : [web](#))

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