

Clinical trial could lead to new 'gold standard' test for prostate cancer detection

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A University of Alberta study shows that PET/CT imaging using a new tracing agent is more accurate at determining the extent of prostate cancer than the current standard MRI for intermediate and high-risk

cases.

In [research published this week](#) in the journal *JAMA Oncology*, the researchers report that the [new test](#) correctly predicted the location and margin of tumors in 45% of cases—nearly twice as often as the rate of 28% for MRI.

"This is very important because we make a lot of treatment decisions based on where the cancer is in the [prostate](#)," explains Adam Kinnaird, assistant professor of surgery and adjunct assistant professor of oncology, as well as the Frank and Carla Sojonky Chair in Prostate Cancer Research and a member of the Cancer Research Institute of Northern Alberta.

"If you're having your prostate removed and the cancer is sneaking outside of the prostate, then we go a little bit wider with our treatment margins so we don't leave any cancer behind. If you're having radiation to your prostate, the radiation oncologist sometimes provides a boost to the center of the cancer for better cancer control," Kinnaird says. "This imaging test gives us a better degree of accuracy in terms of where exactly we need to treat."

Potential new gold standard for testing

The test involves injecting a new radioactive prostate-tumor-specific tracer called 18F-PSMA-1007 into the blood of patients, then tracking it using a combination of positron-emitting tomography (PET) and computerized tomography (CT). Previous studies of PET/CT scans using other tracing agents have not proven as useful, Kinnaird says.

Both the PET/CT and MRI tests were performed within two weeks of each other on 134 Alberta men who were about to undergo [radical prostatectomy](#)—surgery that involves removing the prostate gland,

surrounding tissues and nearby lymph nodes. The accuracy of the tests' predictions were then compared with the size and location of the actual tumors later found by surgeons.

"This clinical trial has great implications for [clinical practice](#) worldwide," says Kinnaird, explaining that he expects the PET/CT scan using the new tracer to become the gold standard.

The test involves a small dose of radiation exposure, but Kinnaird says no patients in the study experienced adverse reactions. He expects that the test will eventually replace other CT and bone scans that are currently required for prostate cancer patients, meaning fewer hospital visits, less time waiting for results and less exposure to radiation for patients, but that will require further study.

"It will be very exciting if you can get more accurate information and replace three tests with one [test](#), because these scans are only available in Edmonton or Calgary," says graduate research fellow Patrick Albers, a co-author on the study.

The positive results from this trial have already prompted another clinical trial led by Kinnaird to determine whether the PET/CT scan can be used to guide ablation, a procedure that uses energy such as heat, cold or electricity to kill cancer cells within the prostate.

The new imaging agent is offered at only a few treatment centers across the country while it awaits Health Canada approval, but the Alberta government has just announced \$3 million for 2,000 men to have the new scans in the meantime.

Ensuring better outcomes for Black men

A [second recently published study from Kinnaird's research team](#) shows

that Black men with prostate cancer have similar outcomes to those of other men in Alberta. However, Black men are diagnosed an average of two years earlier—at age 64 rather than 66—leading Kinnaird to recommend that they be offered routine screening at 45 rather than 50.

Published in *JAMA Network Open*, the study was based on data from the Alberta Prostate Cancer Research Initiative (APCaRI), which Kinnaird chairs. A total of 6,534 men who were diagnosed with prostate cancer between 2014 and 2023 were included, with 177 of them self-identifying as Black. The study showed that the Black men were just as likely to survive and remain metastasis-free as the general patient population.

In the United States and the United Kingdom, other studies have shown that men of African and Caribbean descent face double the lifetime risk of developing prostate cancer compared with Caucasian men, suggesting a biological causation.

However, those countries have two-tier or mainly private health-care systems, Kinnaird notes. The Alberta results from within a publicly funded health-care system indicate that these differences in the U.K. and U.S. may be more strongly influenced by socioeconomic factors such as racism, poverty and limited access to health care than by genetics, he says.

Both the American Urology Association and the European Urology Association recommend earlier screening for men of African ancestry and other high-risk populations, but the Canadian guidelines do not. Kinnaird would like to see that change.

Kinnaird points to previous research by his team showing that [Indigenous men get fewer tests for prostate cancer and have worse outcomes than others](#). He suspects that may be due to poorer access to health care for rural Albertans in general, but further study is necessary.

"The crux of it is that if you can detect it at an early, localized, treatable stage, we have a cure rate of 95% or greater. But if you wait until the [cancer](#) metastasizes, then we currently do not have any cures available," he says. "When detected late, it is now a lethal disease."

More information: Nikhile Mookerji et al, Fluorine-18 Prostate-Specific Membrane Antigen–1007 PET/CT vs Multiparametric MRI for Locoregional Staging of Prostate Cancer, *JAMA Oncology* (2024). [DOI: 10.1001/jamaoncol.2024.3196](#)

Patrick Albers et al, Prostate Cancer Among Black Men in Canada, *JAMA Network Open* (2024). [DOI: 10.1001/jamanetworkopen.2024.18475](#)

Provided by University of Alberta

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