

A new screening protocol can detect aggressive prostate cancers more selectively

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Prostate cancer is the most common cancer in men. As a cause of men's cancer death, it ranks the second in Finland and the third in Europe.

A large randomized trial conducted at Tampere University and the University of Helsinki shows that a new three-step [prostate cancer](#) screening method can find a considerable number of aggressive cancers. Population-level screening programs have not been launched in most countries, including Finland.

The findings are [published](#) in the journal *JAMA*.

The ProScreen trial investigated the performance of a three-step prostate cancer screening method. The aim was to analyze whether the new method would efficiently reduce mortality while decreasing the major adverse effect of previous screening methods: the overdiagnosing of insignificant prostate cancers.

Some prostate cancers are clinically insignificant because they do not become symptomatic even when left untreated. Such cancers are frequently detected at autopsy. Thus, treating cancer with a good prognosis does not bring benefits, but the treatment itself can still harm the patients' quality of life.

The screening method used in the ProScreen study includes two blood tests, and if necessary, magnetic resonance imaging (MRI) of the prostate. The previously studied [screening method](#) has only been based on one [blood test](#), the prostate-specific antigen test (PSA).

In the ProScreen study, both blood tests were positive in 7% of the participants and they were invited to an MRI of the prostate. In about half of these men, a suspicious area was detected by MRI and a prostate biopsy was taken.

Cancer was eventually found in about 2% of the participants. Clinically insignificant cancers were diagnosed in four in a thousand men.

"We have previously demonstrated that PSA screening can decrease prostate cancer mortality to some extent. However, PSA screening produces so many unnecessary cancer diagnoses that the harms outweigh the benefits. The new results show that the three-step method now used produces fewer insignificant cancer diagnoses than PSA screening," says Professor of Epidemiology Anssi Auvinen from Tampere University.

Diagnosing cancer with a good prognosis is not beneficial

Some prostate cancers are clinically insignificant, i.e. they will not progress to the symptomatic stage or cause any harm. The co-lead investigator of the project, Professor of Urology Antti Rannikko from the University of Helsinki, points out that the detection of such latent cancers does not bring any benefits and that they should not even be diagnosed.

"The vast majority of tumors found with the previous PSA screenings are low-risk cases that are likely to represent overdiagnosis. Most of them do not progress to the symptomatic stage even when left untreated. If a prostate cancer with a good prognosis is diagnosed, the primary treatment is always active surveillance," Rannikko says.

Local prostate cancer is usually treated surgically or with radiation therapy. The common side effects of treatment include erectile dysfunction, urinary incontinence, and bowel symptoms.

The main goal of screening is to reduce cancer mortality

The study included more than 60,000 men aged 50–63 years who were randomly allocated for either the three-step screening or a control group

without intervention.

The study continues and the study population will expand to also include the neighboring municipalities of Tampere and Helsinki. Men who have already participated will be invited to a new screening after 2–6 years, based on the outcomes of their first screening.

No population-level screening program has been launched in Finland or in most other European countries, but there is a health policy debate on the topic.

According to the researchers, only preliminary evidence of the benefits of the new screening model is available so far. However, the results indicate that major benefits could potentially be achieved in the future. The benefits can only be estimated after a 10-year follow-up, when the effects on prostate cancer mortality have been analyzed.

"The aim of cancer screening is always to reduce mortality. The main criterion for decisions on cancer screening should always be the reduction of mortality to be gained," Auvinen says.

"The ProScreen study, due to its large size and randomized design, can produce the research evidence needed to justify screening decisions," he adds. There is currently no reliable research data on the benefits and harms of MRI screening.

The study was carried out by a large team of researchers, including radiologists, pathologists, urologists, and experts from other fields at Tampere University and Tampere University Hospital (TAYS), as well as the University of Helsinki and Helsinki University Hospital (HUS). The cooperation partners included the local laboratory networks and Lund University.

More information: Anssi Auvinen et al, Prostate Cancer Screening With PSA, Kallikrein Panel, and MRI, *JAMA* (2024). [DOI: 10.1001/jama.2024.3841](https://doi.org/10.1001/jama.2024.3841)

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