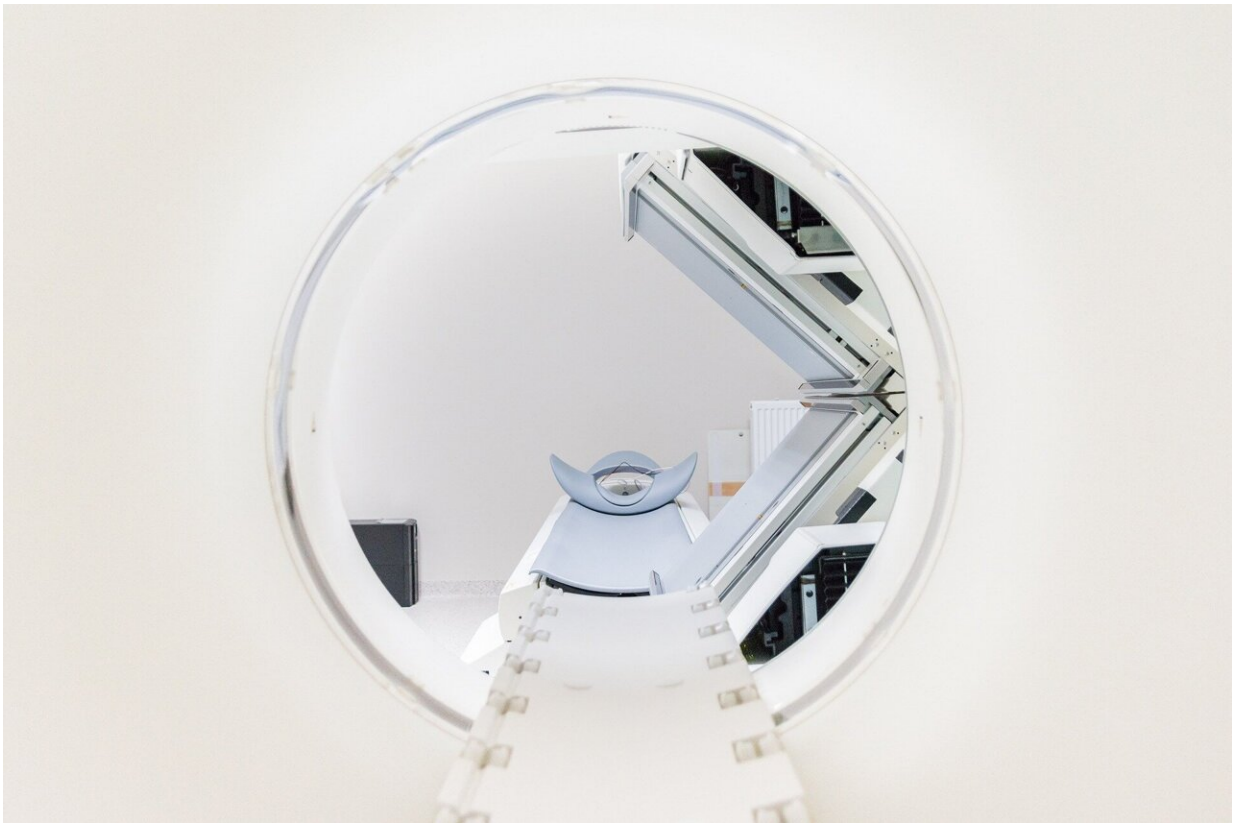


AI better detects prostate cancer on MRI than radiologists, study shows

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AI detects prostate cancer more often than radiologists. Additionally, AI triggers false alarms half as often. This is shown by an international study coordinated by Radboud university medical center and [published](#)

in *The Lancet Oncology*. This is the first large-scale study where an international team transparently evaluates and compares AI with radiologist assessments and clinical outcomes.

Radiologists face an increasing workload as men with a higher risk of [prostate cancer](#) now routinely receive a [prostate](#) MRI. Diagnosing prostate cancer with MRI requires significant expertise, and there is a shortage of experienced radiologists. AI can assist with these challenges.

AI expert Henkjan Huisman and radiologist Maarten de Rooij, project leaders of the PI-CAI study, organized a major competition between AI teams and radiologists with an international team. Along with other centers in the Netherlands and Norway, they provided over 10,000 MRI scans. They transparently determined for each patient whether prostate cancer was present. They allowed various groups worldwide to develop AI for analyzing these images.

The top five submissions were combined into a super-algorithm for analyzing MRI scans for prostate cancer. Finally, AI assessments were compared to those of a group of radiologists on four hundred prostate MRI scans.

Accurate diagnosis

The PI-CAI community brought together over two hundred AI teams and 62 radiologists from twenty countries. They compared the findings of AI and radiologists not only with each other but also with a gold standard, as they monitored the outcomes of the men from whom the scans originated. On average, the men were followed for five years.

This first international study on AI in prostate diagnostics shows that AI detects nearly 7% more significant prostate cancers than the group of radiologists. Additionally, AI identifies suspicious areas, later found not

to be [cancer](#), 50% less often. This means the number of biopsies could be halved with the use of AI.

If these results are replicated in follow-up studies, it could greatly assist radiologists and patients in the future. It could reduce [radiologists'](#) workload, provide more accurate diagnoses, and minimize unnecessary prostate biopsies. The developed AI still needs to be validated and is currently not yet available for patients in clinical settings.

Quality system

Huisman observes that society has little trust in AI. "This is because manufacturers sometimes build AI that isn't good enough," he explains. He is working on two things. The first is a public and transparent test to fairly evaluate AI. The second is a quality management system, similar to what exists in the aviation industry.

"If planes almost collide, a safety committee will look at how to improve the system so that it doesn't happen in the future. I want the same for AI. I want to research and develop a system that learns from every mistake so that AI is monitored and can continue to improve. That way, we can build trust in AI for health care. Optimal, governed AI can help make health care better and more efficient."

More information: Artificial intelligence and radiologists in prostate cancer detection on MRI (PI-CAI): an international, paired, non-inferiority, confirmatory study, *The Lancet Oncology* (2024). DOI: [10.1016/S1470-2045\(24\)00220-1](https://doi.org/10.1016/S1470-2045(24)00220-1). [www.thelancet.com/journals/lan ... \(24\)00220-1/abstract](https://www.thelancet.com/journals/lan.../fullarticle/S1470-2045(24)00220-1/abstract)

Provided by Radboud University

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