

# Simple changes improve quality of MRI scans for prostate cancer screening

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Global map of countries (n = 17) and the number of scanners (n = 64) that took part in phase II of the Global Variation in Magnetic Resonance Imaging Quality of the Prostate (GLIMPSE) study. UK = United Kingdom, USA = United States of America. Credit: *Radiology* (2023). DOI: 10.1148/radiol.231130

A new international study from UCL and UCLH that aims to improve the quality of MRI scans for prostate cancer screening has identified simple ways to treble the number of scans that are of optimal diagnostic quality.

[Published in \*Radiology\*](#), the research is an important step towards

making MRIs available to all men who need one. Improved MRI imaging will allow clinicians to rule out [cancer](#) in more cases without resorting to tissue biopsy, as well as identifying cancer more reliably. Better quality imaging has also been shown to identify the stage a cancer is at more accurately and help make better treatment decisions.

Multiparametric magnetic resonance imaging (mpMRI) of the [prostate](#) is now standard of care in patients suspected of having prostate cancer, reducing the need for an upfront tissue biopsy, which is invasive and can lead to complications. As a result, demand for scans has risen sharply. But only scans of the highest quality can rule out cancer without the need for a subsequent biopsy, or rule in cancer to allow biopsies to be accurately directed towards suspicious areas.

Prostate Imaging Quality (PI-QUAL) is the first standardized scoring system that evaluates [image quality](#) using a five-point scale, where five means the scan is of optimal quality for diagnosis. The system was developed as part of the UCL-led PRECISION study, published in 2018, which led to changes in international clinical practice that meant all men now receive an upfront MRI instead of an upfront biopsy. An MRI is quicker, cheaper and less invasive than a tissue biopsy.

To overcome existing capacity issues and to ensure that all men can access an MRI scan, the PRIME trial was setup to assess whether an even shorter, cheaper and less invasive MRI scan could become the new standard of care. This latest study, called GLIMPSE, is part of that trial.

In the first phase of GLIMPSE, researchers analyzed a total of 355 MRI scans from 41 medical centers across 18 countries. Only 32% achieved the highest PI-QUAL score of five.

The research team provided feedback to the centers to improve the quality of their scans. When 36 centers from 17 countries resubmitted

the MRIs, the percentage of scans achieving a PI-QUAL score of five rose to 97%. This quality is essential for ruling out cancer through MRI alone, which cannot be done for scans with a lower PI-QUAL score.

Dr. Alexander Ng (UCL Division of Medicine), first author of the study, said, "The beauty of our study is that we have provided a glimpse into the international quality of MRI scanners, and found that only a third of scanners were of optimal diagnostic quality. The quality of MRI scans can be significantly improved by following a few simple recommendations. This could be changing the duration of certain sequences by a few seconds, for example. In terms of impact, we will see a big difference to prostate cancer detection for very little effort and cost."

The results of the study will feed directly into PRIME. One of the key aims of this trial is to see whether a two-stage MRI scan can be just as effective at diagnosing prostate cancer as the standard three-phase scan. If the trial is successful, it is expected to change clinical practice and has the potential to reduce the time needed to perform an MRI from 30 minutes to 20 minutes on average. It would also require fewer clinical staff, be less invasive without the need for intravenous contrast, and with potential cost-savings for health care providers.

Associate Professor Veeru Kasivisvanathan (UCL Division of Surgery & Interventional Science), a senior author of the study, said, "The long-term goal of our work on [prostate cancer screening](#) is to see whether we can effectively diagnose or rule out cancer using a shorter, cheaper MRI scan. There is growing awareness among cancer specialists that variable quality of MRI scans poses a challenge to this approach, hence the results of the GLIMPSE study are an important step towards making MRI imaging as quick, cheap and effective as possible."

Dr. Hayley Luxton, Senior Research Impact Manager at Prostate Cancer

UK, said, "Multiparametric MRI scans have transformed how we diagnose [prostate cancer](#), giving men a more accurate diagnosis and helping avoid unnecessary biopsies."

**More information:** Francesco Giganti et al, Global Variation in Magnetic Resonance Imaging Quality of the Prostate, *Radiology* (2023). DOI: [10.1148/radiol.231130](https://doi.org/10.1148/radiol.231130)

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