

Early detection

Known as a centre of excellence for prostate cancer care, The Wesley Hospital is using the latest MRI technology for screening

The Wesley Hospital in Brisbane is leading the way in the use of multiparametric MRI with diffusion-weighted imaging to screen men for prostate cancer and to guide prostate biopsy.

Specialists at the Wesley have performed more than 2,500 screening procedures with the new multiparametric MRI (mpMRI) technology and more than 350 mpMRI-guided prostate biopsies.

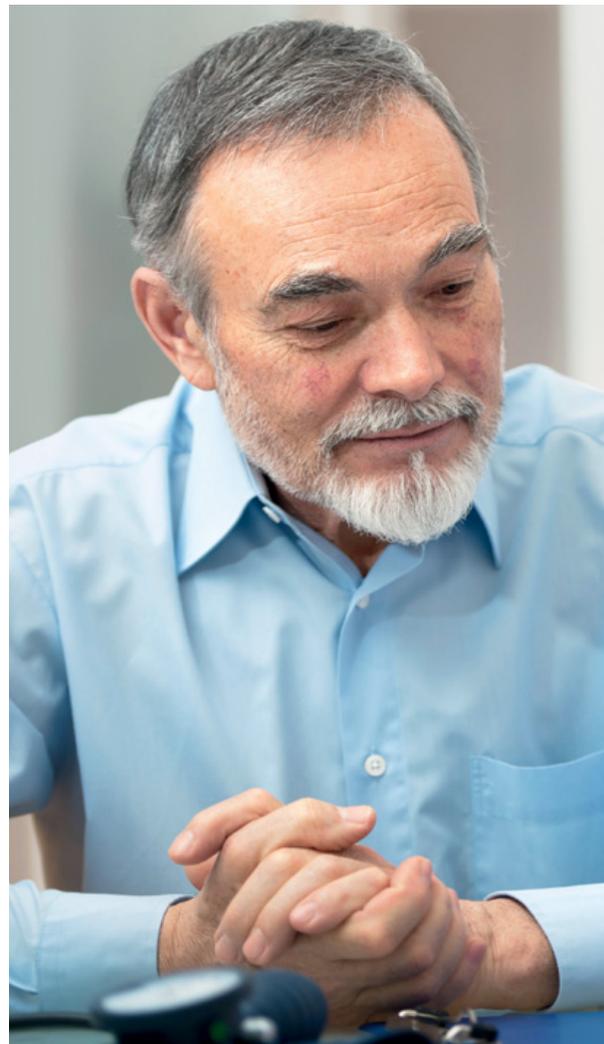
Prostate screening with mpMRI was introduced to the Wesley in 2012 as the result of collaboration between Wesley urologist Dr Les Thompson, Wesley Medical Imaging Radiologist Dr Rob Parkinson, and Professor Jelle Barentsz, Professor of Radiology at Radboud University Nijmegen Medical Centre in the Netherlands. Professor Barentsz is a world leader in developing mpMRI imaging of the prostate.

The application of the technology at The Wesley Hospital with the Nijmegen software and techniques developed by Professor Barentsz provides improved quality imaging of the prostate with detailed functional, anatomical and pathological information. Wesley Medical Imaging has two 3 Tesla Skyra MRI machines which are being used for prostate imaging and MRI-guided prostate biopsies.

Clinical Trial

Earlier this year a clinical trial of the enhanced MRI technology involving more than 200 patients was completed at the Wesley. The principal investigators were Dr Thompson and Dr Parkinson, in association with Professor Barentsz. The results have been collated and are expected to be published later this year in an international journal.

The trial was to assess whether the new mpMRI diagnostic technology will improve the accuracy of diagnosis of prostate cancer compared to standard transrectal biopsy



techniques and whether mpMRI can significantly reduce the numbers of men who need prostate biopsies to determine whether they have cancer or not.

Urologist and Visiting Medical Practitioner at The Wesley Hospital Dr John Yaxley was involved in recruiting patients for the clinical trial and is utilising the new MRI technology. He says mpMRI is a potentially valuable and powerful additional tool in the battle against prostate cancer, which claims almost 3,300 lives in Australia each year.

“Up until now the main tools we have had to detect prostate cancer are PSA (prostate specific antigen) screening and a digital rectal examination, but both of these have limitations,” Dr Yaxley said.

“Certainly with PSA testing we are picking up prostate cancers early and finding more curable prostate cancers than we did before PSA testing. However a high PSA does not necessarily mean that a man has prostate cancer.

“With a digital examination you can only feel the bottom half of the prostate. While most cancers do grow in this part of the prostate, as many as 15 to 20 per cent of cancers are in the anterior portion of the prostate, which is where you cannot feel.



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area that has shown up as abnormal. So potentially you can take fewer biopsy cores, perhaps two instead of 12 or 14. This has advantages for patients in reducing discomfort, bleeding and risk of infection.”

Director of Medical Services at The Wesley Hospital, Dr Luis Prado, said the availability of mpMRI screening was part of the Wesley’s commitment to investing in innovative technology to support a growing need in the area of prostate cancer. According to the Prostate Cancer Foundation, each day about 32 men in Australia are given the news that they have prostate cancer.

“The Wesley Hospital is known as a centre of excellence in prostate cancer care, and this latest MRI technology is world-class and leading the way forward for better detection of prostate cancer,” Dr Prado said. “It adds to the Wesley’s comprehensive services, with urologists, medical oncologists and radiation oncologists working together to provide evidence-based treatment for prostate cancer.” The Wesley also has a dedicated prostate cancer support nurse who provides specialised care, advice, information and education for patients and their families.

The hospital has recently upgraded its da Vinci robotic surgical system (also known as the da Vinci robot) which is used for minimally invasive urological surgery including prostatectomy.

The Wesley now has the new da Vinci Si, which offers surgeons an improved high-definition field of vision and versatility for future applications. The hospital has also invested in Firefly fluorescence imaging capability for the system which helps surgeons better identify tumour cells and which will be used at the hospital for renal surgery.

Dr Yaxley is one of five surgeons at the Wesley performing prostate surgery using the da Vinci robot, and says it offers potential benefits to patients over traditional open procedures, including less bleeding, less-post operative pain, reduced risk of infection, shorter hospital stays and quicker return to normal activity.

“We have done more than ,1200 robotic urological procedures at the Wesley and there has been a very smooth introduction of this technology,” he said. 



Dr John Yaxley

“The mpMRI software package used at the Wesley provides diffusion-weighted imaging which looks at the way water molecules move within tissues. An ADC (Apparent Diffusion Coefficient) map is mathematically generated to demonstrate the relative motion of water within tissues, and to aid detection of prostate cancer within the prostate.

“On the MRI a potential cancer will show up as a dark spot in the prostate. The lower the ADC number generated the more likely the person has prostate cancer. ADC numbers under 700 are also likely to be a high-grade aggressive cancer.”

Dr Yaxley said mpMRI also offered benefits when a prostate biopsy was required.

“Often when biopsies are done, we are taking random core samples looking for the cancer, because the cancer is too early to feel on rectal examination,” he said. “When you can see where the possible cancer is on an MRI, you then know to direct the biopsy needles to that area. You can also determine with the MRI which is the best way to do the biopsy, whether via the rectum or the perineum.

“If you do an MRI-guided biopsy, rather than the traditional ultrasound-guided biopsy, you can see the needle going directly into the