Prostate Cancer Foundation of Australia

RESEARCH AWARENESS SUPPORT

Will PSA testing be replaced? Novel screening approaches.

By Kalli Spencer

For now PSA (prostate specific antigen) is the most widely used screening test (as discussed in previous blogs). But there is a large amount of research examining other ways to determine who gets screened and how they will be screened. Prostate cancer screening was very topical at the recent European Association of Urology (EAU) virtual meeting in July. Some new blood tests and formulas have been suggested along with imaging to guide algorithmic developments. This blog will focus on some of these clinical trials.

To start with, its important to review the risk factors for developing prostate cancer:

- Increasing age (>50 years)
- Development of symptoms (urination difficulty/blood in sperm) [Other conditions can cause these symptoms however – but they must be checked)

The following factors are considered high risk:

- > 40 years of age with a father, brother or son who has been diagnosed with prostate cancer, especially if they were diagnosed when they were young
- family history of prostate, breast or ovarian cancer, especially BRCA1 and BRCA2 gene germline mutations.
- Black African ancestry

What is a genetic germline mutation? A gene change in a body's reproductive cell (egg or sperm) that becomes incorporated into the DNA of every cell in the body of the offspring. Germline mutations are passed on from parents to offspring.

The current EAU guidelines (2021) recommend genetic germline testing in the following instances:

- Metastatic prostate cancer
- High risk prostate cancer and a family member diagnosed with prostate cancer <60 years of age
- Multiple family members diagnosed with prostate cancer at age <60 years or a family member who died from prostate cancer
- In those with high-risk germline mutation or a family history of multiple cancers on the same side of the family.

At the EAU meeting a screening algorithm has been proposed based on age, PSA level, PSA density and patient risk factors[1]. From this stratification MRI and consequently a prostate biopsy is offered based on risk. According to their research, only 10% of men 50-59 years old and 25% of men 60-70 years old would move on to risk stratification. PSA density alone results in 30% fewer referrals for MRI and prostate biopsy. The ultimate goal is 50% immediate reduction of overdiagnosis and overtreatment.

The PROBASE trial in Germany (2014-2019), is a risk-adapted screening study for prostate cancer based on age and baseline PSA alone[2]. They found that further diagnostic testing in young men should only be initiated if an increased PSA level is confirmed on a second test.

The prevalence of prostate cancers in 45 year old's is very low and that of unfavorable cancer is even lower.

The MVP trial in Canada compared MRI to PSA. The results have not been published but preliminary findings suggest that MRIs are useful on their own with reduced prostate biopsies required but more cancer being diagnosed, including clinically significant cancers.

The Stockholm3 MRI trial, which is another risk-adapted screening protocol uses a genomics test and MRI[3]. STHLM3RS is a blood test that analyses PSA and 4 proteins, 101 genetic markers, and clinical information (family history, age, earlier biopsies, and use of 5-alpha reductase inhibitors). The aim of this study was to compare traditional screening with a web-based risk prediction combined with MRI-targeted biopsies for prostate cancer screening. They found that combining the Stockholm3 test with an MRI target biopsy for cancer screening decreases overdiagnosis while maintaining detection of clinically significant prostate cancer.

In Australia, the National Institute of Integrative medicine is trialling a new screening blood test which detects circulating tumour cells (CTC) called ISET[4]. Preliminary published findings show the test to be highly sensitive and accurate for detecting prostate cancer. It will be interesting to see the long-term outcome of this study. The trial team are actively recruiting for the next phase of the trial.

While these screening approaches are still experimental, one tried and trusted test remains: the PSA Test. It is very important for those who are at high risk to start testing from age 40 or 45, every 2 years till age 69, with the starting age depending on the strength of family history.

Reference:

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Kalli is an internationally renowned Urological Surgeon, specialising in oncology and robotic surgery. He trained and worked in South Africa, before relocating to Australia where he has worked at Macquarie University Hospital and Westmead Hospital. His passion for what he does extends beyond the operating room, through public health advocacy, education and community awareness of men's health, cancer and sexuality.

Kalli has been involved with the Prostate Cancer Foundation of Australia for many years, advocating for improved cancer care and facilitating community prostate cancer support groups.