The ROYAL MARSDEN
NHS Foundation Trust

Patient information

Testing for spontaneous *BRCA 1* and *BRCA 2* variants in patients with prostate cancer

Somatic testing with a tumour biopsy sample

Background

In most people cancer occurs by chance. Cancer is caused by genetic mistakes that happen when our cells divide. These mistakes are called *variants* (also known as an *alterations* or *mutations*) A variant in a gene may interfere with the way in which it is supposed to work. Normal cells can transform into cancer cells if they develop specific genetic variants.

In approximately 11% of people with prostate cancer, their cancer occurs because the cancer cells have developed a variant in either the *BRCA1* or *BRCA2* gene. Determining if a cancer has been caused by a *BRCA1* or *BRCA2* variant may help in planning cancer treatment.

Please use the link or scan the QR code below to access the patient information video on testing for abnormalities in the BRCA genes 'Genetic testing for patients with prostate cancer' (please note the video concerns testing for both inherited BRCA alterations and BRCA alterations that occur spontaneously in the cancer and are not inherited).

https://patientinfolibrary.royalmarsden.nhs.uk/genetic-prostate

Why am I being offered this test?

You are being offered a test to look for variants in *BRCA1* and *BRCA2* because of your cancer diagnosis.

What are the benefits to me?

Knowing whether you carry a variant in *BRCA1* or *BRCA2* gives the cancer team more information about your cancer. This can help decisions about the treatments they recommend for you, for example which anti-cancer drugs would be most suitable. It will also give better information about your risk of developing cancer in the future.

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Radiotherapy and Chemotherapy Services F538021 & F538022

What will happen if NO variant in *BRCA1* or *BRCA2* is found?
This is the most likely outcome, as most men with cancer do not carry a variant in *BRCA1* or *BRCA2*. The cancer team will be able to use this information in their management decisions. Very occasionally, inherited variants in other genes can be involved in causing prostate cancer. If your doctors think other genetic factors might be involved in your cancer, for example, if you were diagnosed at a young age of if you have a strong family history of cancer, they can ask the genetics clinic to send you an appointment to evaluate this, if you have not already had an appointment with genetics.

What will happen if a *BRCA1* or *BRCA2* variant is found?
Your cancer team will use the information in their management decisions as there are certain anti-cancer drugs that are more effective for people with *BRCA1* or *BRCA2* variants in their cancer called 'parp inhibitors'. Your team will discuss whether one of these treatments might be appropriate as part of your treatment.
Mutations found in the tumour are usually not inherited, but more rarely they are inherited (germline variant). If a genetic change (somatic variant) is identified through tumour testing on a sample of your cancer, a germline test with a blood sample will be taken to confirm if this is the case for you. If the blood test confirms that you inherited the *BRCA* variant they will refer you to the genetics clinic for a consultation. The genetics team will send you an appointment to discuss the results and address any questions you have. They will also discuss what the test result means for your future risk of cancer, your options for future screening and measures to manage your risks.

What will happen if the test result is unclear?
Genetic variation is normal, because of human diversity. Most variants we detect can be easily categorised as harmful (cancer-causing) or benign (not associated with cancer risk). However, occasionally (<5%) the result may be inconclusive, and we may find a variant that needs further assessment before we can be sure whether it increased your cancer risk. If this occurs, your doctors will refer you to the genetics team, who will send you an appointment to explain the result and to discuss what further information and/or tests would be helpful to find out if the variant is linked to your cancer. If your test fails, we will request another sample via a blood test known as *germline testing*.

Do I have to have the test?
No, having this test is optional. Your decision will not affect the standard of care you receive from the hospital or doctor, which will be based on the available information.

What if I am not sure if I want to have the test?
We would recommend for you to have further discussions with a specialist member of the genetics team.

What will happen next if I say yes?
If you decide to have the test, we will request the tissue biopsy sample that was taken from your prostate to make your diagnosis. If we are unable to retrieve the sample, we can offer you a blood test to see whether you carry a *germline* variant in *BRCA1* or *BRCA2*.

How will I receive the results of the test?
The laboratory team will send your cancer team the results of the test. The results may take up to 10 weeks after receiving the biopsy sample but will usually be within 6-8 weeks. You will receive

your result from your treatment team or from the genetics team, by letter. If you do not receive your result within 8 weeks, please ask your treatment team for an update.

Will my information be confidential?
All data collected about you will be held under the provisions of the 1998 Data Protection Act and stored in secure files. The only people who will know your identity are the hospital staff and a few trained staff reporting the results who are bound by a professional duty to protect your privacy.

If you have any questions, please contact:
The Royal Marsden Prostate Cancer Nurse Specialists on **0208 661 3831** or send a message via the MyMarsden app.