The ROYAL MARSDEN
NHS Foundation Trust

Patient information

# Testing for inherited *BRCA1* and *BRCA 2* variants in patients with prostate cancer

***Germline testing with a blood sample***

**Background**

In most people cancer occurs by chance. A proportion of cancer is caused by spontaneously occurring genetic *variants* (also known as an *alteration* or *mutation*) in cancer cells, in genes known as *BRCA1* and *BRCA2*. In a small minority of people with prostate cancer (about 5%), their cancer occurs because they carry an inherited variant in either of the *BRCA1* or *BRCA2* genes. Determining whether a cancer is caused by a *BRCA1* or *BRCA2* variant may help in planning cancer treatment for you and in informing us about whether any of your relatives may also carry a *BRCA1* or *BRCA2* variant.

Please visit the below link 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-testing-patients-prostate-cancer

**What are the risks associated with inherited *BRCA1* or *BRCA2* variants?**

Inherited *BRCA1* and *BRCA2* variants result in increased risks of prostate, breast, ovarian and other cancers. They are found more frequently in people with particular types of cancer, in people diagnosed at a younger age, and in people with a strong family history of prostate, breast and/or ovarian cancer. It is important to identify if a cancer is due to an inherited *BRCA1* or *BRCA2* variant because it provides you and your doctors with information that can help treat your cancer and manage your risk of future cancer. It can also provide information for relatives about their risk of cancer.


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**Why am I being offered this test?**

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

**What are the benefits to me?**

Knowing whether you carry an inherited 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.

**Does having the test have implications for my family?**

In most people the test will not find an inherited genetic variant. This could be reassuring for your relatives as it would indicate that your cancer was unlikely to be due to hereditary factors that would put them at a higher risk of developing cancer. If your test shows you do carry an inherited gene variant, it is possible that some relatives may have inherited the variant. Relatives could then be referred to discuss this with a specialist genetics team and have a test if they chose to.

**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 an inherited 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 and 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. They will evaluate your family history and can provide information for the appropriate family members should they wish to consider testing to see if they have inherited the variant. Any relatives can be referred to a Genetics Unit, either at the Royal Marsden or more locally to them, to discuss this further.

**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.

**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, you will be asked to sign a consent form. A blood sample will be taken for the test.

**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 but will usually be within 6-8 weeks. You will receive your result from your treating 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:
Please contact your prostate cancer care team.