

Oxford Regional Genetic Department

# BRCA1 and BRCA2 for men

Information for men from families with a  
known alteration in the BRCA1/2 gene



## Introduction

BRCA1 and BRCA2 are two genes which can sometimes be linked to breast, ovarian and prostate cancer in families. These genes are often considered most relevant for women. However, men can also carry these genes. This leaflet gives information specifically for men at risk of cancers related to BRCA1 or 2.

## What are genes?

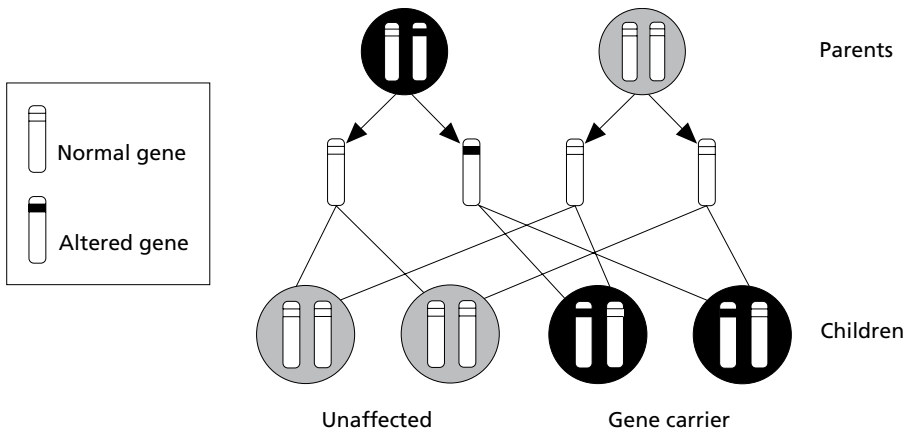
Genes are instructions which tell our bodies how to work. We each have about 30,000 genes. Most of our genes come in matching pairs. We get one copy from our mother and one copy from our father. Each gene has a specific job.

## What do BRCA1 and BRCA2 do?

The BRCA1 and 2 genes are important in controlling how our cells grow and in repairing damage in our cells. By doing this job, the genes help to protect us from getting cancer. If the gene is altered, it will not be able to do its job properly. If BRCA1 or 2 is altered, women have a higher risk of breast and ovarian cancers and men of prostate and breast cancers.

## How are BRCA1 and BRCA2 inherited?

People who have a BRCA alteration have one altered and one working copy of the gene. Each time they have a child; there is a 1 in 2 (50%) chance that they will pass on the working copy and a 1 in 2 (50%) chance that they will pass on the altered copy. This is shown in the following picture.



Although the cancers which are most often linked with BRCA1 and BRCA2 generally occur in females (breast and ovarian cancer), both women and men can carry an altered copy of the gene.

## How do I know if I have a BRCA gene alteration?

If someone in your family is known to have a BRCA alteration, you could have a blood test to see if you also carry it. The results are usually available within a month.

We would arrange an appointment for you to discuss the implications of testing. It is sometimes useful to think about how you and other family members might feel about the results and how you might cope with this. It can also be helpful to consider what screening you may have if you carry the alteration.

Some people worry that genetic testing can affect their ability to obtain life insurance. An agreement with the Association of British Insurers means this shouldn't be the case at the moment but this may change in the future.

## What does it mean for men who carry a BRCA alteration?

The implications for men who carry a BRCA gene alteration depends on whether the alteration is in BRCA1 or BRCA2.

Men who carry a BRCA1 gene alteration, may have a slightly higher risk of male breast cancer. About 1% or 1 in 100 men who carry BRCA1 develop breast cancer. Some studies suggest there may be a slight increase in the risk of prostate cancer, but this is not conclusive.

Men who carry a BRCA2 gene alteration have a higher lifetime risk of developing prostate cancer. 1 in 4 - 1 in 5 (20-25%) of men who carry BRCA2 develop prostate cancer at some point. Most of these prostate cancers occur over the age of 45. Men who carry a BRCA2 alteration also have a higher chance of getting breast cancer. The chance of this is about 1 in 14 (7%).

## Is there any screening available?

There are screening tests available for prostate cancer but there is some question about how reliable they are.

Prostate screening involves a blood test to measure the level of a marker called PSA (prostate specific antigen). The doctor may also examine the prostate by inserting a finger into the back passage to check that the prostate is not enlarged. PSA levels may be raised in prostate cancer, but these tests will not detect all cases of prostate cancer. PSA levels can also be raised in men who do not have cancer. Often, a man with a raised PSA level does not have prostate cancer but this can cause unnecessary investigations and anxiety. If a man has a raised PSA, he may need another PSA test, an examination or a biopsy.

If you carry a BRCA1 gene alteration you could discuss prostate screening with your GP if you wish. As the risk is higher for men with BRCA2 alterations, we may refer men to a local urologist to

discuss a suitable screening program from the age of 45.

There is no useful screening for male breast cancer, but if you are concerned about any changes to the chest area, you should see your GP initially to get them checked.

## What symptoms should I be aware of?

Problems with passing urine can indicate a problem with the prostate. If you notice a persistent change in the flow, urgency or frequency of urination or have difficulty, pain or blood when passing urine, you may wish to speak to your GP. Most of the time, these symptoms will not be due to prostate cancer.

## What about my children?

If you do not carry the gene alteration found in your family, your children cannot inherit it. If you do carry it, they will have a 50% chance of inheriting it. They may wish to have a genetic test when they are adults to inform them about their risk and suitable screening.

Many men worry particularly about their daughters. You may find the 'Hereditary Breast and Ovarian Cancer' leaflet helpful as it gives more information for women. As their risk of developing cancer below the age of 30 is low, we would not usually begin any screening for them until at least this age.

Some men choose to delay testing until their children are in their 20's, when it is more relevant for them. It can be difficult to talk to your sons, daughters or other relatives about this. We can discuss this with you further if you wish.

## Research studies

There are some research studies that men who carry a BRCA alteration can take part in.

The IMPACT study is looking at how effective prostate screening is for BRCA1 and 2 carriers.

The EMBRACE study is looking at other factors which may affect why some people with BRCA alterations develop cancer and others do not.

Your genetic counsellor or clinical geneticist can give you more information about these studies if you wish. It will not affect your care if you choose not to take part.

## Further Information

You may also find the leaflet on 'Hereditary Breast and Ovarian Cancer' useful. Please ask us if you would like a copy.

**[www.cancerresearchuk.org](http://www.cancerresearchuk.org)**

**[www.macmillan.org.uk](http://www.macmillan.org.uk)**



If you need an interpreter or need a document in another language, large print, Braille or audio version, please call **01865 221473** or email **PALSJR@ouh.nhs.uk**

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