



Guy's and St Thomas'
NHS Foundation Trust

Recessive inheritance

**This leaflet gives information about
recessive inheritance.**

What are genes?

Genes are the unique 'instructions' which make each of us an individual. There are many thousands of different genes, each carrying a different instruction. If a gene is mutated (changed), it can cause a genetic condition or disease.

We have two copies of each gene. One copy is inherited from each parent. When we have children, we pass on one copy of each of our genes.

What does recessive inheritance mean?

This means that there are gene mutations in BOTH copies of a particular gene pair. As there is no working copy of the gene then the body is missing a particular instruction and that person will be affected with the genetic condition.



Affected gene



Unaffected gene

Person affected by a disease



Both copies of the gene pair has an alteration so this person is affected by the disease

Carrier of a disease



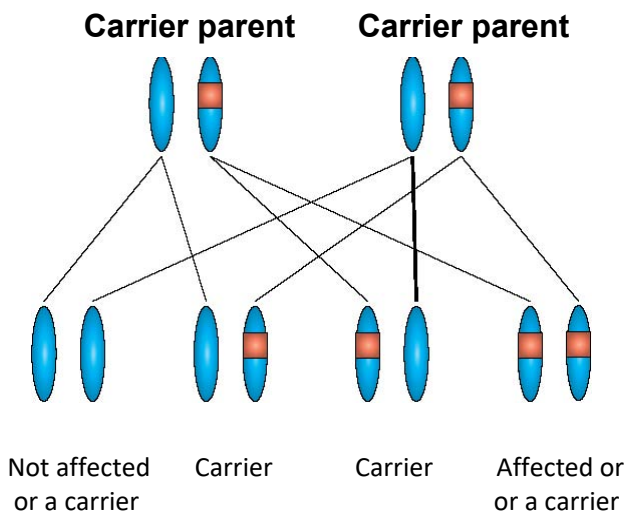
One copy of the gene pair has an alteration but this person is not affected by the disease as they still have a healthy copy of the gene

Having children

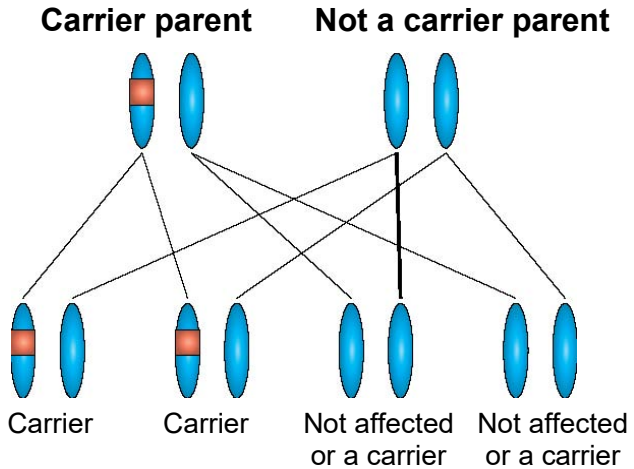
Each parent passes on one copy of each gene pair, in the egg or sperm. This happens completely randomly - we have no control over which genes we pass on.

If both parents carry the same mutated recessive gene, then each child they have has:

- a 1 in 4 (25%) chance of inheriting the altered gene from both parents and being affected with the condition.
- a 1 in 2 (50%) chance of inheriting one copy of the altered gene and one normal copy. If this happens, they are healthy carriers themselves.
- a 1 in 4 (25%) chance of inheriting two normal copies of the gene and having no related problems.



If only one parent is a carrier of the altered gene, then each of their children has a 1 in 2 (50%) chance of being a healthy carrier, depending on which copy of the gene pair the carrier parent passes on.



Parents who are closely related to each other, such as first cousins, are more likely to have children with recessive conditions. This is because they have a higher chance of both being carriers of the same genetic condition.

Contact us

If you live in the South East Thames Region: Clinical Genetics Department
7th Floor, Borough Wing, Guy's Hospital,
Great Maze Pond, London SE1 9RT

t: 020 7188 1364, **f:** 020 7188 1369

w: www.guysandstthomas.nhs.uk/genetics

Pharmacy Medicines Helpline

If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline.

t: 020 7188 8748, Monday to Friday,
9am-5pm

Your comments and concerns

For advice, support or to raise a concern, contact our Patient Advice and Liaison Service (PALS). To make a complaint, contact the complaints department.

t: 020 7188 8801 (PALS)

e: pals@gstt.nhs.uk

t: 020 7188 3514 (complaints)

e: complaints2@gstt.nhs.uk

Language and accessible support services

If you need an interpreter or information about your care in a different language or format, please get in touch.

t: 020 7188 8815

e: languagesupport@gstt.nhs.uk

NHS 111

Offers medical help and advice from fully trained advisers supported by experienced nurses and paramedics. Available over the phone 24 hours a day. **t:** 111

NHS website

Online information and guidance on all aspects of health and healthcare, to help you take control of your health and wellbeing.

w: www.nhs.uk

Get involved and have your say: become a member of the Trust

Members of Guy's and St Thomas' NHS Foundation Trust contribute to the organisation on a voluntary basis. We count on them for feedback, local knowledge and support. Membership is free and it is up to you how much you get involved. To find out more, please get in touch.

t: 0800 731 0319

e: members@gstt.nhs.uk

w: www.guysandstthomas.nhs.uk/membership

Was this leaflet useful?

We want to make sure the information you receive is helpful to you. If you have any comments about this leaflet, we would be happy to hear from you, fill in our simple online form,

w: www.guysandstthomas.nhs.uk/leaflets, or

e: patientinformationteam@gstt.nhs.uk

Leaflet number: 2156/VER2

Date published: March 2019

Review date: March 2020

© 2019 Guy's and St Thomas' NHS Foundation Trust

A list of sources is available on request