Recessive Inheritance

An Information Leaflet for Parents and Families

If you need more advice about recessive inheritance please contact:

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What is Recessive Inheritance?

Genes are the unique set of instructions in every cell which make each of us individual. There are many thousands of genes, each carrying a different instruction. If a gene is altered, it can cause a genetic condition or disease. This gene alteration is known as a mutation.

What does Recessive Inheritance mean?

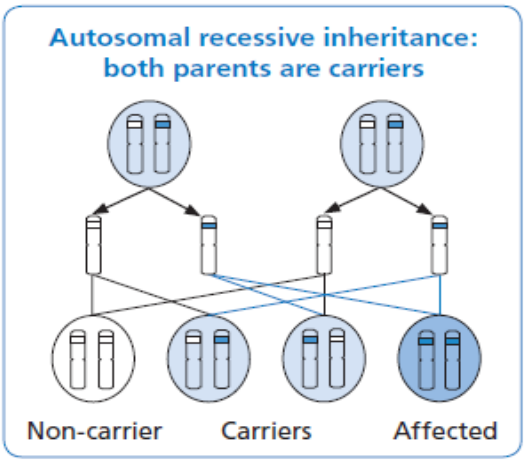
Some conditions are inherited in a way that is called recessive. Individuals who have two altered copies of a gene are affected with the condition. Individuals who have only one altered copy of gene are usually completely healthy. They are known as carriers because they carry one altered copy of a gene. Their normal copy of the gene keeps them healthy and compensates for the altered copy.

Having children

If both healthy parents carry the same altered recessive gene, then there are four possible outcomes for each pregnancy they have, regardless of the sex of the child (see Diagram 1):

- A 1 in 4 (25%) chance of inheriting the altered gene from both parents and being affected
- A 1 in 2 (50%) chance of inheriting the altered gene from one parent and therefore being a healthy carrier
- A 1 in 4 (25%) chance of inheriting the normal gene from both parents and being neither a carrier nor affected

Diagram 1



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, but will not be affected (see Diagram 2)

If one parents is affected and the other is a carrier, then each of their children will have a 50% chance of being affected and 50% chance of being a carrier (see Diagram 3)

If one parent is affected with the condition, then each child will be a carrier but not affected, once the other parent is not a carrier (see Diagram 4)

Couples who are closely related to each other (eg: first cousins) are more likely to share a copy of the same altered gene, thereby increasing the likelihood of having a child with a recessively inherited condition.

Diagram 2

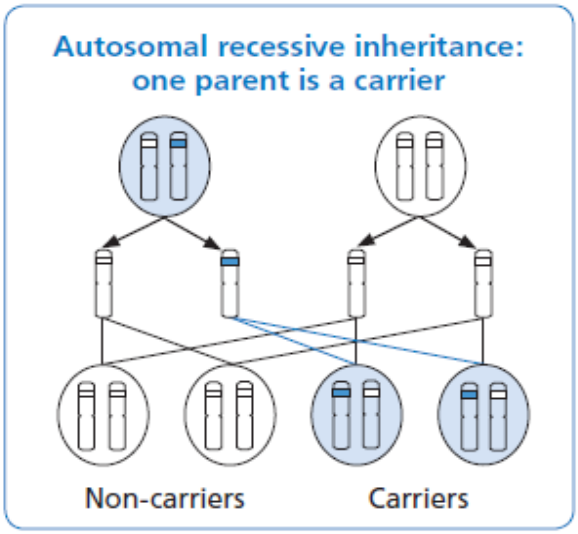


Diagram 3

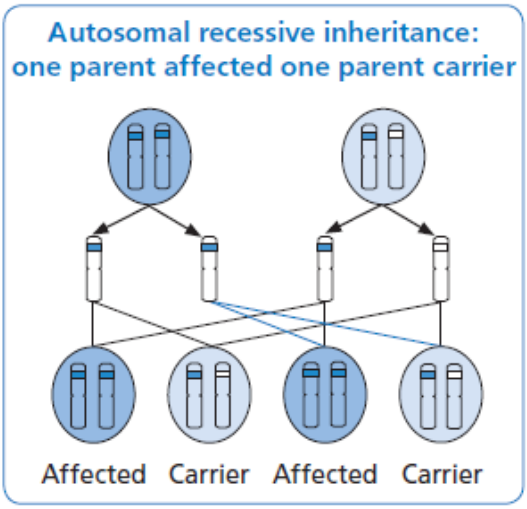
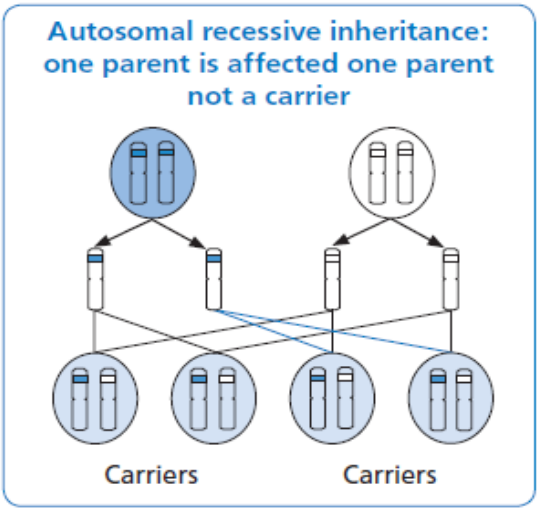


Diagram 4



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