Communication aid

Autosomal recessive inheritance: two carrier parents

NHS England

This communication aid has been produced for clinicians to help support and guide conversations about autosomal recessive inheritance with their patients.

What causes autosomal recessive conditions?

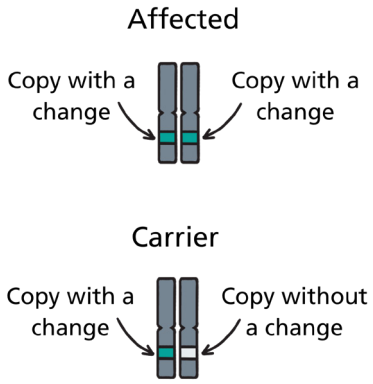
We all have over 20,000 genes, which provide instructions for how our body works.

Our genes are packaged into structures called **chromosomes**.

We all have two copies of each of our **autosomal genes**, one inherited from each of our parents.

Individuals affected by an autosomal recessive condition have a **change** on both copies of the gene.

When someone has a change on just one of the two copies of the gene, they are known as being a 'carrier' and would not usually be expected to develop the condition.



How are changes in autosomal genes passed on to children?

When two carriers have a child together, each parent will either pass on their gene copy with the change or the copy without the change on to their child. This means:

- There is a 25% (1 in 4) chance of having a child affected with the condition.
- There is a 50% (2 in 4) chance of having a child who is a carrier of the condition (like both parents).
- There is a 25% (1 in 4) chance of having a child who is not affected with the condition and is not a carrier.

An unaffected child will have about a 66% (2 in 3) chance of being a carrier.

Key terms

Chromosomes: Packages of DNA which are found in our cells.

Autosomal genes: These genes are located on chromosomes that are not sex chromosomes.

Gene change: Changes in a gene or chromosome used to be referred to as 'mutations'. Now, they are more commonly called changes, alterations or variants.

Want to learn more?

Scan to watch an animation explaining autosomal recessive inheritance

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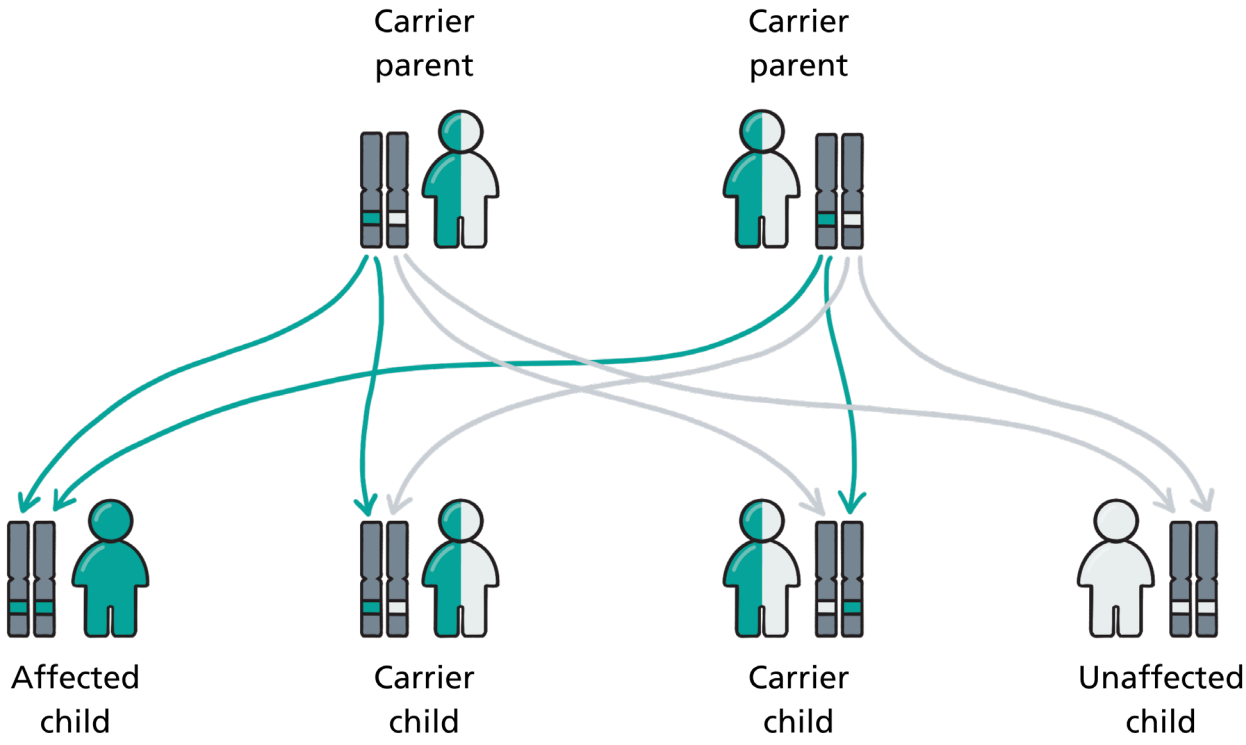

Key

- Gene or chromosome without a change
- Gene or chromosome with a change

25% (1 in 4) chance of having an affected child

50% (2 in 4) chance of having a carrier child

25% (1 in 4) chance of having an unaffected, non-carrier child

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