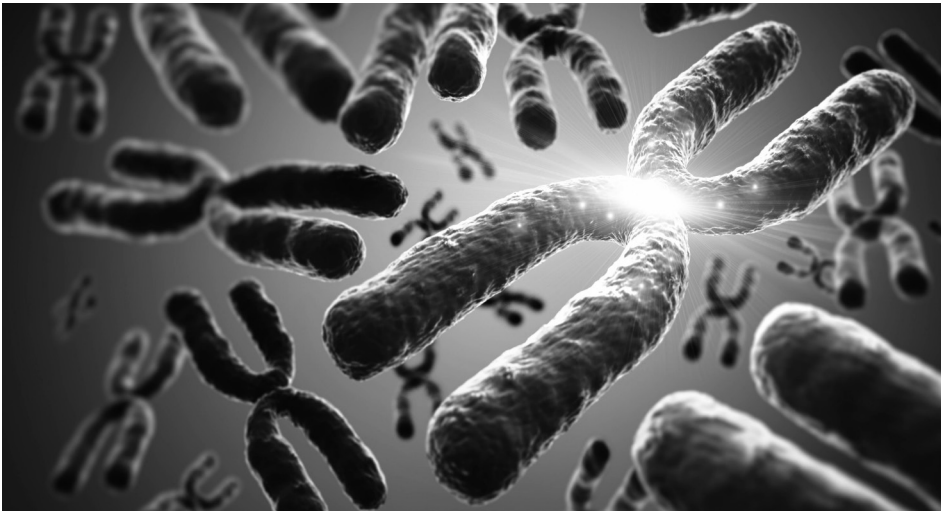
NHS
Greater Glasgow and Clyde

Intermediate Fragile X Result: What does it mean for your family?



Why have you been given this leaflet?

Your child .....
(Name and CHI Number)

had a genetic test for a condition called Fragile X syndrome. Your child was found to have a FMR1 intermediate result. This leaflet will explain what that means for you and your family.

The FMR1 intermediate result does **not** mean your child has Fragile X Syndrome. It is **not** the cause of your child's developmental difficulties and will **not** cause them any health problems as they get older.

What is Fragile X syndrome?

Fragile X syndrome is one cause of autism and learning disability. There are many other causes. A test for Fragile X syndrome is commonly done to investigate developmental concerns in children.

Fragile X syndrome is caused by a specific change in the FMR1gene on the X chromosome.

What are genes and what are chromosomes?

Genes are the codes within our cells that act as instructions for how our bodies are built and maintained. These are packaged into 23 pairs of chromosomes; one of each pair is inherited from our mother, and the other from our father.

One of the 23 pairs of chromosomes are called the sex chromosomes. Males typically have one X and one Y sex chromosome (XY), while females typically have two X sex chromosomes (XX). Mothers always pass on an X chromosome to their children. Fathers pass their X chromosome to their daughters and their Y chromosome to their sons.

How do changes in the FMR1 gene cause problems?

There is an area in the FMR1 gene where the code repeats itself. It is called the 'CGG repeat', and it is present in everyone.

The size of the CGG repeat can vary. Repeat sizes within the 'normal' range (Table 1) are stable, meaning they usually remain the same size through future generations in the family. In this case, future children and grandchildren will have the same size of CGG repeat.

CGG repeats that are larger than the normal range can be unstable, which means they may increase in size through future generations in the family. In this case, future children and grandchildren may have larger CGG repeats. People who carry 55 to 200 copies of the repeat (in the 'premutation' range) may be at risk of certain medical symptoms, such as difficulties with balance or early-onset of menopause in women. Repeats that are larger still (more than 200 copies) cause Fragile X syndrome.

Therefore, in families who carry repeats sizes that are larger than the normal range, the CGG repeat can gradually increase in size until a child is born who will have Fragile X syndrome. However, the increase in size with each generation is usually small.

Table 1:

Normal range:	6-44 CGG repeats
Intermediate range:	45-55 CGG repeats
Premutation range:	55-200 CGG repeats
Fragile X syndrome:	more than 200 CGG repeats

What does an intermediate result mean?

Occasionally, the test shows an intermediate result (45-55 CGG repeats). This result can cause anxiety. However, it is **not** considered to be an abnormal result. Although the repeat size is not in the typical range, it can be thought of as the higher end of normal.

An intermediate result will **not** cause learning disability, autism or other health problems.

What does the intermediate result mean for future generations, like my children and grandchildren?

- **In 6 out of 7 cases, intermediate repeats** are stable (remain the same size in future children) and will **not** be associated with a risk of future generations being affected by Fragile X Syndrome.
- **In 1 in 7 cases intermediate repeats** will be unstable (increase in size in future children). There is a risk that Fragile X syndrome or related symptoms could occur in future generations.
- There are **no reported cases** of a patient with an intermediate result having a child with Fragile X syndrome in a single generation.

What do I need to do when an intermediate result is found?

It is important to let other family members know the result, so future generations can be offered genetic testing once they are adults and considering family planning.

In most cases, there will be no increased risk of Fragile X syndrome for future generations.

Is there anything else that needs to be done for my child?

Your child's Paediatrician will decide if your child needs any further investigations or referrals to other clinics or therapists.