

Hearing & Amplification

Causes of Hearing Loss

Answers To Some Frequently Asked Questions

Why did this happen to my child?

Hearing science professionals estimate that 1 in 300 babies are born with some degree of hearing loss. Human genetic professionals estimate that half of those cases of hearing loss are due to the genes that the baby inherited. About 12 babies per 10,000 have a recessive cause of their hearing loss. Congenital hearing loss (hearing loss present at birth) that is due to one of the many recessive genes is about twice as common as Cystic Fibrosis, another recessive genetic condition.

To answer the question, “Why did this happen to my child?” there could be at least one of three answers.

- Unknown (the cause of the hearing loss cannot be discovered)
- Non-genetic (illness or trauma before, during or after birth)
- Genetic (the hearing loss will depend on the type of inheritance present)

In 70% of cases of genetic hearing loss, the cause is **autosomal recessive**; therefore,

- Both parents are “carriers” of a gene that causes recessive hearing loss.
- There are many different genes in many different locations that may cause genetic hearing loss.
- At one of these locations, a parent may carry one of the recessive genes that can cause deafness and one of the dominant genes that is responsible for normal hearing. Because each parent has only one recessive gene that can cause hearing loss, both parents can hear.
- If each parent passed on one recessive gene, then the child would receive two recessive genes (one from each parent) and that is the cause of the recessive hearing loss.

In 15% of cases of genetic hearing loss the cause is **autosomal dominant**.

- In this case only one parent may have the dominant gene for hearing loss. That parent will have some degree of hearing loss. If the autosomal dominant gene also has other physical findings (i.e., it is syndromic), the parent who has the dominant gene also may have some of these other physical findings.
- The parent with the dominant gene may pass that gene for hearing loss on to the child.

For the final and remaining 15% of genetic hearing loss cases, the answer to the question, “Why did this happen to my child?” is specific to the particular type of genetic inheritance.

Why is my child being referred for Genetic Testing?

Genetic testing may determine whether your child’s hearing loss is due to non-genetic causes or to a gene that causes hearing loss. From this information, professionals can calculate the likelihood that other children in your family may also have a hearing loss due to the same cause. A full genetic evaluation will also determine if there are other health conditions that also need to be addressed.

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What does this mean for my child?

In general, why your child has a hearing loss does not affect how your child will be educated. Management of your child's hearing loss will be based upon the specific characteristics of your child and his or her communication needs. The findings from a genetic evaluation may be relevant for your child's medical care

What is the likelihood that this will happen again with any other children in my family?

If the cause of your child's hearing loss is an autosomal recessive gene, then the likelihood that this will happen in another child (assuming the same partner) is 1 in 4 (25%).

If the cause of your child's hearing loss is an autosomal dominant gene, then the likelihood that this will happen in another child (assuming the same partner) is 1 in 2 (50%).

Should I have my other children tested?

If it is determined that you and your partner carry the silent (recessive) gene which causes a hearing loss, then each of the children resulting with that partner have a 2 in 3 (66%) chance of also carrying that same gene.

Whether or not your hearing children should be tested to determine if they also carry the deafness gene is a matter of choice. Your hearing children may want to know their own gene carrier status so they would know whether to have their partners tested to determine if their children (your grandchildren) have a chance of having hearing loss due to this gene.

There is a 2 in 3 chance that hearing siblings (brothers and sisters) of a child with recessive hearing loss carry the hearing loss gene (like you and your partner). If this is the case, then their life partner could be tested to determine if they are also a carrier. If that partner is also a carrier of the same gene, then each of their children would have a 1 in 4 (25%) chance of having the same genetic hearing loss. If that partner does not carry the same gene, then all of their children would be hearing, although each child would have a 50% chance of carrying the hearing loss gene.

There is a 1 in 3 chance that hearing siblings do not carry the recessive hearing loss gene. If this is the case, there is virtually no chance of having a child with a hearing loss due to this gene, as the gene is not passed on.

Is this something that I need to be concerned about in my other relatives?

If you and your partner carry a recessive gene, then at least one of your parents and one of your partner's parents also carry the gene. This means that each of your brothers and sisters has a 1 in 2 (50%) chance of carrying the same gene.

What will all this cost?

The monetary costs of a genetic evaluation and medical tests are generally covered by your health insurance. Families should always check with their health insurance carrier to determine if genetic and medical tests are covered under their particular plan.

Some people experience the psychological cost of guilt that they were responsible for this condition in their child. Be assured that everyone carries some recessive genes that, if present in a double dose, would cause some sort of genetic condition. Guilt feelings are natural during the stages of grieving and acceptance of your child's hearing loss. However, if those feelings persist or if they affect your ability to function day-to-day, please seek out someone who can help.