York Teaching Hospital
NHS Foundation Trust

Hyperacusis or Altered Sound Tolerance in Children

Information for patients, relatives and carers

Audiology Department

ⓘ For more information, please contact:

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What is hyperacusis?

Hyperacusis is a term used to describe a heightened sensitivity to certain noises, where even everyday sounds cause discomfort or pain. Children with hyperacusis may cry, cover their ears, scream loudly or behave erratically when they hear a sound that they find hard to tolerate.

Hypersensitivity to sound may have significant effects on behaviour and concentration. For some children, it can be extremely distressing and trigger avoidance behaviours that lead to isolation and affect social interactions and daily activities with potential consequences on education, communication and learning.

Other forms of intolerance to sound are:

- Misophonia: a strong dislike to environmental sounds regardless of their volume e.g. the sound of people eating or people sniffing.

- Phonophobia: an adverse emotional response creating fear and anxiety around a sound when the sound is present and anticipation of hearing the sound in the future.

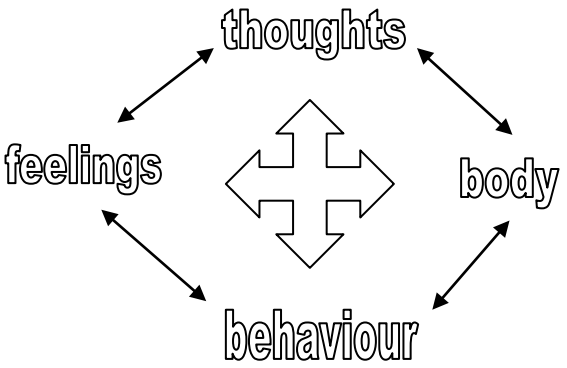
What causes hyperacusis?

The specific mechanisms that underlie hyperacusis are not known; however theories usually suggest association with increased sensitivity in the hearing pathway to the brain (the auditory system) which can be influenced by mood. Hyperacusis can be in one ear (but is most commonly felt in both ears), it can develop suddenly, or it can gradually develop over time. In most children, no specific cause for hyperacusis can be identified and it is simply that he/she does not like the sound. It can sometimes be triggered by exposure to a loud or unpleasant noise that takes them by surprise, for example a balloon popping or someone shouting.

Physiological and medical conditions associated with the onset of hyperacusis:

Hyperacusis can occur on its own or with other conditions. Certain triggers surrounding the onset of hyperacusis can include people who suffer a negative or traumatic life event or a period of increased stress. It can also be associated with conditions associated with emotional wellbeing, such as anxiety and depression chronic fatigue syndrome, migraine and visual over-sensitivity.

In some cases, exposure to loud noises such as fireworks or a balloon popping can trigger hyperacusis. This can result in an anticipation of fear of loud sounds and an avoidance of certain situations such as parties.



When we have a negative reaction to a sound we stimulate an automatic ‘fight or flight’ response reflex to help us deal with potentially dangerous events. If we feel frightened, anxious, annoyed, excited or happy, our body secretes the hormone adrenaline into our blood stream. Adrenaline increases our heart rate, making the heart beat more strongly, enhances our senses (particularly sight, hearing and touch) and makes us more irritable and jumpy. If our thoughts and feelings towards a particular sound are affected by this ‘fight or flight’ response, it can alter our reaction to that sound in future and lead to a fear of pain or discomfort caused by the sound. This will often then develop avoidance behaviours, as a protective mechanism.

Studies have shown that hyperacusis is less common after the age of five to six years and unlike many adults affected, most children will find that the problem lessens with time (Sheffield Children’s Hospital).

Hyperacusis can be more common with certain syndromes and conditions, such as:

- Glue ear
- Williams's syndrome
- People who find it difficult to process sensory information e.g. those with autistic spectrum disorder or learning difficulties
- Lyme Disease
- Bell's Palsy
- Meniere's disease
- Head injury
- Noise induced trauma
- Use of medications that are toxic to the hearing organ such as high dose intravenous antibiotics and some cancer medications.

Hyperacusis/sound intolerance in children

Children with hyperacusis may struggle to listen to loud sounds such as the washing machine, vacuum cleaner, hand dryer or traffic noise. They can become afraid of these sounds and refuse to go near the source. Not all noises at the same volume will evoke the same reaction.

Glue ear

Glue ear is one of the most common childhood illnesses, and occurs when the middle ear becomes filled with sticky fluid. It's usually temporary and can be linked with ear infections and temporary hearing loss. For most children, glue ear will clear up on its own but if it doesn't your audiologist may refer your child to the Ear, Nose and Throat department for further management.

When a child has a hearing loss their dynamic range (the difference between the quietest sounds we can hear and the sounds that are so loud that they cause pain) is reduced so that normal, everyday sounds will be quieter. As the glue ear clears, their hearing generally improves and their dynamic range will increase. This can lead to temporary hypersensitivity to sound which may cause ordinary environmental sounds to become uncomfortably loud. This in turn can trigger a fear response to that sound; resulting in your child anticipating a similar bad experience and wanting to avoid loud situations in the future, like parties for example.

How can I help my child manage their sound sensitivity?

With children, it is important to acknowledge the intolerance to certain sounds, but not to focus on it or promote avoidance behaviours.

1. Whilst it is important to acknowledge that your child has intolerance to certain sounds, it is important not to focus on this in a negative way with your child.

2. The use of ear plugs, defenders or sound-cancelling headphones should be avoided except in extreme or short-term, unavoidable situations (e.g. during a music concert). Exposure to normal and tolerable sound is crucial if the ear and brain are to establish normal sensitivity. Earplugs deprive the auditory system of sound so the ears try to compensate by amplifying the quieter sounds making the ears even more sensitive.

3. Try to explain and rationalise the source of the sound.

4. Your child's fear reaction will often diminish if they can exercise some control over the sounds e.g. encourage them to clap their hands, play with noise makers or start and stop the vacuum cleaner/hair dryer themselves at home. You could try creating a game out of making sound/noise such as tapping a table top in a certain rhythm or shaking rattles as long as the child is always in control of the sounds.

5. Repeated gentle exposure to the noise may help reduce their reaction to it. You could record one or more of the problem sounds (e.g. laughter, clapping, thunder, sirens, and machine-noise) and allow them to initially play the recording at a very low volume. Gradually over a period of days or weeks the volume can be increased. Over time controlled exposure to sound should help your child learn that sound is not something that they need to be afraid of and can actually be fun.

6. Children should not be forced to stay in a situation that is causing them obvious distress (for example during singing in assembly). This may compound their apprehension and make them associate that situation (e.g. the assembly hall) with pain or discomfort. If fear of a specific situation has become established, it is important to gradually reintroduce the child, with time and care.

7. Older children may be reassured if they have the teacher's permission to leave the classroom for a few minutes at any point if they are exposed to an aversive noise. Your audiologist will usually be happy to liaise with teachers via letter to explain the implications of hyperacusis and how they can best support your child in school.

Relaxation

Being able to help your child relax is important in managing the stress often associated with hyperacusis. It can help your child to reduce any physical anxiety response to hyperacusis.

There are various techniques which can be taught including controlled breathing and muscle relaxing exercises.

Where can I obtain further information?

The Hyperacusis Network (www.hyperacusis.net) is an invaluable resource, with much useful and up to date information, lively forums and the opportunity to purchase sound therapy CDs for hyperacusis.

Relax kids (www.relaxkids.com)

British Tinnitus Association Helpline: 0800 018 0527 (www.tinnitus.org.uk)

References

Living with Tinnitus and Hyperacusis; (2010) McKenna, L. Baguley, D. McFerran, D. p108

Tell us what you think of this leaflet

We hope that you found this leaflet helpful. If you would like to tell us what you think, please contact: Audiology Department, The York Hospital, Wigginton Road, York, YO31 8HE, telephone 01904 726741 or email audiologyadmin@york.nhs.uk.

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