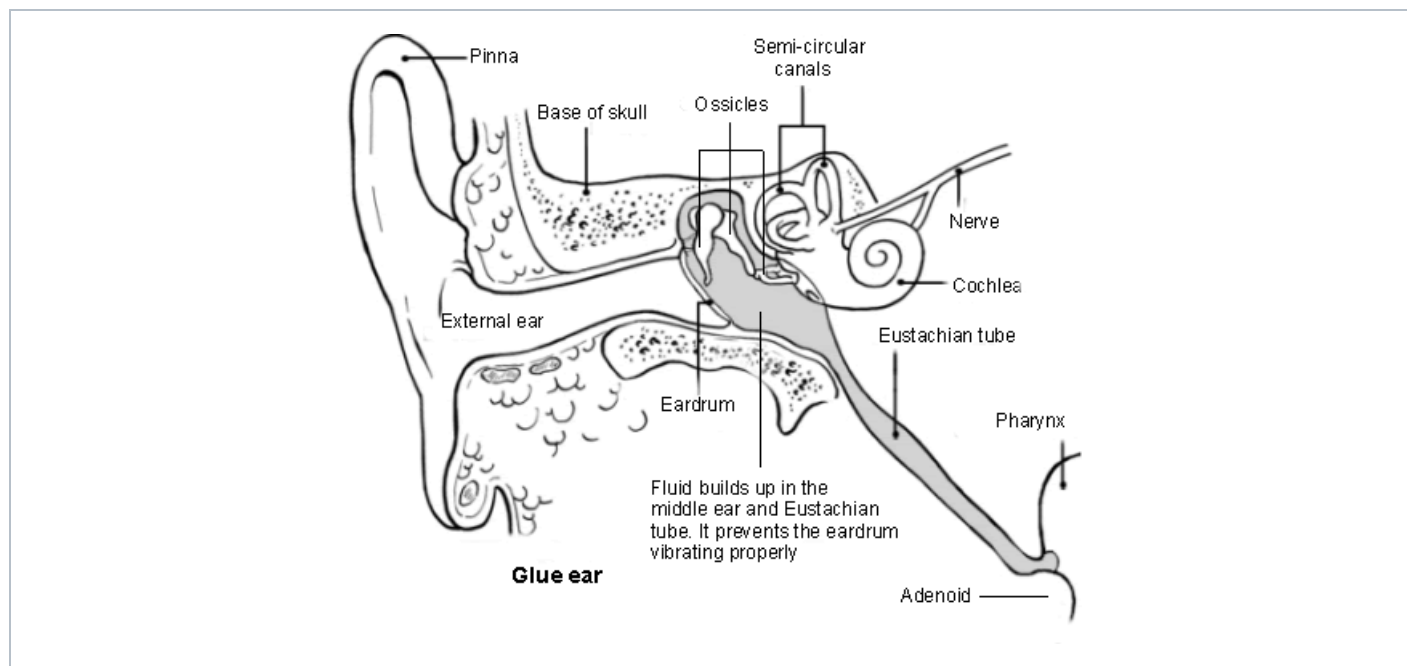


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## Glue Ear

Glue ear is a condition where the middle ear fills with glue-like fluid instead of air. This causes dulled hearing. In most cases it clears without any treatment. An operation to clear the fluid and to insert ventilation tubes (grommets) may be advised if glue ear persists.

### What is glue ear?



Glue ear means that the middle ear is filled with fluid that looks like glue. It can affect one or both ears. The fluid has a deadening effect on the vibrations of the eardrum and tiny bones (ossicles) created by sound. These affected vibrations are received by the cochlea and so the volume of the hearing is turned down. Glue ear usually occurs in young children but it can develop at any age. Glue ear is sometimes called otitis media with effusion (OME).

### How does the ear work?

The ear is divided into three parts - the outer, middle and inner ear. Sound waves come into the outer (external) ear and hit the eardrum, causing the eardrum to vibrate. The vibrations pass from the eardrum to the middle-ear bones (ossicles). These bones then transmit the vibrations to the cochlea in the inner ear. The cochlea converts the vibrations to electric signals which are sent down the ear nerve to the brain. The brain interprets these signals as sound. [For more information about the structure of the ear and how hearing works, see the separate leaflet called Hearing Problems.](#)

The middle ear behind the eardrum is normally filled with air. The middle ear is connected to the back of the nose by a thin channel, the Eustachian tube. This tube is normally closed. However, from time to time (usually when we swallow, chew or yawn), it opens to let air into the middle ear and to drain any fluid out.

### What causes glue ear?

The cause is probably due to the Eustachian tube not working properly. The balance of fluid and air in the middle ear may become altered if the Eustachian tube is narrow, blocked, or does not open properly. Air in the middle ear may gradually pass into the nearby cells if it is not replaced by air coming up the Eustachian tube. A vacuum may then develop in the middle ear. This may cause fluid to seep into the middle ear from the nearby cells.

Some children develop glue ear after a [cough](#), [cold](#), or [ear infection](#) when extra mucus is made. The mucus may build up in the middle ear and not drain well down the Eustachian tube. However, in many cases glue ear does not begin with an ear infection.

## How common is glue ear?

Glue ear is common. By 10 years of age, 8 out of 10 children will have had at least one episode of OME. It is most common between the ages of 2 and 5 years. Boys are more commonly affected than girls. Most cases occur in winter. It is more common in children who:

- Are in daycare.
- Have an older brother or sister.
- Live in homes where people smoke.
- Have **cleft palate**, which can affect how well the Eustachian tube works.
- Have **Down's syndrome**.
- Have **allergic rhinitis** - eg, hay fever.

## Can glue ear be prevented?

The cause of glue ear is not fully understood and there is no way of preventing most cases. However, the risk of developing glue ear is less in children who live in homes free of cigarette smoke and who are breast-fed.

## Glue ear symptoms

### Dulled hearing

This is the main symptom. Your child's hearing does not go completely and the hearing loss is often mild. However, the severity of hearing loss varies from child to child, is sometimes quite severe and can vary from day to day in the same child. Hearing varies according to the thickness of the fluid and other factors. For example, it is often worse during colds. Older children may say if their hearing is dulled. However, you may not notice dulled hearing if your child is younger, particularly if only one ear is affected. You may find that your child turns the TV or radio up loud, or often says "What?" or "Pardon?" when you talk to them. Babies may appear less responsive to normal sounds.

### Pain

This is not usually a main symptom but mild earache may occur from time to time. Children and babies may pull at their ears if they have mild pain. However, the gluey fluid is a good food for germs (bacteria) and ear infections are more common in children with glue ear. This may then cause bad earache for the duration of an infection. Always have some painkiller in your home in case earache develops.

### Development and behaviour may be affected in a small number of cases

If dulled hearing is not noticed then children may not learn so well at school if they cannot hear the teacher. Your child may also become frustrated if they cannot follow what is going on. They may feel left out of some activities. They can become quiet and withdrawn if they cannot hear so well.

There has been concern that dulled hearing from glue ear may cause problems with speech and language development. This in turn was thought perhaps to lead to poor school achievement and behavioural problems. However, research studies that have looked at this issue are reassuring. The studies showed that, on average, children with glue ear had no more chance (or just a little more chance) of having long-term behavioural problems or poor school performance compared with children without glue ear. However, these studies looked at the overall average picture. There is still a concern that the development of some children with glue ear may be affected - in particular, some children with untreated severe and persistent glue ear.

So, in short, developmental delay including speech and language is unlikely to occur in most children with glue ear. However, if you have any concern about your child's development, you should tell a doctor.

Research has also detected a link between glue ear and **attention deficit hyperactivity disorder (ADHD)** as well as anxiety and depression.

## How does glue ear progress?

The outlook is usually good. Many children only have symptoms for a short time. The fluid often drains away gradually, air returns and hearing then returns to normal.

- Hearing is back to normal within three months in about 5 in 10 cases.
- Hearing is back to normal within a year in more than 9 in 10 cases.
- Glue ear persists for a year or more in a small number of cases.

Some children have several episodes of glue ear which cause short but repeated (recurring) episodes of reduced hearing. The total time of reduced hearing in childhood may then add up to many months.

## Are any tests needed?

A referral to an ear, nose and throat (ENT) specialist may be advised at some point. This may be straightaway for babies who have hearing loss. (This is to rule out other serious causes of hearing loss.) It may be after a period of watchful waiting in older children who previously had good hearing. Hearing tests and ear tests can confirm the cause of hearing loss and show how bad the hearing has become.

## Glue ear treatment

### Can medication clear glue ear?

Various medicines have been tried to help clear glue ear. For example, antihistamines, steroids, decongestants, antibiotics and medicines to thin mucus. However, research studies have shown that none of these medicines works in the treatment of glue ear.

### Wait and see (watchful waiting)

No treatment is usually advised at first as the outlook is good. Typically, a doctor may advise that you wait three months to see if the glue ear clears. Watchful waiting is sometimes called active monitoring. Watchful waiting isn't usually an option for some children - eg, those with **Down's syndrome** or **cleft palate**.

### Balloon treatment

For this treatment a special balloon is blown up by the child using their nose. This is called auto-inflation. It puts back pressure into the nose and may help to open up the Eustachian tube and allow better drainage of the fluid. The child needs to do this regularly until the fluid clears. The research studies that looked into this treatment found that it seems to help in some cases but not all. It may improve middle ear function and reduce the need for an operation. It is difficult for young children to do properly. With well-motivated older children who can use the device, it may be worth a try. It is not thought to cause any side-effects or problems. You can get an auto-inflation kit called **Otovent®** on prescription, or you can buy it from pharmacies.

### Surgery

A small operation may be advised by an ear specialist if your child's glue ear persists, or is severe. This involves inserting small tubes called grommets (see below). The operation isn't done as often as it used to be because it is now realised that most cases of glue ear get better without treatment. Also there isn't a lot of evidence that surgery makes much difference to a child's speech or language development.

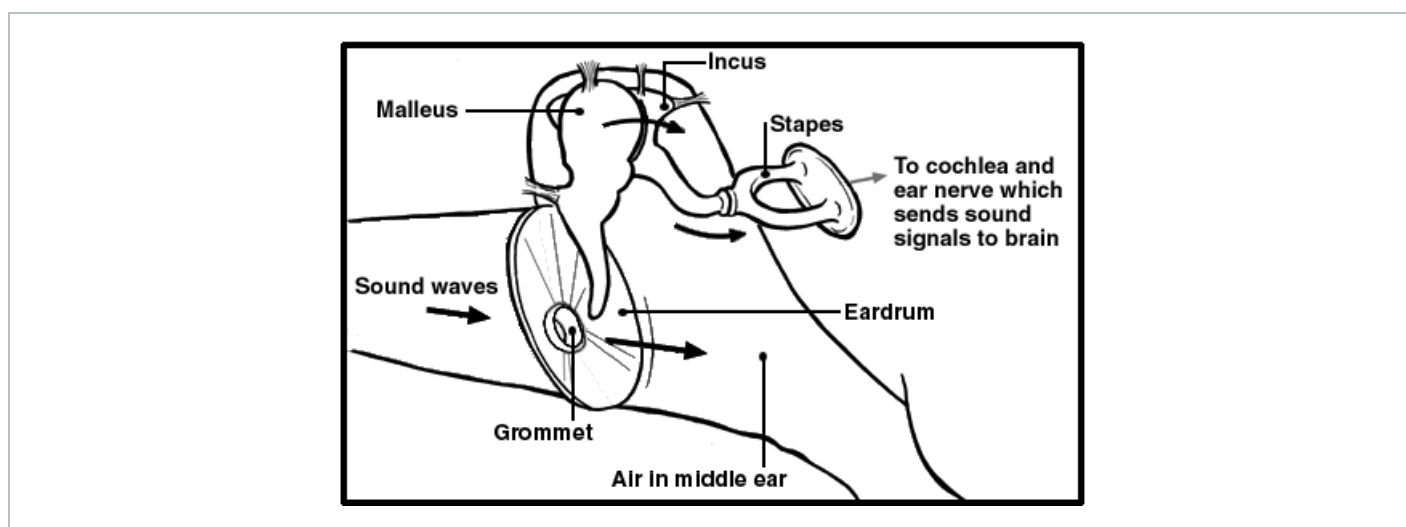
### Hearing aids

Hearing aids are an option instead of an operation to insert grommets in children with hearing loss who have glue ear in both ears. The hearing aids would usually only be used for the time until the glue ear clears away. You and your child should have an opportunity to discuss this option with the specialist and your views should be taken into account. The anxiety caused to some children by having to wear aids sometimes outweighs the benefits.

## Grommets

### What happens during the operation?

The operation is usually done as a day case, and usually an overnight stay in hospital is not needed. Your child will need to be put to sleep for a short time (have a **general anaesthetic**.) The operation involves making a tiny cut (about 2-3 mm) in the eardrum, whilst the child is under anaesthetic. The fluid is drained and a ventilation tube (grommet) is then usually inserted. A grommet is like a tiny pipe that is put across the eardrum. The grommet lets air get into the middle ear. Hearing improves immediately. This improvement in hearing only lasts as long as the grommet stays in place.



### What happens to the grommet after it is put into the ear?

Grommets normally fall out of the ear as the eardrum grows, usually after 6-12 months. The grommet is so small that you probably won't notice it. By this time the glue ear has often gone away. The hole in the eardrum made for the grommet normally heals quickly when the grommet falls out. Sometimes grommets need to be put in on more than one occasion if glue ear returns (recurs).

## Are there any complications?

Most children have no problems after surgery. Discharge and infection are the most common complications. Rarely, a condition called tympanosclerosis occurs in which a chalky sort of substance develops in the eardrum. It's not certain whether this causes any long-term problems. A small hole (perforation) of the eardrum occasionally persists in the eardrum after the grommet has come out. This usually heals without treatment but occasionally a small operation is needed to fix it. Minor damage and scarring to the eardrum may occur but this is unlikely to cause any problems.

All general anaesthetics carry a risk, but only a very tiny one. Your anaesthetist will explain this to you.

## Advice for children with grommets

Children with grommets can go swimming but should avoid diving. Swimming caps and earplugs are not necessary. You should avoid ducking your child's head in soapy water. Children with grommets do not need to avoid flying in an aeroplane. If anything, they will have less pain with taking off and landing as the pressure between the middle and outer ear will be more equal.

## What can I do for my child with glue ear?

The main thing is to be aware that your child will have dulled hearing until the condition goes away or is treated. The following are some tips:

- Talk clearly and more loudly than usual (but you don't have to shout).
- Attract your child's attention before speaking to him or her. Talk directly face to face and down at their level.
- Cut out background noise when you talk to your child (for example, turn off the TV).
- Understand that your child's frustration or bad behaviour may be due to dulled hearing.
- Discuss the problem with the teacher if your child is at school or nursery. Sitting your child near to the teacher may help. Often in a class there are several children with glue ear and raising awareness of glue ear with teachers is helpful.
- Don't let anybody smoke in the same home as your child.

Even after an episode of glue ear has cleared up, remember the problem may return for a while in the future. In particular, after a cold or after an ear infection.

## Are children routinely checked for hearing?

Yes. All children should have a routine hearing test either shortly after birth or aged about 8-9 months. However, most cases of glue ear develop in children aged 2-5 years. Therefore, hearing may have been fine at the routine hearing test but then become dulled at a later time. See a doctor if you suspect your child has dulled hearing at any age.

## Does glue ear go away?

As children grow older, problems with glue ear usually go away. This is because the Eustachian tube widens and the drainage of the middle ear improves. In general, the older the child, the less likely that fluid will build up in the middle ear. Also, in older children, any fluid that does build up after a cold is likely to clear quickly. Glue ear rarely continues (persists) in children over the age of 8. In nearly all cases, once the fluid has gone, hearing returns to normal. Rarely, some adults are troubled with glue ear.

Rarely, long-term glue ear may lead to middle ear damage and some permanent hearing loss.

## Further reading & references

- [Surgical management of children with otitis media with effusion \(OME\)](#); NICE Clinical Guideline (February 2008)
- [Browning GG, Rovers MM, Williamson I, et al; Grommets \(ventilation tubes\) for hearing loss associated with otitis media with effusion in children. Cochrane Database Syst Rev. 2010 Oct 6;\(10\):CD001801. doi: 10.1002/14651858.CD001801.pub3.](#)
- [Otitis media with effusion](#); NICE CKS, October 2016 (UK access only)
- [Perera R, Glasziou PP, Heneghan CJ, et al; Autoinflation for hearing loss associated with otitis media with effusion. Cochrane Database Syst Rev. 2013 May 31;5:CD006285. doi: 10.1002/14651858.CD006285.pub2.](#)
- [Otovent nasal balloon for otitis media with effusion. Medtech innovation briefing \[MB59\]](#); National Institute for Health and Care Excellence (NICE), March 2016
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