

Middle Ear Fluid in Young Children: Parent Guide

Purpose of This Booklet

This booklet is about middle ear fluid in children ages 1 through 3 who have no other health problems. After reading this booklet you should know more about:

- Causes of middle ear fluid.
- Tests for middle ear fluid and hearing.
- Treatments for middle ear fluid and hearing loss caused by middle ear fluid.
- How to work with your child's health care provider to find the best treatment for your child's middle ear fluid.

Another name for middle ear fluid is otitis media with effusion. Some people also call it glue ear. Otitis media means middle ear inflammation, and effusion means fluid.

About the Ear and Hearing

The ear has three parts-the outer ear, the middle ear, and the inner ear. The outer ear includes the part outside the head and the ear canal. The eardrum is a small circle of tissue about the size of a fingertip at the end of the ear canal. The middle ear is the space, usually filled with air, behind the eardrum. When a child has middle ear fluid, this is where it is found. A small tube - the eustachian tube - connects the middle ear to the back of the nose. Three tiny bones (the malleus, incus, and stapes) connect the eardrum through the middle ear to the inner ear. The inner ear is further inside the head and is important for hearing and balance.

In a healthy ear, sound waves travel through the ear canal and make the eardrum move back and forth. This makes the three bones in the middle ear move. The movement of these bones sends sound waves across the middle ear to the inner ear. The inner ear sends the sound messages to the brain. But if the middle ear has fluid in it, then the eardrum and the bones cannot move well. This could cause your child to have trouble hearing.

What Is Middle Ear Fluid?

If your child has middle ear fluid, it means that a watery or mucous-like fluid has collected behind the eardrum. Many children get middle ear fluid during their early years. But middle ear fluid is not the same as an ear infection.

- An Ear Infection usually happens in only one ear at a time. With a middle ear infection your child may have fever and sharp ear pain. When your health care provider looks into your child's ear, they might see a bulging red eardrum and some fluid in the middle ear.
- Middle Ear Fluid is usually found in both ears at once. Most children do not have fever or pain with middle ear fluid. A special test is needed to look for this fluid

What Causes Middle Ear Fluid?

Here are some things that may cause middle ear fluid to happen in your child:

- Past ear infection. It is common for children to have middle ear infections. And some children with middle ear infection later have middle ear fluid.

- Blockage of the eustachian tube (see Figure 1).
- Cold or flu.

There is no one cause for middle ear fluid. Often, your child's health care provider will not know what caused the middle ear fluid.

Why Should I Be Worried About Middle Ear Fluid?

Most health care providers and parents worry that a child who has middle ear fluid in one or both ears may have trouble hearing. Experts do not know how much middle ear fluid affects hearing. Experts are not sure if hearing loss from middle ear fluid can cause delays in learning to talk, and sometimes later on, problems with school work. They do not know for sure what the long-term effects of middle ear fluid are.

How Can Middle Ear Fluid Be Prevented?

Recent studies show that children who live with smokers and who spend time in group child care have more ear infections.

Because some children who have middle ear infections later get middle ear fluid, you might help prevent middle ear fluid by:

- Keeping your child away from cigarette smoke.
- Trying to keep your child away from playmates who are sick.

How Do I Know if My Child is Affected By Middle Ear Fluid?

Sometimes a child with middle ear fluid does not hear well. The most common complaint of parents whose child has middle ear fluid is that the child turns the sound up too loud or sits too close to the television set. Or sometimes the child does not seem to be paying attention.

Speak to your child's health care provider if you are concerned about your child's hearing. Often, middle ear fluid is found at a regular check-up.

Your child's health care provider may use the first two tests below to check for middle ear fluid.

- A *Pneumatic Otoscope* may be used to check for middle ear fluid (below). With this tool, the health care provider looks at the eardrum. The fluid in the middle ear may be seen behind the eardrum. Even when the fluid cannot be seen, the health care provider can test for fluid with this tool by blowing a puff of air onto the eardrum to see how well the eardrum moves. The child must be still for this test to work. The child will feel the otoscope in the ear, but the test does not hurt. This test does NOT measure the child's hearing level. Many health care providers feel that the pneumatic otoscope is the best test for middle ear fluid.

- Tympanometry* is another test for middle ear fluid. Tympanometry helps the health care provider find out how well the eardrum moves. For tympanometry, a soft plug that is about the size of a person's little fingertip is placed snugly into the ear canal. The probe is connected to a machine called a tympanometer. The child hears a low noise for a short time while the machine records how the eardrum reacts. An eardrum with fluid behind it does not move as well as a normal eardrum.

Like the first test, the child must sit still for this test and will feel the probe in the ear. The test does not hurt. Tympanometry does NOT measure hearing level.

- Hearing Testing* may be done to see how well your child hears. Hearing testing does not test for middle ear fluid. In this case, it measures if the fluid is affecting your child's hearing level. The type of hearing test used depends on your child's age and listening ability.

How Can Middle Ear Fluid Be Treated?

Middle ear fluid can be treated in many ways. It is important to know that a treatment that works for one child may not work for another. If one treatment does not work, another treatment can be tried. Please discuss each of the treatments listed here with your child's health care provider. Be sure to ask about the possible advantages and disadvantages of each treatment as well. Then, decide with your child's health care provider on the treatment for middle ear fluid.

- Observation - Middle ear fluid often goes away without treatment. Some studies show that for most children middle ear fluid clears after 3 to 6 months without treatment.
- Antibiotic Drug Treatment - Studies show that middle ear fluid cleared slightly faster in some children given antibiotic drugs than those not given antibiotics. However, antibiotics have some unwanted effects, such as diarrhea, rash, and others. Also, they can be expensive and some children have trouble taking them. For these reasons, you and your child's health care provider may want to try observation first. Before making a decision, ask your child's health care provider about the costs and possible unwanted effects.
- Surgery to put "Tubes" in the Ears - In this minor operation, a small cut is made in the child's eardrum and fluid in the middle ear is gently sucked out. Then a small metal or plastic tube is put into the slit in the eardrum. A general anesthetic is used to put the child to sleep for this operation. When the fluid is removed from the middle ear, the child's hearing returns to its normal level. Ask your child's health care provider about the costs and possible harms of this surgery. The tubes are left in place until they fall out, or until your child's health care provider feels that they are no longer needed. About one third (1 out of 3) of children with ear tubes need to have another operation to insert new tubes within 5 years after the first operation.

What Are the Advantages and Disadvantages of Middle Ear Fluid Treatments?

The advantages and disadvantages of treatments for middle ear fluid are listed in the following table. Please discuss these choices further with your child's health care provider.

Treatment	Advantages	Disadvantages
Observation	* In about 60 percent of children, middle ear fluid goes away without treatment within 3 months; in 85 percent it goes away within 6 months. There is very little cost and no side effects of observation.	* Middle ear fluid does not go away in about 40 percent of children in 3 months and in about 15 percent in 6 months.
Antibiotic drug	* May increase chance (by about 14 percent) and speed of middle ear fluid going away. * May decrease chance of middle ear infection.	* Middle ear fluid may not go away. * Unwanted drug effects (such as diarrhea, rash). * Development of drug-resistant strains of bacteria. * Bother of buying and giving drug.

		* Cost of drug.
Surgery (tubes)	* Middle ear fluid goes away right away. * Hearing returns to normal right away.	* Temporary discomfort for the child. * Risk of anesthesia. * May need to protect ears during bathing and swimming while tubes are in place. * Some children need another surgery to place new tubes in the ears. * Eardrum changes possible. * Time lost to take child for surgery. * Most costly choice.

When Should Middle Ear Fluid Be Treated?

The treatment that your child gets for middle ear fluid depends on:

- How long your child has had middle ear fluid.
- If the fluid is causing hearing problems for your child. Here are some examples of how your child might best be treated for middle ear fluid.

Remember to discuss all treatments with your child's health care provider. Be sure to ask about the advantages and disadvantages of each treatment.

(1) If your child has had middle ear fluid for up to 3 months, then your child's health care provider may recommend one of these treatments:

- Observation OR antibiotic therapy. You and your provider may choose observation because antibiotic therapy can cause some unwanted effects.
- Taking steps to prevent middle ear fluid (especially keeping your child away from cigarette smoke).

(2) If your child has had middle ear fluid for 3 months or more, then your child's health care provider may recommend the following treatments:

- Observation OR antibiotic drugs. You and your provider may choose observation because antibiotic therapy can cause some unwanted effects.
- Taking steps to prevent middle ear fluid (especially keeping your child away from cigarette smoke).

Also

- A hearing test is recommended if your child has had middle ear fluid for 3 months or more. If this shows that your child has a hearing loss in both ears, your child's health care provider may recommend surgery to put tubes in the eardrums.
- Talk to your child's health care provider about any other concerns you have about your child's development~for example, if your child does not seem to be learning to talk on schedule.

(3) If your child has had middle ear fluid that has lasted from 4 to 6 months with a hearing loss in both ears, then your child's health care provider may recommend:

- Surgery to put tubes in the eardrums. Tubes in the eardrums should clear the middle

ear fluid and return your child's hearing to normal. Discuss this surgery with your child's health care provider.

Also

- Find out if your child's ears should be protected from water after the surgery and when to bring your child back for a checkup.

What Treatment Are Not Recommended for My Child?

A number of medicines and surgical treatments are not recommended for young children with middle ear fluid.

The medicines not recommended are:

- Decongestants and antihistamines.
- Steroids.

Most studies show that decongestants and antihistamines used together or alone did not improve or cure middle ear fluid. There are not yet enough studies to tell whether steroids can cure or improve middle ear fluid.

The surgical treatments not recommended are:

- Adenoidectomy.
- Tonsillectomy.

There are not yet enough studies to tell if adenoidectomy (removing the adenoids~tissue at the back of the throat behind the nose) cures or improves middle ear fluid in children younger than 4 years old. But it does seem to help older children. Tonsillectomy (removing the tonsils at the back of the throat) has not been shown to cure or improve middle ear fluid in children.

If your child's health care provider suggests one of these surgeries, there may be another medical reason to do the surgery. Ask why your child needs the surgery. If you are still unsure, you may want to talk to another health care provider.

How Do I Keep Track of My Child's Ear Problems?

You may want to use a chart like this one to keep track of your child's ear problems and how they were treated. This may help your child's health care provider to find the cause of the middle ear fluid.

For: _____
(child's name)

Health care provider's name: _____

Health care provider's telephone number: _____

Date and type of middle ear fluid or infection.	Treatment	Results

The information in this booklet was based on the *Clinical Practice Guideline, Otitis Media with Effusion in Young Children*. The *Guideline* was developed by a non-Federal panel of experts sponsored by the Agency for Health Care Policy and Research.

For more information about guidelines or to receive more copies of this booklet, call toll-free 800-358-9295 or write to:

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