

Audiology and Speech-Language Pathology

AUDITORY BRAINSTEM RESPONSE (ABR) TEST

AT CHILDREN'S HOSPITAL OF PITTSBURGH OF UPMC, we believe parents and guardians can contribute to the success of this test and invite you to participate. Please read the following information to learn about the test and how you can help.

Fast Facts About the Auditory Brainstem Response (ABR) Test

- The ABR test measures the reaction of the parts of a child's nervous system that affect hearing. (The ABR test measures the hearing nerve's response to sounds.)
- An ABR test is often ordered if a newborn fails the hearing screening test given in the hospital shortly after birth, or for older children if there is a suspicion of hearing loss that was not confirmed through more conventional hearing tests.
- The ABR test is safe and does not hurt.
- The ABR test can be completed only if the child is sleeping or lying perfectly still, relaxed and with his or her eyes closed.
 - If your child is younger than 6 months of age, the ABR test usually can be done while he or she naps.
 - If your child is older than 7 years, the ABR test usually can be done while your child is awake if he or she can relax and lie still. The test will be done in a special sound-treated suite in the Audiology department.
 - For children between the ages of 6 months and 7 years, the ABR test is done under anesthesia, which means that your child will need medication to help him or her sleep throughout the test. ABR tests with anesthesia are done through the Same Day Surgery Center.
 - When anesthesia is needed, there are special rules for eating and drinking that must be followed in the hours before the test. If these rules are not followed, the test cannot be done that day.
 - When the test is done under anesthesia, your child's primary care provider will need to see your child for a physical in order to fill out a history and physical form.
- The test itself takes about 1 hour to 1^{1/2} hours, but the entire appointment will take about 2 hours without anesthesia and up to 4 hours if your child needs anesthesia, due to the recovery time.



What Is the ABR Test?

The Auditory Brainstem Response (ABR) test is a helpful tool in determining a child's ability to hear. The test uses a special computer to measure the way the child's hearing nerve responds to different sounds.

Three to four small stickers called "electrodes" will be placed on your child's head and in front of his or her ears and connected to a computer. As sounds are made through the earphones, the electrodes measure how your child's hearing nerves respond to them.

The audiologist, or hearing specialist, looks for certain neurological "markers" as your child's hearing nerves respond to sounds. The softest intensity or loudness level at which these markers appear roughly corresponds to the child's hearing level in that frequency range or pitch. By reading a computer print-out of your child's responses and interpreting these markers, the audiologist can tell if your child has a hearing problem.

Home Preparation

Babies under 6 months

The most important way to prepare your baby for the test is to show up with a tired, hungry baby. Most young babies will sleep through the entire test if they are brought to the appointment ready for a feeding and a nap. Try to keep your baby awake and hold off feeding him or her until you get to the appointment. Once you are in the testing room and your child has been prepped for the test, you can nurse or feed your baby a bottle so he or she falls asleep naturally. The test will take place while your child sleeps in your arms or in a crib, whichever is most comfortable for you and your baby.

AUDITORY BRAINSTEM RESPONSE (ABR) TEST cont'd

Children older than 6 months but younger than 7 years

Children in this age range usually need anesthesia medication in order to sleep throughout the test. When anesthesia medication is needed, there are important rules for eating and drinking that must be followed in the hours before the test. If those rules are not followed, your child's ABR test usually will be rescheduled for another day. Please follow the special rules listed under "Home Preparation for Anesthesia."

Children older than 7 years

Most children who are 7 years and older can be tested while they are awake if they relax and lie still during the test. If your child is not able to cooperate, the test might need to be rescheduled so it can be done under anesthesia.

Home Preparation For Anesthesia

When general anesthesia is needed, there are important rules for eating and drinking that must be followed in the hours before the surgery. One business day before your child's test, you will receive a phone call from a nurse between the hours of 1 and 9 p.m. (Nurses do not make these calls on weekends or holidays.) Please have paper and a pen ready to write down these important instructions.

- The nurse will give you specific eating and drinking instructions for your child based on your child's age. Following are the usual instructions given for eating and drinking. No matter what age your child is, you should follow the specific instructions given to you on the phone by the nurse.



For children older than 12 months:

- After midnight the night before the surgery, do not give any solid food or non-clear liquids. That includes milk, formula, juices with pulp, coffee and chewing gum or candy.

For infants under 12 months:

- Up to 6 hours before the **scheduled arrival time**, formula-fed babies may be given formula.
- Up to 4 hours before the **scheduled arrival time**, breastfed babies may nurse.

For all children:

- Up to 2 hours before the **scheduled arrival time**, give only clear liquids. Clear liquids include water, Pedialyte®, Kool-Aid® and juices you can see through, such as apple or white grape juice.
- In the 2 hours before the **scheduled arrival time**, give nothing to eat or drink.

The Auditory Brainstem Response (ABR) Test

The ABR test without anesthesia is done in a special sound-treated suite in the Audiology Department at Children's Hospital of Pittsburgh. Once you have registered at the Audiology Department, you and your child will be called to the sound-treated suite.

If your child is 7 years or older, he or she will be asked to lie still on a bed or sit in a reclining chair, and the test will begin.

If your child is under 6 months, you will be called to the sound-treated suite, where you may nurse or feed your baby a bottle so that he or she will fall asleep. Once your child is asleep, the electrodes will be placed and the testing will begin.

If your child is having anesthesia, you will register your child at the Same Day Surgery Center. You and your child will be called to meet with a nurse, who will take your child's vital signs, weight and medical history. As the parent or legal guardian, you will be asked to sign a consent form before the sleep medication is given.

- The anesthesiologist will meet with you and your child to review your child's medical information and decide which kind of sleep medication he or she should be given.
- If your child is very scared or upset, the doctor may give a special medication to help him or her relax. This medication is flavored and takes effect in about 10 to 15 minutes. If you wish, you may stay with your child as the sleep medication is given.
- Younger children will get their sleep medication through a "space mask" that will carry air mixed with medication. Your child may choose a favorite scent to flavor the air flowing through the mask. There are no shots or needles used while your child is still awake.

For all children:

- Three or four small stickers called "electrodes" will be placed on your child's head.
- The electrodes will be connected to a computer. They are completely safe and will not hurt your child.
- Earphones will be placed in your child's ears.
- Sounds will be made through the earphones at different loudness levels as the computer gathers information from the electrodes.
- By reading the computer printout, the audiologist can determine if your child has a hearing problem.
- Results from the ABR test, along with other hearing tests, will help the audiologist measure the type and extent of the hearing loss.

AUDITORY BRAINSTEM RESPONSE (ABR) TEST cont'd

Waking Up/Going Home

If your child did not have anesthesia medication, he or she may resume normal activities after the test.

If your child had anesthesia medication, he or she will be moved to the recovery room after the test until the medication wears off. The length of time it will take the medication to wear off will vary, as some children take longer than others to become alert.

- When your child is discharged, he or she may still be groggy and should take it easy for the day.
- Your child may resume normal activities, eating and drinking at the rate he or she is comfortable with when you get home.

Special Needs

If your child has any special needs or health issues you feel the audiologist needs to know about, please call the Department of Audiology and Speech-Language Pathology at Children's Hospital *before* the appointment and ask to speak with an audiologist. It is important to notify us *in advance* about any special needs your child might have.

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To see the list of all available patient procedures descriptions, please visit www.chp.edu/procedures.