

A Guide to
Mandatory Newborn Hearing Screening
for the Primary Care Provider



One simple test makes
a difference for Minnesota babies.

minnesota newborn screening program



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www.health.state.mn.us/newbornscreening

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Newborn hearing screening is now mandatory in Minnesota. Legislation passed in 2007 requires all hospitals caring for newborns to screen for hearing loss before discharge and to report the results of the screening to the primary care provider and to the Minnesota Department of Health (MDH). MDH is then required to monitor in order to ensure that all infants who did not pass the initial screen are retested and that infants with a confirmed hearing loss are connected to appropriate services.



Hearing is essential for normal development of speech and language. The earlier that hearing loss is found, the sooner babies and their families can be helped. Clinic staff play a vital role in identifying infants with hearing loss. Information in this packet will help clinic staff effectively follow-up babies with abnormal hearing screens.



For questions regarding newborn hearing screening and diagnostic evaluations, please contact:

Newborn Screening Program
Phone: (800) 664-7772
Fax: (651) 201-5471
Email: newbornscreening@health.state.mn.us



The following items are included in this packet:

- Hearing Screening Flyer
Use this to educate staff and parents about newborn hearing screening. Please hang it where it can be seen by all.
- Hearing Screening Parent Notification Form
Look for this fax or similar notification with abnormal hearing results from the newborn's hospital. Parents may also bring this form to clinic. Please put a copy in medical chart.
- Newborn Hearing Screening Parent Fact Sheet
Use this to help parents understand the importance of follow-up.
- Newborn Hearing Screening Provider Fact Sheets
Use these to help professionals understand the importance of follow-up when a baby does not pass hearing screening and the technologies used to detect hearing loss in newborns.
- Newborn Hearing Screening Follow-Up Fact Sheet
Use this to help professionals understand why parents may not return for follow-up and how they can help improve follow-up rates.





Why Is Newborn Hearing Screening Done?

Newborn screening is performed to make early treatment possible for babies who have conditions that are not apparent at birth. Without newborn screening, hearing loss often remains undetected until a child is two or three years old. Those early years are essential for a child's development of language and family communication. When hearing loss is undetected, language development is delayed and children face frustration in school, as well as adverse life-long economic consequences.

Early identification of hearing loss in the frequencies needed to understand speech allows for early family education and intervention. Infant/family education, introduction to alternate communication methods, hearing aids that can be fit for babies, and cochlear implants offer parents a variety of ways to help their children learn language.

Identifying newborns with a possible hearing loss at birth is the first step in finding babies who can benefit from early intervention. Like many screening tests, newborn hearing testing has a relatively high false positive rate. Babies with "REFER" screening results need to be seen for further testing in order to confirm whether a hearing loss truly exists. Good teaching by the hospital staff is essential to ensure that parents keep their baby's appointment for further evaluation. Parents and other people may "check" the baby's hearing themselves by hand-clapping or pot-banging. When they detect a response, they conclude that the baby can hear. Hearing testing is designed to find hearing loss in the range where speech is heard. It is important to inform parents that babies with this type of hearing loss can still startle to loud noises.

Follow-up

Your clinic needs to have a protocol to assure that hearing screening results are reviewed by the baby's primary care provider at the first clinic visit. Clinic staff should make sure that the hearing results are on the baby's chart for the first visit. You may have even received a fax with abnormal results. If the test results have not arrived, call the birth hospital and ask to have them faxed over. If the hospital regularly fails to send hearing screening results in a timely fashion, ask your providers to work with them. The new Minnesota law requires that hospitals inform providers of the screening results.

Many babies who fail their newborn hearing screening pass when the test is repeated. This is known as a false positive result. There are many reasons that the initial hearing screen can give a false result including: fluid or debris in the baby's ear, the baby is too noisy during the test, and equipment or operator error.

Because of the high rate of false positives on initial screening, all babies who fail their initial tests need to be re-screened. The second objective hearing screening can be done in the hospital nursery, at the clinic, or by an audiologist.



Your clinic and providers need to have a consistent policy for ensuring that all babies with failed hearing screens are re-tested. Because the second test is so often normal, it may be tempting to ignore the screening results. Ignoring abnormal screening tests can lead to delayed diagnosis of hearing loss. Screening is the best way to find babies who need help because they have a hearing loss. Sometimes clinic staff or providers will clap their hands or ring bells to test a baby's hearing. These simple tests are not accurate and miss babies with hearing loss in the range needed to hear speech. For very young children asking parents if there are "any concerns regarding the baby's hearing" is not an objective hearing re-screen.

If the baby fails the second screen, the family should be referred to an audiologist or ENT who is comfortable and experienced evaluating very young children. This appointment should not be delayed. If the baby does have a permanent hearing loss, every day that goes by means more time where the child misses the chance to learn language.

When diagnostic evaluation demonstrates that the child does have a true hearing loss, the primary care provider needs to ensure that the family has been referred to early intervention services in their community, family support, and appropriate medical specialists. Further information regarding the management of children with confirmed hearing loss is available from personal contact with MDH long-term follow-up staff or on the website at <http://www.health.state.mn.us/newbornscreening>

Reporting Newborn Hearing Screening Results to MDH

All hearing evaluations done after a baby has failed screening in the nursery need to be reported by the clinic to the Newborn Screening Program. Faxing this information to MDH at 651-201-5471 is the fastest way to communicate. Alternately, you can mail reports to the Newborn Screening Program at 601 North Robert St , PO Box 64899, Saint Paul, MN 55164.

When hearing screening was a voluntary program, clinics, audiologists, and hospitals often obtained parents' signed consent before sending information to MDH. Now that hearing screening is mandatory, it is no longer necessary to obtain written permission to send information to MDH.

Parent Education

Clinic staff also need to educate parents about newborn hearing screening and the benefits of checking a baby's hearing. Information on screening is covered in the brochure *One simple test can make a difference for your child*. This brochure, available in both English and Spanish is provided free to hospitals and should have been given to parents at the hospital before the hearing screen was done. Fact sheets on hearing screening for parents and professionals are included in this packet and are also available on the MDH website at <http://www.health.state.mn.us/newbornscreening>



It is vital to help parents whose children do not pass their hearing screen understand the importance of following through with further testing. Although it may be tempting to tell parents that the baby can probably hear fine, it is essential that they understand the importance of more testing to check that their baby can hear well enough to develop language.

NICU Babies

Babies who required intensive care after birth are at higher risk for hearing loss than are other babies. It is very important that the clinic staff find these infants' hearing screening report for their first clinic visit. Sometimes these babies do not have their hearing screened while in the hospital and it is important to arrange for testing by an audiologist.

Parent Options

Minnesota state law allows parents to choose to have their child's hearing screened, but to request that the MDH record of the hearing test be destroyed. If the parent does not want MDH to keep a record of the hearing screening, a form available from the MDH website at <http://www.health.state.mn.us/newbornscreening> needs to be completed and sent to MDH.

This request to have the record destroyed can be made at any time by the parents or even by the child during adulthood.

Minnesota state law also allows parents to choose not to have their child's hearing screened. Because the decision to opt-out of any part of newborn screening is a serious one, it is essential that the medical provider review the benefits of hearing screening with a parent before proceeding to document the parent's refusal to have his or her infant's hearing screened. If after learning about the test, the parent still wants to refuse, signatures must be obtained on an appropriate form available on the MDH website at <http://www.health.state.mn.us/newbornscreening>

Medical staff need to follow the instructions on the form and fax it to MDH. The parent's refusal should also be documented in the infant's medical record and documented in the clinic chart. If children who did not have hearing screening show signs of language delay or other signs of hearing loss, their hearing should be evaluated by an audiologist.

Babies Born Outside of Hospitals

Babies born at home or in other alternate settings may not have had their hearing screened at birth. State law obligates the clinic and primary provider to arrange for newborn screening for these babies in a timely fashion and to send the results of the hearing test to the Newborn Screening Program at MDH.

Minnesota Department of Health

Newborn Hearing Screening

FAMILY FACT SHEET
POSITIVE NEWBORN SCREEN**What is Newborn Hearing Screening?**

When your baby was still in the hospital, simple tests were done to check your baby's hearing. All babies born in Minnesota have their hearing checked shortly after birth. While asleep, your baby's hearing was checked using computerized equipment. The screening test is painless and takes only a few minutes.

Why is hearing screening important?

Identifying hearing loss early is important. Speech and language start to develop right after birth, even though babies don't usually talk until about 1 year of age. A child with hearing loss may have difficulty with speech and language. If a baby has a hearing loss it is usually not noticeable to parents or doctors. Screening and follow-up testing are the **only** ways to find hearing loss early. Learning that your baby has hearing loss gives you and your baby a better chance to communicate and prevent delays.

What is a REFER Newborn Screen?

A REFER result means that your baby did not pass the hearing screen in one or both ears. Many babies with REFER test results can hear perfectly well. There may have been fluid or debris in the baby's ear that interfered with testing. Babies with a REFER hearing screen result need further testing to determine if there is a hearing loss. Your doctor, the nurses at the hospital, and your clinic can help you make an appointment with an audiologist.

What is an audiologist?

An audiologist is a person who specializes in hearing and who has more sensitive equipment to determine if your baby has a hearing loss.

What kind of help is available for a baby with a hearing loss?

If the audiologist confirms that your baby has a hearing loss, there are many professionals who will help you learn more about hearing loss and the best ways to help your baby grow and develop language.

Contacting the following people can help you learn more:

- **Your baby's doctor:** who can provide regular medical care to your baby as well as referral to medical specialists in areas such as otolaryngology (ear, nose, and throat), genetics, and ophthalmology (eyes).
- **Audiologists:** who not only test hearing, but can provide help for babies such as hearing aids and cochlear implants.
- **Hands and Voices or other groups of parents whose children have hearing loss:** who can share how they helped their own children.
- **Your local school district:** where free early intervention services are available to infants with hearing loss.
- **MSCHN:** where connections to early and on-going services are available to families.

What causes hearing loss?

There are many causes of hearing loss:

- Hearing loss can be inherited (passed through a family). Hearing loss can be genetic even if there are no other family members who were born deaf or hard of hearing.
- Hearing loss can be caused by infections, medications, or problems at birth.
- In some cases, even after testing, the cause of the hearing loss may not be known.

Resources for Parents

Minnesota Hands & Voices (651) 265-2435
<http://www.mnhandsandvoices.org>
My Baby's Hearing
<http://www.babyhearing.org>
MSCHN/Follow-Up
 (651) 201-3760



Minnesota Department of Health

Newborn Hearing Screening

PROVIDER FACT SHEET
POSITIVE NEWBORN SCREEN**Action Required**

Review screening information from hospital.

Actions to perform at first clinic visit:

- Initiate referral for further evaluation by the nursery, clinic, or an audiologist for approximately 2 weeks after initial screens.
- Fax appointment date and/or results of testing to MDH at (651) 201-5471.
- Schedule rescreen evaluation around 2 weeks if one has not already been set up.

If hearing loss is confirmed:

- Refer to early intervention, parent support, and specialty services.

Review with Family

Family should have been notified of result by hospital.

Review with family the hearing screening results from the hospital. Initiate appointment for further evaluation if one has not already been set up and encourage parents to seek prompt follow-up testing. Inform parents that they cannot test for hearing simply by clapping their hands and looking for a startle response.

NICU Issues

Babies who required intensive care after birth are at higher risk for hearing loss. Make sure the results of these infants' hearing screens are available at their first clinic visit.

Babies may not have had hearing screens while in the NICU. It is important to arrange for testing by an audiologist.

Clinical Summary

Hearing loss is a heterogeneous condition that may be of genetic or non-genetic origin.

Newborns with hearing loss in the range where speech is heard can still startle to noise. Without newborn screening, hearing loss often remains undetected until a child is two or three years old when clinical signs of speech delay or inattentiveness arise. At this point, the child has lost valuable time to learn language.

Early diagnosis of hearing loss provides the opportunity for infants with hearing loss to maximize their linguistic and communicative development.

Incidence childhood hearing loss:

~ 1:300; affects all ethnic groups

False Positives: Common; typically 4% or less. Screening result can be impacted by fluid or debris in ear, environmental noise, or operator error.

Clinical Expectations

Children with confirmed hearing loss require multidisciplinary evaluations to rule out disorders with hearing loss and their associated problems.

New developments, including infant/family education, sign language hearing aids that can be fit for babies, and cochlear implants allow for a variety of ways to help children learn language and communicate.

Resources

NCHAM: www.infanthearing.org

NIDCD: www.nidcd.nih.gov/health/hearing/screened.asp

MDH: www.health.state.mn.us/newbornscreening

Minnesota Department of Health

Newborn Hearing Screening Technologies

PROVIDER FACT SHEET

Automated Auditory Brainstem Response (ABR)

When the auditory system is excited by a stimulus, small electrical currents are generated. ABR responses are measured by placing sensors on the baby. Sound is introduced to the baby's ears through small earphones while the baby is in a natural sleep. A computer records the baby's brainwave activity and indicates whether the auditory system is appropriately responding to sound.

Advantages of ABR

- Requires no interpretation by the screener
- ABR results are less affected by middle ear or external ear debris than OAEs
- Results are immediately available
- Easy to administer by nursery staff
- May detect neural or central auditory pathologies

Disadvantages of ABR

- May take longer if baby is in a noisy environment
- ABR may be susceptible to electrical interference
- Infants with very mild hearing loss may pass an ABR screen

What to do if equipment fails

- Have a plan in place for a back-up unit
- Arrange to borrow equipment from nearby facility or refer babies out
- Some manufacturers offer loaner equipment
Contact a sales representative about this possibility
- Check with local audiologists or ENT practices to see if they have equipment you could borrow

Otoacoustic Emissions (OAE)

The cochlea produces sound in response to external stimuli. This internally generated sound is measured during an OAE test. OAEs are measured by placing a small probe in the infant's ear canal and presenting sound through small speakers. There are two types of OAEs commonly used in clinical practice. Transient OAE (TEOAE) emits sound in the speech frequency range. Distortion product OAE (DPOAE) emits sound in specific frequency ranges.

Advantages of OAE

- Results are immediately available
- Easy to administer by nursery staff
- Average screening time is less than ABR

Disadvantages of OAE

- Debris or fluid in the external or middle ear can affect results
- Failure rates are high during first 24 hours after birth
- May take longer if infant is in noisy environment
- Infants with very mild hearing loss or central auditory pathologies may pass an OAE screen

Making referrals

Below is a list of ABR and OAE equipment suppliers for your convenience:

- Bio-Logic: (800) 323-8326
- Madsen: (800) 362-3736
- Natus: (800) 255-3901
- Otodynamics: (800) 659-7776

** Appearance on this list does not constitute endorsement by MDH **

Minnesota Department of Health

Newborn Hearing Screening: Follow-Up

PROVIDER FACT SHEET
WHAT CLINICS CAN DO TO IMPROVE FOLLOW-UP RATES
Why parents might not return for hearing follow-up

- Parents don't fully understand their baby's screening results.
- Parents don't fully understand the importance of a follow-up evaluation.
- Parents were not provided with necessary contact and resource information.

What parents should know

- The results of their baby's hearing screen and what the results mean.
- Hearing cannot be tested at home - newborns with hearing loss can still startle to noises like hand clapping.
- Why a prompt, objective follow-up evaluation is necessary.
- Contact information for keeping the follow-up appointment.

What clinic staff should know

- Without newborn screening, hearing loss often remains undetected until a child is 2 or 3 years old.
- When hearing loss goes undetected, language development is delayed and children face adverse outcomes.
- Babies with REFER results need to be seen promptly for further testing. Careful communication with parents is essential to ensure that parents keep their baby's follow-up appointment.

What should be done at the first clinic visit?

- **Develop a standard protocol**
 - § Before visit, make sure hearing results are in the infant's chart. Look for results on fax from hospital or Parent Notification Form provided by MDH.
 - § Obtain any missing hearing screens from the hospital before the visit. Contact nursery to have results sent.
 - § Encourage providers to review hearing screening results with parents. Parents may not mention concerns with hearing even if a hearing loss is present.
 - § Fax rescreening and diagnostic testing results to MDH.
- **Develop protocols to deal with special circumstances**
 - § **Babies born outside of a hospital** - Be prepared to offer initial hearing screening in a timely manner. You may need to provide extra education for these parents.
 - § **Babies who miss rescreen appointments** - Contact family to set-up new time and further educate on the importance of follow-up testing for hearing loss.

Making referrals

- **Rescreening** - work with the hospital, clinic, or audiology staff to make sure babies with REFER results are seen promptly. Talk with parents about the importance of keeping follow-up appointments.
- **Diagnostic Evaluations** - determine where you will send babies who fail rescreening. These babies should see an audiologist or ENT who is comfortable evaluating very young children.