



Michigan Early Hearing Detection
and Intervention Program

Winter 2010

Michigan Early Hearing Detection and Intervention Program 2007 Year in Review

Background

Hearing loss in infants is one of the most common birth defects. Each year, more than 12,000 babies in the US are born with hearing loss, and in Michigan, the prevalence of hearing loss is about 1 to 3 cases per 1,000 live born infants.¹ It is important to identify hearing loss early so that a child can benefit from early intervention services to help develop language, learning, and social skills.¹ State newborn hearing screening programs have now become the medical and legal standard of care in the United States with at least 42 states having statutes related to universal newborn hearing screening, including Michigan.²

The Early Hearing Detection and Intervention (EHDI) Program, as part of the Michigan Department of Community Health (MDCH), works to help identify infants with hearing loss and follows these infants to enrollment of early intervention services. The Michigan EHDI program strives toward achievement of the national EHDI goals that were implemented by the CDC, and state and national agencies. The National EHDI goals³ are as follows:



- Goal 1.** All newborns will be screened for hearing loss no later than **1 month** of age, preferably before hospital discharge.
- Goal 2.** All infants who screen positive for hearing loss will have a diagnostic audiologic evaluation no later than **3 months** of age.
- Goal 3.** All infants identified with hearing loss will receive appropriate early intervention services no later than **6 months** of age.

The EHDI program continues to be supported by state funding and grants awarded by the Centers for Disease Control and Prevention (CDC) and the Maternal and Child Health Bureau (MCHB). Other funding for EHDI comes from Michigan Newborn Screening Card fees to support efforts in newborn hearing screening, quality assurance, and reducing loss to follow-up rates.

Highlights from the Michigan EHDI Program

- * About 96% of infants born in 2007 received a completed hospital hearing screen.
- * Newborn hearing results were added to the Michigan Care Improvement Registry (MCIR) for providers to access results easily and help facilitate follow-up for infants.
- * A letter is now sent to parents of infants who need a hearing evaluation in efforts to reduce the loss to follow-up rate and to ensure that children receive needed services as soon as possible.
- * An online training module on newborn hearing screening is available for nurses, technicians, and audiologists at birth facilities.

Future Directions for the Michigan EHDI Program

- * Provide Pediatric Audiology training to enhance knowledge and skills in assessing hearing loss and selecting amplification and intervention services for infants.
 - * Continue collaboration with the Michigan Department of Education to ensure infants are receiving timely early intervention services.
 - * Focus on reducing the loss to follow up rate by educating physicians and increasing communication to parents about the importance of follow-up.
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Michigan EHDI Program Statistics, 2005-2007

Screening Rates

Table 1 summarizes the number of live births and the percent of live births with a completed hearing screen for infants who were born from 2005 to 2007. The hearing screening rate* has remained high due to universal newborn hearing screening becoming standard of care for birth hospitals over the past few years.

A hospital hearing screen was either completed or attempted for 97% of the infants born in 2007. Attempted, but incomplete hospital hearing screens are those that could not be performed due to: infant was in the Neonatal Intensive Care Unit (NICU) (36.7%), transferred to another facility (13.1%), discharged prior to screening (11.3%), was restless (1.1%), died (8.8%), there was an equipment problem (11.9%), environmental noise (0.3%), parental refusal (7.4%), or some other reason (9.4%).

Referral Rates

In 2007, the referral rate** was 4.0%, which corresponds with the National EHDI goal of 4% or less.³ It is important that this number remain low so that children do not receive follow-up that is not needed.

Hearing Loss Reported

The prevalence of hearing loss[†] by result of the final screen for birth years 2005-2007 is shown in table 2. Hearing loss was defined as permanent hearing loss of any degree (mild, moderate, severe, or profound), and unilateral or bilateral. As previously published, cases of hearing loss should be reported by result of the final screen to show the impact that the EHDI program has on the detection of hearing loss in Michigan.⁴ Infants diagnosed with hearing loss after a failed final screen are considered to be detected by EHDI processes, while infants diagnosed after a passed or incomplete final screen are considered detected by an outside source.

In 2007, 135 infants with hearing loss were detected by EHDI while an additional 31 infants were detected by outside sources, for a total prevalence of 1.5 infants with hearing loss per 1000 live births. This is a slight increase from 2005, with hearing loss in 1.1 infants per 1000 live births.

The national EHDI goal is that all

infants who screen positive will have a diagnostic evaluation no later than 3 months of age. The percentage of infants diagnosed with hearing loss by 3 months of age increased from 30% in 2005 to 35% in 2007.

Table 1. Completed Hospital Hearing Screens in Michigan, 2005-2007, Michigan EHDI database, as of October, 2009.

Year of Birth	Number of Live Births	Percent of Live Births with Completed Hearing Screen
2005	127,518	97%
2006	127,537	97%
2007	125,172	96%

Table 2: Prevalence of permanent hearing loss and percent diagnosed by 3 months of age by final screen results for birth years 2005-2007: Michigan EHDI database, as of October, 2009.

Birth Year	Final Screen		Diagnosis of Hearing Loss (N)	Prevalence (per 1,000 live births)	Dx <3 months of age N (%)
	Result	Number			
2005	Fail	2,178	90	0.7	35 (39%)
	Pass	119,562	44	0.3	6 (14%)
	Incomplete	1,513	6	0.1	1 (17%)
	Total Screened	123,253	140	1.1	42 (30%)
2006	Fail	2,245	112	0.9	51 (46%)
	Pass	119,566	41	0.3	7 (17%)
	Incomplete	1,561	9	0.1	4 (44%)
	Total Screened	123,372	162	1.3	62 (38%)
2007	Fail	2,397	135	1.1	55 (41%)
	Pass	117,501	31	0.2	6 (19%)
	Incomplete	1,652	18	0.1	4 (22%)
	Total Screened	121,550	184	1.5	65 (35%)

Definitions:

***Hearing screening rate**—The percent of infants with a complete hospital screen among the total number of live births for the year.

****Referral rate**—The number of infants who fail their initial screen divided by the total number of infants who completed the hospital screen.

†**Prevalence of hearing loss**—The number of infants with hearing loss divided by the total number of live births.

Michigan's Progress Toward Meeting National EHDI Goals

The CDC, along with state representatives, developed national goals with quantitative objectives so that state EHDI programs can assess their achievements in timely detection of hearing loss and enrollment in early intervention services.³ The CDC collects EHDI data from each state with the CDC EHDI Hearing Screening and Follow-up Survey.⁵ Michigan's progress in meeting the first three national goals is shown here, using data from the CDC survey.

Goal 1: All newborns will be screened for hearing loss no later than 1 month of age, preferably before hospital discharge.

Of the 121,300 infants who had a complete hearing screen and were born in Michigan in 2007*, 97% (n=117,698) were screened before one month of age. Infants may be screened later than one month of age for reasons such as being in the neonatal intensive care unit, being born at home, or it may be an error in reporting to EHDI.

Goal 2: All infants who screen positive will have a diagnostic audiologic evaluation no later than 3 months of age.

Of infants born in Michigan during 2007 and having a hearing screen, 1,937 failed their last hearing screen. Of these infants, 134 (7%) were diagnosed with unilateral or bilateral hearing loss and 476 (25%) were false positives (had normal hearing).

Of the 134 infants with hearing loss, 58 (43%) were diagnosed before 3 months of age, 36 (27%) were diagnosed between 3 and 6 months of age, and 40 (30%) were diagnosed after 6 months of age, as seen in figure 1.

Infants with no diagnosis include: 33 (2%) with a diagnosis in progress, 53 (4%) with no diagnosis due to parental refusal, 24 (1%) moved out of state, and 1,217 (63%) were lost to follow-up. Much effort is being put into reducing the loss to follow-up to ensure that babies who fail the final screen have a diagnostic audiologic evaluation.

Goal 3: All infants identified with hearing loss will receive appropriate early intervention services no later than 6 months of age.

Of the 134 infants who were born in Michigan during 2007 and were diagnosed with permanent hearing loss, 67 (50%) had documentation in Michigan EHDI for enrollment into *Early On*[®] services. Of those 67 infants that were documented, 25 (37%) were enrolled before 6 months of age, 21 (31%) were enrolled between 6 and 12 months of age, 3 (5%) were enrolled after 12 months of age, and 18 (27%) were enrolled at an unknown age (figure 2).

There is no information on enrollment status for 50% of the infants. This may be due to the Health Insurance Portability and Accountability Act (HIPAA) and the Family Educational Rights and Privacy Act (FERPA) which regulate the sharing of confidential health information. Most privacy rules have exclusions for public health practice which allows the sharing of confidential information between health care providers and MDCH, in terms of conducting surveillance. To help improve documentation, EHDI now requests parents to sign a release form to obtain health information about their child for proper documentation in EHDI.

Figure 1: Age at Diagnosis of Hearing Loss for children in Michigan who failed their last hearing screen: 2007 CDC EHDI Hearing Screening & Follow-up Survey.⁵

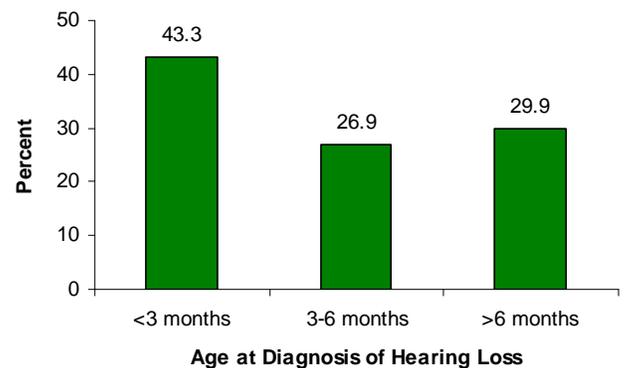
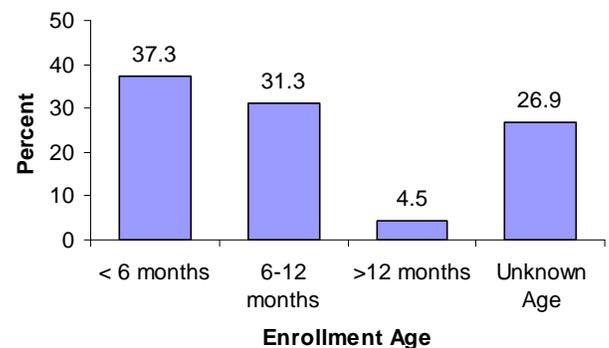


Figure 2: Documentation of enrollment into early intervention services in Michigan, by age of enrollment: 2007 CDC EHDI Hearing Screening & Follow-up Survey.⁵



*Note: Data for the CDC survey are collected from states once a year, so statistics shown here may differ from statistics shown on the previous page due to continued reporting by hospitals and diagnostic centers to EHDI.



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Support Programs and Additional Resources

The EHDI program provides resources to guide families through the process of making decisions for their baby diagnosed with hearing loss. Following is a list of educational materials and parent support programs.

* **Hands & Voices (H&V)** is a non-profit organization, offering non-biased support to families of children with hearing loss. Michigan H&V offers activities such as educational seminars, networking, and outreach events to provide balanced information to families so they can make good choices for their child. For more information, visit the website at www.mihandsandvoices.org.



* **Guide By Your Side (GBYS)** is a Hands & Voices program that provides an opportunity for families of children recently diagnosed with hearing loss to meet with a parent of a deaf or hard of hearing child who understands what the new family may be experiencing and who can help them locate resources in their area. For more information, or to request a brochure, visit the EHDI website at www.michigan.gov/ehdi.



* The **Michigan EHDI Program** supports families and professionals by developing resources and literature, providing educational trainings, building family support, and increasing awareness. EHDI collaborates with other MDCH programs such as the Birth Defects Registry, the Newborn Screening (NBS) Follow-up Program, Local Public Health, Genetics, the Michigan Care Improvement Registry (MCIR), and the Preschool and School-Age Hearing Screening Program. Additional information about EHDI can be found at www.michigan.gov/ehdi.

* For national level information on newborn hearing screening, diagnostic evaluation, and early intervention services, visit the **National Center for Hearing Assessment and Management (NCHAM)** website at www.infanthearing.org/ or the **Centers for Disease Control and Prevention (CDC)** website at <http://www.cdc.gov/NCBDDD/ehdi/>.

References

¹Early Hearing Detection and Intervention (EHDI) Program. Centers for Disease Control and Prevention. Found on Oct 27, 2009 at <http://www.cdc.gov/ncbddd/ehdi/>.

²EHDI Legislation. National Center for Hearing Assessment and Management. Found on Nov 13, 2009 at <http://www.infanthearing.org/legislative/index.html>.

³National EHDI Goals. Centers for Disease Control and Prevention. Found on Nov 10, 2009 at <http://www.cdc.gov/ncbddd/ehdi/nationalgoals.htm>.

⁴El Reda D, Grigorescu V, Jarrett A. (2005) Impact of the Early Hearing Detection and Intervention Program on the Detection of Hearing Loss at Birth—Michigan, 1998-2002. *Journal of Educational Audiology*, 12, 1-6.

⁵2007 CDC EHDI Hearing Screening & Follow-up Survey. Centers for Disease Control and Prevention. Found on Oct 26, 2009 at <http://www.cdc.gov/ncbddd/ehdi/data.htm>.

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