

PROJECT NARRATIVE

BACKGROUND AND NEED

Screening, diagnosing, and early intervention for hearing loss as early as possible is crucial to a child's development. The first year of life is a critical period because interventions are most successful during this timeframe. To increase the number of children who are in a system of care for hearing loss as early as possible, the Mississippi State Department of Health (MSDH) established the Early Hearing, Detection and Intervention Program (EHDI-M) to work towards improving outcomes for Mississippi's newborns.

In 1997, Mississippi was one of the first states to pass early hearing legislation. Sections 41-90-1 through 41-90-9 of the Mississippi Code of 1972 mandate that all hospitals which birth 100 or more babies a year must conduct universal newborn hearing screening. All hospitals and other providers must report results of all screening procedures and diagnostic hearing evaluation with appropriate personal and identifying information. Families of all identified children with hearing impairments will be provided information on the available services in the state for children with hearing impairments.

Approximately 44,000 live births occur each year in Mississippi. In 2007, there were 45,509 live births. According to data analyzed from the EHDI-M application system, ninety-eight percent (44,596) infants had a hearing screening. Most infants were screened in one month or less. Seventy-six percent (76%) of infants completed their diagnostic evaluation by 3 months of age; Eight-two percent of infants (82%) were referred to early intervention services by 6 months of age. Mississippi identifies approximately .1% of children with a bilateral hearing loss, and another .06% with a

unilateral hearing loss per year.

The EHDI-M program has established collaborations with local, state, and national entities to improve services for children throughout the EHDI process. EHDI-M staff communicate with and provide training for hospitals and service providers statewide to ensure infants with potential hearing loss are reported to EHDI-M. EHDI-M staff refer children to the Early Intervention program and work with Early Intervention Service Coordinators in the development of Individualized Family Service Plans for these children.

For children who are born in neighboring states, EHDI-M staff communicate with other state EHDI staff to receive and send data on newborn hearing screening. State university staff in deaf education programs provide technical assistance and resources. Magnolia Speech School and SKI*HI are the main service providers that provide services for hearing impaired children statewide as well as technical assistance to the program. EHDI-M staff receive technical support from the Region 4 contact person from the National EHDI Resource Center Technical Assistance Network.

EHDI-M procedures explain the process from screening phase to intervention phase along with the responsibilities of hospitals, EHDI-M staff, and diagnostic centers, and the Early Intervention program staff. The nurse or technician who performs the initial hearing screen at the hospital completes the child's demographic information and screening results on the Newborn/Infant Hearing Screening Report (Form 288). The screening results are forwarded to EHDI-M via fax or mail after the third hospital screening and if the child refers. If the child passes the screening, no further testing is recommended, unless the child is considered to be "at risk". If the child refers from the

screening, a third appointment is made at the birthing hospital for an outpatient screen. This screen is conducted within 2 days after hospital discharge and 1 month after birth. Form 288 is faxed or mailed to EHDI-M within 48 hours if the child refers, the does not show for the third screening, transferred to another hospital, is home birth, or considered a “sick” infant.

The Hearing Screening Coordinator enters data from Form 288 into the EHDI-M application system. Form 288 is routed within 2 days to the Diagnostic/Intervention Coordinator with a checklist to contact the family to confirm scheduled appointment. If the child is a “no show” for the third screening or diagnostic follow-up, the Hearing Screening Coordinator attempts to contact the family by telephone to reschedule the appointment and attempts to resolve any barriers the parents may have in rescheduling an appointment. Form 288 is routed to the Diagnostic/Intervention Coordinator to file in a notebook and monitor periodically to track if/when the third hearing screening or diagnostic assessment is done, the results, and indicated follow-up.

MSDH Office of Vital Records sends the Hearing Screening Coordinator a list of home births at periodic intervals. If a baby is not found on a hospital log, the parent is called to ask if a screening has been completed and, if so, the location of the screening. If the baby has been screened, the results will be located. If the baby has not been screened, the Hearing Screening Coordinator assists the family in scheduling a screening at a hospital or diagnostic center in their area of residence. If the parent cannot be reached by phone, a letter with information regarding the nearest screening hospital is sent along with educational materials discussing the importance of early identification of hearing loss. Information to contact the regional Hearing Screening Coordinator is also included.

Following diagnostic evaluation, the Audiologist sends the Audiological Diagnostic/Follow-up Report (Form 53) to the EHDI-M Diagnostic/Intervention Coordinator along with all test results and reports. This form is also completed if the child is a “no show” and sent to the EHDI-M’s office for tracking and monitoring. The Diagnostic/Intervention Coordinator logs the information into EHDI-M’s database.

After hearing loss has been confirmed by an audiologist, the child’s information is directly entered as a referral into the Early Intervention program’s application system by the Diagnostic Intervention Coordinator. The Early Intervention Service Coordinator is immediately assigned to the child to provide service coordination to the family. The Hearing Resource Consultant in the child’s area is also notified to provide additional support to the family.

EHDI-M collects individual-level hearing screening data reported from all birthing hospitals and diagnostic centers. Forty-eight birthing hospitals in the state report hearing screening data. Approximately 16 diagnostic centers statewide report diagnostic data to EHDI-M. This data is received on floppy disks and standardized program forms, Newborn/Infant Hearing Screening Report (Form 288) and the Audiological Diagnostic/Follow-up Report (Form 53).

Each month, hospitals mail a floppy disk to the EHDI-M with a downloaded Excel spreadsheet file of individual-level data on all completed hearing screens. The spreadsheet includes data elements such as name, gender, date of birth, screen results, and high risk factors. For infants who refer or who have an identified high-risk factor, hospitals mail or fax in a copy of Form 288 to EHDI-M. When infants referred for the diagnostic evaluations, the diagnostic center mails or faxes diagnostic evaluation results

on Form 53 to the EHDI-M.

All data is captured in the EDHI-M application system, which is a Microsoft Access-based system. It is located on a secure agency drive shared by EHDI-M and Early Intervention program staff. The application system is comprised of multiple database tables related to information captured on Form 288 and Form 53. All of the data in the system is manually entered by program staff.

EHDI-M has been conducting tracking and surveillance activities of newborns for hearing loss for over ten years, and it has implemented a successful system of detecting newborns with hearing loss. However, the EHDI-M tracking and surveillance processes must be enhanced to accurately report the status of all newborns in the EDHI process. Several critical areas have been identified that are in need of improvement.

EHDI-M staff spends a significant amount of time processing paperwork from reporting sources and data entry of information into the EHDI-M application system. Time spent processing paper work and data entry must be reduced to facilitate complete, accurate and timely reporting. Web-based reporting from hospitals and diagnostic centers must be considered as a viable alternative to paper-based reporting.

The EHDI-M application system must accommodate the collection of additional data elements needed for in-depth analysis of newborns and for integration with programs that identify children with special health care needs. The data elements currently being collected are limited, and more data elements needed to be collected for future analysis and program planning.

No formal tracking or long-term reporting process has been developed to track and identify children with late onset or progressive hearing loss. Tracking older children

for hearing loss may be difficult because hearing loss is not identified through typical newborn screening methods and health care providers do not systematically monitor older children. Standardized guidelines must be developed and implemented for health care providers to capture and report data on this population for surveillance purposes.

In response to these identified needs, this grant project will conduct activities to increase the capacity of EHDI-M to collect quality and accurate data on all children for tracking and surveillance of hearing loss. This will enhance EHDI-M's ability to evaluate the progress towards reaching the national EHDI goals.

WORK PLAN

The work plan has two components: a narrative description of the objectives and activities and a work plan table that includes additional details about the activities identified under each goal and objective.

Goal 1: Improve the quality of hearing screening data to monitor the status of every newborn through the EDHI process

The most complete, individual-level data in the EDHI application system has been captured since 2005. The minimum data elements needed for tracking and surveillance of newborns through the EDHI process is in the system. It is necessary to expand the data collected in the system to improve the quality of hearing screening data. However, the design of the EHDI-M application system can be easily expanded to include additional data elements. Both reporting forms, Form 288 and Form 53, will have to be revised. Other internal databases at MSDH will be reviewed to increase data sharing, integration and linkage.

Objective 1: By August 2009, modify the EHDI-M application system to collect additional data elements on newborns who refer.

Activities:

- 1) Revise Form 288 to include maternal demographics (age, race, ethnicity, and education level) and county of residence
- 2) Revise data entry protocols
- 3) Add maternal demographics (age, race, ethnicity, and education level), county of residence, and date of enrollment in early intervention services as data elements in application system tables

Form 288 and a table within the application system will have to be revised to collect the additional data elements. Maternal demographics (age, race, ethnicity, and education level) and county of residence will be added as entry fields on Form 288. Date of enrollment in early intervention services will be added as a data element in the Early Intervention program's application system for Service Coordinators to record. Since the two application systems are not linked, the data element will also be added to the EHDI-M application system. All of the data elements will be added to tables in the application system.

Measure of effectiveness: Obtain additional data elements on 100% of infants who refer.

Objective 2: By August 2009, import data on newborns who passed hearing screening (without high-risk factors) into the EHDI-M application system.

Activities:

- 1) Develop a list of data elements to include in the table
- 2) Create and import data into table in application system

Currently, the data from 2005 on newborns who passed the hearing screening are housed in Excel spreadsheet files on a hard drive. The files are inclusive of all completed

newborn hearing screenings. Children who passed hearing screening without a high-risk factor for hearing loss need to be extracted from files since 2005 and incoming files. Duplicate tests will be removed from the files. The last completed hearing screening for each newborn will be imported into the table in the application system.

Initially, no additional data elements will be collected on the newborns who passed. The hospital downloads the spreadsheet from the screening equipment, and the data elements on the spreadsheet can not be altered. The spreadsheet can only be altered in the latest version of the screening equipment, and only one hospital on the state uses it.

A challenge that has to be addressed in importing data is obtaining the newborn's legal name. The newborn legal name is necessary to obtain accurate data elements. On the spreadsheet, an infant's first name and last name is reported for example as Boy Jones or Girl Smith. The legal name is identified on Form 288 for children who refer, but additional measures must be taken to find the legal name of children who passed without a risk factor for hearing loss.

Measure of effectiveness: 95% of data on newborns who passed hearing screening since 2005 is housed within the EHDI application system

Objective 3: By December 2009, establish ongoing data linkages with internal databases to obtain additional data elements on newborns who refer and passed hearing screening (without high-risk factors).

Activities:

- 1) Identify programs with databases that collect data on the selected data elements
- 2) Develop and establish written assurances with programs outside of the Office of Child/Adolescent Health
- 3) Link data on newborns who refer on hearing screening with internal databases once a month

4) Link data on newborns who pass hearing screening with internal databases at least twice a year

The Diagnostic/Intervention Coordinator will attempt to collect additional data elements when families are contacted on newborns who refer. However, a formal, alternative process will be developed to obtain the information.

During the 1st year, data linkages will be conducted on children who refer. This dataset consists of only a few hundred children a year, and it is more manageable to match with the internal databases. The internal databases that will be reviewed include Immunization Registry, Vital Records, Newborn Screening, MSDH Patient Information Management System and other databases as identified. During the 2nd year, the hearing screening data on children who passed hearing screening (without high-risk factors) will be linked with internal databases at least twice a year to obtain the additional data variables.

MSDH is currently reviewing proposals for an integrated patient information data system. All the databases under the Office of Child/Adolescent Health will be integrated into a data warehouse in the future.

Measure of effectiveness: Obtain 100% of additional data elements on all newborns from at least 2 established data sharing or linkages with internal databases

Objective 4: By August 2010, develop and implement a pilot project for web-based reporting with a hospital and diagnostic center.

Activities:

- 1) Develop and distribute a survey tool for hospitals and diagnostic centers
- 2) Establish a contract and confidentiality agreement with selected hospital and diagnostic center
- 3) Develop data entry protocols for hospital and diagnostic center

4) Staff from MSDH Office of Information Technology will develop a web-based application for the EHDI program.

5) Initialize web-based reporting

In order to reduce paperwork and human error, a pilot project for web-based reporting will be coordinated with a hospital and diagnostic center. The hospital and the diagnostic center will report infants who refer via web-based system and those identified with high-risk factors. The hospital and diagnostic center will be selected based on a survey of all hospitals and diagnostic centers in the state. MSDH Office of Information Technology will designate staff to develop and maintain the web-based application. The project will be evaluated to assess the challenges and improvements before web-based reporting is expanded to include other hospitals and diagnostic centers.

Measure of effectiveness: The selected hospital and diagnostic center report 100% of newborns who refer or receive a diagnostic evaluation on web-based application

Objective 5: By February 2010, develop a quality assurance plan to monitor the accuracy and quality of reported hearing screening data.

Activities:

- 1) Develop data quality guidelines for hospitals and diagnostic centers
- 2) Conduct quality data checks in the EDHI-M application system on a monthly basis
- 3) Develop a review tool for hospital and diagnostic center data reviews
- 4) Travel to hospitals and diagnostic centers once a year to conduct in-services

Since an increased amount of data will be imported into the EHDI-M application system, a quality assurance plan will need to be developed to ensure all information received is complete and accurate. The plan will be two-fold. Data quality guidelines will be developed. Quarterly data checks will be completed on data in the EHDI-M

application system to ensure that all data elements are complete for each child.. EHDI-M staff will travel to hospitals and diagnostic centers to conduct chart reviews, in-services on data quality and reporting, and provide program updates.

Measure of effectiveness: 90% of reported hearing screening data is accurate and quality data

Objective 6: By January 2010, develop an analytic plan to address causes of loss to follow-up.

Activities:

- 1) Develop a written analytic plan which includes a list of data elements to capture and analyze
- 2) Implement analytic plan as a part of EDHI-M procedures.
- 3) Review findings of causes of loss to follow-up

Loss to follow-up rates in Mississippi are significantly low. Approximately five children were identified as being lost to follow-up in 2008. However, the specific reasons are why these children were lost to follow-up are unknown. An EHDI-M Advisory Board subcommittee will be formed to develop an analytic plan to address causes of loss to follow-up. At a minimum the subcommittee should consist of a parent advocate, audiologist, and a primary care or service provider. The members of the committee will meet to develop a written analytic plan that will be implemented by the EHDI-M staff to address loss to follow-up issues.

Measure of effectiveness: At least 6 different data elements and issues related to loss to follow-up are collected and analyzed

Objective 7: By December 2010, publish a yearly surveillance report on EHDI process data (newborn hearing screening, evaluation, and intervention) and the burden of hearing impairments in children.

Activities:

- 1) Develop an analysis plan that identifies data elements to analyze
- 2) Analyze data elements.
- 3) Develop written report.
- 4) Disseminate report to key stakeholders.

To facilitate data sharing on the progress of the national EHDI goals, a surveillance report will be developed and published. The report will include an analysis of data elements related to EHDI process data and hearing impairments in children. The report will be published on the EHDI-M web page for availability to the general public and copies will be distributed to pediatric health care providers.

Measure of effectiveness: Key stakeholders have online and print access to the surveillance report

Goal 2: Expand the capacity of EHDI-M to track and identify children at-risk for and with late onset or progressive hearing loss

EHDI-M does not actively identify and track children with late onset or progressive hearing loss. Very few children in the EHDI application system are identified with late onset or progressive hearing loss. Newborns who passed the hearing screening with one or more high-risk factors are in files, but not housed in the EHDI-M application system. These children will be inputted into the EHDI-M application system. Children with high-risk factors captured since 2005 will be tracked to determine whether they have been identified with potential late onset or progressive hearing loss.

EHDI-M procedures identify the need to follow-up on newborns with high risk factors, but no specific procedures have been developed for long-term follow-up of these

children. EHDI-M has maintained files of children who have not completed their evaluation for diagnosis of a hearing impairment since 2006. Additional procedures will be developed to identify older children with late onset for progressive hearing loss. Primary care provider awareness and education are necessary to ensure that these children are screened, monitored, referred to appropriate services past the neonatal period. Providers must view reporting children with late onset or progressive hearing loss to EHDI-M as a necessity not a burden.

Objective 1: By August 2009, modify the EHDI-M application system to capture children who passed hearing screening with high risk factors.

- 1) Develop a list of data elements to include in the table
- 2) Create and enter data into table in application system

EHDI-M has files of children who passed hearing screening with high risk factors since 2005. These children will be entered into the EHDI-M application system to initiate tracking of children with late onset or progressive hearing loss. A table will be created in the application system for ongoing input of this data.

Measure of effectiveness: 90% of children who passed hearing screening with high risk factors are housed with the EDHI-M application system

Objective 2: By August 2009, modify the EHDI-M application system to collect additional data elements on children with late onset or progressive hearing loss.

Activities:

- 1) Establish a list of data elements to include in the table
- 2) Revise Form 53 and data entry protocols to include missing data elements
- 3) Add data elements to table for children with late onset and progressive hearing loss
- 4) Import data set of children who passed hearing screening with a high risk factor

A table in the EHDI-M application system exists for children with late onset and progressive hearing loss. This table will be revised to collect established standardized data elements reported from diagnostic centers and other reporting entities. Form 53 and data entry protocols will be revised to capture the additional data elements.

Measure of effectiveness: Obtain 90% of additional data elements on all children with late onset or progressive hearing loss

Objective 3: By November 2009, implement tracking and reporting guidelines with diagnostic centers and physicians to collect data on children with late onset or progressive hearing loss.

Activities:

- 1) Develop written standard reporting guidelines for children with late onset or progressive hearing loss which includes standardized data elements
- 2) Establish MOUs with diagnostic centers and other reporting entities for ongoing collection of data on children with late onset or progressive hearing loss
- 3) Implement reporting guidelines

Guidelines must be developed to ensure that children outside the neonatal period with late onset or progressive hearing loss are tracked and reported to EHDI-M. Physicians and other staff from diagnostic centers will be selected to form a work group to develop written reporting guidelines for all diagnostic centers and other reporting entities. After the guidelines are developed, MOUs will be established with each reporting entity for ongoing collection of data.

Measure of effectiveness:50% increase in data collected on children with late onset or progressive hearing loss

Objective 4: By February 2010, establish ongoing data linkages with internal databases to obtain additional data elements on children at-risk for and with late

onset or progressive hearing loss.

Activities:

- 1) Identify programs with databases that collect data on the selected data elements
- 2) Develop and establish written assurances with programs outside of Child/Adolescent Health
- 3) Link data on children at-risk for and with late onset or progressive hearing loss with data in internal databases quarterly

To obtain additional data elements on children at risk for and with late onset or progressive hearing loss, internal program databases will be reviewed to collect data. The internal databases that will be reviewed include Immunization Registry, Vital Records, Children's Medical Program and other databases as identified. The databases will be linked with data from tables on children at risk for late onset or progressive hearing loss and children with late onset or progressive hearing loss quarterly. If a significant amount of children are reported, the data will be linked more often.

Measure of effectiveness: Obtain 90% of additional data elements on all children from at least 2 established data sharing or linkages with internal databases

Objective 5: By July 2011, increase primary care providers' awareness of the need to monitor children for late onset or progressive hearing loss.

Activities:

- 1) Develop an education tool for primary care providers
- 2) Educate providers at various state medical professional conferences on national standards for monitoring children for late onset or progressive hearing loss
- 3) Conduct regional trainings for primary care providers

An educational tool for primary care providers will be developed to educate providers about the need to monitor children for late onset or progressive hearing loss.

After this tool is developed, EHDI-M staff will provide trainings statewide to distribute this tool to primary care providers. As more providers are educated, an increase in reporting and referrals for children with late onset or progressive hearing loss should occur.

Measure of effectiveness: 50% increase in reporting of children with late onset or progressive hearing loss from primary care providers

COLLABORATIVE EFFORTS

EHDI-M has established a reporting system with all birthing hospitals and diagnostic centers to report screening and diagnostic evaluation results. However, the only tertiary hospital in the state, University of Mississippi Medical Center (UMMC), is a major reporter of screening and diagnostic evaluation data from children who reside in different areas of the state. The Hearing Screening Coordinator is notified by a designated nurse of the hearing screening results of newborns who are transferred out of state for surgery, who refer, and who pass hearing screening with a high risk factor. The nurse also notifies the Hearing Screening Coordinator of appointments made with the UMMC Hearing Screening Diagnostic Center. The Diagnostic/Intervention Coordinator works weekly with and UMMC Hearing Screening Diagnostic Center staff to ensure that data on all newborns are receiving diagnostic evaluations is updated and complete.

Through this grant project, EHDI-M will establish collaborations with a hospital and a diagnostic center for web-based reporting. The two entities will be selected based on the number of children screened or evaluated and the capacity of the entity to convert to web-based reporting.

Currently, EHDI-M works with the Newborn Screening program, under the Office of Child and Adolescent Health, for data sharing purposes. The Hearing Screening

Coordinator has access to the Newborn Screening Registry to obtain contact information if it is inaccurate on Form 288. EHDI-M will expand its collaboration within the Office of Child and Adolescent Health to include data sharing with the Children's Medical Program to identify children with late onset or progressive hearing loss.

EHDI-M will work with the Early Intervention program to capture additional data on children who were referred for early intervention services. The shared Business Systems Analyst will modify the Early Intervention application systems to include date of enrollment as a data element. Service Coordinators statewide will begin collecting this data on referrals from children with hearing loss.

MSDH Office of Vital Records provides EHDI-M data on home births. This collaboration will be expanded to include data linking of EHDI-M data with birth certificate data. A MOU will be established with the Office of Vital Records for ongoing data linking of EHDI-M data.

Mississippi is bordered by 3 contiguous states, Tennessee, Alabama, and Louisiana, with sparsely populated towns along their borders. This situation forces parents to travel across state lines to the nearest delivering hospital. EHDI-M recognizes this as a challenge to EHDI surveillance, and specific reporting procedures have been developed with each state.

PROGRAM CAPACITY

Mississippi State Department of Health is the lead agency charged with conducting EHDI activities in the state. The Early Hearing, Detection and Intervention Program in Mississippi (EHDI-M) is located under the Office of Child and Adolescent Health. It includes programs such as the Children's Medical Program, Newborn

Screening program, Birth Defects Registry, Adolescent Health and the Early Intervention program.

EHDI-M is located organizationally under the Early Intervention Division. The Early Intervention Director provides administrative oversight for EHDI-M. EHDI-M staff has access to Early Intervention's application system to enter referrals for children identified with hearing loss immediately. Hearing Resource Consultants (HRCs) work closely with Early Intervention Service Coordinators to enroll children into Early Intervention once hearing loss has been confirmed. HRCs work as a team member to formulate the Individualized Family Service Plan (IFSP) for children and provide ongoing support and consultation to the Early Intervention team.

Key EHDI-M staff, EHDI-M Director, Hearing Screening Coordinator, and Diagnostic/Intervention Coordinator, coordinate the EHDI process from the state office. EHDI-M is the single reporting source for hearing screening and evaluation results. Hearing Resource Consultants, located in nine public health districts, provide direct family support at the local level.

The EHDI-M Advisory Board makes program recommendations and advocates for legislation related to hearing impairments. It consists of health care professionals and advocates statewide including pediatricians, otolaryngologists, speech/language pathologists, audiologists, parents, and Hearing Resource Consultants. The board meets three times a year.

EHDI-M collaborates with deaf education programs at state universities and state service providers to provide training for health care providers and expand resources for families. Through collaboration with SKI*HI, Mississippi School for the Deaf, Magnolia

Speech School, and state universities, EHDI-M coordinates three regional trainings each year to address the training needs of professionals working with hearing-impaired infant and toddlers.

The University of Southern Mississippi (USM), College of Education and Psychology, Department of Speech and Hearing Sciences, has partnered with EHDI-M to distribute needs assessment surveys to families. The purpose of the survey is to identify the service needs of families with children with hearing impairments. EHDI-M Hearing Resource Consultants assist the families with completing the surveys during home visits. USM is working to develop Family Training Programs throughout the state.

EHDI-M staff receive technical support from the Region 4 contact person from the National EHDI Resource Center Technical Assistance Network. The contact person provides ongoing guidance for program development, best practices, and training needs. The contact person conducted one of the sessions during the recent regional trainings.

Grant funding from the HRSA Maternal and Child Health Bureau has allowed EHDI-M to implement new strategies to address loss to follow-up issues. It has allowed the expansion of EHDI-M staff to provide funding for a Hearing Resource Consultant in each public health district. Capturing the medical home of each child who referred the hearing screening was incorporated into EHDI-M program procedures to improve linkages with intervention services.

Before state EHDI legislation was passed, only six hospitals in the state conducted hearing screening. In 1997, AABR screeners were purchased by EHDI-M for hospitals delivering 100 or more babies a year. Currently, 48 hospitals have AABR screeners.

When EDHI-M was initially created, program staff consisted of an EHDI-M director, Child Find Coordinator, Audiologist Consultant, and two HRCs to conduct surveillance activities. In 1999, the program changed staff positions to include an EHDI-M director, Hearing Screening Coordinator, Diagnostic/Intervention Coordinator, and four HRCs. In 2001, EHDI-M expanded program staff to include eight HRCs.

STAFFING AND MANAGEMENT PLAN

The Early Hearing Detection and Intervention Program of Mississippi (EHDI-M) has three full-time staff positions at the Central Office and seven contractual positions that serve throughout the state. The staff positions include: EHDI-M Director, Hearing Screening Coordinator, Diagnostic/Intervention Coordinator, Hearing Resources Consultants, and Business System Analyst. Three additional positions, Principal Investigator, Biostatistician, and Data Control Clerk II, will be added to support the activities of this grant.

The EHDI-M Director, Eunice Short, is responsible for direct oversight of all activities of the program. This individual provides supervision of EHDI-M central office and contractual staff and acts as a liaison between hospitals, diagnostic centers, health department staff, and other providers. This Director aids in identifying critical training issues and acts as the primary coordinator in the planning and implementation of training programs. She has over three years of experience in early intervention services for children birth to three. She will be responsible for the day-to-day operation of grant activities. The EHDI-Director's position is full-time and 100% state funded.

The Hearing Screening Coordinator, Gloria Lee, is responsible for the day-to-day management of the hospital screening component of the program. This is a full time

position. The duties of this position consist of managing the hospital data system and ensuring that all infants who do not pass the hearing screen are consistently referred for timely diagnostic evaluation by an audiologist. Additionally, she provides on-site consultation and technical assistance for the hospital nursery staff and manages MSDH hearing screening equipment inventory. She has ten years of experience with EHDI-M. The position is funded through the Early Intervention Program.

The Diagnostic/Intervention Coordinator, Angel Lee, is responsible for the day-to-day administration of the statewide diagnostic and intervention component of this project. The position is full time. She assists with the development and implementation of policies and procedures to augment the relationship between the statewide EHDI-M staff and health care professionals involved in newborn and infant hearing diagnostic evaluation and intervention. This coordinator is also responsible for input and monitoring of audiologic diagnostic data for completeness and timeliness compliance. This individual has three years of experience with EHDI-M. The plan is for this position to be funded by this grant project. Currently, this position is a contractual position.

Seven part time contractual Hearing Resource Consultants (HRCs) work in each of the nine public health districts. These individuals serve as resources to families, early intervention service coordination staff, early intervention service providers, and Primary Care Providers. They play an essential role in working with the Early Intervention team and family to formulate the Individualized Family Service Plan (IFSP). A HRC is required to be a licensed speech language pathologist, teacher of the deaf, or audiologist in Mississippi with experience working with children and families with hearing loss. HRCs are funded with grant funds from Health Resources and Services Administration

(HRSA) Maternal and Child Health Bureau.

Business Systems Analyst, Tony Williams, allocates 50% of his time for the technical maintenance of the EDHI-M and Early Intervention application systems. He troubleshoots any IT related problems the EHDI-M staff has with the system and makes any necessary modifications to the system. This individual has over 10 years of IT experience in state government. The position is funded through the First Steps Early Intervention Program.

The Principal Investigator, Stephanie Ivy, will provide 20% of her time towards managing the administrative activities of the grant. She will also assist with implementation of grant activities. The grant funding will pay for 20% of her salary. She has more than six years of public health experience, which includes program planning, public health surveillance, and health education. Currently, Stephanie serves as a Special Projects Officer in the Office of Child and Adolescent Health to provide support for all programs.

The Biostatistician will provide 20% of time towards completing grant activities. The grant funding will pay for 20% of their salary. The person would be responsible for the oversight of data collection and data analysis of EHDI-M data. This position is currently vacant, but a staff member from the Bureau of Health Data and Research will provide support for the program until the position is filled. The minimum requirements for this position include a doctoral degree in statistics, biostatistics, public health, health planning, or health care and one year of health care or statistical experience or a master's degree in statistics, biostatistics, public health, health planning, or health care administration and three years of health care or statistical experience. This position will

be shared with other related MSDH Child/Adolescent Health programs implementing surveillance activities.

The Data Control Clerk II will provide 100% full-time support towards program activities. The person hired in this position will provide clerical support and data entry. The work will include importing and data entry of older and current files of children into EHDI-M application system, performing data quality checks, and other duties as assigned. Additional program support will be needed as the EHDI-M application system is expanded to include additional components.

EVALUATION PLAN

The evaluation of this project will be an integral part of this grant activities. Multiple methods will be used to measure the success of this project. A logic model of EHDI-M is located in Appendix _.

EHDI-M will be evaluated before grant activities are implemented to determine the current performance of the application system and surveillance activities. The document MMWR Recommendations and Reports “Updated Guidelines for Evaluating Public Health Surveillance Systems” will be used as a guide to evaluate the system. The results of this evaluation will be used as a baseline to measure progress as grant activities are implemented.

The progress towards the goals and objectives of this project will be evaluated annually by an EHDI-M Evaluation Work Group. The work group will consist of MSDH staff from other programs, deaf education faculty from state colleges/universities, physicians, audiologists, and EHDI-M staff. This group will be formed by the end of the first month of the project. Technical assistance for evaluation will be provided by

National Center for Hearing Assessment and Management's Region IV Consultant.

The work group will meet quarterly during the project period to review evaluation needs and results and will compile data to measure long-term outcomes each year. EHDI-M staff will develop an activity report form to record outcomes as the activities under each objective are implemented. This report form will be given to the work group to determine the level of progress related to established health outcome indicators and outcome and process measures. A written report will be developed at the end of each fiscal year.

The following is a detailed list of indicators for each goal and outcome and process

measures for each objective:

Goal 1: Improve the quality of hearing screening data to monitor the status of every newborn through the EDHI process

Health Outcome Indicators	
•1	Proportion of newborns who are screened for hearing loss by age 1 month
•2	Proportion of newborns who have audiologic evaluation by age 3 months
•3	Proportion of newborns who are enrolled in appropriate intervention services by age 6 months

Objective 1: By August 2009, modify the EHDI-M application system to collect additional data elements on newborns who refer.

Outcome Measure(s)	Process Measure
•1 % of newborns who refer with complete data	•2 Additional data elements on newborns who refer added to table

Objective 2: By August 2009, import data on newborns who passed hearing screening into the EHDI-M application system.

Outcome Measure(s)	Process Measure
•3 % of newborns imported into EDHI-M application system	•4 Table created for newborns who passed hearing screening •5 Data on newborns who passed hearing screening imported into EHDI-M application system

Objective 3: By September 2009, establish ongoing data linkages with internal databases to obtain additional data elements on newborns who refer and passed hearing screening without high-risk factors).

Outcome Measure(s)	Process Measure
•6 % of data linkages that retrieve accurate data	•7 Access established for two or more data linkages with internal databases

Objective 4: By August 2010, develop and implement a pilot project for web-based reporting with a hospital and diagnostic center.

Outcome Measure(s)	Process Measure
•8 100% of data reported to web-based application	•9 MOUs established with hospital and diagnostic center for web-based reporting

Objective 5: By February 2010, develop a quality assurance plan to monitor the accuracy and quality of reported hearing screening data.

Outcome Measure(s)	Process Measure
•10 % of newborns with accurate and quality data	•11 Quality assurance plan developed and implemented

Objective 6: By January 2010, develop an analytic plan to address causes of loss to follow-up.

Outcome Measure(s)	Process Measure
•12 Number of reasons identified for loss to follow-up	•13 Data collected and analyzed for each data element

Objective 7: By December 2010, publish a yearly surveillance report on EHDI process data (newborn hearing screening, evaluation, and intervention) and the burden of hearing impairments in children.

Outcome Measure(s)	Process Measure(s)
•14 Number of reports distributed	•16 Data analyzed
•15 Report completed before the end of the calendar year	•17 Report generated

Goal 2: Expand the capacity of the EHDI-M program to track and identify children at-risk for and with late onset or progressive hearing loss

Health Outcome Indicators
<ul style="list-style-type: none"> •4 Proportion of children identified with a high risk factor(s) for late onset or progressive hearing loss •5 Proportion of children identified with late onset or progressive hearing loss •6 Proportion of children identified with late onset or progressive hearing loss who are in a system of care

Objective 1: By August 2009, modify the EHDI-M application system to capture children who passed hearing screening with high risk factors.

Outcome Measure(s)	Process Measure
•18 % of children inputted into the EHDI-M application system	•19 Table created for children who passed hearing screening with high risk factors

Objective 2: By August 2010, modify the EHDI-M application system to collect

additional data elements on children with late onset or progressive hearing loss.

Outcome Measure(s)	Process Measure
•20 % of children identified with late onset or progressive hearing loss	•21 Table created for children with late onset or progressive hearing loss

Objective 3: By November 2010, implement tracking and reporting guidelines with diagnostic centers and physicians to collect data on children with late onset or progressive hearing loss.

Outcome Measure(s)	Process Measure
•22 Increase in number of children reported to EHDI-M late onset or progressive hearing loss	•23 Reporting guidelines developed

Objective 4: By February 2010, establish ongoing data linkages with internal databases to obtain additional data elements on children at-risk for and with late onset or progressive hearing loss.

Outcome Measure(s)	Process Measure
•24 % of children with complete data	•25 Access established for two or more data linkages with internal databases

Objective 5: By July 2011, increase primary care providers' awareness of the need to monitor children for late onset or progressive hearing loss.

Outcome Measure(s)	Process Measure
•26 Increase in the number of primary care providers who report children with late onset or progressive hearing loss	•27 Education tool developed •28 Number of trainings held or conferences attended •29 Number of primary care providers who attend trainings or conferences

As explained in Objective 5 under Goal 1, a quality assurance plan will be developed by EHDI-M staff. It will focus on monitoring data quality from each reporting source and providing technical assistance for all providers. In addition to obtaining screening and diagnostic evaluation results, efforts need to focus on ensuring that all information is complete and accurate. EHDI-M staff will complete monthly quality checks of data reported from hospitals, diagnostic centers, and other providers. They will review data from each provider to ensure that all data elements are complete for each child. EHDI-M staff will work with providers who do not report all data elements by developing an action plan to improve data quality and address barriers to reporting all

data elements. Once web-based reporting is implemented, data quality checks will be conducted and compared with paper-based reporting.