

## **EHDI TSI Program Narrative**

### **Executive Summary**

#### **Achievements**

The beginning of the Tennessee Early Hearing Detection and Intervention Tracking, Surveillance, and Integration (EHDI TSI) project was marked by the passage of “Claire’s Law” which required newborn hearing screening testing and reporting for all Tennessee newborns to the Tennessee Department of Health. The EHDI TSI program, despite many obstacles, has been successful in gaining access to the most essential data sets required for the successful tracking of newborn hearing screenings, infants and children with risk factors, and those with late onset hearing loss. The Electronic Birth System (EBS), the Neometrics Newborn Screening system, which includes both the Newborn Metabolic Screening and Newborn Hearing Screening data systems, and the old EHDI follow-up data system have been linked and incorporated to form the core of the EHDI TSI Integrated Data System. These are the three largest most robust and comprehensive data sets available to utilize for EDHI TSI and comprise our current working system. Access to these datasets was gained early in the program and a linkage process developed to help identify possible problems or concerns. This process allowed the analytical staff to formulate an evaluation plan and set realistic goals for decreasing the percentage of loss to follow-up.

The initial linking of the data sets was completed and went very well. Birth records were matched to Neometrics screening records on variables such as screening form number, infant/mother medical record number, mother’s social security number, birth date, birth order, birth time, mother’s and baby’s names, and resident address, etc. The matching process was based on an iterative algorithm developed by Law and Li (2008)<sup>1</sup>, using both deterministic and nondeterministic methods. In 2008 there were a total of 89,206 in-state live births recorded by the Vital Records Division, Tennessee Department of Health (provisional data). Among them 88,627 were matched to their corresponding Neometrics screening record (99.4%). The unmatched records were composed primarily of home births and newborns that died within the neonatal period.

Among the matched births in 2008, 83,184 (93.9%) received hearing screening and among those there were 3,457 abnormal results. The follow-up diagnosis and intervention data for 2008 have not been completely entered in the system. Thus, follow-up rates are currently unavailable. These records will be updated by the end of the first year of the project and initial medical records will continue being scanned into Neometrics during the second year. Based on 2007 data, 69.3% (2,491 out of 3,597) of infants/children with positive screening results received diagnostic tests and were captured in the EHDI data system. Fifty-one (51) children were diagnosed with permanent hearing loss, 24 (47.1%) of which were enrolled in the Part C early intervention program.

As indicated in our Data Flow Diagram in the Attachments, we are planning to add the Immunization Registry, Birth Defects, and Pregnancy Risk Assessment Monitoring System (PRAMS) datasets in the near future. Also slated to be added to the system are the Women, Infants, and Children (WIC) and Children's Special Services (CSS) datasets. While we have no direct electronic access, the Tennessee Early Intervention System (TEIS) currently sends relevant information by phone or fax to NHS. The Tennessee Department of Education has designated Susan McCamy (Coordinator for TEIS) as one of the two-member central intake unit. The TDH NHS program has designated Julie Beeler (NHS Audiologist) as the other member of this team. They will jointly provide central intake for TEIS, NHS and EHDI TSI, identify and communicate as needed to ensure that no infants or children are lost to follow-up, implement case management and make needed referrals to the TEIS field representatives or to NHS for action as appropriate. This accomplishment is significant in that the TEIS is not currently electronically available to us and we must rely on TEIS program personnel to identify and communicate relevant information to NHS and EHDI TSI. This implementation was possible as a result of our previous in-depth planning work with TEIS regarding the field details of data elements. This is the best alternative available without electronic access to the TEIS system. This new procedure will be followed starting March 1, 2009 and will become part of our written policy and procedures for EHDI TSI. We will monitor and

adapt the strategy in our policies and procedures as needed to accomplish our program goals and objectives.

The EHDI TSI program has two nurses in the field using secure e-mail to receive and send information on individual cases that they examine. NHS sends a list of infant medical records that the EHDI TSI nurses review in hospitals and birthing centers. The nurses also contact individual doctors and audiologists regarding follow-up. The nurses then fill out the follow-up form and e-mail the form back to the NHS. This process is illustrated in the Attachments with the diagnosis call log, the instructions for the follow-up form, and a copy of the follow-up Form. The EHDI TSI project staff (clerks and nurses) are in the process of getting secure connections to the Neometrics database. They can then enter data within the Neometrics system rather than utilizing e-mail. The process is working well currently. However, direct access to Neometrics will lessen the likelihood of errors and streamline the process considerably.

### **Challenges**

The EHDI TSI program has faced several challenges. When the program was in the developmental phase, the in-kind EHDI TSI staff laid the groundwork to implement changes and access to 3 different database systems that Tennessee utilized in the NHS and ones that we planned to utilize for the EHDI TSI. The program planned to add demographic and tracking fields to two databases, TEIS and Neometrics. We also planned to eliminate the old EHDI database by adding the needed fields to the other 2 existing proprietary systems. We worked with the NHS coordinator Jacque Cundall to negotiate with TEIS and with Neometrics. Negotiations began in June 2008. We requested several changes be included along with the TEIS system change already initiated. We met periodically with the TEIS team and their management and service staff. We also worked with the contractual database administrator for the TEIS electronic database. EHDI TSI staff were planning some changes that needed to be instituted and hoped to include the fields that would help us track those children at risk or with late onset hearing problems. During this process of negotiation and planning, we delved into the smallest details of the system process to decide who in the field would be collecting

the data and which and how many character fields were needed for each item and how data would be recorded in the system. We also examined how this information would be shared with EHDI TSI and NHS. After several months of planning and meetings, we submitted our request to the TEIS database administrator. After review with the TEIS program manager, the requests for data items and fields led to the “activation” of some TEIS inactive fields for EHDI TSI. However, the magnitude of changes we wished to make in the data fields was not possible. The changes would have required a new contract among EHDI TSI, TEIS and their contractual database administration. Time constraints would not permit us to pursue this option. TEIS decided to proceed with their planned changes. Our requests would take about 2 years before they could be placed actively into the TEIS data system. However, we could not wait for two years to get the data we needed to accomplish the goals of the program. We found an acceptable alternative that would ensure we have the information needed to track children for EHDI TSI. The central intake process now serves that purpose.

Meanwhile, we were waiting for Neometrics to add the risk factor fields, and some tracking and demographic fields to their system. Initially these changes were on the calendar for July 11, 2008. This date was delayed 3 times until finally implemented in December 2008. Neometrics did add some of the requested fields. The Neometrics system contains the initial infant hearing screening files from the various hospitals and birthing centers in the state. The medical records for 2007 and 2008 contained in the old EHDI system had the information that was added to Neometrics. This information from the old EHDI system needed to be added manually to Neometrics to bring the 2007 and 2008 files up to date. NHS staff entered the data as time allowed and have input 3 months of 2008 data; 2007 data and the remaining 2008 data need to be added for completion of infant records in the Neometrics system. Additionally, the NHS staff scanned 2-3,000 reports per month that did not come into the newborn screening system with the blood spot card. However, staff were not able to sustain this pace with the resources available to them. This led to a backup of records that could have posed a problem for EHDI TSI. To address this issue, we assigned two clerks to bring the database up to date with the 2007 and 2008 files. Additionally, the clerks would scan the hearing screen results into the

Neometrics system. We could then link these electronic birth records with the Neometrics to identify those children who had no initial hearing screening or had been identified with hearing loss or at risk for hearing loss.

Overcoming several obstacles, the EHDI TSI staff identified an epidemiologist from within the state framework in November and placed him on staff. He was experienced and well qualified for EHDI TSI. As of Nov 1 2008, Fenyuan Xiao, MD, PhD was placed in the EHDI TSI program. His resume is in the Attachments. Additionally, the two nurses from the Birth Defects Registry were identified as possible personnel for the EHDI TSI program. As the program PI (Dr. Law) also oversees the Birth Defects Registry, we were able to place the two nurses on staff with EHDI TSI. They will work full time on the EHDI TSI program for the rest of year 1. These nurses were already familiar with the hospitals and birthing centers from their work in the Birth Defects Registry. Additionally, their travel already covered the entire state. One works the eastern portion and one works the western portion of the state and together work the middle. Resumes for both nurses were sent to CDC representatives on February 2, 2009. EHDI TSI and NHS conducted 3 training sessions that were attended by the nurses and the epidemiologist. EHDI TSI also conducted one half-day training session for the clerks who will be doing the data input and scanning. The program nurses, epidemiologist, and the in-kind staff also attended this training session so that they would be familiar with the process and activities implemented for the program. This facilitates a comprehensive view and assists in the development of new EHDI TSI policies and procedures. Examples of the training materials are included in the Attachments.

During the initial 6 month startup of the program, the Primary Investigator and the Epidemiologist Evaluation Director worked to access, examine, and link the datasets that were to comprise the initial EHDI TSI Integrated Data System. These datasets included: Electronic Birth; Neometrics, old EHDI, TEIS, Immunization Registry, PRAMS, and Birth Defects. Three of these data sets (Electronic Birth, old EHDI, and Neometrics) were accessed, studied, and linked. This process created the initial current working data system for EHDI TSI.

To deal with the backlog of files (2008-9 medical records), we requested 1 FTE of clerical time from the supervisors of our general administrative assistants. We plan to employ two clerks at 0.5 FTE for the remainder of year 1. Luckily, all of the clerks are experienced and have many years with the Tennessee Department of Health. The duties of the clerks require them to remain in the Cordell Hull Building to work on the EHDI TSI program. We formulated a security protocol for medical records handling and transportation and plan to work with our own technical group to establish a secure virtual private network (VPN) connection. The technicians are currently creating this connection and testing the system interface for use by the administrative assistants and nurses. The EHDI TSI program may need technical interface screens from the Neometrics proprietary system provider. Training sessions with the program staff, nurses and the administrative assistants may be altered and rescheduled taking into account these changes.

While the program has experienced several delays in start-up, and related activities, these will be corrected by doubling the time the nurses and administrative assistants are to spend on the EHDI TSI tasks for the remainder of year 1. This arrangement is possible as we are working within the Policy, Planning and Assessment section where EHDI TSI is organizationally located. Tennessee Department of Health staff work closely together in this section and agreement was reached to place the 2 nurses in service full time from late February through the end of June and to place both clerks on staff at one half time each for one full FTE. We will revise this arrangement for year 2 and place the two nurses in service 25% each for a total of 0.5 FTE and one clerk for 25% time for a total of 0.25 FTE.

### **2008-2009 Budget Unobligated Estimation**

EHDI TSI plans to continue our pursuit of year 1 goals and objectives with a doubled effort. Therefore, we expect to expend most of the year 1 budget allocation. We estimate that there will be approximately \$19,997 in unobligated funds remaining from the 2008-2009 year 1 budget.

## **Progress Report Goals and Objectives / 2009-2010 Program Plans**

We have reviewed our progress from July 2008 to December 2008. This review is presented with the associated National EHDI Goals and Objectives and is consistent with that format. This progress reflects the fruits of the detailed, time consuming planning process. Dealing with the many challenges served to provide a good understanding and to improve the working relationships among colleagues and collaborators. This collegiality will be enhanced further as we begin to report pertinent information to collaborators and collectively reduce and eliminate loss to follow-up.

## **References**

<sup>1</sup>Law, D.J., Li, Y. (2008). Linking Tennessee Newborn Screening and Birth Certificate Data Systems. Presented at the CDC Assessment Initiative Meeting: Atlanta, GA.

## **EHDI TSI PROGRAM GOALS AND OBJECTIVES:**

### ***6. Every state will have a complete EHDI Tracking, Surveillance, and Integration System that will minimize loss to follow-up.***

6.1     *Comprehensive system.* Each state will have a computerized system that maintains current information on hearing screening for every infant, evaluation for all infants/children who do not pass the screenings, and interventions for every infant and child from birth through 5 years of age with hearing loss.

#### *Progress:*

6.1.a: Ongoing. The Tennessee EHDI TSI system has been conceptualized, the databases and data elements were identified, and the initial linkage of the databases was established. A data flow chart of this data system is in place depicting the systematic flow of information (See Attachments). We are in the process of compiling a written document for the system and this document is expected to be completed by June 2009.

**6.1.b: Met.** We used the TN EHDI TSI system to report statistics requested by CDC for the 2007 EHDI Hearing Screening and Follow-up Survey (HSFS). The information submitted for HSFS included the number of hearing screenings, evaluations and interventions. We established the computer programs needed to report the 2008 data in January 2009. Once all the 2008 EHDI TSI records are entered into the system (which will require some more time for the data clerks to finish), we'll be able to generate reports for the 2008 data. We expect all 2008 data to be entered into the system by June 2009. At present the 2009 data is current.

**6.1.c: Met.** The Evaluation Plan is completed and is presented in the Work Plan Table which is contained in the project narrative for this application.

- 6.2 *Policies and procedures.* Each state will have written policies and procedures regarding operation of the EHDI Tracking, Surveillance, and Integration Program.

**Progress:**

**Ongoing.** Written policies and procedures for the Tennessee EHDI TSI S Program are expected to be completed by June 2009.

- 6.3 *Privacy and confidentiality.* Each state will develop policies, procedures, and informed consent requirements regarding privacy and confidentiality of data in the EHDI Tracking, Surveillance, and Integration Program.

**Progress:**

**Ongoing.** Written policies and procedures on informed consent requirements are to be completed by March 2009.

- 6.4 *Include all births.* Each state will ensure that all live births in the state are included in the state EHDI Tracking and Surveillance and Integration

Program by matching with the state's birth certificates registry as allowed by state policy.

Progress:

**6.4.a: Met.** We have included all births recorded from the Vital Records system in our EHDI TSI system.

**6.4.b: Met.** By matching all live birth records with the records in the Neometrics Screening database we are able to identify individual infants (number and percent) who did not receive hearing screening.

**6.4.c: Met.** The number and percent of matches are documented and individual infants are included in the EHDI TIS Integrated Data System.

6.5 *Risk factors for hearing loss.* The state EHDI Tracking, Surveillance, and Integration System will ascertain risk factors for hearing loss for every infant by linkage with other state data systems, such as TEIS, the old EHDI access system, hospital records, birth certificates, birth defects, immunizations, etc.

Progress:

**6.5.a: Met.** The number and percent of infants with risk factors are identified and recorded in the EHDI TSI system. This information will be shared with the appropriate service providers to limit the loss to follow-up for those with risk factors and possible late onset hearing loss.

**6.5.b: Met.** The number and types of risk factors are identified and recorded from the EHDI TSI system. Reports will be developed and shared with our collaborators in order to assure that the children are receiving appropriate follow-up services.

6.6 *Newborn hearing screening results.* The state EHDI Tracking, Surveillance, and Integration System will capture all hearing screening results at birthing hospital within [a week] after discharge or transfer. This information will be shared with the appropriate persons, agencies that will be providing the follow-up for the child. EHDI TSI will track all children to ensure appropriate follow-up activities have been engaged to serve the needs of the child.

*Progress:*

**6.6.a: Met.** We have established a computer program to periodically report the number and percent of infants screened and the screening results. We will produce reports that will be shared with collaborators and treatment personnel so that appropriate services are provided to infants on a timely basis.

**6.6.b: Ongoing.** A plan addressing how to improve the timeliness and quality of screening data will be completed by June 2009. This activity will be utilized to make needed improvements or changes in the accuracy and timeliness of the data sharing process.

6.7 *Reporting mechanism for health care providers.* Each state will provide a mechanism for hospitals, audiologists and other health care providers to report hearing screening results, evaluations, and interventions.

*Progress:*

**6.7.a: Ongoing.** A plan addressing how to ensure all health care providers report hearing screening results to the state will be completed by December 2009. Currently we utilize phone and fax notifications to ensure that children are screened and appropriate services provided. Tennessee passed Claire's Law in 2008. This law requires hospitals and birthing centers to report screenings to the Tennessee Department of Health. We

currently link the Vital Records birth data with Neometrics to identify children that have not been screened.

**6.7.b: Ongoing.** The goal is to ensure 100% of health care providers have protocols for reporting hearing screening results to the state by June 2010. We work closely with NHS staff that already has some protocols developed already. (ie. audiologists). We will continue to identify and develop protocols for other health care specialties and service providers as necessary.

**6.7.c: Ongoing.** The goal is to have 100% health care providers reporting hearing screening results to the state by December 2010. Most hospitals and birthing centers already report hearing screening to NHS. We will continue to assist in identification of health care providers where protocols are needed and will work with our collaborative partners to ensure that all hearing screening is reported to the Tennessee Department of Health.

- 6.8 *Identifying children who need screening and follow-up.* The state EHDI Tracking and Surveillance System will be able to identify infants and children who need initial hearing screening, repeat testing, evaluation, follow-up or intervention.

**Progress:**

**6.8.a: Ongoing.** We developed a computer program to report the number and percent of infants/children needing initial screening, confirmatory screening, and intervention for annual aggregated data. We are in the process of modifying the program to generate these statistics on a weekly basis. This modified program is expected to be completed by June 2009. The resulting reports will be shared with appropriate collaborative partners and individuals so that the loss to follow-up is significantly reduced.

**6.8.b: Ongoing.** We plan to modify the existing computer programs and generate weekly reports with the number and percent of infants/children who received follow-up to stakeholders and collaborative partners to reduce the time and likelihood that children are lost to follow-up.

- 6.9 *Access to information.* The state EHDI Tracking, Surveillance, and Integration Program will distribute relevant information regarding infants and children in periodic reports to case managers and authorized health care providers to meet our projected goals and objectives for the program.

**Progress:**

**6.9.a: Ongoing.** A written plan for EHDI TSI report dissemination will be completed by December 2009. Protocols will be developed to ensure that the appropriate health care providers receive timely information and children are less likely to be lost to follow-up.

**6.9.b: Ongoing.** A procedure for case managers and authorized health care providers to access relevant patient information is expected to be in place by June 2010. We have a good working relationship with Children's Special Services, TEIS, and others and will work closely with them to insure that we provide timely, relevant reports for their use.

### **Work Plan Table (Year 2 plans & Program Evaluation)**

The Work Plan Table has been revised to more accurately reflect achievements and realistic goal and objective outcomes. The evaluation plan has been added and intense scrutiny by the program staff reflects the assessment of the program timeline revisions. With the doubled efforts of staff, we are confident that year 2 and 3 goals and objectives are presented accurately. We have already completed some reports. (See Attachments for example). EHDI TSI staff expects to increase this effort substantially in year 2.

## Tennessee EHDI Tracking, Surveillance, and Integration Program

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| <p><b>Goals</b></p> <p><b>Goal 6. Tennessee will have a complete EHDI Tracking, Surveillance &amp; Integration System that will minimize loss to follow-up.</b></p> | <p><b>Measures of Success:</b> An Established EHDI TSI System in Tennessee</p> <p><b>Team Member Abbreviations:</b></p> <p>P-Primary Investigator<br/> E – Epidemiology Staff<br/> N -PHNC1 Public Health Nurse Consultant 1 Staff<br/> C-Collaborative Partners = BD, CSS, FV, NHS, MOD, TEIS, VS, H&amp;HCP<br/> BD- Birth Defects Registry; CSS-Children's Special Services; FV- Family Voices; NHS-Newborn Hearing Screening; MOD- March of Dimes; TEIS- Tennessee Early Intervention Services; VS- Vital Statistics, H&amp;HCP- Hospitals and Health Care Providers</p> |
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| Objectives                                                                                                                                                                                                                                                                                                                                 | Activities/Steps                                                                                                                                                                                                                                                                                                                                                                                                                            | Data/Evaluation                                                                                                                                                                      | Timeframe for Assessing Progress  | Team Members Responsible                                |
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| <p><b>6.1 Comprehensive system.</b></p> <p>Tennessee will have a computerized system that maintains current information on hearing screening for every infant, evaluation for all infants and children who do not pass the screening and interventions for every infant and child from birth through 5 years of age with hearing loss.</p> | <ul style="list-style-type: none"> <li>• Establish framework for Tennessee EHDI TSI system.</li> <li>• Enhance the tracking and surveillance system to improve methods to accurately identify, match, and collect unduplicated individual identifiable data.</li> <li>• Develop a quality assurance and improvement plan.</li> <li>• Develop an evaluation plan to monitor progress toward meeting program goals and objectives.</li> </ul> | <p>a. A written description of Tennessee EHDI TSI system is in place.</p> <p>b. Reports of screening, evaluation, and intervention information will be produced and distributed.</p> | 12 months<br><br><br><br>7 months | P, E, C = NHS, TEIS, VS<br><br><br><br>P, E, N, C = All |

| <b>Objectives</b>                                                                                                                                                            | <b>Activities/Steps</b>                                                                                                                                                                                                                                                            | <b>Data/Evaluation</b>                                                           | <b>Timeframe for Assessing Progress</b> | <b>Team Members Responsible</b> |
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|                                                                                                                                                                              | <ul style="list-style-type: none"> <li>• Report standardized aggregated information extracted from unduplicated individual identifiable, including but not limited to: ear specific diagnosis, maternal; demographics, and dates of diagnosis, referral and enrollment.</li> </ul> | <p>c. An Evaluation Plan is developed and documented in the Work Plan Table.</p> | 7 months                                | P, E                            |
| <b>6.2 Policies and procedures.</b><br><br>Tennessee will have written policies and procedures regarding operation of the EHDI Tracking, Surveillance, & Integration System. | <ul style="list-style-type: none"> <li>• Develop written policies and procedures for the program.</li> </ul>                                                                                                                                                                       | <p>a. Policies and procedures for the program are developed and documented.</p>  | 12 month                                | P, E, N, C=All                  |

| <b>Objectives</b>                                                                                                                                                                                                                                                             | <b>Activities/Steps</b>                                                                                                                                                                                                                                                                                                                                                                       | <b>Data/Evaluation</b>                                                                                                                                                                                                                                                                                                               | <b>Timeframe for Assessing Progress</b>         | <b>Team Members Responsible</b>                                |
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| <p><b>6.3 Privacy and confidentiality.</b></p> <p>Tennessee will develop policies, procedures, and informed consent requirements regarding privacy and confidentiality of data in the EHDI Tracking, Surveillance, &amp; Integration System.</p>                              | <ul style="list-style-type: none"> <li>• NHS has a mechanism in place for informed consent and confidentiality.</li> <li>• The Office of Policy, Planning and Assessment (PPA) maintains standard data policies for confidential data for the Tennessee Department of Health (TDH).</li> <li>• Review, revise &amp; adopt as appropriate above mechanism for the EHDI TSI program.</li> </ul> | <p>a. Policies and procedures on informed consent requirements are developed, documented, and implemented as required.</p>                                                                                                                                                                                                           | 9 months                                        | P, E, N, C = All                                               |
| <p><b>6.4 Include all births.</b></p> <p>Tennessee will ensure that all live births in the state are included in the Tennessee EHDI Tracking, Surveillance, &amp; Integration System by matching with the state's birth certificates registry as allowed by state policy.</p> | <ul style="list-style-type: none"> <li>• Conduct all tracking and surveillance activities as described in this detailed Work Plan Table.</li> <li>• Develop an analytic evaluative plan to address loss to follow-up rates.</li> </ul>                                                                                                                                                        | <p>a. All live births recorded in Vital Statistics are included in the TSI system.</p> <p>b. Number and percent of infants screened are continually tracked in the system..</p> <p>c. Documentations of the number and percent of matches with vital records. Discrepancies will be identified and case ascertainment conducted.</p> | <p>5 months</p> <p>5 months</p> <p>7 months</p> | <p>P, E, C = All</p> <p>P, E, C = All</p> <p>P, E, C = All</p> |

| Objectives                                                                                                                                                                                                                                 | Activities/Steps                                                                                                                                                                                                                                                                                                       | Data/Evaluation                                                                                                                                                                                                                                                                                                                                                                                                                       | Timeframe for Assessing Progress | Team Members Responsible              |
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| <p><b>6.5 Risk factors for hearing loss.</b></p> <p>The Tennessee EHDI Tracking, Surveillance &amp; Integration System will ascertain risk factors for hearing loss for every infant by linkage with other state data systems.</p>         | <ul style="list-style-type: none"> <li>• Develop or improve mechanisms to identify and collect standardized data on unduplicated individual infants and children with risk factor for late onset or progressive hearing loss.</li> </ul>                                                                               | <ol style="list-style-type: none"> <li>a. Number and percent of infants with risk factors are identified and recorded from the TSI system. Reports will be distributed to collaborators and partners to limit loss to follow-up.</li> <li>b. Number and type of risk factors for each infant are identified and recorded from the TSI system. Reports will be utilized to distribute pertinent information to care givers.</li> </ol> | 7 months<br><br>7 months         | P, E, N, C=All<br><br>P, E, N, C=All  |
| <p><b>6.6 Newborn hearing screening results.</b></p> <p>The Tennessee EHDI Tracking, Surveillance, &amp; Integration System will capture all hearing screening results at birthing hospital within a week after discharge or transfer.</p> | <ul style="list-style-type: none"> <li>• Collect all screening data from hospitals and health care providers.</li> <li>• Collaborate with other state and territorial EHDI programs, CDC and other federal and national agencies on effective mechanisms for obtaining screening data across EHDI programs.</li> </ul> | <ol style="list-style-type: none"> <li>a. Report on the number of percent of infants screened that includes results for each ear, technology used, and age at screening.</li> <li>b. A written plan will be developed to address how to improve the timeliness and quality of screening data.</li> </ol>                                                                                                                              | 9 month<br><br>12 months         | P, E, C = NHS<br><br>P, E, N, C = All |

| <b>Objectives</b>                                                                                                                                                                                                                          | <b>Activities/Steps</b>                                                                                                                                                                                                                                                               | <b>Data/Evaluation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Timeframe for Assessing Progress</b>     | <b>Team Members Responsible</b>                            |
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| <p><b>6.7 Reporting mechanism for health care providers.</b></p> <p>Tennessee will provide a mechanism for hospitals, audiologists and other health care providers to report hearing screening results, evaluations and interventions.</p> | <ul style="list-style-type: none"> <li>• Collaborate with multiple sources including vital records, birth defects registries, immunization registries, bloodspot programs, Part C and other early intervention services to increase data sharing, integration and linkage.</li> </ul> | <ol style="list-style-type: none"> <li>a. A written plan will be developed to address how to ensure all health care providers report hearing screening results to the state.</li> <li>b. Increase percent of health care providers that have protocols for reporting hearing screening results, evaluations and interventions to 100%.</li> <li>c. Increase percent of health care providers reporting hearing screening results, evaluations and interventions to the state to 100%.</li> </ol> | 18 months<br><br>24 months<br><br>30 months | P, E, N, C=All<br><br>P, E, N, C=All<br><br>P, E, N, C=All |
| <p><b>6.8 Identify children who need screening and follow-up.</b></p> <p>The Tennessee EHDI Tracking, Surveillance, and Integration System will be able to identify, on a [weekly] basis, all.</p>                                         | <ul style="list-style-type: none"> <li>• Conduct all tracking and surveillance activities as described in this work plan.</li> </ul>                                                                                                                                                  | <ol style="list-style-type: none"> <li>a. Number and percent of infants and children needing follow-up who:           <ul style="list-style-type: none"> <li>-- were referred for second screening</li> <li>--missed screening</li> <li>--need a repeat screen</li> <li>--were referred for</li> </ul> </li> </ol>                                                                                                                                                                               | 12 months                                   | P, E, N, C= NHS, TEIS, VS                                  |

| <b>Objectives</b>                                                                                                                                                                                                                 | <b>Activities/Steps</b>                                                                                                                                                                                         | <b>Data/Evaluation</b>                                                                                                                                                                                                                                             | <b>Timeframe for Assessing Progress</b> | <b>Team Members Responsible</b>      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------|
| infants and children who need initial hearing screening, repeat testing, evaluation, follow-up, or intervention.                                                                                                                  | <ul style="list-style-type: none"> <li>• Collaborate with hospitals, audiologists, and other health care providers to identify children who need screening, diagnostic evaluation, and intervention.</li> </ul> | <p>diagnosis<br/>--were referred for early intervention.</p> <p>b. Number and percent of infants and children who received follow-up will be regularly reported to eliminate loss to follow-up.</p>                                                                | 12 months                               | P, E, N, C=NHS, TEIS, VS             |
| <b>6.9 Access to information.</b><br><br>The Tennessee EHDI Tracking, Surveillance, & Integration System will allow case managers and authorized health care providers to access relevant information about infants and children. | <ul style="list-style-type: none"> <li>• Develop and implement an information dissemination protocol for health care providers and other partners to access to EHDI TSI health information.</li> </ul>          | <p>a. A written plan for EHDI information dissemination is implemented.</p> <p>b. A procedure is established for EHDI TSI to provide case managers and authorized health care providers access to relevant patient information to eliminate loss to follow-up.</p> | 18 months<br><br>24 months              | P, E, N, C>All<br><br>P, E, N, C>All |