U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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Maternal and Child Health Bureau

Universal Newborn Hearing Screening and Intervention

Reducing Loss-to-Follow-up after Failure to Pass Newborn Hearing Screening

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GRANT APPLICATION

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Attachment 2: Staffing Plan and Job Descriptions for Key Personnel
a. WSB Regional Outreach Specialist Coordinator
b. WSB Program Director / Audiologist
c. WE-TRAC Project Coordinator
d. GBYS Follow-Through Coordinator
e. WSB EI Outreach Specialist

Attachment 3: Biographical Sketches of Key personnel
a. Rebecca Martin
b. Elizabeth Seeliger
c. Connie Stevens

Attachment 4: Letters of Agreement and/or Descriptions of Proposed/Existing Contracts
a. Chippewa County Public Health Department
b. UW-Madison Waisman Center
c. Wisconsin Families for Hands & Voices
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I. INTRODUCTION

This application is submitted by the Wisconsin (WI) Department of Health Services (DHS), Division of Public Health (DPH) in response to the CFDA # 93.251 – *Reducing Loss to Follow-up after Failure to Pass Newborn Hearing Screening.* This application is aimed at using quality improvement methodology so that Loss to Follow-up/Loss to Documentation (LTFU/LTD) as reported through the CDC annual Early Hearing Detection and Intervention (EHDI) survey is decreased from a national average of 35% to a national average of 20%.

The early identification of infants with hearing loss is an important public health objective. The Joint Committee on Infant Hearing (JCIH), 2000 and 2007 Position Statements recommend that: 1) All infants should have access to hearing screening using a physiologic measure before 1 month of age; 2) All infants who do not pass the initial hearing screen and the subsequent rescreening should have appropriate audiologic and medical evaluations to confirm the presence of hearing loss before 3 months of age; and 3) all infants with confirmed permanent hearing loss should receive intervention services before 6 months of age. A simplified, single point of entry into an intervention system is optimal.

WI passed initial hearing screening legislation in 1999. In response to the legislation and to the MCHB National Hearing Screening Performance Measure, the Children and Youth with Special Health Care Needs (CYSHCN) Program in the Division of Public Health (DPH) established the Wisconsin Sound Beginnings (WSB) Program in 2000. Since then, WSB has made significant progress to implement a statewide EHDI Program.

Permanent congenital hearing loss is one of the most frequently occurring birth defects. Approximately two infants per thousand are born with some level of hearing loss annually in WI. In May of 2010, the legislature updated the hearing screening legislation to include mandated hearing screening in Wisconsin and establishing that: "…the physician, nurse-midwife, or certified professional midwife who attended the birth shall ensure that the infant is screened for hearing loss before being discharged from a hospital, or within 30 days of birth if the infant was not born in a hospital." Currently, 100% of hospital birth units have implemented universal newborn hearing screening (UNHS) programs along with the vast majority of nurse-midwife, or certified professional midwife practices in WI. WI's progress may be attributed to the public-private partnerships established by the WSB Program and the Newborn Screening Advisory Hearing Subcommittee and its members.

Although much progress has been made toward the goal to screen all newborns, national data from 2011 indicate that 35% of all newborns who refer on the hearing screen do not return for follow-up services. Research indicates that infants enrolled in an intervention program by six months of age perform better on school-related measures than children who did not receive intervention. Yet nationally, only 63% of the infants identified as deaf or hard of hearing were known to have received some sort of early intervention. It is critical that systems are put into place to ensure that infants receive timely diagnostic and intervention services. The primary focus of this grant application is for the WSB Program to reduce loss to follow-up within all stages of the EHDI continuum.

Reduction of loss to follow-up is impossible if a program cannot identify which babies are lost. Therefore, statewide data collection and surveillance is a critical component in the reduction of loss to follow-up. In WI, infants are tracked through a partnership with the metabolic blood screening program at the Wisconsin State Laboratory of Hygiene (WSLH). In April of 2002, hearing screening values were added to the metabolic blood screening card.

Initial hearing screening results are recorded on the blood card and sent to the WSLH where hearing screening data is transmitted nightly via secure messaging from the WSLH database to the web-based Wisconsin EHDI Tracking Referral and Coordination (WE-TRAC) system's data repository. WE-TRAC is a part of the Wisconsin Public Health Information Network (PHIN), developed by the DPH. WE-TRAC business logic determines the appropriate action for each record, sending only babies that need further screening to individual hospital queues where users can view lists of babies associated with their organization. This system alerts well-baby birthing units, special care nurseries and audiologists that babies need follow-up and allows these providers to make electronic referrals and enter re-screening, medical home and diagnostic results.

WE-TRAC is currently utilized by 100% of birthing units and Neonatal Intensive Care Units (NICUs) representing 99% of Wisconsin births, as well as the majority of Homebirth Midwifery practices. All audiology organizations (109) that see babies born in WI enter screening and hearing evaluation information into WE-TRAC, make online referrals for additional testing and track individual babies through their confirmation of hearing loss, treatment and management and referrals to the Birth to 3 and Guide By Your Side Programs. WE-TRAC provides the WSB Program the capacity to measure statewide loss-to-follow-up rates, monitor loss-to-follow-up by organization, track individual babies at-risk for loss-to-follow-up and evaluate the effectiveness of loss-to-follow-up reduction strategies. The 2012 Annual Report can be found at www.improveehdi.org/wi/state/improvement.cfm. WE-TRAC data was utilized to perform much of the needs assessment described in the following section.

In 2006-2007, Wisconsin was one of eight states that participated in the first National Initiative for Child Health Quality (NICHQ) EHDI Learning Collaborative. WI teams representing both rural and urban settings and including parents and providers (pediatricians, audiologists, nursery staff, early interventionists) helped to identify quality improvement strategies (making the follow-up hearing screening appointment prior to hospital discharge, etc.) as effective implementation practices to reduce LTFU. Team members from participating community practices then acted as Faculty Advisors as the WSB Program planned and executed a replication of the National EHDI Quality Improvement Learning Collaborative. Beginning in November of 2009, the WSB staff initiated an 18-month EHDI Quality Improvement Learning Collaborative (LC). The WSB Program recruited Community of Practice (COP) teams, comprised of primary care providers, birth hospital staff, audiologists, early interventionists, and parents. Genetic counselors and ENTs provided regional representation. Each of the COP teams designated a data manager and key contact. Five regional Parent Guides provided expertise to COP teams and supported the local participation of parents. The WI LC was designed to include: a pre-session, regional team meetings, statewide learning sessions, and action periods. Community teams are expected to participate in all segments. During the pre-work session and the three subsequent Learning Sessions, the WSB staff educated teams about the Model for Improvement, best practices and resources, and planned tests of change with guidance from expert faculty. During the action periods, teams met locally to review data reports, continued to test changes and analyzed their progress with input from colleagues and experts. The primary goal of the three Regional Team Sessions was collaborative learning through the sharing of successes and challenges experienced during the action periods in order to develop strategies to overcome barriers to change, plan for further spread of the changes and share effective implementation strategies with other COP teams. As an outcome of the shared learning that occurred as a result of the LC, a web-based EHDI Quality Improvement Toolkit was designed to

assure that providers had easy access to timely and up-to-date information and resources to enable all points of the EHDI continuum to improve their programs using the strategies and tools developed by participating teams. Activities in this grant application will focus on continuing to spread the Improvement Model and high leverage strategies to Low-Performing COP teams.

II. NEEDS ASSESSMENT

In Wisconsin in 2010 (most recent date available from Wisconsin Vital Records), there were 68,367 occurrent births with 67,158 babies born in one of 100 birthing hospitals or free standing birth centers and the remaining 1,209 documented as out-of-hospital births. Wisconsin births by mother's race/ethnicity as reported via the birth record in 2010 are described in the table below:

Mother's Race / Ethnicity	**# of Births**	**% of Births**	**% of closed cases by race/ethnicity in WE-TRAC in 2012**
Non-Hispanic White	50,893	74.4%	52%
Non-Hispanic Black	6,845	10.0%	19%
American Indian	1,129	1.7%	3%
Hispanic/Latino	6,560	9.6%	10%
Laotian/Hmong	1,264	1.8%	9%
Other Asian	1,628	2.4%	6% were categorized as multi-racial/ethnic
Missing	48	0.1%	
Total	68,367	100.0%	67 babies = 100%

Wisconsin was one of five states selected to participate in an MCHB supported Community of Learners facilitated by the National Center for Cultural Competence. This year long opportunity allowed the WSB team to emphasize our attention on the unique ways culture may impact family experience with the EHDI system. Team members have engaged in individual reflection, as well as team exploration of Cultural Attunement, in pursuit of meeting each family where they are at.

Universal Newborn Hearing Screening (UNHS) is part of the standard of care in birth hospitals. In 2012, 96% of babies were screened prior to hospital discharge with a 0.2% refusal rate. In 2012, the statewide average rate of infants who do not pass the inpatient hearing screen was 2.60%, which falls within the American Academy of Pediatrics recommendation of less than 4%. The statewide average rate of infants who do not pass the final hearing screen was 0.77%. The WSB program periodically monitors both screen rate and referral rate by birth organization to aid in quality improvement (QI) efforts. WSB encourages Birth Units and out-of-hospital providers to monitor their own refer rates, as well as conduct annual screener competency training. Birth Units that participated in previous WSB QI Learning Collaboratives have reduced their refer rates by implementing other strategies such as limiting the staff nurses who do the hearing screening, modifying their screening protocols and developing screener check lists. Members of those organizations are now spreading the lessons they learned to other hospitals that are experiencing high refer rates.

The data in WE-TRAC provides the framework for assessing programmatic need areas, tracking loss-to-follow-up (LTFU), and evaluating outcomes of the WSB program. WE-TRAC currently provides the WSB Program with the capacity to track individual babies as they progress through the EHDI continuum of care as well as the ability to track Wisconsin's progress toward meeting the JCIH identified targets. Wisconsin has made steady progress toward

screening babies by one month of age and identifying babies with hearing loss by three months of age. In 2006, the average age in days of Confirmation of Hearing Loss (CHL) was 295 days. Through concentrated efforts, this average has been reduced to 116 days in 2012 (with a median number of 89 days from birth to final hearing loss diagnosis). There is still need for improvement as evidenced by the number of days between birth and diagnosis in 2012 ranging from 4 days to more than 500.

According to national incidence data, approximately 140 to 200 babies should be identified with congenital hearing loss in the WI each year—however, 50 infants were identified with hearing loss in 2006, 81 were identified in 2007 and 91 were identified in 2008. Since 2008, the WI birth rate has been in steady decline. In 2009, there were 70,824 births, whereas preliminary data suggests that there were only 66,035 babies born in 2012. Therefore, one might expect a possible decrease in the number of babies identified with hearing loss between 2009 and 2012. Instead, the number of babies identified has remained fairly consistent around 100. Identifying the other potential 60 to 100 infants is an ongoing WSB priority.

Of the 172 infants identified between 2006 and 2008, 97 (56%) were enrolled in early intervention services. Although in 2012, 97% of infants with hearing loss were referred to the Birth to 3 Program through WE-TRAC, the enrollment rate has not improved—only 56 of 104 infants (54%) were enrolled in Birth to 3 and of the 56 infants enrolled, only 44 were enrolled before 6 months of age. This data demonstrates the need to improve follow-up to ensure access and enrollment in intervention services.

WSB identifies two main populations as "lost-to-follow-up" (LTFU):

1. babies who never had their hearing screened (*never screened*).
2. babies who were screened but did not pass and have not received follow-up (*did not pass*).

WSB addresses these two populations in separate ways, targeting interventions to meet each group's needs. However, to get a global picture of babies who need a service but did not receive it (either an initial screen or a follow-up screen/diagnostic evaluation), WSB combines these two populations to calculate our Total LTFU rate. WSB's efforts targeting the *never screened* population and the *did not pass* population have systematically reduced our LTFU rate. Wisconsin also tracks lost-to-follow-up/lost-to-documentation (LTFU/LTD) data as babies who have a confirmed hearing loss but are not known to be enrolled in Birth to 3. In 2012, there were 66,193 births recorded in WE-TRAC. Of those births: 190 were not screened (for a reason other than infant death or parent refusal); 579 did not pass the hearing screening; and 110 babies did not pass and were LTFU/LTD. Of the 417 babies who did not pass but did get reported audiologic follow-up, 107 had a permanent hearing loss. However, as mentioned previously, only 56 were enrolled in early intervention. WSB will analyze each of these LTD/LTFU categories quarterly throughout this grant cycle to continuously assess on-going need areas and drive improvement initiatives. WSB must strive to systematically reduce the LTFU/LTD rates in Wisconsin, contributing to the National reduction goal of 20% LTFU/LTD by 2016.

While closed cases (those that require follow-up but do not receive it) are included collectively as LTFU or LTD in reporting Wisconsin's data, in WE-TRAC, LTFU and LTD have distinctive definitions. LTFU is defined as "unable to contact the family, phone is disconnected, address is wrong, etc." whereas LTD is defined as "there is reason to believe that child received appropriate follow-up, but no documentation has been found." In WE-TRAC, we have additional definitions and classifications for why a case is closed without receiving follow-up. In fact, in 2012, for babies who were screened, did not pass and did not receive appropriate follow-up, only 20 cases were closed in WE-TRAC as either LTFU or LTD. Far more cases (44) were

closed as “unresponsive family” defined as “family has been unresponsive to follow-up efforts including missing appointments, failing to return phone calls, not responding to mail, etc.” or “refused follow-up” defined as “family states they do not want hearing follow-up care for their child.”

One of the most effective strategies for reducing LTFU is to ensure that every baby has an informed medical home with good communication among the medical home and specialty care providers. Since 2003, WI has been working to ensure that all children and youth with special health care needs, including those with hearing loss, are connected to a medical home. In 2003, WI was one of 11 states selected to participate in a National Medical Home Learning Collaborative (MHLC) sponsored by the federal Maternal and Child Health Bureau (MCHB), NICHQ, the Center for Medical Home Improvement (CMHI) and the National Center for Medical Home Initiatives for Children with Special Needs at the American Academy of Pediatrics. During the MHLC, all practices completed rapid-cycle quality improvement projects aimed at identification of CYSHCN, care planning and resource development. Utilizing the model of the National MHLC and based on experiences gained during participation, the CYSHCN Program initiated a WI MHLC supported by Title V Block Grant funds in 2004 - 2005. Ten practices were recruited with all teams connected to a trained facilitator from one of the five WI Regional CYSHCN Centers. Based on the lessons learned, the www.wimedicalhometoolkit.aap.org was developed to facilitate implementation at the practice level.

WI was also one of eight states selected to participate in the 2007 NICHQ EHDI Medical Home Learning Collaborative sponsored by MCHB focusing on reducing loss to follow-up from newborn hearing screening programs through the medical home. Four practices were recruited from four distinct areas of WI to learn the “Model of Improvement” and how to apply it to early hearing detection and intervention. Based on these Learning Collaborative experiences, WSB has identified a “Model of Improvement” to other systems and organizations as an effective way of spreading effective strategies for the reduction of LTFU. Many of the current WSB staff were a part of the initial QI training and supported each of the WSB sponsored Learning Collaboratives. Therefore, WSB is well position to use QI methodology to meet identified need areas in WI.

An area that needs continued attention is ensuring that a child who does not pass the newborn hearing screening is connected to a physician with whom they will follow-up after the baby is discharged from the hospital (a medical home). Although physician information is recorded on the metabolic blood card at the time of inpatient hearing screening, this information is often inaccurate. Hospital staff will often record the attending physician or neonatologist rather than the physician the child will follow-up with after they are discharged. WSB will continue throughout this grant cycle to work to increase the accuracy of medical home information so that PCPs can be informed advocates for hearing follow-up.

The majority of Wisconsin’s never screened population are babies born out-of-hospital (OOH). Babies born at home are a particularly challenging population. Each year about 2% of Wisconsin births occur outside of hospital birth centers. In 2005, WSB enabled the Guild of Wisconsin Midwives to pilot a Homebirth outreach project whereby two groups of midwives shared two portable hearing screeners. The Wisconsin Guild of Midwives now owns 11 OAE (otoacoustic emissions) screeners that 24 Licensed Midwives share. Babies attended to by these OOH midwives typically receive initial hearing screening within two weeks of delivery. Babies who refer twice on OAE are referred to audiology for follow-up. Families with financial,

cultural or transportation barriers to audiology care are referred to WSB staff for an in-home ABR (automated brainstem response) screen. To date, five OOH babies have been identified with hearing loss. In WI, there is a considerable population of Amish and Mennonite families who use Traditional Birth Attendants (TBA) from within their cultural communities rather than certified homebirth midwives. Prior to 2013, the size and whereabouts of this population was largely unknown. Due to the recent completion of a data linkage between the birth certificate and the blood card, WE-TRAC can now be used to identify infants with a birth certificate who have not had a blood or hearing screen. Based on preliminary 2013 data, there are an estimated 320 additional babies born each year in four centralized communities that were unknown to the WSB program before. A unique approach to implementing hearing screening may be required due to the desired isolation of these communities. WSB will test strategies that may be effective in these four communities as a focus of this grant.

To address Wisconsin's LTFU/LTD rate for babies who are screened but did not pass, WSB employs an innovative 3-Step-Follow-Up (3SFU) intervention to prevent LTFU. Using the WE-TRAC system, WSB identifies babies as at-risk for LTFU as any baby who has not passed their inpatient screen and has not received follow-up by 30 days of age. When these at-risk babies 'time out' in WE-TRAC, WSB staff begins the 3SFU process:

STEP 1: Medical Home Outreach—WSB identifies babies at risk for LTFU and reaches out to birth units, medical homes, primary care providers, and audiology clinics to determine if the child has received follow-up; informs primary care and medical home of hearing screening results and the need for follow-up. Cases are either completed at this step (the child received the follow-up they needed and this information has been accurately documented in WE-TRAC) or they move on to Step 2 or Step 3.

STEP 2: Parent-to-Parent Outreach—WSB provides parent-to-parent outreach to families with at-risk babies to encourage follow-up, address their concerns and answer questions. Cases are either completed at this step or they move on to Step 3.

STEP 3: Regional Outreach—WSB provides in-home or in-community rescreens for those families experiencing barriers (cultural, linguistic, logistical, etc.) to accessing the health care system, frequently collaborating with local Public Health departments, WIC clinics or community service agencies to help reach families. Cases that reach this step are usually the most resource intensive and families frequently have additional needs, stressors or issues occurring in their lives. Cases are either completed or eventually closed incomplete at this step.

Of the babies born in 2012, WSB identified 387 as at-risk for LTFU after they reached 30 days of age without receiving appropriate follow-up. In 2012, *67% of those babies who Did Not Pass were identified as at-risk for LTFU and required WSB's 3-Step-Follow-Up intervention*. WSB assisted in successfully resolving 342 of these at-risk cases (88% success rate). All 342 cases went through Step 1 (Medical Home Outreach), only those cases that required additional WSB follow-up intervention moved on to the next steps. In 2011, WSB and Wisconsin's WIC (Special Supplemental Nutrition Program for Women, Infants and Children) program signed an MOA giving Sound Beginnings staff access to WIC's statewide database. WSB divided the state's 92 WIC sites into follow-up protocols A and B (there are 32 WIC B sites and 60 WIC A sites). As part of 3SFU, WSB places an alert in the WIC file for any WIC participant baby at risk for LTFU. WSB removes the alert after the baby receives follow-up. WSB tracks alerts and their outcomes to evaluate the alert protocols and document any emerging trends. The WIC alerts are fully integrated into the 3SFU protocol. Those cases with WIC A alerts pass through all 3 steps (medical home outreach, parent-to-parent outreach and regional outreach). Those

cases with WIC B alerts go directly from Step 1 (medical home outreach) to Step 3 (regional outreach). To date, WSB has placed 146 total alerts (for babies at risk to LTFU at 1 month of age).

According to the Wisconsin Department of Regulation and Licensing, there are 375 audiologists who hold an active WI license to practice audiology. Of those licensed audiologists, 133 are active users of the WE-TRAC system, which indicates that they can provide some level of service to infants and their families. A list of audiologists who are currently able to provide the full range of diagnostic services for infants less than six months of age, is available on the www.improveehdi.org/wi website. Very few of the sites have access to sedation. Increasing the accessibility of pediatric audiology services will continue to be an important strategy to reduce loss to follow-up in Wisconsin.

Since the WSB Program's inception, parents of children who are deaf or hard of hearing have been involved. In January 2002, the WSB program convened an invitational Parent Network Summit, where families identified statewide family support needs such as the importance of continuing to have opportunities to come together to learn and socialize. In response, the first annual conference for parents was held and attended by 35 families. The conference attendance doubled the following year and has grown steadily since then, hosting as many as 109 families, 13 of whom were Spanish-speaking only.

Another important need that was identified was the importance of access to information about early hearing detection and intervention, as well as unbiased information at the time of diagnosis. WSB, with its family partners and the Birth to 3 Program, compiled unbiased information into the "Babies and Hearing Loss Notebook for Families" that is now available to families through all Wisconsin pediatric audiologists. Other print materials related to UNHS and diagnostic audiology have been created in English and Spanish and have been widely disseminated. Approximately 60,000 copies of A Sound Beginnings for Your Baby are ordered each year. A ten-minute educational video featuring English, Spanish and Hmong participants was produced in all three languages as well as close captioned, in order to explain universal newborn hearing screening, audiologic referral, why accurate diagnosis is important, the noninvasive nature of audiologic testing procedures and the importance and impact of early detection and intervention to development of language and literacy with a focus on cultural sensitivity.

The most fervent recommendation to come out of the Parent Summit was the need for direct and immediate parent-to-parent support. From that recommendation the now nationally recognized Hands & Voices Guide By Your Side (GBYS) Program was constructed. The GBYS Program is comprised of Parent Guides, who are experienced in the joys and challenges of raising children who are deaf or hard of hearing. Parent Guides are organized into Regional Parent Guides (English speaking parents who serve the regions in which they live) and Statewide Parent Guides (parents with special experiences or skill sets who serve families throughout the state). Some Statewide Parent Guides are bilingual or the parents of children who are deaf blind, or deaf with other special healthcare needs. Currently, there are Parent Guides whose first languages are Spanish and Hmong as well as a Deaf Parent Guide whose first language is American Sign Language. A mother of a young child with Usher's Syndrome is a Statewide Parent Guide who meets with families with children who are deaf, blind or multiply impaired.

The GBYS Program has been supported in part by the federal MCHB grant dollars that have gone to the WSB Program and in part through grant dollars from the Department of Public Instruction's (DPI) IDEA preschool discretionary grant funds and is administered through the

Wisconsin Educational Services Program for the Deaf and Hard of Hearing (WESPDHH). Beginning in April 2008, the GBYS Program is funded in full by DPI. The GBYS Program is coordinated by Sherry Kimball, the WESPDHH Birth to 6 Services Coordinator and Laurie Nelson, the WESPDHH Parent Liaison, in collaboration with the Wisconsin Families for Hands & Voices organization.

The GBYS Program is an essential component to preventing loss-to-follow-up. The GBYS program is designed to promote contact between Parent Guides and families going through the EHDI process at three points in time: at the point of referral on the newborn hearing screening, after the child has been diagnosed with hearing loss and when the child is transitioning out of the Birth to 3 (Part C) program. Participation in the GBYS program is currently voluntary and not all families accept a referral. A focus of this grant will be to determine whether outreach by the GBYS Follow-Through Coordinator shortly after diagnosis will increase family enrollment in early intervention services and GBYS.

The WI Birth to 3 Program, Wisconsin Sound Beginnings and the WESP-DHH Outreach team have been engaged in reimagining the system of care for children with low incidence sensory conditions such as kids who are deaf, hard of hearing or deafblind since 2008. In 2009, the Birth to Six Redesign Summit was held and was attended by over 50 participants from around the state. The Summit's goal was to enlist local experts and stakeholders in envisioning the critical components of a service delivery system that would meet the unique needs of these kids. Based on the key findings from the Summit, a Western Region Services Coordinator was hired using ARRA funding to perform a needs assessment, create a map of providers with specialized knowledge and skill sets related to deafness, and to create "creative collaborations" that would allow these partners to work with kids in counties that are without such providers. The *Final Summary Report* documented the effectiveness of the pilot and its activities. The materials developed during the pilot were organized into an *Implementation Guide* (see www.wesp-dhh.wi.gov/wesp/out-birth-six-redesign.cfm). After the pilot's completion and the end of the ARRA funding, the regional services coordinator position was dissolved. However a network of dedicated Western Region providers continued to meet and named themselves the Western Region D/HH Cadre. They continue to identify on-going issues and solutions to the implementation of best practice Birth to 3 services for children who live in the Western Region. However, many barriers keep the team from being able to exact the kinds of high quality, streamlined systems they had hoped for. Some of the identified barriers include:

- Lack of clarity around data sharing.
- Lack of guidance, support and oversight of the cadre's work.
- Lack of a formal infrastructure that would include a position similar to the D/HH regional services coordinator at the helm.

Quantitative data from preliminary results of the Assessment of Early Interventions data indicates that improving access to high quality services continues to be a major need in WI. None of the children, with hearing loss only or with multiple conditions, demonstrated outcomes commensurate with their hearing peers. Therefore, WSB will continue to focus on both getting infants enrolled and improving access to individuals with specialized knowledge and skills in the Early Intervention System.

III. METHODOLOGY

The WSB Program will continue to operate core functions such as 3-Step-Follow-Up and overall surveillance and monitoring of the EHDI system in WI as part of our Standard Operating Procedures. In addition, WSB will implement a series of continuous quality improvement projects throughout the three-year grant cycle with an emphasis on engaging extended partners in utilizing the Improvement Model to test change strategies. WSB utilized WE-TRAC data to establish draft target indicators to measure the degree of need for QI statewide and for Grant Application planning purposes. WSB measured the performance of individual birth hospitals and audiology organizations using three indicators: 1) percentage of babies identified as at-risk for LTFU/LTD and needing WSB intervention; 2) the number of infants with unresolved cases (LTFU/LTD); and 3) the extent of WSB intervention their at-risk-to-LTFU cases required. WSB identified six birth hospitals (and their primary referral audiology clinics) as Low-Performing organizations, or Communities of Practice (COP). WSB will reach out to two Low-Performing COPs each year to provide QI technical assistance in order to assist in reducing LTFU/LTD and improve overall outcomes for infants and families. To get a global picture of babies who need a service but did not receive it (either an initial screen or a follow-up screen/diagnosis), WSB combines the two populations (never screened and DNP without follow-up) to calculate our Total LTFU rate. WSB will perform a Strength, Weaknesses, Opportunities, and Threats (SWOT) analysis of the potential COPs to determine greatest need and most efficient outreach capacity. The SWOT will include a thorough assessment of policies and protocols, data capacity, current knowledge, and enthusiasm for engaging in QI. A description of strengths will need to address equipment availability, access to timely care and well trained staff. Sustainability of each COP will also be addressed in the SWOT.

AIM 1: Reduce the total number of babies who never receive a hearing screening by 5% each year.
Baseline: 0.287% of babies (190 babies never screened not including deceased and refused/66,193 babies born) were never screened in 2012.

In both 2012 and the first quarter of the current grant year, Wisconsin had more babies LTFU that were never screened than were LTFU after not passing their inpatient screen. Each year, about 2% of Wisconsin births occur outside of hospital birth centers, mostly at home. In the first quarter of the current grant year (4/1/13-6/30/13), 68% (48/71) of the babies that were never screened were born at home. In 2012, the never screened, OOH babies made up the largest percentage of the total number of babies LTFU (those who were never screened plus those who did not pass and didn't receive follow-up). Therefore, increasing access to babies born at home will be a priority area in each of the three grant years.

Objective/Aim 1.1: By March 30, 2015, WSB will determine the number of unattended births or out-of-hospital births attended by traditional birth attendants (TBA), rather than Certified Midwives, and will increase the number of babies screened each year of the grant cycle.

Activity 1A: Train the OOH Outreach Specialist on the Improvement Model so that she can serve on the WSB QI Faculty Advisory Team.

In order to reach traditional homebirth attendants, it will be important to have a midwife on the WSB QI Faculty Advisory Team to act as an EHDI champion within her professional organization and in the homebirth community. The EHDI Midwife Champion, Gretchen Spicer,

has provided previous consultation services to WSB for the past six years. In this new grant cycle, her role will shift from consultation to contracted employee. She will act as lead advisor on all QI initiatives that involve OOH births. As such, she will be responsible for conducting all initial recruitment efforts, newborn screening education, setting the monthly meetings with TBA, collecting and analyzing QI data. She will also be responsible for leading the development of PDSA cycles to reduce never screened numbers. Other education and outreach responsibilities will be to build partnerships with community agencies such as public health departments and outpatient clinics to increase the access to hearing screening for babies born at home in those organizations.

Activity 1B: Develop a mechanism to objectively rate TBAs as high- or low-performers based on the number of births they attend and their willingness to work with WSB.

In 2012, a new feature was developed in the WE-TRAC system that allows the matching of WE-TRAC data to birth certificate data. For the first time, WSB was able to identify infants born in communities without access to blood or hearing screening. Extrapolated data suggests approximately 300 babies in three concentrated communities are born without a Certified Midwife present. Therefore, WSB must engage new partners to increase hearing screening in these communities. WSB will use the new WE-TRAC matching logic to identify TBAs who appear to attend the greatest number of births and the OOH Outreach Specialist will contact them to assess their interest in ensuring access to screening in their communities. Each TBA will be rated as a high- or low-performer based on these two measures.

Activity 1C: Gain commitment from one high-performing TBA (greatest number of births and highest commitment to partnering with WSB) each year to engage in a QI Learning Collaborative.

The WSB OOH Outreach Specialist will meet with each high-performing TBA to educate about the importance of newborn screening and recruit one to participate in a yearlong QI learning collaborative. The learning collaborative will include pre-work, testing a variety of change strategies, rapid improvement cycle data collection and reporting monthly measures.

Activity 1D: Gather pre-work baseline data.

Baseline data will include an assessment of the TBA's current hearing screening knowledge, practices and access to screening equipment in her community. Baseline data along with previous experience with the OOH birth community will inform the development of an individualized change packet and test strategies targeted at reducing the number of babies never screened. WSB, along with its OOH birth community partners, have already designed change strategies related to identifying these families and ways to increase screening in these communities which are articulated in Change Concepts 1.1 and 1.2.

Change Concept 1.1

WSB, along with its community partners, will use the Model for Improvement and PDSA cycles to test change strategies that are predicted to increase the probability of *identifying families without access to blood or hearing screening.*

Hearing screening results are collected on the metabolic blood-screening card. However, earliest estimates indicate that approximately 750 babies had a birth certificate but no blood screening

card submitted in 2012. Also, in 2012, 14 blood cards were submitted for babies born at home with blank hearing screening information (no hearing screening results and no reason why the child was not screened). Finally, with the new WE-TRAC birth certificate and blood card matching function, WSB discovered that blood cards submitted with missing demographic data were not entering the WE-TRAC system via the WI SLH data transmission. In order to ascertain an accurate assessment of the number of babies in Wisconsin who do not have access to blood or hearing screening, WSB needs to have accurate information in many different places (the blood card if they receive metabolic screening, demographic data on both the blood card and the birth certificate and hearing screening information). With so many opportunities for inaccuracy among records, identifying families without access to blood or hearing screening and assessing individual child status has been an arduous task for the WSB program. Therefore, the OOH Outreach Specialist along with the WSB QI Faculty Advisory Team will develop a QI change packet that will be tested in Grant Year 1. A few of the change strategies already identified are listed below:

Change Strategy A–Use PDSA cycles to test the effectiveness and efficiency of matching one month of birth certificate data with blood card data to see how many families can be identified.

Currently, the WSB Program is solely responsible for manual and automated data matching between the blood, hearing and birth certificate information. In 2012, WSB changed the WE-TRAC match interface to expedite the process. However, WSB has discovered that many original assumptions made in defining the matching logic were wrong. For example, contrary to what we anticipated, many birth certificates included missing or inaccurate blood card numbers, the birth certificate entered the system before the blood card and we underestimated the number of blood cards not transmitted to WE-TRAC from the WI SLH. Recently, the blood card number has become a mandated field on birth certificates and WSB has reached out to hospitals to educate them on the importance of this number's accuracy. In this grant cycle, WSB will identify additional strategies to improve the match logic.

Change Strategy B–Use PDSA cycles to test the effectiveness and efficiency of requesting that the TBA submits data to WSB.

Typically, TBAs do not have access to the Internet, may be uncomfortable with technology or technology may be culturally unacceptable. To address this issue, WSB will work with TBAs to identify alternate methods of reporting information (mailing, phoning or faxing information to WSB staff to then manually enter the information into WE-TRAC).

Change Strategy C–Use the PDSA cycles to design and test different methods of SLH data validation in order to reduce the # of records not transmitted.

Now that WSB has discovered that records were not being transmitted, the WI SLH will test strategies for ensuring complete and accurate data entry of demographic information such as manual checking and automated reports.

Change Concept 1.2

WSB, along with its community partners, will use the Model for Improvement and PDSA cycles to test change strategies that are predicted to increase *screening these newly identified babies without access to blood or hearing screening.*

There are many barriers that restrict access to hearing screening for babies born at home using TBAs. Some of these barriers are cultural, geographic or due to family values that are not easily

altered. Wisconsin has a large Amish and Mennonite population that chooses to give birth largely at home without any medical care. Cultural beliefs as well as lack of access to transportation limit the ability of these families to access hearing screening by a certified midwife or in a clinic/hospital setting. Therefore, the WSB QI Faculty Advisory Team will develop a QI change packet and will test strategies in one new community each year of the grant cycle. A few of the change strategies already identified are listed below:

Change Strategy A–Use the PDSA cycles to test the spread of the WSB outreach clinic model to one new community known to have TBAs.

Currently, WSB conducts OOH diagnostic audiology outreach clinics in two areas of WI where families reside that cannot or will not access traditional follow-up to the hearing screening provided by the midwife. Recently, WSB has begun holding a new hearing outreach clinic to offer initial newborn screening to a very strict Amish order that does not utilize certified midwives. Preliminary results indicate that this strategy may be an effective way to reduce the number of never screened babies. However, WSB will continue to use the Improvement Model to test this strategy in additional communities while measuring both screening and follow-through with follow-up recommendations when a baby does not pass the screening and time/travel costs of offering these clinics.

Change Strategy B–Use the PDSA cycles to test the effectiveness of having the local health department offer screening.

Birth certificate data suggests that some of the TBA-supported communities are located far from the WSB staff. Therefore, Grant funds will support the purchase of new hearing screening equipment that a local public health nurse might use to screen out-of-hospital babies in homes, at the health department or in conjunction with other Amish outreach.

Change Strategy C–Use the PDSA cycles to test the effectiveness of having the local medical clinic offer screening.

In some of the TBA-supported communities, local medical clinics have become a trusted resource. Therefore, WSB will temporarily place a Grant-funded hearing screener at a medical clinic in this area.

Change Strategy D–Use the PDSA cycles to test the effectiveness of having existing WSB staff perform in-home hearing screenings.

In some of the TBA-supported communities and for other OOH families, WSB staff will begin conducting in-home initial screenings or ABR screening follow-up after an infant Did Not Pass twice with an OAE. WSB will continue to monitor and evaluate the cost and effectiveness of this service.

Activity 1E: Expand the PDSAs shown to be effective in increasing the number of families identified while continuously collecting and analyzing trend data via run charts and other methods.

The essence of quality improvement is to start with very small tests of any change idea, while paying careful attention to the process and the outcome. Then the team studies the results and impact carefully. If the test is perceived as having positive results, then the idea is to expand the test making adjustment where indicated. After completing the consecutive test cycles, the change may be expanded to include additional populations (i.e. well babies and NICU babies or English speakers and Spanish speakers) or additional staff (i.e. one nurse to 5 nurses or day shift nurses and night shift nurses). Each time the change cycle is expanded, additional data is collected in order to collect evidence that a change results in improvement. Therefore strategies

in this application that are shown to be effective in increasing the number of families identified through continuous data collection and analysis of trend data via run charts and other methods will be systematically expanded. Conversely, strategies that do not seem effective will be abandoned for new ideas.

Activity 1F: Spread the implementation of effective QI practices to other extended partners or implement as WSB Program Standard Operating Procedures.

Through participation in the EHDI Learning Collaborative, the WSB Team will spread high leverage improvement strategies to additional TBAs within the initial OOH community in Grant Year 1 and will then use them as the foundation of the change packet that will be utilized in the second and third communities in Grant Year 2 and 3. The TBAs participating in the QI Learning Collaborative will become the QI champions within the communities where they work. The time and travel of participating TBAs will be supported through a stipend using grant dollars.

AIM 2: Reduce LTFU/LTD of infants who DNP a hearing screening from 19% in 2012 to less than 10% by 2016.
2012 Baseline: 19% (110 babies were LTFU not including deceased and refused / 579 babies who did not pass the final hearing screening x100)

Of the babies born in 2012, WSB identified 387 as at-risk for LTFU after they reached 30 days of age without receiving appropriate follow-up. In 2012, *67% of those babies who Did Not Pass were identified as at-risk for LTFU and required WSB's 3-Step-Follow-Up intervention*. During this grant, WSB will work to decrease the percentage of babies that are deemed at-risk for LTFU and require WSB intervention by partnering with Low-Performing COPs. Shifting the onus of responsibility from the State to the local providers creates a more sustainable and localized system of care for families.

Objective/Aim 2.1: By January 1, 2016, the number of babies at risk for LTFU at 30 days of age will be reduced by 10% in six Low-Performing Communities of Practice (COP). Each COP will include Birth units, NICUs, Medical Home organizations, Audiology organizations, Parents, County Birth to 3 and tertiary providers such as ENT and/or Genetics.

Activity 2A: Recruit a multidisciplinary team representing the make up of the COPs to serve on the WSB QI Faculty Advisory Team.

In order to execute a high-quality learning collaborative, we will recruit a multi-disciplinary team of advisors, beginning with members of the current Newborn Screening Hearing Screening Advisory Committee. WSB Faculty Advisory Team will meet in advance to create the first Learning Collaborative charter, establish the meeting agendas, solidify the change packets and finalize evaluation measures.

Activity 2B: Use QI assessment tool to objectively categorize High, Medium or Low-Performing COPs based on their ability to meet identified target indicators.

The WSB team drafted a QI assessment tool as part of the Needs Assessment process for this application. Target indicators included: 1) percentage of babies identified as at-risk for LTFU/LTD and needing WSB intervention; 2) the number of infants with unresolved cases (LTFU/LTD); and 3) the extent of WSB intervention their at-risk-to-LTFU cases required. WSB

and the Faculty Advisory Team may expand target indicators to provide more details around current level of performance in order to gain buy-in from COPs and to provide COPs with direction for improvement efforts.

Activity 2C: Gain commitment from six Low-Performing COPs to engage in a series of QI Learning Collaboratives. Use the data collected and lessons learned from two COPs in Grant Year 1 to spread to two additional COPs in Year 2 and a total of six by the end of the grant cycle.

Once WSB and the Faculty Advisory Team have categorized the COPs, the WSB Program Director will contact decision-makers at the Birth Unit and Audiology Clinic from each Low-Performing COP to alert them of the need for QI. WSB will use organization-level data extracted from WE-TRAC to encourage participation in a yearlong QI learning collaborative. The learning collaborative will include pre-work, testing a variety of change strategies, rapid improvement cycle data collection and reporting monthly measures. This assessment tool will be utilized throughout the learning collaborative to monitor organization progress towards becoming a High Performer. WSB will support LC participants to use the Model for Improvement to guide their organizations' efforts.

Activity 2D: Gather pre-work baseline data.

Baseline data will include an assessment of each organization within the COP, including their use of the nine promising strategies (listed in the FOA). Baseline data, along with experience from past learning collaboratives, will inform the individualization of the change packet and test strategies targeted at reducing LTFU/LTD of infants who did not pass hearing screening in the COP organizations. WSB, along with its QI faculty advisors, has already designed change strategies related to improving data reporting and decreasing the percentage of infants who did not pass who are designated as LTFU/LTD in WE-TRAC which are articulated in Change Concepts 2.1 and 2.2.

Change Concept 2.1

WSB, along with its community partners, will use the Model for Improvement and PDSA cycles to evaluate the best way to increase *the accurate and timely reporting of follow-up in WE-TRAC for babies who did not pass a hearing screening*.

Change Strategy A–WSB will encourage timely (within seven days of occurrence) and accurate data submission via raising awareness through "just in time" phone calls, letters to organization administrators and/or a monthly report card to low-performing COPs.

The key to effective follow-up at every stage in the EHDI continuum is to have access to accurate information about the screening results, the family as well as the medical home provider that the family will follow-up with after discharge. Organizations vary in the consistency with which data is entered into WE-TRAC. The WSB Program will test a variety of methods to encourage consistency of timely data submission.

Change Strategy B–Identify a second point of contact for the family documented in WE-TRAC.

Many of the state-level and local-provider-level strategies identified throughout this application to reduce loss-to-follow-up depend wholly on accurate family contact information. Currently, the WSB team has access to family contact information from the birth certificate and from the WIC database (when applicable). WSB also accesses family contact information from

manually entered demographics by WE-TRAC users. However, family contact information is only a required field in WE-TRAC when an organization is referring the case to a different organization in WE-TRAC and even then only one address/phone number is required. WSB will explore collecting email addresses in WE-TRAC as the second point of contact. WSB will encourage COPs to test strategies that improve family contact capabilities for themselves and other participants in their Community of Practice.

Change Strategy C–Ascertain and document in WE-TRAC and EMR (electronic medical record) the name of the infant's Primary Care Provider (PCP).

The PCP can be a wonderful asset in assisting families navigate the hearing screening follow-up process. However, information gathered from the 13 hospitals participating in the previous WSB learning collaborative indicates that practices related to obtaining and verifying the infant's medical home prior to hospital discharge vary in strategy as well as outcome. Eight of the organizations reported 100% and one NICU reported 80% of the babies had a verified PCP prior to discharge on baseline data collection. Two other hospitals in the LC indicated that approximately 50% of the babies had a verified PCP prior to discharge. And yet another hospital could account for 0% of babies with a verified PCP. This activity will focus on collecting the tools and strategies that work for the hospitals that have consistently reported 100% of their babies are discharged with a designated medical home in order to share successful strategies with both OB/BYN providers as well as hospital decision makers. The WSB Program will provide QI technical assistance to support testing these tools and strategies through the QI Learning Collaborative model.

Objective/Aim 2.2: By March 30, 2016, the number of infants that DNP marked as LTFU/LTD in WE-TRAC will be reduced by 25% in six Low-Performing Communities of Practice (COP).

Change Concept 2.2

WSB will provide targeted QI technical assistance to Low-Performing COPs. Extended partners will be encouraged to use the Model for Improvement and PDSA cycles to test change strategies at the individual practice level that are predicted to decrease the % of infants that DNP who are designated as LTFU/LTD.

Change Strategy A–Inform the PCP of hearing screening results by baby's first well baby appointment while treating did not pass results as modified critical values requiring confirmation.

Currently, the WSB Program does not have a systematized method of informing the infant's primary care provider of hearing screening results. However, the Congenital Disorders program has been providing physicians with the results of the blood screening for all babies with an abnormal result or who need a repeat screen. The SLH has developed an internal mechanism that pulls data nightly for all babies who need blood screening follow-up and have created a system to mail patient-specific letters to PCPs. They also require that the physician's office fax back a confirmation they received the information. If on the fax, the physician indicates that they are not the child's PCP, the SLH staff follow-up to determine who is. The Congenital Disorders program attributes much of the success of their low LTFU rate to this letter/fax-back strategy. Therefore, WSB will use this grant to investigate the possibility and effectiveness of replicating this system for hearing screening. WSB will also encourage the Low-Performing COPs to develop PDSA tests related to informing PCPs of all hearing screening results. Test

strategies may include ensuring that all test results are included in the discharge summary, in the EMR for in-system PCPs and developing systematic methods (such as fax-back sheets) for conveying all results to out-of-network providers. Low-Performing COPs will also test strategies for ensuring that PCPs are particularly aware of Did Not Pass results. A strategy that was highly effective in several past LC participants was to treat DNP results as a 'critical value' requiring communicating results directly to the PCP as well as PCP confirmation that they received the information.

Change Strategy B–Use PDSAs to improve WIC/public health case management of hearing screening follow-up.

Since 2011, WSB has been placing alerts in the statewide WIC database for babies at-risk for LTFU after a failed newborn hearing screen. Of the 92 WIC sites, 60 sites receive an alert requesting that they provide the at-risk family a letter describing the babies needed hearing follow-up care. The rest of the 32 sites receive an alert requesting care coordination with WSB staff. Despite the fact that WSB has found a correlation between WIC alerts placed and reduced LTFU, minimal care coordination has occurred and few WIC sites are documenting their activity. WSB state-wide coordination of care, while regionalized, still covers a massive amount of territory and is a resource-intensive intervention. With this Grant, WSB will explore ways to improve WIC reporting of alert activities to foster tracing of QI efforts. WSB will explore strategies to improve WSB's collaboration with WIC and local public health offices (many of which also run the WIC program) to improve WSB and WIC case management of families in need of hearing screening follow-up.

Change Strategy C–Make re-screen or audiology appointments for the infant at hospital discharge and report it on the GBYS Did Not Pass card.

WSB and its participating professionals have learned a great deal from the small tests of change evaluated across the continuum of EHDI in WI. Using the GBYS Did Not Pass card strategy proved successful and resulted in implementation in each community it was tested in. Therefore, it will be beneficial to share the lessons learned with the individuals who will be establishing new policies and procedures. Hospital staff reported that they making similar kinds of follow-up appointments reported families were more likely to show for the appointment. Families reported appreciating one less thing to do when they got home from the hospital and reported thinking that it had greater importance because the staff was taking the time to set it up.

Connecting parents directly to a Parent Guide is an important strategy for preventing loss to follow-up. Therefore recording the re-screen appointment information on the card also provides the family with a toll-free number that they can use to connect with the GBYS follow-through guide. If the family calls the Parent Guide, she offers reassurance along with accurate information on the importance of following through with additional hearing testing and to identify and problem-solve any barriers to follow-up a family may have and connect them to local resources that can provide assistance. WSB provides hospitals with free GBYS referral cards that meet low literacy requirements and are available in the three most prevalent languages in Wisconsin (English, Spanish, and Hmong). These cards are also designed with a perforated tear-off next appointment reminder cards.

Change Strategy D–Provide reminders for appointments (in family's first language whenever possible).

Appointment reminders prevent families from missing their appointments. It will be important to test both scripted in-person reminders with a variety of staff and automated reminders to determine the most effective strategy at the smallest cost to the organization. Other

options for reminding families about their appointments to test include generating letters, text messaging or emailing.

Activity 2E: Expand the PDSAs shown to be effective.

Reference Activity 1E for details.

Activity 2F: Spread the implementation of effective QI practices to other extended partners or implement as WSB Program Standard Operating Procedures.

Through participation in the EHDI Learning Collaborative, the WSB Team will spread high leverage improvement strategies tested in the initial Low-Performing COPs in Grant Year 1. The Low-Performing COP that participated in the first QI Learning Collaborative will become the QI champions within the communities where they work. WSB will provide a small stipend using grant dollars to the team lead and the data lead for each COP.

AIM 3: 78% or more of babies who DNP their final screen will have conclusive diagnostic audiology results (regardless of the outcome) by 3 months of age as documented in WE-TRAC. 2012 Baseline: 75% = 319 babies received their final Dx Aud. exam by 91 days /427 babies who received diagnostic services.

According to national incidence data, approximately 140 to 200 babies should be identified with congenital hearing loss in Wisconsin each year. WSB developed WE-TRAC with the goal that audiologists could enter data for each contact they have with the patient, audiologists can enter multiple re-screens and diagnostic results. As of 2012, they can also enter in treatment and management information. However, the way in which audiologists use WE-TRAC varies. If an audiologist sees a patient in their clinic but does not update those results into WE-TRAC, WE-TRAC reports no longer accurately reflect what has occurred. While the percentage of babies receiving diagnostic services regardless of outcome has stayed relatively steady at 72%, this is not the case for those babies being *diagnosed with a hearing loss* (and referred to Early Intervention). For these babies in 2012, the percentage who received a diagnosis by three months of age was just **51%.** Although most of the diagnoses occurred around 100-200 days from birth (3-6 months of age), there were a handful of babies who weren't diagnosed until more than a year after birth. Of the babies diagnosed after 200 days, 67% had four or more appointments. Some babies had more than six appointments, including one baby who was screened five times prior to diagnosis. Factors associated with delayed diagnosis include repeated rescreens and deviations from recommended protocol; repeated rescreens due to suspected middle ear involvement; and multiple ENT appointments due to suspected middle ear involvement.

Objective/Aim 3.1: Reduce average age at conclusive diagnosis by 15% or more in six Low-Performing COPs.

Activity 3A: Utilize the Audiology/ENT QI Faculty Advisors to develop and increase the use of evidence-based audiology/ENT guidelines for pediatric diagnostics and management of OME (otitis media with effusion).

While most of the babies identified in 2012 were diagnosed between 100 and 200 days of age, a handful were not diagnosed until more than a year after birth. Of the babies diagnosed after 200 days, 67% had four or more appointments and most indicated that suspected or

confirmed fluid was interfering with a conclusive diagnosis. Although the American Academy of Pediatrics Position Statement on Otitis Media with Effusion indicates that *"Early detection and treatment of OME identified by screening, however, have not been shown to improve intelligence, receptive language or expressive language"* there is evidence in WE-TRAC to the contrary. If the OME is not aggressively managed and a comprehensive pediatric audiology assessment is not conducted, the OME can and often does, mask an underlying SNHL that is also present. In order to determine whether earlier and more consistent treatment of congenital OME reduces the age at identification of permanent hearing loss, practice recommendations must be drafted and disseminated.

Activity 3B: Develop a mechanism to objectively categorize high-, medium- or low-performing audiology clinic COP members based on their ability to meet identified target indicators.

The WSB team drafted a QI assessment tool as part of the Needs Assessment process for this application. However this tool primarily looked at low-performing birthing units, not audiology clinics. Possible target indicators might include: 1) percentage of babies identified as at-risk for LTFU/LTD and needing WSB intervention; 2) the average age in days at diagnosis of babies seen in the audiology clinic; 3) the average number of appointments reported prior to diagnosis; 4) the number of cases closed prior to diagnosis; and 5) the number of days on queue. WSB and the Faculty Advisory Team will finalize target indicators in order to provide more details around current level of performance to gain buy-in from COPs and provide them with direction for improvement efforts.

Activity 3C: Gain commitment from six Low-Performing COPs to engage in a series of QI learning collaboratives. Use the data collected and lessons learned from the two COPs in Grant Year 1 to spread to two additional COPs in Year 2 and a total of six by the end of the grant cycle.

Once WSB and the Faculty Advisory Team have categorized the COPs, the WSB Program Director will contact decision-makers at the Birth Unit and Audiology Clinic from each Low-Performing COP to alert them of the need for QI. WSB will use organization-level data extracted from WE-TRAC to encourage participation in a yearlong QI learning collaborative. The learning collaborative will include pre-work, testing a variety of change strategies, rapid improvement cycle data collection and reporting monthly measures. This assessment tool will be utilized throughout the learning collaborative to monitor organization progress towards becoming a High Performer. WSB will support LC participants to use the Model for Improvement to guide their organizations' efforts.

Activity 3D: Gather pre-work baseline data, including an assessment of COP use of the nine promising change strategies (listed in the FOA).

According to WI data, 110 of the 579 (19%) babies who Did Not Pass the hearing screening were lost-to-follow-up prior to diagnostic audiology. WSB, along with its QI Faculty Advisors, has already designed change strategies related to reducing the average age at conclusive diagnosis for infants who Did Not Pass, which are articulated in Change Concepts 3.1, 3.2 and 3.3.

Change Concept 3.1

WSB will provide targeted QI technical assistance to Low-Performing COPs. WSB will encourage extended partners to use the Model for Improvement and PDSA cycles to test change strategies that are predicted to reduce average # of audiology and ENT appointments prior to conclusive diagnosis.

Change Strategy 1 – Coordinate ENT/Audiology Care appointments.

In 2011, WSB conducted a survey of parents with diagnosed children, 56% of the respondents reported that access to comprehensive diagnostic audiology caused delays to identification and enrollment in early intervention services. Families repeatedly referenced issues including scheduling conflicts and the need for multiple audiology visits to confirm the hearing loss. According to 2012 WSB data, of those babies diagnosed with hearing loss when they were greater than 200 days old, 67% had four or more appointments prior to diagnosis. Therefore, WSB will encourage and support COP participants in testing changes to increase care coordination and reduce the number of appointments.

Change Strategy 2 – Coordinate Sedated ABR with other procedures requiring sedation.

As part of WSB's 3-Step-Follow-Up process, the Follow-Through Parent Guide talks to families about their concerns related to hearing screening follow-up. An often-cited concern, especially for medically fragile children, is the need for multiple appointments requiring sedation. Therefore, COP participants will test the ability to coordinate the sedated ABR with other procedures.

Change Strategy 3 – At hospital discharge, schedule two audiology appointments two weeks apart.

Access to pediatric audiology services varies throughout the state. Appointment availability can be a barrier to receiving a diagnosis by three months of age. Evidence suggests that infant diagnostics, especially in a natural sleep state often requires more than one appointment. Previous LC participants found that scheduling two audiology appointments two weeks apart at hospital discharge reduced appointment scheduling delays and helped establish that hearing follow-up can be a more than one appointment process for the new parents at hospital discharge.

Change Strategy 4 – Increase use of evidence-based Audiology/ENT guidelines for management of OME.

WSB has learned from audiology providers that a barrier to timely hearing loss diagnosis is the presence of congenital OME and the uncertainty of appropriate or aggressively managing it. Audiology providers may also be inexperienced or uncomfortable conducting natural sleep Bone Conduction ABR as it is a complex procedure. WSB QI Faculty Advisory Team members will seek expert advice in creating these guidelines and gaining buy-in by providers throughout the state. Once they draft guidelines, COPs will test strategies to comply with the guidelines.

Change Strategy 5 – One-on-one case consultation/mentoring on challenging cases or with inexperienced audiologists.

WSB has learned from audiology providers that they themselves sometimes lack confidence in their diagnosis, also leading to increased number of appointments. Therefore, WSB and its Faculty Advisory Team will test a change strategy to provide confidential consultation through on-site support, tele-support or results review.

Change Concept 3.2

WSB will provide targeted QI technical assistance to Low-Performing COPs. WSB will encourage community partners to use the Model for Improvement and PDSA cycles to test change strategies that are predicted to reduce the no show rate for appointments.

Change Strategy 1 – Pre-appointment instructions mailed to families, in their first language whenever possible.

Family life is busy and new parents can feel overwhelmed in the weeks after coming home with a newborn. A written reminder may be enough to reduce no-shows for the follow-up appointment. However, it will be important to test timing and content of the written instructions and communication.

Change Strategy 2 – Pre-appointment reminders calls made to family, confirming time and location of appointment.

While reminder calls may be enough, it will be important to test both scripted in-person reminders and automated reminders to help prevent parents from simply forgetting that the appointment had been made. Calls will be tested under a variety of conditions to evaluate what causes the greatest impact with the least strain on organization resources.

Change Strategy 3 – The family is provided with instructions to follow-up verbally and in writing in the parents' first language whenever possible.

Reminder letters may help avoid forgetting about the appointment but we predict pairing it with a sincere conversation in their first language will be more effective. Therefore, this strategy will test providing both as best practice.

Change Concept 3.3

WSB will provide targeted QI technical assistance to Low-Performing COPs. WSB will encourage extended partners to use the Model for Improvement and PDSA cycles to test change strategies at the individual practice level that are predicted to increase the accuracy and timeliness of audiology data entry.

Change Strategy 1 – Utilize a dx audiology checklist (Infant Audiology QI Tool) to encourage immediate reporting to WSB and PCP.

The Infant Audiology QI Tool grew out of the experiences and lessons learned from the State EHDI QI initiatives and their engagement with audiology partners. Prior to the collaborative, professionals reported concentrating on improving their own service, but had little opportunity to improve the connections between the services. Parents perceived a system of disconnected parts, with limited communication between providers. QI processes and activities can eliminate waste, improved flow, and standardized care across the EHDI continuum. The Infant Audiology QI Tool will be designed to identify opportunities to improve the care provided to infants and families, while creating efficiencies within Audiology organizations by listing targeted improvement areas that promote: the provision of high quality of care; information sharing between providers; effective communication with families. Completing these activities has been linked to improved cross system communication and improved outcomes for families.

Change Strategy 2 – WSB provides concurrent performance feedback to local providers related to timeliness and accuracy of data.

WSB has learned that one of the greatest motivators for organizations is for them to learn that someone is paying attention to their statistics. By providing their data to them in the form of

a report card, they will gain insight into their own practice, have awareness and accountability to the other providers who might be doing a better job of reporting, as well as raising the understanding that the WSB Program is monitoring their performance—that the information they provide and the services they report on matter, not only to the family, but to the system at large.

Activity 3E: Expand the PDSAs shown to be effective.

Reference Activity 1E for details.

Activity 3F: Spread the implementation of effective QI practices to other extended partners or implement as WSB Program Standard Operating Procedures.

Through participation in the EHDI Learning Collaborative, the WSB Team will spread high leverage improvement strategies tested in the initial Low-Performing COPs in Grant Year 1. The Low-Performing COP that participated in the first QI Learning Collaborative will become the QI champions within the communities where they work. WSB will provide a small stipend using grant dollars to the team lead and the data lead for each COP.

AIM 4: 75% of those infants diagnosed with PHL by 3 months of age will have a documented Individualized Family Services Plan (IFSP) by 6 months of age.
2012 Baseline: 42% of all babies referred were enrolled by 6 months of age.

Evidence indicates that along with early identification, enrollment in high-quality Early Intervention programs leads to improved outcomes for children who are deaf or hard-of-hearing. To help facilitate this, audiologists are able to refer families automatically through WE-TRAC to local Birth to 3 programs. In Wisconsin, any child with a diagnosed hearing loss may be found eligible for early intervention services. There is no restriction based on severity or type of hearing loss. However, only 56 of 104 infants with hearing loss referred to the Birth to 3 Program were enrolled in 2012. Of the 56 enrolled, only 44 were enrolled before 6 months of age. WSB will make strategic efforts to increase the number of children with congenital hearing loss who are found eligible, enrolled and continue participating through age three in the Wisconsin Birth to 3 Program. Because this is a significant systems change, WSB will partner with the State Birth to 3 Program, the Wisconsin Department of Public Instruction (DPI), the Wisconsin Educational Services Program Deaf and Hard of Hearing (WESP DHH) Outreach Program and the University of Wisconsin-Waisman Center.

Objective/Aim 4.1: By 2016, the percentage of infants enrolled in EI Services will increase from 42% to 65%.

Change Concept 4.1

Use the Model for Improvement and PDSA cycles to test change strategies at the WSB Program level that are predicted to increase family understanding of the value of Birth to 3 Program.

Out of the needs assessment for this grant, WSB's recent collaboration and data sharing with the State Birth to 3 Program, as well as WSB's AEIOu outreach, a concerning trend has emerged--while most babies in WI who are diagnosed with a hearing loss are referred to EI, far fewer enroll or remain enrolled in EI. As part of WSB's AEIOu outreach when the diagnosed child turns one, WSB staff has learned from families that many of them did not enroll in Birth to 3 because they didn't understand why they were eligible, what benefit they would receive from enrolling, how they would pay for it/what it would cost as well as families perceiving that Birth

to 3 only serves children who are already experiencing developmental delays. Yet we know that the best time to begin early intervention is before the child shows delays. A lack of understanding or perceiving EI services as beneficial might be a large contributor to the low enrollment and retention rates at EI referral. In fact, at this one year AEIOu outreach phone call, several families have requested assistance in re-connecting with their local Birth to 3 Program, indicating that between the point of EI referral and the point of the AEIOu outreach phone call, families attitudes, understandings or needs change. Therefore, WSB will explore ways in which the program can increase a family's understanding of, interest in and ultimately participation in Birth to 3 at the point of EI referral (as well as at other points throughout the EHDI continuum of care).

Change Strategy 1 – Developing a uniform and centralized first point of contact for families - WSB Parent Guide.

Many families received referrals upon diagnosis to Birth to 3 but didn't enroll then. During the AEIOu outreach phone call that WSB staff makes when the diagnosed child is approximately one year old, families have told WSB staff repeatedly that they wish they had received this type of informational and supportive phone call sooner. Families may have lacked understanding of the system, the impact hearing loss may have on their child's development or the benefit early intervention might bring their child. Families are also receiving a lot of information from a lot of different sources at a time when the family may also still be dealing with this new diagnosis and what it might mean for their child and their family. Therefore, WSB will test a central point of contact to reach out to families who live in the Western Region at diagnosis to help support them in understanding the new landscape of the services they qualify for and why. For families living outside of the Western Region, a WSB staff member will reach out to families at time of EI referral to help improve EI enrollment and retention rates.

Change Strategy 2 – Developing a uniform and centralized first point of contact for families - Regional WSB EI Outreach Specialist.

As recommended by the JCIH in their 2007 Supplement on early intervention, a uniform and centralized first point of contact can reduce confusion for families and increase participation in early intervention services. In response to a Birth to 6 Services Summit WSB began working closely with a cadre of service providers in the Western Region of the State. This group of professionals has been meeting regularly to collaborate and discuss ways to coordinate and provide services for newly diagnosed children in their service areas. WSB is piloting using a newly created staff position of an Early Intervention Outreach Specialist to act as the main point of contact upon diagnosis for all families living in this geographic area. The EI Outreach Specialist will not only reach out to the family to help them understand the landscape of the diagnosis, but will also actively help them navigate the EI system. The EI Outreach Specialist will be coordinating with local EI providers and will be participating in IFSP meetings with the families and will be an active and engaged partner in the service provision process. For families living inside of the Western Region, WSB EI Outreach Specialist will reach out to diagnosed children and their families at time of EI referral to help improve EI enrollment and retention rates. Using lessons learned from piloting the EI Outreach Specialist model in the Western Region, it may be expanded to other areas in Years 2 or 3 of the Grant.

Change Strategy 3 – County Birth to 3 service coordinators use scripted message with families describing Birth to 3 services as “preventive.”

WSB will work with local Birth to 3 providers as members of the COP to help educate and support them in crafting their message to families. As mentioned previously, families report that the message they receive from Birth to 3 is often to monitor their child until they have concerns about possible delay. Families might also not understand Birth to 3 as being a preventive service and might only perceive the program to work with children with a delay. A family might have resistance to working with Birth to 3 because they don't believe their child is delayed, and without understanding the need for preventive intervention or receiving the message that quality intervention can prevent delays, families might not enroll or remain enrolled in EI. Scripted messaging will help ensure that families across Wisconsin are receiving the uniform message that EI services can benefit even the youngest of babies before delays develop.

Objective/Aim 4.2: Reduce the number of infants with PHL who Birth to 3 Program reports were 'lost to reporting' from 34% (15/44) in 2012 to 10% in 2016.

Change Concept 4.2

Improve timeliness and accuracy of data reporting into PPS and between PPS and WE-TRAC.

Change Strategy 1 – Work with County Birth to 3 Providers to improve data entry into PPS.

Historically, the WI Birth to 3 Program has only monitored the data entered into their data system to ensure compliance with federal guidelines at the county level. Even though PPS contains robust data collection capacity, counties have never been encouraged to enter most data. A variety of methods will be tested to improve both the quantity of data counties are entering as well as the accuracy and validity of the data.

Change Strategy 2 – Work with the State Birth to 3 Program to increase their data monitoring.

In 2012, WSB and Birth to 3 created an automated mechanism for WE-TRAC to receive information regarding a family's Individualized Family Service Plan (IFSP) date and their participation status. However issues remain with the validity of these data fields.

Change Strategy 3 – Implement strategies to regularly cross-reference data between WE-TRAC and PPS to ensure reliability of the data transmission process.

Once counties enter additional data, it will be important to have easy, sustainable ways to ensure that the data transmission process is working effectively. WSB will evaluate automated versus hand comparison as well as its impact on resources of staff and time.

Activity 4A: Expand the PDSAs shown to be effective.

Reference Activity 1E for details.

Activity 4B: Spread the implementation of effective QI practices to other counties or implement as WSB Program Standard Operating Procedures.

Through participation in the EHDI Learning Collaborative, the WSB Team will spread high leverage improvement strategies tested in the initial Low-Performing COPs in Grant Year 1. The Low-Performing COP that participated in the first QI Learning Collaborative will become the QI champions within the communities where they work. WSB will provide a small stipend using grant dollars to the team lead and the data lead for each COP.

AIM 5: By the end of the grant, children (with permanent hearing loss only) in the Birth to 3 Program will be making positive gains as measured in AEIOu at 30 months of age (i.e. one month progress in one month time).
Baseline: 0% (0 out of 7)

The Assessment of Early Intervention Outcomes project, or AEIOu, tracks developmental outcomes of early diagnosed children who are deaf or hard of hearing and enrolled in Wisconsin Birth to 3 in the areas of general, communication and social development; the early intervention they receive; and the variables that affect positive outcomes. The goal is to help parents and service providers meet the needs of children who are deaf or hard of hearing.

Since June 2009, 47 families in 21 counties have participated in AEIOu. In October 2012, WSB changed its recruitment process to incorporate WSB parent-to-parent outreach that has been more effective in getting participant families. WSB identifies babies who are 13 months of age with a diagnosed hearing loss and have been referred to Birth to 3 in WE-TRAC. Families participating in AEIOu complete three developmental assessments about their child (MacArthur-Bate, Minnesota Child Development Index and the Greenspan Social-Emotional Assessment) when their child is approximately 14 months old and again when the child is 30 months old. Families have the option to participate in a video-recorded evaluation called the Parent-Child Early Relational Assessment (ERA) that evaluates the quality of their interactions. (AEIOu is part of the National Early Childhood Assessment Project. The ERA component is unique to Wisconsin.) To date, 19 families have completed assessments at both stages.

Objective/Aim 5.1: By January 1, 2015 100% of infants with permanent hearing loss will be documented as eligible for Birth to 3.
Baseline: 9% (4/44) reported the "child did not qualify for services in 2012.

Activity 5A: Target outreach and education to raise County Birth to 3 Program awareness of the newly signed MOU and working relationship between WSB and Birth to 3 Programs.

In 2013, WSB and the State Birth to 3 Program successfully developed a MOU to create open communication, data sharing and collaboration between the two programs and establishing WSB as a Birth to 3 participating provider. As the MOU is still undergoing final legal review most local Birth to 3 providers may be unaware of WSB and our new partnership. Once the MOU is official, raising awareness of its impact will be a high priority.

Activity 5B: Recruit and gain commitment from six County Birth to 3 Administrators to engage in a QI Learning Collaborative. Use the data collected and lessons learned from two COPs in Grant Year 1 to spread to two additional COPs in Year 2 and a total of six by the end of the grant cycle.

Because the lack of developmental gains occurs in children regardless of the Birth to 3 agency that serves them, the Counties that WSB will recruit to participate in the learning collaborative, will be based on the County in which the other Low-Performing COPs operate. Once WSB and the Faculty Advisory Team have categorized the COPs, the WSB Program Director will contact decision-makers at the County level to invite them to participate. In addition, Counties in the Western Region of Wisconsin will have the opportunity to engage in systematic QI with the Sound Beginnings Team.

Activity 5C: Gather pre-work baseline data related to EI Outcomes. Determine best way to measure improvement.

Of the 19 children who have completed AEIOu, seven had hearing loss only. None of these children made month-to-month developmental gains between their first assessment at 14 months of age and their second assessment at 30 months of age. For these seven children, the time between the first assessment and the second averaged 21 months. In typical development, we expect to see equal growth per months of time (so for a 21-month time period, we would expect 21 months growth). From this preliminary data, we are seeing that children who are deaf or hard of hearing are making progress, but not at a month-to-month rate. Therefore, WSB and the QI Faculty Advisory Team will explore the best way to demonstrate that a change in EI programs contributes to improvements in developmental outcomes.

Activity 5D: Operationalize the new partnership between WSB, Birth to 3 Program and County Birth to 3 Providers.

The WSB Program, in partnership with the state level Birth to 3 Program have developed a new process *(Attachment 6)* that will facilitate progress toward adherence to the newly released Position Paper from the Joint Committee on Infant Hearing (JCIH) that was released in the AAP Pediatrics Journal that outlines evidence based *Principles and Guidelines for Early Intervention After Confirmation That a Child Is Deaf or Hard of Hearing* as well as clear goals, rationales, and measureable recommendations (see http://pediatrics.aappublications.org/content/131/4/e1324.full). The new process will establish the new WSB EI Outreach specialist position as the first point of contact for a newly diagnosed child as well as an IFSP team member for families referred to Birth to 3.

Therefore, the Model for Improvement will be used to test the new process, beginning with families who live in the Western region of the state. A member of the cadre will be recruited as EI faculty for the WSB QI Faculty Advisory Team. Lack of clarity around data sharing

Special attention will be paid to clarity of purpose and role, support and engagement of the Western Region Cadre's expertise, and formalizing the infrastructure. If found to be successful, WSB will spread the process to two additional regions by the end of the grant cycle.

Change Concept 5.1

Increase the number of County Birth to 3 Programs with access to providers who have specialized knowledge and skills related to working with individuals who are D/HH.

Change Strategy 1 – Provide Just in Time information packets to educate County Birth to 3 Programs within days of new D/HH referral.

Currently, WSB sends out 'Just in Time' packets to PCPs for all children diagnosed with a hearing loss and referred to early intervention. Families report that the packets facilitate communication with the PCP. With our new partnership in place with the Birth to 3 Program, WSB will develop 'Just in Time' packets of written materials to educate, support and alert County Birth to 3 Programs to the recently diagnosed child in their service area.

Change Strategy 2 – Provide Just in Time phone calls to educate County Birth to 3 Programs within days of new D/HH referral.

Along with contacting the newly diagnosed child's parents, WSB will also call the County Birth to 3 Program. The goal of both the parent phone calls and the County Birth to 3

phone calls is to educate and support both entities to encourage participation in Birth to 3. While parents might not understand that Birth to 3 is a preventive service for their children, Birth to 3 staff might also be unaware of the unique needs of children who are deaf or hard of hearing. WSB has anecdotally heard from parents that the message they have received is to wait until the child shows signs of a delay to begin intervention. With this Grant, WSB seeks to improve the number of children enrolling and remaining enrolled in early intervention services as national studies have shown that quality early intervention is key in helping children remain on target.
Change Strategy 3 – Support providers from counties serving a child who is deaf or hard of hearing to attend annual deafness specific training opportunities and encourage application of new knowledge.

For many Birth to 3 providers, the newly referred child who is deaf or hard of hearing might be their first one, leaving providers without specific training or understanding of these children's needs. This might be another reason for so many children enrolling in early intervention but not remaining enrolled. Providers may also be unaware of the range of services and supports available to help them best serve the family. Each year, the WESP DHH hosts a Statewide Family Conference along with a professional pre-conference. WSB use grant dollars to support inexperienced providers to attend this terrific conference. WSB will also help create an on-line community of learners network for information sharing, posting questions, and overall support for EI staff.

Objective/Aim 5.2: By January 1, 2016 20% of infants with permanent hearing loss enrolled in County Birth to 3 Programs will be documented as making positive developmental gains.

Change Concept 5.2

WSB, along with its community partners, will use the Model for Improvement and PDSA cycles to test how the WSB EI Outreach Specialist position can best positively impact child development outcomes.

Change Strategy 1 – Educate and assist counties to write IFSP outcomes that integrate receptive and expressive language with social emotional skills.

As part of the AEIOu project, WSB evaluates IFSPs. In 2012, WSB staff began categorizing the goals to look for any trends. What we are preliminarily finding is that few IFSPs include social or emotional development goals or incorporate communication goals with social/emotional goals. Emerging national research is demonstrating children who are deaf or hard of hearing consistently score lower than their hearing peers on social/emotional or pragmatic development. By encouraging providers to incorporate this aspect of the child's development into their IFSP, the goal is to look at the broader cultural and contextual aspects of this child and his/her life. The end goal of a global view of the child and communication development in the context of social and relationship development is improved developmental outcomes. With this grant, WSB will begin to innovatively explore this while support early intervention providers.
Change Strategy 2 – Integrate EI Outreach Specialist into the IFSP team in the Western Region.

According to the JCIH 2007 Position Statement, "Recent research suggests that outcomes for young children and their families are better when providers have specialized training specific to working with infants and toddlers who are D/HH and their families, although more evidence is needed. Professional consensus statements acknowledge the need for service providers with

specific training in serving children who are D/HH. WSB will attempt to test whether having the EI Outreach Specialist on the IFSP team can improve outcomes for kids who live in the Western Region of WI. If evidence indicates the model is effective, it will be spread to two additional regions in WI by the end of the grant cycle.

Activity 5E: Expand the PDSAs

Reference Activity 1E for details.

Activity 5F: Spread the implementation of effective QI practices to other extended partners or implement as WSB Program Standard Operating Procedures.

Through participation in the EHDI Learning Collaborative, the WSB Team will spread high leverage improvement strategies tested in the initial Low-Performing COPs in Grant Year 1. The Low-Performing COP that participated in the first QI Learning Collaborative will become the QI champions within the communities where they work. If effective, the EI Outreach Specialist will be added as a core member of the WSB Team.

IV. WORK PLAN

The WSB Project Work Plan *(Attachment 1)* describes the aims and objectives, change concepts, proposed change strategies, timelines and responsible lead staff for each activity. The activities that will be used to achieve each of the proposed goals are explained in greater detail in the Methodologies section.

V. RESOLUTION OF CHALLENGES

Although Wisconsin has made major accomplishments towards the universal screening and early diagnosis of infants with hearing loss, there continue to be challenges to progress. Data reporting and the use of the WE-TRAC System is voluntary.

In addition, WI EHDI legislation does not provide funding to support program development; the WSB Program is currently entirely supported by federal grants. A particular challenge of this grant project will be to put into place O&C Centers within the first 7 months of the grant. However, the funding of a person to fill the GBYS Follow-Through Coordinator position to coordinate this activity will help to ensure that the timelines will be met.

An anticipated challenge in executing the EHDI O&C Centers will be to work within the timeline, and engage the appropriate administrative decision makers that must approve systemic changes. However, WSB has been building partnerships within the Children's and Marshfield systems that will assist in the accomplishment of this effort.

While key improvement strategies have been identified and tested in a variety of clinical settings, statewide implementation remains a challenge. The addition of the GBYS Follow-Through Coordinator, O&C Centers will help to spread these strategies.

VI. EVALUATION AND TECHNICAL SUPPORT CAPACITY

The WSB Program has been funded through federal Maternal and Child Health dollars for the past twelve years, and therefore has experience with individual and state level program evaluation. Process, Outcome, and Balancing Measures will be utilized throughout the project to

inform decisions about high leverage, sustainable ways to improve the EHDI Program in WI. Statewide data related to loss to follow-up at each specific stage of the EHDI continuum will be tracked and monitored and compared to the 2012 baseline rates which are documented in the 2012 Annual Report www.improveehdi.org/wi/state/improvement.cfm. The changes in loss to follow-up rates will be assessed regularly to determine progress toward meeting the identified targets outlined in the Methodologies section. WSB will consult with the MCH Epidemiology Group to ensure accurate data and its use.

Individual organizations will learn how to access and use their aggregate data. Their performance will be evaluated. Hospitals and clinics participating in the Learning Collaboratives will continue to track the impact of tests of change toward reducing loss to follow-up and these data will be shared with others on a regular basis.

This grant focuses on both local and State level quality improvement efforts will also be evaluated using data collected by the WSB Team during rapid-cycle quality improvement projects. Monthly data measures will be collected as they relate to the over-all improvement goals and the WSB's individualized Plan, Do, Study, Act (PDSA) models for improvement. Examples of improvement efforts that will be measured are outlined in the Project Work Plan in Section IV. Trends will be charted by the WSB Outreach Specialists to look for "break-throughs."

Overall progress of the WSB Program in reducing loss to follow-up and implementing a high quality EHDI system will be measured by increasing the number of children who are meeting the JCIH targets and through demonstrated outcomes of the children identified as deaf or hard of hearing which will be assessed by the University of Wisconsin Waisman Center through other funding but coordinated by the WSB Program Director.

STAFFING PLAN AND PERSONNEL REQUIREMENTS

Staffing for this grant will include in-kind staff from the Department of Health Services (DHS) and contractual support from the UW – Waisman Center, Chippewa County Health Department, City of Milwaukee Health Department and WI State Laboratory of Hygiene. Staffing Plan Staffing Plan and Job Descriptions for Key Personnel *(Attachment 2)* and Biographical Sketches for Key Personnel *(Attachment 3)* are included.

GRANT FUNDED PERSONNEL

- GBYS Follow Up Coordinator: Staff hired at 0.60 FTE is responsible for ensuring that families and primary care providers have access to hearing related care after discharge from the hospital. This will include strong collaborations with the State Laboratory of Hugiene. The GBYS Follow Through Coordinator will also be responsible for assisting the newly established EHDI Outreach and Coordination Centers develop their follow-through protocols and policies. Finally, the GBYS Follow Through Coordinator will be responsible for evaluation of Loss to Follow-up activities.
- WSB Regional Outreach Specialists: Two staff hired at 0.70 FTE and will coordinate all aspects of the EHDI outreach project in two regions of Wisconsin. Responsibilities will include scheduling community team meetings, facilitate the set-up of outreach sites, develop procedures and protocols, attend quality improvement trainings, and track and analyze data to evaluate outcomes of the learning collaborative and WSB outreach efforts.

- WSB Regional Outreach Coordinator: 1 staff hired at 1.00 FTE and will coordinate all aspects of the EHDI outreach project in one regions of Wisconsin. Responsibilities will include scheduling community team meetings, facilitate the set-up of outreach sites, develop procedures and protocols, attend quality improvement trainings, and track and analyze data to evaluate outcomes of the learning collaborative and WSB outreach efforts. She will also be responsible for communication and day to day support of the other two WSB Regional Outreach staff. 50% of her FTE each year will be supported through an In-Kind donation from the UW - Waisman Center.
- WSB OOH Outreach Specialist: This position will be a 0.50 FTE contracted through the WI State Laboratory of Hygiene. However, the majority of the cost of the position will be funded using WI Blood Screening Surcharge dollars. This grant will contribute towards salary and travel expenses for the work that relates directly to reducing LTFU/LTD of hearing screening such as recruiting and supporting the TBA during QI work, completing follow-up ABRs on OOH infants that do not pass the OAE screen, organizing and staffing OOH Outreach clinics.
- Early Intervention Outreach Specialist: Staff hired at 0.60 FTE is responsible for QI Activities related to Early Intervention and child development outcomes. May develop creative collaborations with other resources within the county or in the surrounding communities provide county service coordinators and providers ongoing case consultation, training & support as needed, and participate in IFSP meetings and guide the development of integrated Goals and Activities. She will also coordinate connections to Parent to Parent support via Wisconsin Families for Hands & Voices as well as regular evaluation for children who are D/HH through the AEIOu project. WSB will begin recruiting for this position in January as funding is available in the current grant cycle to support it.

WISCONSIN SOUND BEGINNINGS PERSONNEL

- Wisconsin Sound Beginnings (WSB) Program Director: Elizabeth Seeliger, the WSB Program Director is an audiologist with nine years experience in the development and implementation of WSB. This position will be in-kind to this grant and supported with Title V Block Grant funds.
- WE-TRAC Project Coordinator: is responsible for ongoing monitoring and development of the WE-TRAC surveillance and tracking system and will provide in-kind support to this grant as she assures that WE-TRAC is well equipped to monitor quality improvement efforts at the individual organization level as well as the statewide level. WE-TRAC Project Coordinator position is currently funded through grant dollars from the Centers for Disease Control and Prevention.

OTHER IN-KIND PERSONNEL

DHS – Department of Health Services

Sharon Fleischfresser, MD, MPH (15%): Medical Director of the CSHCN Program serves as principal investigator for this program and team leader for the Family Health Section Early Screening team that includes metabolic and hearing screening along with genetic services.
Linda Hale, BSN, RN (5%): Section Chief of the Family Health Section and supervises the activities of the WSB Program Coordinator and the WE-TRAC Project Manager.

Lori Wittemann (5%): Wisconsin Birth to 3 Program, Health Policy Specialist and works on policy, access, and data issues as they relate to children identified as d/hh.
Terri Fisch (15%): CYSHCN Program Assistant provides clerical support.
Elizabeth Oftedahl, BA (10%): CYSHCN epidemiologist will assist in analysis of data collected through the WE-TRAC System.

WESPDHH – Wisconsin Educational Services Program for the Deaf and Hard of Hearing
Sherry Kimball, MA Deaf Education (15%): Assist WSB program in developing the concept of a primary point of referral and the development of a MOA between DHS and DPI related to data sharing of information about families with d/hh children 0 to 6 years of age.
Laurie Nelson, (10%): Work collaboratively with the GBYS Follow-Through Coordinator to develop first contact scripts, outreach and education materials and protocols.

VII. ORGANIZATIONAL INFORMATION

Organization Structure and Capacity: The Wisconsin Sound Beginnings (WSB) Program is located in the Family Health Section (FHS) in the Bureau of Community Health Promotion (BCHP) in the Division of Public Health (DPH), Department of Health Services (DHS) *(Attachment 5)*. The DHS has as its mission to protect and promote the health and safety of its citizens. The FHS administers the Title V MCH/CYSHCN Block Grant for Wisconsin and awards statewide and regional projects to address important maternal and child health issues and system development such as regional centers for children and youth with special health care needs and genetic counseling services. The FHS has oversight responsibility for meeting the Title V Block Grant National Performance Measures including "early and continuous screening".

A 2004 reorganization of the DPH strategically placed the WSB Program in the FHS. A new team was created called "Early Screening". The team includes Genetics Services, the Metabolic Screening Program, the Screening Hearts in Newborns (SHINE) Program and the WSB Program that includes the EHDI data collection/ tracking system known as WE-TRAC. Programmatically team members work closely with the CYSHCN Medical Director and CYSHCN epidemiologist and are supervised directly by the FHS Supervisor. Other programs within this section include the Title V MCH and CYSHCN Programs, Statewide Systems Development Initiative (SSDI), and the Birth Defects Surveillance Program. This organization and management structure was created to positively impact data collection efforts as well as the coordination and integration of the screening/surveillance programs (hearing, metabolic, and birth defects) with support and services (genetic services, Title V funded Regional CYSHCN Centers, Medical Home initiatives including Learning Collaboratives).

In addition, as part of the Division of Public Health reorganization, the Bureau of Health Information (Vital Records) relocated to the DPH and a new bureau was created called Health Information and Policy that includes the Public Health Information Network (PHIN) and a Project Manager for PHIN Project Integration. This structure has enhanced the Division's ability to integrate data systems such as WE-TRAC, a Project Area Module (PAM) of the PHIN.

Key Partners: Other key programs located within the Department include: the Birth to 3 Program (Part C) in the Division of Long Term Care Services, the Wisconsin Office for the Deaf and Hard of Hearing, and the Title XIX Program and SCHIP (Badger Care) in the Division of Health Care Access and Accountability. The CYSHCN, Early Screening and WSB Program staff who will be involved in this grant represents a broad array of experienced health care

professionals (audiologist, genetic counselor, epidemiologist, health educator, pediatrician, etc.) and includes individuals with expertise in deaf and hard of hearing services and experience in data collection, analysis, and data integration. Staff has participated in and acted as Faculty Advisors to the national NICHQ EHDI and Medical Home Learning Collaboratives and has successfully implemented a Wisconsin "replication" of the Learning Collaborative model.

Legislation: In October 1999, the Wisconsin legislature passed Act 9 s.253.115 which requires the DHFS to report EHDI data annually to the legislature and, "if by August 5, 2003 less than 88% of deliveries in Wisconsin are performed in hospitals that have a newborn hearing screening program, each birthing hospital will be required to implement UNHS by January 1, 2004." In May of 2010, the newborn hearing screening legislation was revised to be integrated within the newborn blood screening legislation. The major changes to the legislation includes making hearing screening mandatory with an opt-out provision, as well as the inclusion of certified midwives amongst the providers who must ensure that newborns are screened "253.115 **(4)** SCREENING REQUIRED. Except as provided in sub. (6), the physician, nurse−midwife licensed under s. 441.15, or certified professional midwife licensed under s. 440.982 who attended the birth shall ensure that the infant is screened for hearing loss before being discharged from a hospital, or within 30 days of birth if the infant was not born in a hospital. **(6)** EXCEPTIONS. (a) Subsection (4) does not apply if the parents or legal guardian of the child object to a screen for hearing loss on the grounds that the test conflicts with their religious tenets and practices." The new legislation also states that, "**(5)** REFERRAL TO FOLLOW−UP SERVICES. The department shall provide referrals to intervention programs for hearing loss." Under public health authority, newborn hearing screening results are reported to the SLH on the metabolic blood screening card and all hearing results are messaged daily to the WE-TRAC data repository. As detailed earlier, those infants who have failed the screening test are then tracked. WE-TRAC participation is voluntary and families may withdraw from WE-TRAC at any time but nearly all families chose to participate.

WORK PLAN

The Wisconsin Sound Beginnings Program will implement the Activities/ Strategies proposed in the methodology section related to the following Aims to achieve the overall goal of which is to reduce overall LTFU/LTD within the EHDI system of care from 41% to 26% for babies born in Wisconsin between January 1, 2013 and January 1, 2016.

Aim Statement 1: Reduce the total number of babies who never receive a hearing screening by 5% each year.
Baseline - 0.287% of babies (190 babies never screened not including deceased and refused/66,193 of babies born) were never screened in 2012).
Calculated Target (%) = 2012 baseline 0.287% - {#of babies never screened in 2013 not including deceased and refused / total # babies born in 2013 x100} / 2012 baseline 0.287%

Objective/Aim 1.1: By March 30, 2015 WSB will determine the # of unattended births or out of hospital births attended by traditional birth attendants (TBA) (rather than Certified Midwives) and will increase the # of babies screened each Year of the Grant Cycle.

Activity 1A: Train the out-of hospital outreach specialist on the Improvement Model so that she can serve on the WSB QI Faculty Advisory Team.

Activity 1B: Develop a mechanism to objectively rate TBAs as High or Low Performers based on the number of births they attend and their willingness to work with WSB.

Activity 1C: Gain commitment from 1 High performing (greatest number of births and highest commitment to partnering with WSB) each year to engage in a Quality Improvement Learning Collaborative.

Activity 1D: Gather pre-work baseline data, including an assessment of their current practices and access to screening equipment, in order to develop individualized change packet and test strategies related to Change Concepts 1 & 2.

Change Concept 1.1

WSB, along with its community partners, will use the Model for Improvement and PDSA cycles to test change strategies that are predicted to increase the probability of *identifying families without access to blood or hearing screening.*

	Start Date	Completion Date	Lead Staff & Partners	Process Measures	Outcome Measures
Change Strategy A Use PDSA cycles to test the effectiveness and efficiency of matching one month of birth certificate data with blood card data to see how many families can be identified.	04/01/14	03/30/15	WSB Program Director WI SLH	Collect measurement data from the small tests including avg. time for completion and # of unknown cases identified.	2012 Baseline % of records with null values = 0.13% Target = .05% by 2016 • Increase in the # of babies identified who need screening • Reduce hearing screening records LTD • Reduce the number of babies at-risk for LTFU.
Change Strategy B Use PDSA cycles to test the effectiveness and efficiency of requesting that the TBA submits data to WSB.	04/01/14	03/30/15	WSB Program Director Traditional birth attendant OOH Outreach Specialist	Collect measurement data from the small tests including avg. time for completion and # of unknown cases identified.	

Change Strategy C Use the PDSA cycles to design and test different methods of SLH data validation in order to reduce the # of records not transmitted.	04/01/14	03/30/15	WSB Program Director WSB Outreach Specialist WI SLH		• Increase in the # of babies identified who need screening. • Reduce hearing screening records LTD. • Reduce the number of babies at-risk for LTFU.
Change Concept 1.2 WSB, along with its community partners, will use the Model for Improvement and PDSA cycles to test change strategies that are predicted to increase *screening the newly identified babies without access to blood or hearing screening.*					
	Start Date	**Completion Date**	**Lead Staff & Partners**	**Process Measures**	**Outcome Measures**
Change Strategy A Use the PDSA cycles to test the spread of the WSB outreach clinic model to one new community known to have TBAs.	10/01/14	03/31/16	WSB Program Director Traditional Birth Attendant OOH Outreach Specialist	Collect measurement data from the small tests including avg. time for completion and resource allocation.	• # of babies identified who are screened for hearing loss. • # of babies screened that are resolved successfully. • # of hearing screening records LTD.
Change Strategy B Use the PDSA cycles to test the effectiveness of having the local health department offer screening.	10/01/14	03/31/16	WSB Program Director Traditional Birth Attendant OOH Outreach Specialist Health Department Staff	Collect measurement data from the small tests including avg. time for completion and resource allocation.	
Change Strategy C Use the PDSA cycles to test the effectiveness of having the local medical clinic offer screening.	10/01/14	03/31/16	WSB Program Director Traditional Birth Attendant OOH Outreach Specialist Medical Clinic Director	Collect measurement data from the small tests including avg. time for completion and resource allocation.	
Change Strategy D Use the PDSA cycles to test the effectiveness of having existing WSB staff perform in-home hearing screenings.	10/01/14	03/31/16	WSB Program Director Traditional Birth attendant OOH Outreach Specialist	Collect measurement data from the small tests including avg. time for completion and resource allocation.	
Activity 1E: Expand the PDSAs shown to be effective in increasing the number of families identified while continuously collecting and analyzing trend data via run charts and other methods.					
Activity 1F: Spread the implementation of effective QI practices to other extended partners or implement as WSB Program Standard Operating Procedures.					

Aim Statement 2: Reduce LTFU/LTD of infants that DNP a hearing screening from 19% in 2012 to less than 10% by 2016
2012 Baseline: 19% = (110 babies were LTFU not including deceased and refused / 579 babies who did not pass the final hearing screening) x100
Calculated Target (10%) ≤ (2016 # of babies LTFU not including deceased and refused /2016 # of that DNP) x 100

Objective/Aim 2.1: By January 1, 2016, the number of babies at risk for LTFU at 30 days of age will be reduced by 10% in six Low-Performing Communities of Practice (COP). Each COP will include Birth units, NICUs, Medical Home organizations, Audiology organizations, Parents, County Birth to 3 and tertiary providers such as ENT and/or Genetics.

Activity 2A: Recruit a multidisciplinary team representing the make-up of the COPs to serve on the WSB QI Faculty Advisory Team

Activity 2B: Use QI Assessment tool to objectively categorize High, Medium, or Low-Performing COPs based on their ability to meet identified target indicators.

Activity 2C: Gain commitment from 6 Low-Performing COPs to engage in a series of Quality Improvement Learning Collaboratives. Use the data collected and lessons learned from 2 COPs in Grant Year 1 to spread to two additional COPs in Year 2 and a total of 6 by the end of the grant cycle.

Activity 2D: Gather pre-work baseline data.

Change Concept 2.1

WSB, along with its community partners, will use the Model for Improvement and PDSA cycles to evaluate the best way to increase the accurate and timely reporting of follow-up in WE-TRAC for babies who did not pass a hearing screening.

	Start Date	Completion Date	Lead Staff & Partners	Process Measures	Outcome Measures
Change Strategy A WSB will encourage timely (within 7 days of occurrence) and accurate data submission via raising awareness through just in time phone calls; letters to admins. and/or a monthly report card to Low-Performing COPs.	10/01/14	03/31/16	WSB Team Hospital WE-TRAC user Hospital Administrator Audiology WE-TRAC user Audiology Providers	1) Time it takes to implement each method. 2) Consistency with which each method can be implemented. 3) # of COP babies at risk for LTFU at 30 days of age/total number of babies at risk for LTFU at 30 days of age. 4) # of COP babies at risk for LTFU with a second point of contact for the family documented in WE-TRAC. 5) # of COP babies at risk for LTFU with an accurate PCP listed in	Target = 2% reduction in babies at-risk for LTFU/LTD over a 3 month period of time at the Low-Performing COPs. • The number of babies at risk for LTFU at 30 days of age. • Reduction in Avg. days on queue. • % of cases in need of F/U that have complete and accurate data entered in WE-TRAC.
Change Strategy B Identify a second point of contact for the family documented in WE-TRAC.	10/01/14	03/31/16	WSB Team Hospital WE-TRAC user Hospital Administrator Audiology WE-TRAC user Audiology Providers		
Change Strategy C Ascertain and document in WE-TRAC and EMR the name of the infant's primary care provider.	10/01/14	03/31/16	WSB Team Hospital WE-TRAC user Hospital Administrator Audiology WE-TRAC user Audiology Providers PCP Providers		

				WE-TRAC.	
Objective/Aim 2.2: By March 30, 2016, the number of infants that DNP marked as LTFU/LTD in WE-TRAC will be reduced by 25% in six Low-Performing Communities of Practice (COP).					
Change Concept 2.2 WSB will provide targeted QI technical assistance to Low- Performing COPs. Extended partners will be encouraged to use the Model for Improvement and PDSA cycles to test change strategies at the individual practice level that are predicted to decrease the % of infants that DNP who are designated as LTFU/LTD.					
	Start Date	**Completion Date**	**Lead Staff & Partners**	**Process Measures**	**Outcome Measures**
Change Strategy A Inform the PCP of hearing screening results by babies first well baby appointment, while treating DNP results as modified critical values requiring confirmation.	10/01/14	03/31/16	WSB Team Hospital WE-TRAC user Hospital Administrator PCP Providers	1) Documentation of PCP knowledge of a child's hearing screening results. 2) Consistency with which notification method can be implemented. 3) Analysis of Resource allocation. 4) Family satisfaction survey.	• % of infants that DNP who are designated as LTFU/LTD • Parents report PCP is aware or highly aware of hearing screening results and follow-up.
Change Strategy B Use PDSAs to improve WIC/ public health case management of hearing screening follow-up.	10/01/14	03/31/16	WSB Team Hospital WE-TRAC user Hospital Administrator PCP Providers State WIC Office Local WIC providers	1) Documentation of WIC response to the hearing screening alert. 2) Analysis of Resource allocation. 3) Family satisfaction survey.	• % of infants that DNP who are designated as LTFU/LTD • Parents report PCP is aware or highly aware of hearing screening results and follow-up. • WIC reports high degree of satisfaction with the process.
Change Strategy C Make rescreen and/or audiology appointments for the infant at hospital discharge and record it on the GBYS Did Not Pass Card.	10/01/14	03/31/16	WSB Team Hospital WE-TRAC user Hospital Administrator PCP Providers Audiology Providers	1) Consistency with which notification method can be implemented. 2) Analysis of Resource allocation. 3) Family satisfaction	• % of infants that DNP who are designated as LTFU/LTD • Parents reports that the change strategy was effective or highly effective. • COP reports that the change strategy was effective or highly effective.

Change Strategy D Provide telephone reminders for appointments (in family's first language whenever possible).	10/01/14	03/31/16	WSB Team Hospital WE-TRAC user Hospital Administrator PCP Providers Audiology Providers	1) Consistency with which notification method can be implemented. 2) Analysis of Resource allocation. 3) Family satisfaction	• % of infants that DNP who are designated as LTFU/LTD • Parents reports that the change strategy was effective or highly effective. • COP reports that the change strategy was effective or highly effective.
Activity 2E: Expand the PDSAs shown to be effective in increasing the number of families identified while continuously collecting and analyzing trend data via run charts and other methods.					
Activity 2F: Spread the implementation of effective QI practices to other extended partners or implement as WSB Program Standard Operating Procedures.					
Aim Statement 3: 78% or more of babies who DNP their final screen will have conclusive diagnostic audiology results (regardless of the outcome) by 3 months of age as documented in WE-TRAC. *2012 Baseline: 75% = 319 babies received their final Dx Aud. exam by 91 days /427 babies who received diagnostic services* Calculated Target = (2016 # of babies that had final dx aud. report entered by 91 days of age / 2016 # of babies that that DNP) x 100					
Objective/Aim 3.1: Reduce average age at conclusive diagnosis by 15% or more in six Low-Performing COPs.					
Activity 3A: Utilize the Audiology/ENT QI Faculty to develop and increase use of evidence based Audiology/ENT guidelines for pediatric diagnostics and management of Otitis Media with Effusion.					
Activity 3B: Develop a mechanism to objectively categorize High, Medium, or Low-Performing Audiology clinic COP members based on their ability to meet identified target indicators.					
Activity 3C: Gain commitment from six Low-Performing COPs to engage in a series of Quality Improvement Learning Collaboratives. Use the data collected and lessons learned from two COPs in Grant Year 1 to spread to two additional COPs in Year 2 and a total of six by the end of the grant cycle.					
Activity 3D: Gather pre-work baseline data including an assessment of the COP use of the nine promising change strategies (listed in the FOA).					
Change Concept 3.1 WSB will provide targeted QI technical assistance to Low-Performing COPs. WSB will encourage extended partners to use the Model for Improvement and PDSA cycles to test change strategies that are predicted to <u>reduce average # of audiology and ENT appointments prior to conclusive diagnosis.</u>					
	Start Date	**Completion Date**	**Lead Staff & Partners**	**Process Measures**	**Outcome Measures**
Change Strategy 1 Coordinate ENT /Aud. Care appointments.	10/01/14	03/31/16	WSB Staff COP providers	1) % of families who see the audiologist and the ENT on the same day for evaluation 2) Family satisfaction	• Average # of audiology and ENT appointments prior to conclusive diagnosis. • Age at conclusive diagnosis.
Change Strategy 2 Coordinate Sedated ABR with other procedures	10/01/14	03/31/16	WSB Staff COP providers		

requiring sedation.					
Change Strategy 3 At hospital discharge schedule two audiology appointments two weeks apart.	10/01/14	03/31/16	WSB Staff COP providers	1) % of families who require and show at both appts. 2) Consistency with which notification method can be implemented. 3) Analysis of Resource allocation. 4) Family satisfaction.	• Average # of audiology and ENT appointments prior to conclusive diagnosis. • Age at conclusive diagnosis.
Change Strategy 4 One-on-one case consultation/mentoring on challenging cases or with inexperienced audiologists.	04/01/15	03/31/16	WSB Staff COP providers QI Aud. Faculty	1) Consistency with which consultation can be implemented. 2) Analysis of Resource allocation.	• Average # of audiology and ENT appointments prior to conclusive diagnosis. • Age at conclusive diagnosis.
Change Concept 3.2 Provide targeted QI technical assistance to Low-Performing COPs. WSB will encourage community partners to use the Model for Improvement and PDSA cycles to test change strategies that are predicted to reduce the no show rate for appointments.					
	Start Date	**Completion Date**	**Lead Staff & Partners**	**Process Measures**	**Outcome Measures**
Change Strategy 1 Pre-appointment instructions mailed to families, in their first language whenever possible.	10/01/14	03/31/16	WSB Staff COP hospital and audiology providers Parent partners	1) % of families who require and show at both appts. 2) Consistency with which notification method can be implemented. 3) Analysis of Resource allocation. 4) Family satisfaction.	• Age at conclusive diagnosis. • % LTFU/LTD • Parents reports that the change strategy was effective or highly effective. • COP reports that the change strategy was effective or highly effective.
Change Strategy 2 Pre-appointment reminder call made to family, confirming time and location of appointment.	10/01/14	03/31/16	WSB Staff COP providers Parent partners	1) % of families who require and show at both appts. 2) Consistency with which notification method can be implemented. 3) Analysis of Resource allocation.	• Age at conclusive diagnosis • % LTFU/LTD • Parents reports that the change strategy was effective or highly effective. • COP reports that the change strategy was effective or highly effective.

				4) Family satisfaction.	
Change Strategy 3 Hospital provides instructions to families related to follow-up verbally and in writing in the parents' first language whenever possible.	10/01/14	03/31/16	WSB Staff COP providers Parent partners	1) % of families who require and show at both appts. 2) Consistency with which instruction method can be implemented. 3) Analysis of Resource allocation. 4) Family satisfaction	• Age at conclusive diagnosis • % LTFU/LTD • Parents reports that the change strategy was effective or highly effective. • COP reports that the change strategy was effective or highly effective.
Change Concept 3.3 Provide targeted QI technical assistance to Low-Performing COPs. Encourage extended partners to use the Model for Improvement and PDSA cycles to test change strategies at the individual practice level that are predicted to increase the accuracy and timeliness of diagnostic audiology and treatment data entry.					
	Start Date	**Completion Date**	**Lead Staff & Partners**	**Process Measures**	**Outcome Measures**
Change Strategy 1 Utilize a dx audiology checklist to encourage immediate reporting to WSB and PCP.	10/01/14	03/30/16	WSB Staff COP providers	1) Consistency with which the checklist is utilized. 2) Analysis of Resource allocation.	• Age at conclusive diagnosis • % LTFU/LTD • Reduction of avg. days on list and # of kids on the 3-month timed-out list.
Change Strategy 2 WSB provides concurrent performance feedback to local providers related to timeliness and accuracy of data.	10/01/14	03/30/16	WSB Staff COP providers	1) Consistency with which the checklist is utilized. 2) Analysis of Resource allocation.	• Age at conclusive diagnosis • % LTFU/LTD • Reduction of avg. days on list and # of kids on the 3-month timed-out list.
Activity 3E: Expand the PDSAs shown to be effective in increasing the number of families identified while continuously collecting and analyzing trend data via run charts and other methods.					
Activity 3F: Spread the implementation of effective QI practices to other extended partners or implement as WSB Program Standard Operating Procedures.					
Aim Statement 4: 75% of those infants diagnosed with PHL by 3 months of age will have a documented IFSP by 6 months of age. *Baseline: # of babies with an IFSP date of ≤182 days / # of babies referred to EI via WE-TRAC before 91 days of age* Calculated Target (75%)					
Objective/Aim 4.1: By 2016, the percentage of infants enrolled in EI Services will increase from 42% to 65%.					

Change Concept 4.1 Use the Model for Improvement and PDSA cycles to test change strategies at the WSB Program level that are predicted to increase family understanding of the value of Birth to 3 Program.					
	Start Date	**Completion Date**	**Lead Staff & Partners**	**Process Measures**	**Outcome Measures**
Change Strategy 1 Developing a uniform and centralized first point of contact for families - WSB Parent Guide.	04/01/14	03/30/15	WSB Staff COP EI providers State Birth to 3 Program WSB Parent Guide	1) # of children referred to EI 2) # Parent Guide is able to contact 3) # contacted by Parent Guide who enroll	• In 2012, 48% (21/44 infants not enrolled) declined Birth to 3 services. • % of children referred who are enrolled in EI by 182 days • Reduction in the percent of families reported as "declined Birth to 3 services". • % of children who remain enrolled in EI until age 3 who do not move out of state.
Change Strategy 2 Developing a uniform and centralized first point of contact for families - Regional WSB EI outreach Specialist.	04/01/14	03/30/16	WSB Staff COP EI providers WI State Birth to 3 Program WSB Regional EI Outreach Specialist	1) # of children referred to EI 2) # WSB Regional EI Outreach Specialist is able to contact 3) # contacted by Regional EI Outreach Specialist who enroll	• % of children referred who are enrolled in EI by 182 days • Reduction in the percent of families reported as "declined Birth to 3 services". • % of children who remain enrolled in EI until age 3 who do not move out of state.
Change Strategy 3 County Birth to 3 service coordinators use scripted message with families describing Birth to 3 services as "preventative"	04/01/14	03/30/15	WSB Staff COP EI providers State Birth to 3 Program	1) # of children referred to EI 2) # EI Service Coordinator is able to contact 3) # of families who enroll	• In 2012, 48% (21/44 infants not enrolled) declined Birth to 3 services. • % of children referred who are enrolled in EI by 182 days • Reduction in the percent of families reported as "declined Birth to 3 services". • % of children who remain enrolled in EI until age 3 who do not move out of state.
Objective/Aim 4.2: Reduce the number of infants with PHL who Birth to 3 Program reports were 'lost to reporting' from 34% (15/44) in 2012 to 10% in 2016.					

Change Concept 4.2 Improve timeliness and accuracy of data reporting into PPS and Between PPS and WE-TRAC.					
	Start Date	**Completion Date**	**Lead Staff & Partners**	**Process Measures**	**Outcome Measures**
Change Strategy 1 Work with County Birth to 3 Providers to improve data entry into PPS.	04/01/14	03/01/15	WSB Staff County Level EI Providers WI State Birth to 3 Program WSB Program Director WSB EI Outreach Specialist	1) # of children referred to EI 2) # of children referred to EI with accurate data reported 3) Provider participation/ satisfaction	• % of children referred who are enrolled in EI by 182 days • Reduction in the percent of families reported as 'lost to reporting'.
Change Strategy 2 Work with the State Birth to 3 Program to increase their data monitoring.	04/01/14	03/01/15	WSB Staff County Level EI Providers WI State Birth to 3 Program WSB Program Director WSB EI Outreach Specialist	1) # of Birth to 3 generated reports 2) # of children referred to EI with accurate data reported	• % of children referred who are enrolled in EI by 182 days • Reduction in the percent of families reported as 'lost to reporting'.
Change Strategy 3 Implement strategies to regularly cross-reference data between WE-TRAC and PPS to assure reliability of the data transmission process.	04/01/14	03/01/15	WSB Staff County Level EI Providers WI State Birth to 3 Program WSB Program Director WSB EI Outreach Specialist	1) Analysis of Resource allocation. 2) Consistency with which each strategy can be effectively implemented.	• % of children referred who are enrolled in EI by 182 days • Reduction in the percent of families reported as 'lost to reporting'.
Activity 4A: Expand the PDSAs shown to be effective in increasing the number of families enrolled while continuously collecting and analyzing trend data via run charts and other methods.					
Activity 4B: Spread the implementation of effective QI practices to other counties or implement as WSB Program Standard Operating Procedures.					
Aim Statement 5: By the end of the grant children, with permanent hearing loss only, in the Birth to 3 Program will be making positive gains as measured in AEIOu (i.e. One month progress in one month time) at 30 months of age. *Baseline: 0% (0 out of 7)* Calculated Target 2% (# of infants participating in AEIOU making positive/# of infants participating in AEIOU).					
Objective/Aim 5.1: By January 1, 2015 100% of infants with permanent hearing loss will be documented as eligible for Birth to 3. 9% (4/44) reported the "child did not qualify for services in 2012					
Activity 5A: Target outreach and education to raise County Birth to 3 Program awareness of the newly signed MOU and working relationship between WSB and Birth to 3 Program.					
Activity 5B: Recruit and gain commitment from six County Birth to 3 Administrators to engage in a QI Learning Collaborative. Use the data collected and lessons learned from two COPs in Grant Year 1 to spread to two additional COPs in Year 2 and a total of six by the end of the grant					

cycle.					
Activity 5C: Gather pre-work baseline data related to EI Outcomes. Determine best way to measure improvement.					
Activity 5D: Operationalize the new partnership between WSB, Birth to 3 Program and County Birth to 3 Providers.					
Change Concept 5.1 Increase the number of County Birth to 3 Programs with access to providers who have specialized knowledge and skills related to working with individuals who are D/HH.					
	Start Date	**Completion Date**	**Lead Staff & Partners**	**Process Measures**	**Outcome Measures**
Change Strategy 1 Provide Just in Time information packets to educate County Birth to 3 Programs within days of new D/HH referral.	04/01/14	03/30/16	WSB Staff County Level EI Providers WI State Birth to 3 Program WSB Program Director WSB EI Outreach Specialist	1) Self reported gains in knowledge or skills 2) # of counties WSB contact 3) Birth to 3 communication back to WSB	• COP reports that the change strategy was effective or highly effective. • % of children referred who are enrolled in EI by 182 days. • Family reports high or very high level of satisfaction related to the Birth to 3 knowledge and skills. • % of children who remain enrolled in EI until age 3 who do not move out of state.
Change Strategy 2 Provide Just in Time phone calls to educate County Birth to 3 Programs within days of new D/HH referral.	04/01/14	03/30/16	WSB Staff County Level EI Providers WI State Birth to 3 Program WSB Program Director WSB EI Outreach Specialist	1) Self reported gains in knowledge or skills 2) # of counties WSB communicates with 3) # of communications from Birth to 3 back to WSB	• COP reports that the change strategy was effective or highly effective. • % of children referred who are enrolled in EI by 182 days. • Family reports high or very high level of satisfaction related to the Birth to 3 knowledge and skills. • % of children who remain enrolled in EI until age 3 who do not move out of state.

Change Strategy 3 Support providers from counties serving a child who is deaf or hard of hearing to attend annual deafness specific training opportunities and encourage application of new knowledge.	04/01/14	03/30/16	WSB Staff County Level EI Providers WI State Birth to 3 Program WSB Program Director WSB EI Outreach Specialist WI Families for Hands & Voices	1) # of Birth to 3 professionals attending the WESP-DHH Professional Conference. 2) Documentation of change in practice. 3) Family satisfaction.	• COP reports that the change strategy was effective or highly effective. • % of children referred who are enrolled in EI by 182 days. • Family reports high or very high level of satisfaction related to the Birth to 3 knowledge and skills.
Objective/Aim 5.2: By January 1, 2016 20% of infants with permanent hearing loss enrolled in County Birth to 3 Programs will be documented as making positive developmental gains.					
Change Concept 5.2 WSB, along with its' community partners, will use the Model for Improvement and PDSA cycles to test how the WSB EI Outreach Specialist position can best positively impact child development outcomes.					
	Start Date	**Completion Date**	**Lead Staff & Partners**	**Process Measures**	**Outcome Measures**
Change Strategy 1 Educate and assist counties to write IFSP outcomes that integrate receptive and expressive language with social emotional skills.	04/01/14	03/30/16	WSB Staff County Level EI Providers WI State Birth to 3 Program WSB Program Director WSB EI Outreach Specialist	1) % of IFSP outcomes coded as Social/ pragmatic	• Improved receptive, expressive language skills and social emotional skills as measured by the Greenspan Social Emotional Growth Chart, the Minnesota Child Development Inventory (Receptive Language and Expressive Language) and the MacArthur-Bates Communication Development Inventory
Change Strategy 2 Integrate EI Outreach Specialist into the IFSP team in the Western Region.	04/01/14	03/30/16	County Level EI Providers WI State Birth to 3 Program WSB Program Director WSB EI Outreach Specialist	2) # of children referred to EI 3) # of IFSP on which WSB EI Outreach Specialist is listed	
Activity 5E: Expand the PDSAs shown to be effective in increasing the number of infants making developmental gains while continuously collecting and analyzing trend data via run charts and other methods.					
Activity 5F: Spread the implementation of effective QI practices to other regions and/ or implement as WSB Program Standard Operating Procedures.					