Introduction

The mission of the Nevada Early Hearing Detection and Intervention (EHDI) Program is to ensure infants are identified with hearing loss and have access to services within a timeframe that minimizes the negative consequences of hearing loss. The Nevada EHDI Program works in accordance with the Healthy People 2010 objective 28.11 and the Joint Committee on Infant Hearing 2007 Position Statement paper to ensure that all infants are screened for hearing loss before one month of age, those referred from the screen receive a diagnostic evaluation by three months of age, and those infants identified with hearing loss receive necessary services including amplification by six months of age. Additionally, the Nevada EHDI Program works with community partners to develop and enhance services for infants with hearing loss and their families.

The Nevada EHDI program is one of the many programs that functions within the Nevada State Health Division. Programs within the Division seek to improve the health of Nevada's families with emphasis on women, infants, and children, including children with special healthcare needs. The Health Division addresses issues in maternal and child health by providing programs, monitoring, evaluation, analysis, standards development, technical assistance, and quality assurance throughout the state. Activities are accomplished through professional staff including health program specialists, health resource analysts, medical consultants, as well as other professional and support staff.

The Nevada EHDI program was initiated on January 1, 2002 following the passage of a legislative mandate. This law states that all hospitals providing care for more than 500 newborns per year must administer hearing screens on all infants prior to discharge. This mandate currently affects 20 of the 24 state hospitals leaving 4 hospitals to report voluntarily. The law also stipulates that infants in need of further audiological analysis be appropriately referred before discharge. Prior to the passage of legislation, it is estimated that less than 40 percent of infants born in the state each year received a hearing screen. In 2002, this number increased to approximately 94.4 percent, and in 2008, the screening rate was over 99.0 percent. Since 2003, the Nevada EHDI program has been operating with grant funds from the Health Resources Services Administration (HRSA), and in 2008 Nevada was awarded a grant from the Centers for Disease Control and Prevention (CDC) to expand program operations.

Upon its creation, the Nevada EHDI program began working to educate healthcare providers on EHDI issues and assure infants received a hearing screen in the hospital. In progressing years the Program Coordinator position was unoccupied for two years and was then filled for a year with a Coordinator who worked ten hours per week. While the program did make some improvements, difficulties hiring program staff slowed the early development of the EHDI Program.

In October 2006, the State Health Division hired a full time EHDI Program Coordinator. Since hiring the Program Coordinator, in concert with a strongly committed core team of professionals and parents, the program has been evolving rapidly. In January of 2007 NEIS

convened a Hearing Task Force to identify gaps in the EHDI and NEIS programs, address need, and develop collaborations to increase efficient use of time and resources. The EHDI Task Force has been successful in identifying problems and implementing procedural changes within the program, at hospitals, and at NEIS clinics. These changes resulted in a screen rate improvement from 96.7 percent in 2006 to over 99.0 percent in 2008. Additionally, the Task Force implemented the following: a) increased training of medical professionals in EHDI issues, b) enabled the purchase of diagnostic audiology equipment for the Reno and Las Vegas NEIS clinics, c) completed the NICHQ educational collaborative with stakeholders statewide, d) purchased and began development of the statewide EHDI database and e) created a direct referral process from hospital screening to diagnosis at NEIS. Additionally, the Hearing Task Force has developed collaborations with non-profit agencies within the state including the March of Dimes, the Deaf and Hard of Hearing Advocacy Resource Center, and the AG Bell Association. The Task Force has also worked with parents and professionals to develop a Nevada chapter of Hands and Voices, which began operations in 2008.

In the last two years many of the Nevada State Health Division's programs including the EHDI Program have seen changes. In spring of 2008 State Administration began redesigning the Health Division. The purpose was to increase program integration, leverage resources, streamline activities, and create cost sharing activities between programs. This has resulted in fundamentally rethinking what the state health division does, who delivers it, and determining where efforts should focus. As a result, the Nevada EHDI Program has been integrated with the Nevada Newborn Screening Program for the purpose of streamlining program activities, eliminating redundancy, and increasing overall program efforts. In addition to changing Health

Division activities, beginning in 2008 Nevada's economy began to decline. Like many states, revenues have decreased, and as a result a number of staff positions have been eliminated or remain unfilled. The situation in Nevada is such that for 2009 the Kaiser Family Foundation ranked Nevada 1st in economic distress and for May of 2009 Nevada's unemployment rate exceeds 11.3 percent. This has resulted in many state positions performing additional job duties and the elimination of some programs. However, through these difficult times the Nevada EHDI Program continues to grow and expand operations. The ability to maintain and even expand program operations during this difficult time is testament to the EHDI Program's recent success and State Health Division Administration's faith that the EHDI program will continue to succeed in the future.

The Nevada EHDI Program is currently involved in a number of activities. These include working to recruit audiologists to shortage areas within Nevada, revising print materials, expanding training and education activities, assuring follow-up for all children that are in the EHDI system, working with community groups to expand family-to-family support within the state, and working to integrate a functional cultural competence system within the EHDI Program. In addition to these issues, the Nevada EHDI Program is in the process of developing a statewide database. The Nevada EHDI Program currently operates with a paper tracking and referral system. This system is inefficient and tracking infants through the referral process, collecting data, and analyzing statistics is impossible with the current level of staffing. The database was purchased in the fall of 2008 and is currently under development with an expected go-live date of August 2009. This system will enable the EHDI program to collect data, analyze statistics, report data to federal agencies, track infants at each step of the EHDI process, and

streamline the process of referral between hospitals and NEIS. Ultimately, this will decrease lost to follow-up rates and improve outcomes for infants with hearing loss.

The Nevada EHDI database selected is a secure, web-based reporting system capable of collecting individual data and demographics, including criteria for late onset hearing loss. The database will be compatible with the Nevada Electronic Birth Registry (EBR), which is currently under development with an expected go-live date of July 1, 2009. It is the expectation that other data systems in the state, including Immunizations, Vital Records, Birth Outcomes Monitoring System, and Newborn Screening Blood Spot program, will become compatible with the EBR and EHDI systems. Once active, the Nevada EHDI program will be able to cross-reference with these data systems.

Needs Assessment

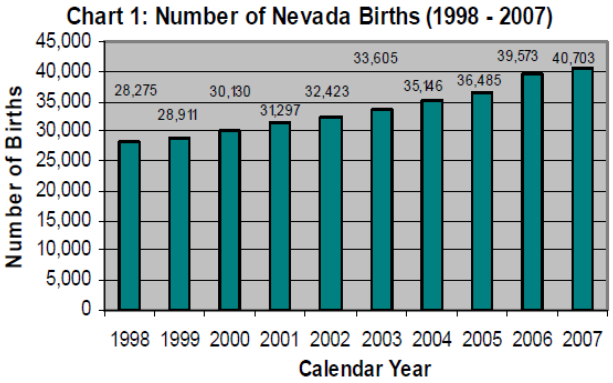
The long-term plan for the Nevada EHDI program is to develop a fully functional and integrated program that ensures infants with hearing loss received coordinated, seamless interventions that minimize the negative consequences of hearing loss. This will occur through development of community systems including hospitals, audiologists and other healthcare providers, early intervention services, and community groups. In addition, there is need to ensure that program is sustainable beyond the period of federal grant funding. The path to fulfill this vision includes developing short-term and intermediate-term goals that will allow the program to grow and evolve in stages. The intent of the period from 2009 through 2012 is to fill the current gaps within the EHDI program to ensure seamless and fully functional services in all communities

within the state. Current gaps include a dramatic shortage of audiologists and related healthcare professionals, lack of standardization within hospital screening programs, and an inability to track loss to follow-up rates and track children through the EHDI process. Long-term efforts include moving ongoing costs including salary and database costs to sustainable sources of state funding. This funding will likely include Newborn Screening fees, which are currently collected on every birth in the state, and general fund dollars allocated by the Nevada State Legislature.

For the purposes of the current grant the Nevada EHDI Program will work to reduce loss to follow-up at all stages of the EHDI Process. This includes: 1) addressing the lack of audiology capacity in Southern Nevada 2) providing ongoing standardized training to healthcare providers to ensure appropriate screening, referrals, diagnosis, and intervention 3) expanding family-to-family support, support through the EHDI process, and ensuring these organizations are self sustaining 4) assuring adequate state infrastructure including data collection and analysis capabilities, adequate staffing, standardized policies and procedures, and a formalized system of knowledge dissemination to ensure ongoing institutional memory.

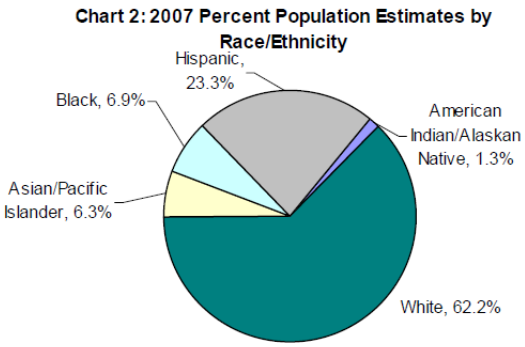
Economic Climate

For nearly all of the last twenty years, Nevada has been the fastest growing state in the nation.



Between 1990 and 2006 the population of Nevada increased by 87.1 percent, by far the largest increase in the country. During the ten year period from 1998 through 2007, the birth rate in Nevada grew from 28,275 to 40,703 (chart

1), a nearly 44% increase in only ten years. These births are currently spread among 24 birthing hospitals statewide, 3 in the Reno/Carson area, 17 in the Las Vegas area, and 4 in rural areas of the state. Nevada also has a homebirth rate of approximately 1.3 percent. The dramatic increase in population has affected the state in a number of ways, including a) strains on the service infrastructure including hospitals, medical services, schools, and social services; b) increases in poverty and crime, and c) other infrastructure issues related to roads, recreation and culture, to name a few. Like many states, a large portion of the population increase is due to immigration. During the 1990 to 2007 period, 17 percent of the population increase was through foreign immigration. Eighty percent of these immigrants were Spanish speaking, though other languages including Tagalog, German, and Chinese were present as well. Chart 2 shows population estimates by race and ethnicity in Nevada. The U.S. Census Bureau has projected that Nevada will remain the fastest growing state in the nation through at least 2030. In addition to explosive demand on services, Nevada has recently suffered from a shrinking tax base related to the nationwide economic downturn. In Las Vegas, mortgage foreclosures are the highest in the nation. For 2008 and 2009, this situation resulted in more than twenty percent cuts to state programs with additional cuts imminent for future years. To compound the problem, Nevada currently ranks last in the nation in the amount of funds received from the federal government. For every $1.00 Nevadan's pay in taxes they currently receive $0.63 in return, in stark contrast to the $1.06 national median.



By area, Nevada is the 7th largest state in the nation with 110,561 square miles. By population density, the state ranks 43rd with 18.2 residents per square mile. By population, Nevada ranked 35th in the nation with approximately 2.6 million residents (2007 data). Residents of Clark County, the urban area in the south, and Washoe County, the urban area in the north, comprise approximately 90 percent of the population. Clark County includes the cities of Las Vegas with a 2007 population of 552,539, Henderson with 240,614, and North Las Vegas with 197,567. Washoe County includes Reno, with a 2007 population of 210,255 and Sparks, with 83,959. The remaining 15 counties in the state are considered rural or frontier areas.

Demographics

Overall, 73.08 percent of Nevada's population is Caucasian, 6.57 percent is African-American, 5.03 percent is Asian, 1.40 percent is Native American, 13.92 percent declare identity as other, and 22.68 percent of people in Nevada report Hispanic ethnicity. In the Las Vegas area 68.54 percent of the population is Caucasian, 9.94 percent is African-American, 5.04 percent is Asian, 0.83 percent is Native American, and 27.99 percent of the population claim Hispanic ethnicity. In the Reno area 76.22 percent of the population is Caucasian, 2.00 percent is African-American, 5.35 percent is Asian, 1.30 percent is Native American, and 22.60 percent of the population claim Hispanic ethnicity. Overall, Nevada's poverty rate was 11.1 percent, with 11.3 percent in the Reno and Las Vegas areas, and 10.4 percent in rural areas (2005 data).

Data tracking and follow-up capacity

The Nevada EHDI Program has operated with a paper tracking system since it began operations in 2001. In the fall of 2008 the Nevada EHDI Program purchased and began building a data system that will allow for the electronic collection of data, will allow the program to know the status of every child moving through the EHDI process, and will allow the program to follow-up

with children that have not received screening or diagnostic intervention. The system purchased will function as a module of the state's EBR, which is also currently being developed. This will allow the program to cross reference data with Vital Records and set hearing screening alerts for parents purchasing birth certificates for their children. Once the EBR and EHDI databases are in place it is expected that the system will be expanded to include Newborn Screening, Immunizations, Birth Outcomes Monitoring System, and a number of other systems.

Initial Screening Capacity

The Nevada EHDI Program has done an excellent job ensuring infants receive an initial screen before discharge from birthing hospitals. In 2008, hospital screening exceeded 99 percent. This is a result of advocacy, education, and ongoing relationships with hospital screening personnel. Nevada revised Statues currently require hospitals with over 500 births per year to report to the state EHDI Program, though all state hospitals currently screen and report statistics, regardless of legal requirement. There are 24 birthing hospitals in Nevada and of these 20 are using ABR or a combination of OAE and ABR screening equipment. There is one rural hospital using only hand held OAE equipment, and there is one large state hospital that uses hand held OAE equipment to screen their patients. The state currently has 7 hospitals that are contracted with Pediatrix Medical Group to provide screening for infants, and all of the other state hospitals perform screening in-house. In many of the state hospitals there is considerable turnover, resulting in the need to provide screener education on a regular basis.

Follow-up Screening Capacity

Because of the lack of an electronic data system and the lack of resources within the program it has, to this point, been impossible for the program to collect accurate data on the number of children that do not return for a follow-up screen in state hospitals. The program has done small

studies in Northern and Southern Nevada and we estimate that loss-to follow-up is approximately 40 percent in Northern Nevada and over 50 percent in Southern Nevada. The 40 percent rate in Northern Nevada is due to the operations in one hospital, to which the state is currently providing training. In Southern Nevada loss to follow-up is a more difficult matter. Nevada Early Intervention Services (NEIS) in Las Vegas is the only clinic capable of performing full diagnostic exams on children that refer from the hearing screen. Since the audiology position at this clinic has gone unfilled for over a year, it is difficult to provide services to referred children. In order to fill some of this gap, NEIS currently flies an audiologist between Reno and Las Vegas twice per week. In addition to audiology capacity there are problems with hospital staff turnover, issues related to the transient nature of populations in Southern Nevada, resistance from hospitals, and a current lack of provider education.

Medical and Audiological Capacity

Nevada deals with a shortage of medical professionals in every area, including audiology. In the state there are approximately 60 licensed audiologists, however less than five of these are interested in working with pediatric patients. To alleviate this problem NEIS has audiologists on staff and has equipment to provide diagnostic examinations. However, in June of 2008 the Audiologist in Southern Nevada left her position, and since this time NEIS has been unable to fill this vacancy. To keep the structure of the system in place hospitals in Las Vegas still refer to NEIS, and they provide two alternatives for parents; referrals to two community audiologists that will work with pediatric patients and have some diagnostic capability, or remaining on a waiting list for an audiologist that NEIS currently flies from Northern Nevada to Las Vegas twice a week to perform diagnostic exams. This system currently has a number of limitations and will be a main area of focus for the Nevada EHDI Program until the issues are resolved.

Summary

In Nevada, loss-to-follow up follow-up is a difficult issue to address. The many challenges faced by the Nevada EHDI program are compounded by a quickly growing population and lagging provider-to-patient ratios. Currently, less than one half of the Children and Youth with Special HealthCare Needs (CYSHCN) in Nevada have a medical home. The number of infants who receive diagnostics by 3 months of age and necessary services by 6 months falls below national standards. A little over half of families with CYSHCN partner in decision-making, and almost half of CYSHCN are underinsured or have no health coverage. The activities proposed in the work plan will focus on developing the EHDI Program infrastructure in Nevada with a focus on reducing loss to follow-up, increasing access to services for children with hearing loss, and increasing family-to-family support for families of children identified with hearing loss. It is expected that through the development of this system the State Health Division can ensure better outcomes for children with hearing loss and become a model program from which other state programs can build.

Methodology

The Nevada EHDI Program will use collaborative partnerships, the leveraging of resources between the Health Division and community organizations, the expertise and resources available from program partners, lessons learned from other state programs, and the plan-do-study-act (PDSA) improvement cycle developed during Nevada's involvement in the NICHQ learning collaborative to implement the goals and objectives outlined in the work plan. This methodology will allow the program to make incremental improvements in the state system, identify successes and challenges, and leverage resources where they will be most effective. Efforts will focus on

reducing loss to follow-up between screen and rescreen, and between rescreen and diagnosis. The following are the goals and objectives for the proposal.

Goal 1: Reduce loss to follow-up between hospital screen and rescreen

Objective 1.1 Expand program staff and increase training activities for hospital screeners

1. Hire Program Manager to provide programmatic and fiscal oversight of EHDI Program
2. Develop and implement standardized training curriculum for hospital screening personnel
3. Develop training schedule with state hospitals
4. Provide bi-yearly trainings to hospital screeners and related personnel
5. Develop tracking system to identify hospital staff, turnover, and provide additional training when necessary
6. Analyze hospital hearing screening data to identify additional training needs
7. Develop EHDI Program newsletter to be distributed to healthcare providers statewide
8. Develop feedback process with hospitals to ensure they know outcomes for all screened children
9. Develop and distribute educational materials for healthcare providers including posters and other targeted materials

Objective 1.2 Increase educational activities for parents

1. Develop Guide by Your Side (GBYS) Program with Nevada Hands and Voices to help parents through the EHDI Process
2. Provide educational opportunities at birthing classes, obstetrician offices, and targeted businesses statewide
3. Develop and provide information packets at hospitals
4. Map community assets statewide to identify additional educational opportunities for parents

5. Develop and provide Nevada EHDI videos to new parents
6. Develop targeted video for parents of referred infants and provide to referred parents
7. Develop statewide advertising campaign around hearing loss issues through press releases, proclamations, radio, television and billboard spots
8. Expand Nevada EHDI website to provide state and national resources for parents
9. Provide follow-up calls to all families of infants that referred from the hearing screen and ensure rescreening appointments are made
10. Provide home visit screenings for parents resistant or unable to return to hospital or other clinic setting

Objective 1.3 Develop system to follow-up with children between screen and rescreen with Nevada EHDI database

1. Assure patient information including contact information is entered into EHDI database
2. Provide reminder calls to families of infants that refer from the program
3. Assure rescreen data is entered into the EHDI database

Goal 2: Reduce loss to follow-up between rescreen and diagnosis

Objective 2.1 Reduce the number of infant referrals, provide training to audiologists with an interest in working with pediatric patients, and provide diagnostic equipment to audiologists in high need areas.

1. Educate hospital screeners in appropriate referral techniques including setting diagnostic appointments
2. Work with screeners in low capacity areas to tighten referral criteria
3. Develop curriculum to train audiologists in pediatric techniques and provide ongoing trainings
4. Educate private practice and NEIS audiologists on the use of the EHDI database
5. Develop referral system with vital statistics including record flagging and follow-up with audiologists if child is found through Vital Records

Objective 2.2 Enhance recruitment efforts to increase audiology capacity in Southern Nevada

1. Provide yearly visits to at least three audiology graduate schools nationwide
2. Develop and distribute recruitment packet to be delivered to graduating audiology classes
3. Develop incentive package for audiologists that relocate to Southern Nevada

Objective 2.3 Provide parent education and expand tracking and follow-up activities for infants in need to audiology diagnostic exams

1. Provide parent education including expansion of the EHDI website
2. Provide follow-up calls to parents of children in need of audiology services
3. Develop marketing activities around the need for timely follow-up around diagnostic screening

Objective 2.4 Provide education to audiologists in use of the EHDI database and provide record flagging and reminder phone calls to parents of infants in need of diagnostic analysis

1. Develop and begin training curriculum for audiologists
2. Develop system for flagging birth certificates with State Vital Records
3. Provide coordination of services between State Vital Records, audiologists and the EHDI Program when a child is identified through flagged records
4. Provide initial trainings and yearly updates for audiologists

Work Plan

Goal 1. Reduce loss to follow-up between hospital screen and rescreen

The Nevada EHDI Program currently operates with a paper tracking system. Because of this it is not possible for the Program to identify loss to follow-up rates at each step of the EHDI process. The Program completed a survey in 2008 and has estimated the loss to follow-up from screen to rescreen to be approximately 40 percent in Northern Nevada and over 50 percent in Southern Nevada. Through the development of the Nevada EHDI database the program expects to begin

tracking loss to follow-up rates and through grant activities expects to reduce the loss to follow-up rate from screen to rescreen to less than 10 percent within three years.

Reducing loss to follow-up between hospital screen and rescreen will occur through activities in three areas. These include adding program staff, developing educational materials and providing trainings at all state hospitals for hearing screeners and nursing staff, educating healthcare providers and parents, and collecting and analyzing program data to identify training needs and program gaps.

Objective. 1.1 Expand program staff and increase training activities for hospital screeners			
ACTIVITY	PEOPLE RESPONSIBLE	TIMELINE	EVALUATION
1. Hire Program Manager to provide programmatic and fiscal oversight of EHDI Program	NCCID Program Manger	9/1/09 – 12/31/09	Work Performance Standards developed Program Manger hired Manager trained in EHDI activities
2. Develop and implement standardized training curriculum for hospital screening personnel	EHDI Program Manger EHDI Program Coordinator	1/1/10 – 2/28/10	Standardized training curricula developed Training booklet developed and distributed to all state hospitals
3. Develop training schedule with state hospitals	EHDI Program Manger EHDI Program Coordinator	3/1/10 – 6/30/10	Training schedule developed with state hospitals
4. Provide bi-yearly trainings to hospital screeners and related personnel	EHDI Program Manger EHDI Program	7/1/10 – 8/31/12	Trainings provided in hospitals Hospitals screeners and other healthcare professionals

	Coordinator		trained in EHDI issues
5. Develop tracking system to identify hospital staff, turnover, and provide additional training when necessary	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant	6/1/10 – 8/31/12	Hospital Screener turnover identified in each hospital Supplemental trainings offered for each new position
6. Analyze hospital hearing screening data to identify additional training needs	EHDI Program Manger EHDI Program Coordinator	6/1/10 – 8/31/12	Data analyzed on a quarterly basis Training needs identified and provided
7. Develop EHDI Program newsletter to be distributed to healthcare providers statewide	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant Community Partners	6/1/10 – 8/31/12	Quarterly newsletter developed and distributed to healthcare providers and community partners statewide
8. Develop feedback process with hospitals to ensure they know outcomes for all screened children	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant	1/1/11 – 8/31/12	All hospital screeners aware of state and local statistics for children identified with hearing loss
9. Develop and distribute educational materials for healthcare providers including posters and other targeted materials	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant	1/1/11 – 8/31/12	Educational materials developed and distributed to hospital screeners and other healthcare providers

10. Provide database training to all hospital screeners	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant	1/1/10 – 8/31/12	Hospital screeners in all state hospitals trained on EHDI database 100% of information entered accurately into EHDI database
11. Work with State Health Districts to purchase screening equipment and provide outpatient screens	EHDI Program Manger EHDI Program Coordinator	6/1/10 – 8/31/12	Equipment purchased for Health Districts Outpatient screens offer for referred children
12. Purchase handheld equipment that can be used by state audiologists to provide in home screens	EHDI Program Manger EHDI Program Coordinator	6/1/10 – 8/31/12	Equipment purchased In-home screens provided to infants when necessary

Objective 1.2 Increase educational activities for parents			
ACTIVITY	PEOPLE RESPONSIBLE	TIMELINE	EVALUATION
1. Develop Guide by Your Side (GBYS) Program with Nevada Hands and Voices to help parents through the EHDI Process	EHDI Program Manger EHDI Program Coordinator Hands and Voices volunteers	9/1/09 – 8/31/09	GBYS program developed 100% of referred infants provided guidance through EHDI process
2. Provide educational opportunities at birthing classes, obstetrician offices, and targeted businesses statewide	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant	6/1/10 – 8/31/12	Educational opportunities offered in all communities statewide Educational opportunities increased in each community by 10% each year

	Community resources		
3. Develop and provide information packets at hospitals	EHDI Program Manger EHDI Program Coordinator	1/1/11 – 8/31/12	Packets developed and distributed Number of packets distributed by each hospital matches birth numbers
4. Map community assets statewide to identify additional educational opportunities for parents	EHDI Program Manger EHDI Program Coordinator	6/1/10 – 8/31/12	Assets mapped statewide 10% increase in resource building each year
5. Develop and provide Nevada EHDI videos to new parents	EHDI Program Manger EHDI Program Coordinator	6/1/11 – 8/31/12	Videos developed and distributed to all state hospitals and provided at educational opportunities
6. Develop targeted video for parents of referred infants and provide to referred parents	EHDI Program Manger EHDI Program Coordinator	6/1/11 – 8/31/12	Videos developed and distributed to all parents or referred infants statewide
7. Develop statewide advertising campaign around hearing loss issues through press releases, proclamations, radio, television and billboard spots	EHDI Program Manger EHDI Program Coordinator	1/1/11 – 8/31/12	Advertising activities occurring statewide

8. Expand Nevada EHDI website to provide state and national resources for parents	EHDI Program Manger EHDI Program Coordinator	06/1/10 – 8/31/12	Website developed Resource materials available for parents on website
9. Provide follow-up calls to all families of infants that referred from the hearing screen and ensure rescreening appointments are made	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant	9/1/09 – 8/31/12	Follow-up calls provided to 100% of parents with infants referred from the hearing screen Appointments coordinated between screening and rescreening
10. Provide home visit screenings for parents resistant or unable to return to hospital or other clinic setting	EHDI Program Manger EHDI Program Coordinator NEIS Audiologists	6/1/10 – 8/31/12	Equipment purchased System of home visits developed Home visits provided to 100% of families unwilling or incapable of returning to hospital or clinic for screen

Objective 1.3 Develop system to follow-up with children between screen and rescreen with Nevada EHDI database

ACTIVITY	PEOPLE RESPONSIBLE	TIMELINE	EVALUATION
1. Assure patient information including contact information is entered into EHDI database	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant	1/1/10 – 8/31/12	Patient data entered into database 100 percent of the time Data cross referenced with Electronic Birth Registry
2. Provide reminder calls to families of infants that refer from the program	EHDI Program Manger EHDI Program Coordinator EHDI Program	1/1/10 – 8/31/12	Reminder calls provided for 100% of referred infants Rescreen appointment created and coordinated between rescreen clinic and EHDI

	Administrative Assistant		Program
3. Assure rescreen data is entered into EHDI database	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant	1/1/10 – 8/31/12	Data entered into EHDI database

Goal 2. Reduce loss to follow-up between rescreen and diagnosis

The primary reason for Nevada's high level of loss to follow-up between rescreen and diagnosis is due to the shortage of audiologists in Las Vegas, the most populated area of the state. In order to address this issue the program will expand activities in two areas; development of audiology capacity, and decreasing the hospital refer rate. In Southern Nevada the overall refer rate is currently 4 percent. Though program staff believe this is a reasonable refer rate, working with hospitals to temporarily decrease referral rates will help alleviate some of the pressure on audiologists in the area. In addition, the program is going to work with community audiologists to increase incentives for providing care to pediatric patients. This will include purchasing equipment that can be used in audiologist offices, providing training in pediatric audiology techniques, providing additional reimbursement incentives to audiologists in high need communities, and providing advertising for audiologists.

Objective 2.1 Reduce the number of infant referrals, provide training to audiologists with an interest in working with pediatric patients and provide diagnostic equipment to audiologists in high need areas.

ACTIVITY	PEOPLE RESPONSIBLE	TIMELINE	EVALUATION
1. Educate hospital screeners in appropriate referral techniques including setting diagnostic appointments	EHDI Program Manger EHDI Program Coordinator	01/01/10 – 8/31/12	All hospital screeners providing appropriate referrals including setting diagnostic appointments 100% of the time
2. Work with screeners in low capacity areas to tighten referral criteria	EHDI Program Manger EHDI Program Coordinator	1/01/10 – 8/31/12	Overall decrease in referral rate from 4.0 to 1.5% in audiology shortage areas
3. Develop curriculum to train audiologists in pediatric techniques and provide ongoing trainings	EHDI Program Manger EHDI Program Coordinator NEIS Audiologist	6/1/10 – 8/31/12	Standardized audiology curriculum in place Audiologists trained in pediatric techniques
4. Educate private practice and NEIS audiologists on the use of the EHDI database	EHDI Program Manger EHDI Program Coordinator NEIS Audiologist	6/1/10 – 8/31/12	All audiologists working with pediatric patients statewide able to enter data into EHDI database
5. Develop referral system with vital statistics including record flagging and follow-up with audiologists if child is found through Vital Records	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant NEIS Audiologist	1/1/11 – 8/31/12	Flag system in place Vital statistics providing referral information 100% of the time

Objective 2.2 Enhance recruitment efforts to increase audiology capacity in Southern Nevada			
ACTIVITY	PEOPLE RESPONSIBLE	TIMELINE	EVALUATION
1. Provide yearly visits to at least three audiology graduate schools nationwide	EHDI Program Manger EHDI Program Coordinator NEIS Audiologist	9/1/09 – 8/31/09	Collaborations developed with graduate programs
2. Develop and distribute recruitment packet to be delivered to graduating audiology classes	EHDI Program Manger EHDI Program Coordinator NEIS Audiologist	1/1/10 – 8/31/12	Recruitment packet developed and distributed to audiology programs
3. Develop incentive package for audiologists that relocate to Southern Nevada	EHDI Program Manger EHDI Program Coordinator NEIS Audiologist	1/1/11 – 8/31/12	Incentives developed for audiologists including financial incentives, advertising, and equipment

Objective 2.3 Provide parent education and expand tracking and follow-up activities for infants in need to audiology diagnostic exams			
ACTIVITY	PEOPLE RESPONSIBLE	TIMELINE	EVALUATION
1. Provide parent education including expansion of the EHDI website	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant NEIS Audiologist	1/1/10 – 8/31/12	Parent educational activities expanded including enhancement of the state website and websites of non-profit organizations statewide
2. Provide follow-up calls to parents of children in need of audiology services	EHDI Program Manger EHDI Program	9/1/10 – 8/31/12	Follow-up calls provided to parents in need of audiology services 100% of the time

	Coordinator EHDI Program Administrative Assistant NEIS Audiologist		
3. Develop marketing activities around the need for timely follow-up around diagnostic screening	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative Assistant NEIS Audiologist	1/1/11 – 8/31/12	Marketing campaigns developed and provided to all communities statewide

Objective 2.4 Provide education to audiologists in use of the EHDI database and provide record flagging and reminder phone calls to parents of infants in need of diagnostic analysis			
ACTIVITY	PEOPLE RESPONSIBLE	TIMELINE	EVALUATION
1. Develop and begin training curriculum for audiologists	EHDI Program Manger EHDI Program Coordinator NEIS Audiologist	06/01/11 – 8/31/12	Training curriculum developed and provided for audiologists
2. Develop system for flagging birth certificates with State Vital Records	EHDI Program Manger EHDI Program Coordinator Vital Records staff	06/01/11 – 8/31/12	Flagging system in place 100% of infants lost to follow-up given information about the EHDI Program and provided follow-up by audiologist
3. Provide coordination of services between State Vital Records, audiologists and the EHDI Program when a child is	EHDI Program Manger EHDI Program Coordinator EHDI Program Administrative	06/01/11 – 8/31/12	Services Coordinated Child entered into services within 30 days following identification

identified through flagged records	Assistant NEIS Audiologist		
4. Provide initial trainings and yearly updates for audiologists	EHDI Program Manger EHDI Program Coordinator NEIS Audiologist	06/31/11 – 8/31/12	Trainings provided to 100% of audiologists statewide

Resolution of Challenges

One of the greatest challenges faced by the Nevada EHDI Program is the lack of audiology services in Southern Nevada. To help resolve this issue NEIS has had staff audiologists to provide services to families. In 2005 the staff audiologist retired, and though the position was filled for a period of time, it has been impossible to find a replacement since the last audiologist left the program in spring of 2008. NEIS has advertised for the position since it was vacated and salaries have been raised twice, all to no avail. Currently, a staff audiologist from NEIS Reno flies to Las Vegas twice a week to follow-up with referrals. To help eliminate this problem the Nevada EHDI Program plans to take a more proactive approach by actively recruiting at audiology programs around the nation, increasing advertising programs, and attempting to increase incentives for private practice audiologists in Southern Nevada including the purchase of diagnostic equipment for audiologists willing to see infants that refer from the newborn hearing screen.

The state also deals with deaf/hard of hearing issues in the community. For years there have been fundamental disagreements between these groups that have left the state vulnerable to political attacks and have resulted in a lack of basic communication that is needed to change the

infrastructure of the state. In 2006, through HRSA funding the Nevada EHDI Program began working with parents and professionals to start a chapter of Hands and Voices. The non-bias mission and forward thinking has the potential to bring all of the groups together to act as a strong, united political force in Nevada. Efforts to bring the various state groups together are ongoing.

Evaluation and Technical Support

Progress on the proposed activities and the impact of these activities will be evaluated by the following methods. Continuous measurement and assessment occurs with the PDSA model (see Attachment 5 for sample PDSA). A yearly internal evaluation will be conducted by the EHDI Coordinator, Early Intervention Coordinators, NEIS Audiologists, and hospital screening staff. A yearly external evaluation will be completed by the Nevada University Center for Excellence in Developmental Disabilities. Results of the evaluations will be presented to the program partners and the Hearing Loss Task Force to review for feedback and to resolve issues. The PDSA method and data collection from family feedback and satisfaction surveys comprise the quality assurance methods.

Results of the Nevada EDHI activities and strategies outlined in the work plan will be evaluated using process and output measures to assess timeliness, completeness, impact, and cost effectiveness. Measurements include: 1) percentage of infants screened before one month, 2) percent that return to hospital for re-screen, 3) referral rate, 4) percent that receive follow-up at NEIS, 5) the percentage of infants with hearing loss enrolled in NEIS by six months of age.

Key Components of each evaluation method:

PDSA: In April of 2008, the Nevada EHDI program began working with the National Initiative for Children's Healthcare Quality (NICHQ) Learning Collaborative. The NICHQ recommended method for improvement is the PDSA model for change. This model allows testing activities on a small scale, evaluating their success, and incrementally expanding successful activities. Objectives for procedural changes listed in the Work Plan will receive continuous assessment via the PDSA tool.

Internal Process Evaluation: Meetings with EHDI program staff, NEIS staff, and hospital staff to analyze effectiveness of current procedures; analysis of program data; walkthroughs with families for feedback of the program; assessment of measures in comparison to the goals and objectives; measurement of health outcome indicators including the number of infants completing the EHDI program in the recommended timeline; onsite observation of the hospital screening and referral process.

External Outcome Evaluation: Monitor progress toward program goals and objectives; developing, piloting, administrating, and evaluating family and hospital surveys; evaluating data quality by cross-referencing program data to hospital charts.

Organizational Information

The Nevada EHDI program operates under Nevada Revised Statute 442.500-590. The law mandates that all hospitals providing care for more than 500 newborns per year administer hearing screens on all infants and that infants in need of further audiological analysis be appropriately referred before discharge. The law covers 17 of Nevada's 24 birthing hospitals,

however all state hospitals report to the program and refer infants, regardless of legal requirement. Nevada statute also grants authority to programs within the Health Division to share confidential information on clients in order to provide more efficient and affordable community based services statewide. Since its development, the Nevada EHDI program has operated under a grant provided by HRSA. This grant has provided the funding for personnel, travel within the state and to the national EHDI conference, and the development of program infrastructure including purchase of the EHDI database.

The Nevada EHDI Program operates within the Bureau of Child, Family and Community Wellness (BCFCW). Within BCFCW lies six sections: 1) the Early Childhood Wellness section contains Autism Training and Technical Center, Perinatal Substance Abuse Prevention, Immunization Program, Maternal and Child Health, and the Nevada Centers for Congenital and Inherited Disorders Program which includes the Nevada EDHI program, Newborn Screening and genetics. 2) the Chronic and Communicable Disease section, 3) the Women, Infant, and Children program, 4) Prevention and Wellness section 5) Service Assurance, and 6) Minority Health. Attachment 2 contains the organizational structure of the Nevada State Health Division and the BCFCW. As noted above, the bureau collaborates closely with other agencies within the state system.

The collaboration between the EHDI program and NEIS is vital to the success of the EHDI program. Nevada Early Intervention Services functions throughout the state and provides 85 percent of the early intervention services in Nevada. Services include facilities, evaluations, diagnostic testing, and early intervention treatment services for children 0-3 years of age. They have bi-lingual (English and Spanish) staff, and have capacity to teach sign language to enhance

children's ability to communicate and learn. In Nevada, infants who do not pass their hospital hearing screen are directly referred to NEIS for diagnostic screens. Diagnostic equipment is available in the three main NEIS clinics around the state, and audiologists are on staff in each of these clinics. This system helps reduce the number of infants lost to follow-up by providing diagnostic testing without cost, while addressing the dramatic shortage of audiologists within the state. This structure decreases the timeline between screening and diagnosis and helps ensure that infants identified with hearing loss are entered into services as soon as possible. It also allows for data collection and sharing with the EHDI program. Nevada Early Intervention Services works closely with the Department of Education and Nevada's 17 local County School Districts to transition children into available special education programs. They regularly work on the development of Individualized Family Service Plans (IFSP) for children with special healthcare needs. An interdisciplinary team offering a full array of medical and developmental professionals and disciplines provides clinical services.

In January of 2007, NEIS convened a quarterly Hearing Loss Task Force meeting to identify gaps in services and help develop streamlined services for infants and young children with hearing loss. The Task Force consists of the EHDI Coordinator, NEIS staff from all areas of the state, Audiologists, School district personnel, non-profit groups around the state, parents, and the University Of Nevada School Of Medicine Speech Language Pathology Program. The Task Force has already seen success implementing procedures to decrease the timeline for infants identified with hearing loss and streamlining policies and procedures for both the EHDI program and NEIS.

The EHDI Program is fortunate to have a group of committed parents working in non-profit groups in northern and southern Nevada. These individuals work closely with the EHDI program to help train medical professionals by disseminating packets with information about the need to identify hearing loss early. Individuals are also working to develop family-to-family resources around the state through a Nevada chapter of Hands and Voices and working to expand operations of A.G. Bell in Northern and Rural Nevada.