PROGRAM NARRATIVE

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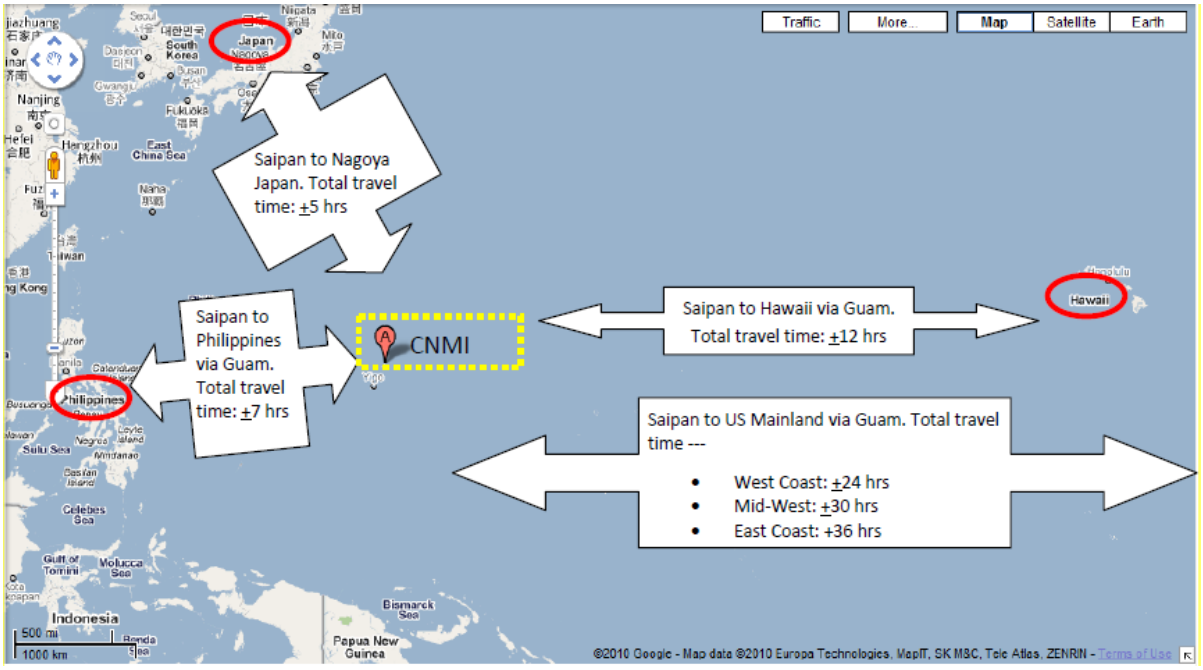
INTRODUCTION

The Commonwealth of the Northern Mariana Islands (CNMI) is a U.S. Commonwealth formed in 1978, formerly of the United Nation's Trust Territory of the Pacific region of Micronesia within Oceania. The CNMI is comprised of 14 islands with a total land area of 176.5 square miles spread out over 264,000 square miles of the Pacific Ocean, approximately 3,700 miles west of Hawaii, 1,300 miles from Japan, and 125 miles north of Guam. The CNMI's population lives primarily on three islands; Saipan, the largest and most populated island, is 12.5 miles long and 5.5 miles wide. The other two populated islands are Tinian and Rota, which lie between Saipan and Guam. The northern most islands are very sparsely inhabited with few year-round inhabitants and no infrastructure services.



The CNMI Commonwealth Healthcare Corporation (CHCC) is responsible for health services in the CNMI. The next closest tertiary medical care centers are of great distance away by plane. The Commonwealth Health Center (CHC), an 86-bed Medicare certified hospital is the only birthing hospital in the CNMI and is located on Saipan. The CNMI Early Hearing Detection and Intervention (EHDI) program is falls under the direction of the Division of Public Health Services / Maternal Child Health Program. The EHDI program was implemented in July 2001 with the goal to improve the health and quality of life of children with hearing loss and their families. This program has proven to be a successful collaboration between the Division of Public Health and the Public School System Early Intervention Program. Our goals are consistent with the national initiatives and reflect the recommendations of other organizations, such as the National Institute of Health (NIH), Health Resources and Services Administration (HRSA), Joint Committee on Infant Hearing (JCIH), American Speech Language Hearing

Association (ASHA), American Academy of Audiology (AAA), and American Academy of Pediatrics (AAP). Goal 1: All newborns will be screened for hearing loss before 1 month of age, preferably before hospital discharge. Goal 2: All infants who screen positive will have a diagnostic audiological evaluation before 3 months of age. Goal 3: All infants identified with a hearing loss will receive appropriate early intervention services before 6 months of age. These first three goals are frequently referred to as the 1-3-6 plan. Also recognizing the need to assure that infants with late onset, progressive hearing loss are also identified as soon as possible we have incorporated a Goal 4: All infants and children with late onset, progressive or acquired hearing loss will be identified as the earliest possible.

A comprehensive EHDI Information System (EHDI-IS) was developed to collect accurately identify, match, and collet data that is individually identifiable through the EDHI process. The primary purpose of this initiative is to reduce loss to follow up of infants who have not passed a physiologic newborn hearing screening prior to hospital discharge by utilizing specifically targeted and measureable interventions. Our efforts will focus to improve loss to documentation/ loss to follow up for infants who did not pass their initial screening, and / or are identified as needing appropriate and timely follow up, and early intervention services. In anticipation of this new application we have already held an initial meeting to reinvigorate stakeholders. We have started to closely review and analyze the data and each program component to develop specific aim statements, identify change strategies. We intend to implement the plan, do, study, act (PDSA) cycle to test an idea and assess its impact. This will help us determine what change strategies will work and lead to improvement and by knowing this we will then implement the change within our system.

NEEDS ASSESSMENT

Target Population

The target population for the program will be all newborn infants born in the CNMI. According to the 2010 U.S. Census, the total population in CNMI is 53,883, with approximately 90% living in Saipan. Both CNMI and U.S. governments categorize its population into three segments: local, other Micronesians, and foreign contract workers. Local residents are primarily Chamorro with a smaller group of Carolinians. Chamorro and Carolinian are considered the two ethnic groups indigenous to the CNMI. Micronesians include other ethnic groups, such as Palauan and Chuukese. The U.S. “Compacts of Free Association” permit the free movement of people between the freely associated states, flag territories, Hawaii and the mainland U.S. These “Compact” islands include the Republic of Palau; the Republic of the Marshall Islands; and the islands comprising the Federated States of Micronesia, Kosrae, Chuuk, Pohnpei, and Yap. Foreign contract workers from Asia (primarily Chinese and Filipino) comprise over half of the CNMI’s population. These contract laborers work in CNMI’s private and public sector in difficult-to-fill positions. While the CNMI originally maintained control over its own labor and immigration regulation and enforcement, recent federal legislation has mandated a normalization of labor and immigration. Normalization of the CNMI immigration system, which began in June 2009, is expected to significantly decrease the number of foreign workers in the CNMI.

The population is very diverse and according to the 2010 CNMI Demographic Profile Summary File, Census of Population and Housing there are more residents of Asian descent than Pacific Islanders. Table 1 illustrates the population by ethnicity.

Table 1: CNMI Population by Ethnicity

Ethnicity	1990	2000	2010
Chamorro	12,555	14,749	12,902
Filipino	14,160	18,141	19,017
Carolinian	2,348	2,652	2,461
Chinese	2,881	15,311	3,659
Caucasian	875	1,240	1,117
Other Pacific Islands	3,663	4,600	3,437
Other Asians	4,291	5,158	4,232
Others	2,572	7,370	6,832

Source: U.S. Census Bureau

The CNMI for the past five years has had an expect birth rate of approximately 1,100 born annually. As stated earlier the Commonwealth Health Center (CHC) is the only birthing hospital in the CNMI and therefore the majority of babies in the CNMI are born on Saipan. There is a common practice of bring all expecting mothers from Tinian and Rota, approximately two weeks before there due date, to the guesthouses that are located near the hospital. With that said, a couple infants each year have been delivered on Tinian and Rota at their respective community health center when travel to Saipan was not possible. The Early Hearing Detection and Intervention program was implemented as a standard care practice therefore all infants are screened prior to hospital discharge. The initial hearing screening is administered by one of the nurses in the well-baby or NICU nursery using AABR before hospital discharge. For every infant that refers on their initial screening a second inpatient screening is provided before the infant leaves the hospital. If results still indicate a "refer" then the results and a brochure about the importance of hearing screening follow up are shared with the parents. An appointment is also scheduled requesting that they return to the hospital's Children Clinic for an outpatient re-screen. For the few babies that are born on Tinian or Rota screening is arranged and completed by the audiologist on her monthly visit to the each island.

Infant results are recorded and stored in the Natus AABR unit and then uploaded into the CNMI EHDI-IS. The EHDI-IS is linked with the Health and Vital Statistics Office (HVSO) data system which provides all additional demographic information and maternal data. This system is comprehensive in tracking data on all infants, their demographics, their hearing screening results, rescreen results, diagnostic testing, and referral data to early intervention. When reviewing EHDI program data with vital records birth rates, we consistently average a 98% screening rate by one month of age. Table 2 provides a more detailed review of screening rates from 2010 – 2012.

Table 2: CNMI EHDI Screening Rates

Year	Total Births	Total Screened	Screen Rate
2010	1075	1053	98%
2011	1029	1013	98%
2012	1126	1101	98%

Data Source: EHDI Data and Tracking Surveillance System

Nursery Refer Rate

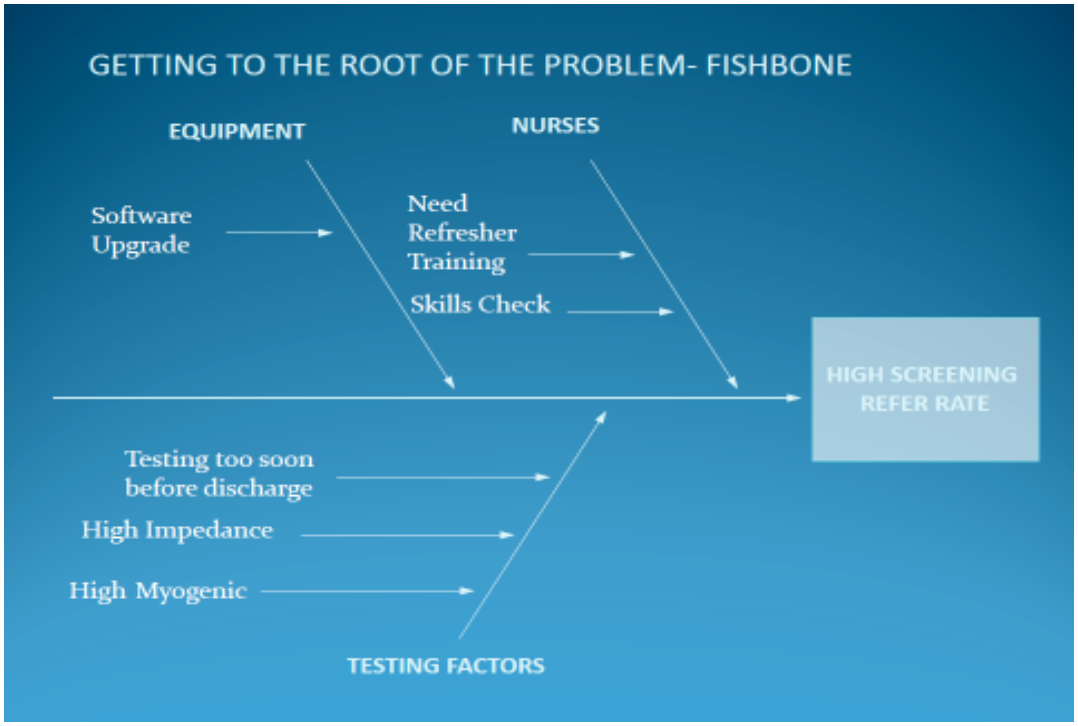
The EHDI program believes that they if they can support the nurses in maintaining a low screening refer rate it will clearly reduce the number of infants that need outpatient follow up and therefore naturally reduce the risk of losing them in the process. The recommended benchmark by the JCIH is less than 4% for all newborn infants who fail initial screening and fail any subsequent rescreening before comprehensive audiological evaluation. In review of the CNMI data the nursery refer rate has bounced between 4% and 21% averaging 11% in 2012.
In the CNMI both mother and their infant tend to be discharged in less than 24 hours after delivery, with C-section mothers staying for three days. In years past the nursery nurses would commonly screen the infants only hours after delivery. As an effort to reduce the refer rate the policy was changed requiring them to wait 18 hours. Although this helped lower the refer rate the nurses continually shared that this was extremely difficult with all the duties and responsibilities to be competed just prior to discharge. Following several discussions with the nurses a compromise was made and the policy was changed requiring the nurses to wait a minimum of 12 hours before conducting the initial hearing screening and then waiting 4 hours before completing the second inpatient screening before hospital discharge.

In August of 2013 a Quality Assurance (QA)/Improvement (QI) training was conducted for Division of Public Health Services with support from the Pacific Islands Health Officers Association (PIHOA). The training aimed to improve the effectiveness and efficiency of work processes. To narrow down the priority area the EHDI team used a multi-voting technique to select the most importance or popular area to focus on; the nursery screening refer rate was selected.

Areas of Concern Related to EHDI	Mutli-Voting
1. Screening Refer Rate	X X X
2. Lost to Follow Up from Screening	XX
~~3. Diagnostics~~	
4. High Risk Infants	X
~~5. Early Intervention Services~~	
6. Parent Satisfaction	X

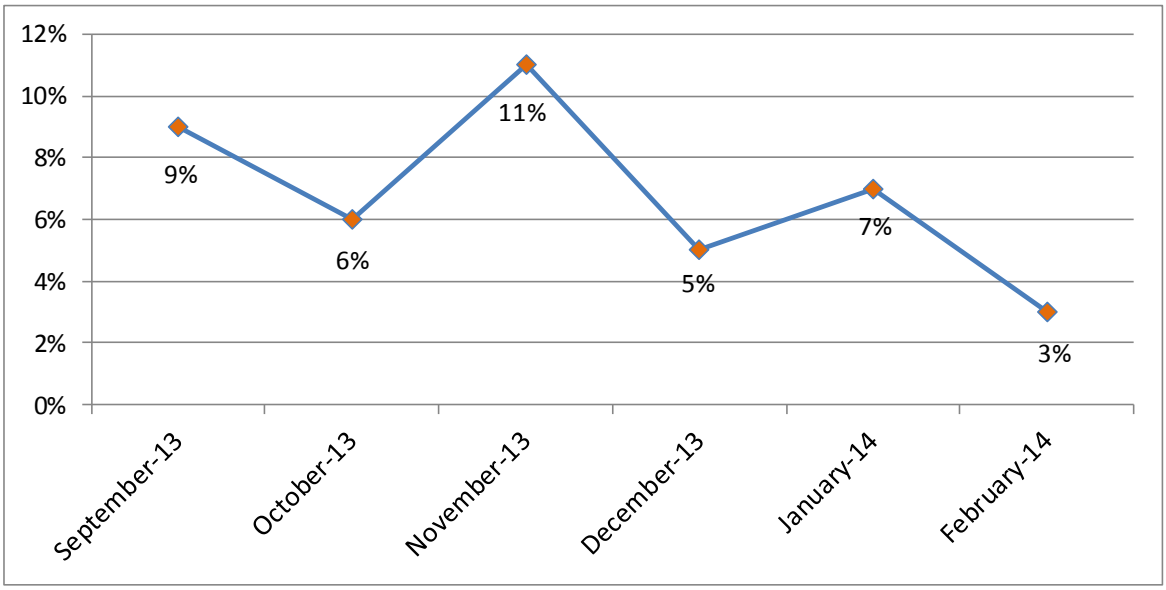
~~7. Public Awareness~~	
8. Data Tracking	X
9. Parent Support	X

The team then identified all the factors leading to a high screening referral rate using the fishbone diagram below, reviewed 6 months of data, and met with nursing staff to discuss the problem and changes to be implemented.



The EHDI data manager compiled a report for the nurses sharing both the overall statistics breaking it down for each nurses to see their performance individually. The nurses seemed energized to improve this refer rate after simply having the opportunity to see and review these statistics. As a strategy of change a large EHDI post it note was developed and placed on the individual test unit highlighting the importance of low impedance and low myogenic with suggestions on how they might meet this goal (select a well fed sleeping infant, swaddle infant snuggly after applying electrodes, use a small drop of saline on the electrode if impedance is high, assure the impedance is low and equal at electrode sites, etc). The idea behind this was just to call their attention and keep their mind focused on their screening techniques. The EHDI follow up coordinator also made herself more present to provide hands on support. Table 3 illustrates the screening refer rate from September 2013 when the project was implemented to February 2013. The refer rate has significantly been reduced with a small spike in November. After further conversation with the nursery it was discovered that they had some technical challenges with the equipment in November which effected the refer rate. The EHDI team continues to monitor these findings, provides feedback to the nurses as well as the helpful tips and techniques; by being more present and providing feedback the nurses seem to be more accountable for the screening results they obtain.

Table 3: Screening Refer Rate September 2013 – February 2014



Data Source: EHDI Data and Tracking Surveillance System

Infants Lost to Follow Up at Outpatient Screening

The CNMI EHDI program has also been addressing the number of infants lost to follow up at the stage of outpatient screening by implementing promising strategies that were shared by other states involved in the National Initiative for Children's Healthcare Quality (NICHQ) collaborative. It is common practice to have our nurses provide families with a rescreening appointment at the time of hospital discharge and request two points of contact for all infants that refer. The program also regularly conducts reminder calls, has a dedicated Follow Up Coordinator on staff and developed an incentive program to address transportation barriers of the community.

Although Saipan is relatively, a small island, transportation continues pose a challenge to ensure the accessibility of follow up services. There is no public transportation in the CNMI. Additionally gasoline on the island costs just under [redacted] per gallon and with the minimum wage only at [redacted] per hour people are facing the difficult situation of choosing to buy food for their family over such 'luxuries' as seeking preventive services. More common than not the community tends to seek healthcare for acute situations and severe conditions only when they cannot avoid it – a process that often leads to poor outcomes and expensive specialty care. To specifically address this area of concern the EHDI program implemented the gas voucher program. Families are notified along with their follow up hearing screening appointment that if they return on their scheduled visit that they will receive a gas voucher to assist with foreseen transportation costs. A gas voucher in the amount of [redacted] is then provided to each family following the outpatient rescreening.

While the CNMI has made significant progress over the years to reduce the number of infants lost to outpatient screening there was an interesting spike in the data seen in 2012. After further

review it was determined that most of infants that did not return for rescreening and lost to follow up were 90% of Chinese ethnicity.

Table 4: Ethnicity breakdown of infants lost to follow up for outpatient rescreen in 2012

Total LFU	20 infants	
	Number of infants	Percent by ethnicity
Chinese	18	90%
Chamorro	2	10%

Data Source: EHDI Data and Tracking Surveillance System

This data correlates well with the fact that the CNMI is currently experiencing an increase in the number of Chinese tourist births. Expectant mothers are coming to Saipan to give birth and receive an American passport only to return to China shortly after delivery. It was evident that these infants were receiving the initial screening before hospital discharge, but not returning for the follow up outpatient screening. To address this concern the EHDI program coordinated a meeting with one of the Chinese translators explaining the importance of follow up so that this information could be delivered back to the families. The EHDI Program also implemented a small step of change by providing the Health and Vital Statistics Office with a reminder appointment slip translated in Chinese to be given specifically to the family when they came to obtain their infants birth certificate documents. Data for 2013, reveals a decrease in the number of infants lost to follow up at outpatient screening from 2012 when the issue arose. This is a success not only for the families served, but clearly demonstrated the EHDI team's ability to review the data components, discuss the goal to be accomplished, implement a change and evaluate the results in improvement. The PDSA model of improvement lead to a positive outcome in reducing the number of infants lost to outpatient follow up. Table 5 below summarizes lost to follow up data from 2010 to 2012.

Table 5: Outpatient Lost to Follow Up Rate

Year	2010	2011	2012
Total infants who referred / need outpatient screening	149	114	119
Infants rescreened	141	103	99
Infants lost to follow up	8	11	20
Percentage	5.37%	9.65%	16.81%

Data Source: EHDI Data and Tracking Surveillance System

Diagnostic Evaluation

In the CNMI there is only one audiologist, Dr. Angie Mister, who provides all audiological services for both the Public School System and the Commonwealth Health Center. When an infant refers on an outpatient screening Dr. Mister is contacted directly by EHDI Follow up Coordinator and a diagnostic evaluation appointment is scheduled generally within a week. This is not to say that infants are not lost at this level. Families have been known to no show or cancel

multiple appointments, to disregard the referral when they feel that everything is ok and/or move off island. Table 6 identifies the number of infants lost to follow up at diagnosis. A factor that should be considered in reviewing this data is that due to the low numbers the percentage is greatly affected when even one infant is lost to follow up.

Table 6 Infants Lost to Follow Up at Diagnosis

Year	Refer To DAE	Completed DAE	Lost To Diagnosis Rate
2010	13	11	15%
2011	9	8	11%
2012	6	5	17%

Data Source: EHDI Data and Tracking Surveillance System

On an impressive note, infants that received their diagnostic evaluation for both 2012 and 2013 were completed by 1 ½ month of age.

Early Intervention Services

Another strong component of the CNMI EHDI program is that when an infant is diagnosed with a hearing loss Dr. Mister, immediately starts the conversation about communication options, supports and services and directly refers the family to the early intervention program. The fact that Dr. Mister also works as audiologist for the early intervention program she is the one who incidentally receives and then serves these infants – a streamlined system. All infants diagnosed with any degree of hearing loss including unilateral losses are eligible for early intervention; hearing loss is considered an established condition and upon referral the infant automatically qualifies for services. Within 45 days of the referral, the early intervention team and family meet to identify medical and non-medical needs. An Individualized Family Service Plan (IFSP) is developed addressing these specific needs and services are put into place. Given the collaboration between the Division of Public Health Services / Commonwealth Health Center and the Public School System this communication and referral process happens smoothly and almost immediately upon diagnosis. In 2011, 2012 and 2013 all infants, 100%, identified with hearing loss in the CNMI received early intervention services by 6 months of age. Also when families elect for amplification hearing aids are often fit within weeks of the diagnosis. Funding under the Part C early intervention program covers the cost of hearing aids, other assistive devices and equipment repair for families. The EHDI program also has a small loaner bank to provide amplification while the personal aids are ordered by the EI program. The loaner hearing aids are also used assure that there are not gaps in wear time when the child's personal hearing aids are sent in for repair.

Evidence today clearly indicates that early diagnosis and quality intervention can reduce the negative effects associated with hearing loss. Children whose hearing loss is identified at or before 6 months of age and who receive appropriate early intervention services have significantly larger vocabularies and receptive language than those whose hearing is discovered after six months of age. The CNMI early interventionists/ teachers serve all children with a wide variety of disabilities. To ensure that our EI providers are aware of the best practice and have the knowledge and skills to best support infants with hearing loss the CNMI EHDI Program has

brought out experts to provide training and technical assistance. The EHDI Program has contracted Dr. Teresa Caraway, formally with Hearts for Hearing, to provide various lecture and hands on training and direct coaching. The trainings provided an overview of current hearing technology, demonstrated the various aspects of speech, listening, and spoken language skill development. They were taught specific auditory teaching strategies and techniques to promote development of listening and spoken language skills. But most importantly they were supported and observed to in apply these strategies through guided coaching and observations with the parents of children with hearing loss in an early intervention session. They have also had the opportunity to work with Ms. Nancy Rushmer, M.A., CED has was contracted for several years to provide hands on training to early intervention and related service staff in all elements of programming for infants and toddlers with hearing loss and their families; also provide training to staff working with pre-school aged children with hearing loss. The CNMI has also worked with the neighboring island of Guam and their EHDI staff as well as other professionals involved in the Pacific Partnerships for Deaf Blind Service Projects and Hands and Voices, a parent driven nonprofit organization.

Family Support

As we work to support families through the entire process from identification to intervention the CNMI EHDI program continues to support a family event each year for families with children who are deaf or hard of hearing. For the past seven years over 30 families attend the family event with over 100 children and adults participating. The activities of the conference are planned based on parent input and slowly the families themselves are starting to lead the discussions, opening new channels of communication, sharing their ideas and making plans for future events. Feedback from participating families is very positive, but the strongest feedback received is generally related to the quality of speakers and topics and the opportunity to network with other families during the day-long event. This past year the EHDI program has created a family directory in collaboration with the Pacific Deaf Blind Project. This directory not only lists the family contact information, but also provides a listing of local, regional and national resources, a glossary and family stories. The premise of the directory is to let families know they are not alone in being a parent of a child with hearing loss. C.S Lewis said is best “Friendship is the moment when one person says to another: What! You too? I thought I was the only one.”

METHODOLOGY

The overall goal of this project is to improve the health and quality of life of children with hearing loss. The EHDI program wants to ensure that all infants are screened for hearing loss by one month of age, all infants who screen positive will have a diagnostic audiological evaluation before 3 months of, and to ensure they receive early intervention by six months of age. The CNMI is a voluntary screening program and has shown commitment to screening all infants for hearing loss for over 12 years. In anticipation of this project the CNMI EHDI Program has already established a quality improvement team that consists of key stakeholders involved in the various aspects of the EHDI program from screening to intervention (refer to Attachment 2: EHDI Quality Improvement Team). Those that function as advisory members are also part of this QI team. Because Saipan is a small community it is easy for members to come together and often these same individuals find themselves working together on multiple projects. Similar

challenges are also commonly seen across programs so brainstorming and strategy sharing happens very naturally.

Data from the EHDI-IS will be compiled, reviewed and used by the QI team to set goals and to monitor progress. The various data items collected include, but are not limited to:

- The number of infants screened for hearing loss by one month of age
- The number of infants screened for hearing loss by more than one month of age
- The number of infants that are missed and did not receive and newborn hearing screening
- The number of infants that refused the newborn hearing screening
- The number of infants that did not pass the newborn hearing screening
- The number of infants who did not pass but received follow up audiological testing before three month of age.
- The number of infants who did not pass but received follow up audiological testing before six month of age.
- The number of infants who were diagnosed with hearing loss by three months of age.
- The degree and type of hearing loss for infants diagnosed with hearing loss.
- The number of infants who were diagnosed with hearing loss referred to early intervention and enrolled by six months of age.
- Demographic data including infants gender, mothers age, educational level, maternal ethnicity / race etc.

Although the CNMI has not been able to participate in an organized NICHQ learning collaborative; the EHDI team is familiar and experienced with the PDSA model. They have had the opportunity to work with Dr. Elizabeth Seeliger in the area of quality improvement back in 2009 under a short contractual agreement. Dr. Seeliger took the lead and guided the program thru the process. This is when the EHDI team first really started to look at the program and its data in new light, questioning where they were, where they needed improvement and how to make that possible. The CNMI EHDI team will also be fortunate to attend and participate in an in-depth quality improvement training conducted by the National Center for Hearing Assessment and Management (NCHAM) following the 2014 National EHDI Conference.

With the support from NCHAM, our contacts with PIHOA and our own hospital quality and performance management program the EHDI team will train and bring up to date the EHDI QI team / stakeholders on the model of improvement and procedures to implement PDSA cycles in hopes to improve the program and reduce the number of infants loss to follow up. Based on the need and availability of the QI team members a regular schedule of meetings will be established at least quarterly and ground rules for communication will be established as well as assignments with timelines to assure accountability.

The Model for Improvement that will be used was developed by Associates in Process Improvement, it is a simple yet powerful tool for fast-tracking improvement. This Model for Improvement has been used successfully by hundreds of healthcare organizations and EHDI Programs across the nation to improve EHDI practices and outcomes. The model consists of two parts: addressing three fundamental questions and engaging in tests of change.

The four stages of the PDSA cycle are:

- **Plan** a change. Identify a specific group of people and actions, be time specific and have a measurable outcome.
- **Do**/try the change. Implement the new strategy and obtain a quantitative measure of the effect.
- **Study**/observe the results. Was the target population affected and to what degree was the affect?
- **Act** on what was learned. Based on the new knowledge, implement a change on a larger or more permanent scale.

PDSA is an action-oriented learning model and is based in answering three main questions:

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What changes can we make that will result in improvement?

By using the PDSA cycles we can take small steps toward changes realizing that we may or may not get the results we expect. Because change is often difficult it is our hope that by moving slowly we will get ownership and reduce the barriers of change. Therefore, only after testing a change on a small scale, learning from each test, and retesting with several PDSA cycles, the team will move to implement the change on a larger scale. The EHDI team has discussed and realized that with only one hospital it may be difficult to determine what change agent was the determining factor so not too much change will be proposed at once and each cycle will be implemented slowly and as precise as possible to best evaluate its effectiveness.

Linkages with other Programs

The EHDI Program already works closely with the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) program. The data manager reaches out to the WIC program as a potential catch point for infants that did not return for their follow up appointments but may be enrolled in WIC. We also anticipate working more closely with the Healthy Outcomes for Maternal and Early Childhood (H.O.M.E) Visiting Program to address lost to follow up. This program is new and in the process of establishing itself in the CNMI. Its focus is to ensure that comprehensive health care is provided to all mothers, infants, and children including children with special health care needs. Therefore, we are opening the discussion to have their staff trained on conducting newborn hearing screenings for infants that may be identified as lost to follow up or at risk for late onset hearing loss. The CNMI EHDI already has portable AABR equipment that will be available for their use. The CNMI does not have an Early Head Start Program to test and follow infants and toddlers. However the CNMI does serve children age 3 to 5 years of age in the Head Start Program. Hearing screening is completed annually on all of these children within the 45 days of the start of school. A database with various data elements and reports was developed to log all Head Start and school hearing screening results. It was developed with a common identifier so that futuristically we can electronically link this data with the EHDI database to identify those children with progressive or late onset hearing loss.

Sustainability

The EHDI Program is one of the strongest most successful programs in the Division of Public Health Services. The team is dedicated and countless efforts have and without a doubt will continue to be implemented to assure positive outcomes for infants born in the CNMI. The success of the initiative has much to do with the dedicated staffing. To assure sustainability of the project after Federal funding ends the program has discussed the idea of talking with local representative to introduce legislation to mandate screening and the reporting of newborn hearing screening results. The team has however also started conversations with the CHCC Chief Executive Officer to create a system within the corporation that allows the current revenues to be fed back into the EHDI Program. Further discussions are need but the CEO was amenable to exploring options.

WORK PLAN

Goals, activities and timelines are outlined in the work plan (Attachment 1). It will be used as the framework for prioritizing the activities to meet the goals and objectives to achieve the reduction of loss to follow up.

RESOLUTION OF CHALLENGES

Given our small community the CNMI does not foresee a lot of challenges in working together to design and implement activities within a work plan. As with all change there will be the consistent need to monitor the implementation process to assure the strategy is implemented consistently. Scheduling the group should not be an issue as the community is flexible and willing to work together.

Our location and remoteness is however, one ongoing challenge. Screening and diagnostic can be delayed when there are technical problems or computer malfunctions. For our screening equipment we assure that there is a full warranty to cover the repair costs and it our understanding that the company provides a loaner in the interim. Our location can also create challenges for the fitting of earmolds and hearing aids in a timely manner. To overcome this challenge we have created a small loaner bank of hearing aids and the audiologist is now using insta molds that allows infants to be fit as soon as possible. More permanent earmolds are ordered, but it is convenient to have insta molds available while orders are shipped off island.

A second barrier that may also be related to the poor economic state of the CNMI is that many families have disconnected phones or numbers that are no longer in service. With the minimum wage at [redacted] and the cost of living on the rise many families cannot afford phone service, cable and in some circumstances power. To overcome this obstacle we plan to continue the gas voucher program and are investigating the possibilities of also providing outpatient follow up at the one community health center or partnering with the HOME visiting program to provide the screening in the home when needed.

EVALUATION AND TECHNICAL SUPPORT CAPACITY

The EHDI team has established the practice of meeting regularly to review EHDI data and monitor activities. It is now the goal to further involve our partners in the EHDI Quality

Improvement Team. As a small community it is easy for members to come together. Data will be collected in the EHDI IS and analyzed to evaluate the progress towards meeting our goals. Ms. Cindy Hoepner the Corporate Quality Performance Director has agreed to provide support and technical assistance. We have been in brief contact with and anticipate working with Ms. Allyson Ward who was hired under the NCHAM to provide support in the area of quality improvement. The EHDI problem is fully aware of the health disparities of the community and given the diversity of the community we will continue to address the cultural and linguistic minority populations. Key staff for this project include but are not limited to the following:

Director of the Division of Public Health Services: Margarita Torres-Aldan holds a Master's Degree in Public Health (Health Service Administration) from the University of Hawaii and a Bachelor of Science Degree from the University of Colorado, Denver. Aside from her experience in the Maternal and Child Health Program, she has experience in social work, including interagency liaisons, adolescent health, and services for children with special health care needs.

MCH Coordinator: TaAnn Kabua is new to the position of MCH Program Coordinator. Her previous position was the State System Development Initiative Project Director for the CNMI Division of Public Health Services. She has been instrumental in the development, integration and implementation of comprehensive IT infrastructure to include data sharing systems, data linkage, web-based e-government systems and the Division of Public Health Services data systems. She has also been greatly involved in the data collection and analysis requirements for the Title V Maternal and Child Health Block grant. As MCH Coordinator Ms. Kabua's will work closely with and monitor all programs and activities for women, infants, and children, including the EHDI Program.

EHDI Coordinator / Audiologist: Dr. Angie Mister has worked in pediatric audiology for 19 years providing diagnostic and amplification services to infants and children as well as providing administrative support. Dr. Angie Mister provides all audiological services for the public school system and the Commonwealth Health Center. She recently joined the NCHAM network for the Pacific Region. In addition to her support of EHDI she is also a key stakeholder in the Interagency Coordinating Council, for the birth to three programs, the Early Childhood Comprehensive System, and the Head Start Health Advisory Council continually addressing the audiological needs of children. Dr. Mister will be working with the EHDI team to develop and implement the QI strategies focusing on the follow up from screening to diagnosis, early intervention and family support. Dr. Mister has the drive, motivation, skills, and understanding to assist in the coordination of the CNMI EHDI program.

EHDI Follow Up Coordinator: Shiella Perez has been with the EHDI program for 5 years. She has excellent interpersonal skills when working and talking to parents. She is experienced in the screening of infants using Otoacoustic Emissions (OAE) and Automated Auditory Brainstem Response (AABR) screening equipment. She has her AA degree in the field of nursing and worked as the Children with Special Health Care Needs Coordinator for 3 years prior to join the EHDI team. As EHDI Follow Up & Service Coordinator Ms. Perez is responsible for following all infants that refer on their initial hearing screening, providing outpatient re-screening. She will also be working with the nurses to reduce refer rates, developing public awareness materials,

providing outreach to private clinics, and representing the EHDI program at school, community and health fairs as well as other assigned duties. Ms. Perez will be greatly involved in implementing the QI strategies; the compilation and dissemination of program information and conducting parent/stakeholder surveys.

EHDI Data Manager: Mr. Jose V. Santos has worked with the EHDI program for 4 years. He manages the overall EHDI IS (data system) and completes data analysis across the various components of the EHDI system to improve and ensure that all infants are screened for hearing loss and receive appropriate follow-up services. He imports and completes the data entry of infants into the EHDI-IS system, performing data quality checks, and utilizes the database to track families with infants who need follow up. Mr. Santos has an integral part of tracking the data for the program and its QI projects which then guides the decision and direction of the CNMI EHDI Program.

Corporate Quality Performance Director: Cindy Hoepner holds a Master's Degree in Public Health (ENVRN HLTH: Environmental and Occupational Health Epidemiology) and Graduate Certificate in Public Health Practice; Core Concepts from the University of Minnesota. Also, she obtained a Bachelor of Science degree in Health Studies/Health Sciences from Portland State University. Ms. Hoepner has been with the Commonwealth Healthcare Corporation (CHCC) Quality program since 2011. Her professional experience includes both clinical and epidemiological study design, development, and management along with her knowledge and experience in Hospital and Public Health Quality and Performance Management. She provides technical assistance and recommendations to units and programs at CHCC, as well as leads Quality Assurance/Performance Improvement initiatives and trainings.

ORGANIZATIONAL INFORMATION

The Commonwealth of the Northern Mariana Islands (CNMI) is self-governing with locally elected governor, lieutenant governor, and legislature. Each state agency is under the supervision of the governor and is headed by a single executive. In October 2011, Public Law 16-51 dissolved the Department of Public Health and created the Commonwealth Healthcare Corporation (CHCC). CHCC is a government corporation, and while it is a part of the CNMI government, it is semiautonomous. The CHCC is now the operator of the Commonwealth's healthcare system and the primary provider of healthcare and related public health services in the CNMI. This law transferred all the functions and duties of the CNMI Department of Public Health including management of federal health related grants to the Commonwealth Healthcare Corporation, so that the CHCC is the successor agency to the now defunct Department of Public Health. The Chief Executive Officer of CHCC is the authorized representative for the EHDI Program. There are three divisions under the corporation: 1) Public Health -- provides preventive and community health programs in which many are federally funded; 2) Hospital; and 3) Bureau of Behavioral Health. The following are appointed senior leadership positions: Chief Executive Officer, Director of Division of Public Health Services, Hospital, and Behavioral Health, and the Public Health Medical Director. Refer to Appendix 5: CHCC Organizational Chart.

The EHDI program is falls under the direction of the Division of Public Health / Maternal Child Health Program, whose mission is to provide and promote coordinated health care and related support services to women, infants and young children of our island communities. The EHDI staff is dedicated to the program and its effort to working on issues related to loss to follow up. They have demonstrated the ability to execute and implement QI projects in the past which have led to positive outcomes for the program. Refer to Attachment 2 for more details on the role, responsibilities and qualification of key staff as well as Attachment 3 for their individual biographical sketches.

Also worth mentioning is the strong relationship and the EHDI Program has with the coordination and referral into early intervention services. The Children's Developmental Assistance Center (C*DAC), the early childhood program is a collaborative effort between the Public School System and the Department of Public Health. A memorandum of understanding exists between the Public School System, Early Childhood Special Education Program and the Department of Public Health for early intervention services. The public school system is the lead agency and has a state plan for early intervention. They assume the role and assure that infants and toddlers age 0-3 years who are developmentally delayed, or at risk receive appropriate early intervention services as specified under Part C of the Individuals with Disabilities Education Act. Early intervention services include: care coordination, identification and assessment, audiology, occupational therapy, physical therapy, speech-language pathology, social work, psychological services, vision services and assistive technology. The early intervention services are available on all 3 islands. It is also the responsibility of the public school system to assure that eligible children transition from the Early Childhood Program to the special education program when appropriate.

CNMI Work Plan

Aim Statement 1

By August 31, 2015, the CNMI will screen 100% of all infants prior to hospital discharge.

Changes / Activities (sequence as needed)	Start Date	Estimated Completion Date	Lead Staff and Partner Support (where applicable)	Process Measures	Outcome Measures
Review the data for missed infants to draw conclusions why they were not screened /missed.	December 2014	January 2015	EHDI Data Specialist QI team	A data report will be developed identifying what conclusion were made as to why an infant was not screened / missed	100% of all infants will be screened before hospital discharge.
Develop a corrective action plan to address the identified reasons.	February 2015	March 2015	EHDI Coordinator QI team	Action plan will be developed and policy and procedures will be provided to OB nursery /NICU department.	100% of all infants will be screened before hospital discharge.

Aim Statement 2

By August 31, 2015 the CNMI will decrease the number of infants that refer on inpatient hearing screening from 11 % to no more than 6% working towards the national goal of 4%

Changes / Activities (sequence as needed)	Start Date	Estimated Completion Date	Lead Staff and Partner Support (where applicable)	Process Measures	Outcome Measures
Review data and track inpatient monthly refer rate.	September 2014	Monthly	EHDI Data Specialist QI team	Results will be tracked over time and reviewed.	Decrease in screening refer rate to no more than 6%.
Develop and design a monthly report card to inform nurses of their monthly and individual screening statistics.	October 2015	Monthly	EHDI Data Specialist EHDI Coordinator	Results will be identified in a screening report card and reviewed.	Nurses will be aware of program and individual statistics related to screening.

Develop and post EHDI reminder notes on the AABR test unit to call their attention to recommended tips and techniques to reduce the initial refer rate.	October 2015	Quarterly	EHDI Follow Up Coordinator EHDI Coordinator	EHDI Reminder notes will provide nurses with tips and techniques that follow best practice recommendations	Nurses will be informed of a variety of tips and techniques that follow best practice recommendations for screening
Review progress each month and identify individual nurses that need a skills check and support to assure best practices. Draw conclusions in reference to data findings	Monthly	Monthly	EHDI Data Specialist EHDI Follow Up Coordinator EHDI Coordinator QI team	EHDI and QI team will review data and draw references.	Nurses with high refer rates will be identified. Suspected reasons for the high refer rate will be identified.
Conduct skills check for nurses as indicated by data review / provide hands on support.	November	Ongoing	EHDI Follow Up Coordinator	Evidence of skills check and documented training	Identified nurses will have improve their screening skills. Decrease in the screening refer rate.
Provide annual refresher training to educate nurses on best practice. Recognize nurses with high performances.	Yearly		EHDI Coordinator Partnering agencies to discuss infant behaviors	Evidence of training (sign in sheet / list of participants, pre and posttest findings)	Post test results will indicate an improvement and additional knowledge and skills were gained. Decrease in the screening refer rate.

Aim Statement 3

By August 31, 2015 the CNMI will decrease the number of infants lost to follow up at outpatient screening from 16% to 11%.

Changes / Activities (sequence as needed)	**Start Date**	**Estimated Completion Date**	**Lead Staff and Partner Support (where applicable)**	**Process Measures**	**Outcome Measures**
Review the data in the EHDI–IS for infants that still need outpatient rescreening and to draw	October 2014	Quarterly	EHDI Data Specialist EHDI Coordinator EHDI Follow Up Coordinator	EHDI and QI team will review data and draw references.	The percentage of infants lost to follow up will decrease by 5 %.

conclusions why it was not completed.			QI team		
Review data to determine if a particular ethnicity group is higher than other, develop scripted messages for those identified ethnic groups.	November 2014	December 2014	EHDI Data Specialist EHDI Coordinator EHDI Follow Up Coordinator QI team	EHDI and QI team will review data and draw references.	Translated materials will be available to various ethnic group understand the importance of screening follow up which will result in a decrease of infants lost to follow up at outpatient screening.
Conduct a small step of change by requesting a map to the families' home when 2 points of contact is not available.	December 2014	Ongoing until enough data is collected to evaluate the strategy.	Nursery nurses EHDI team	A second point of contact will be obtained in the form of a map.	Increase in the programs ability to reach a family resulting in a decrease in the number of infants lost to follow up at outpatient screening.
Explore linkage with HOME Visiting Program to conduct the rescreening at the family's home.	December 2014	Ongoing until enough data is collected to evaluate the strategy.	EHDI Coordinator EHDI Follow Up Coordinator HOME Visiting Program	Families that cannot be reached by phone will be screened at their homes using portable AABR machine.	Decrease the number of infants lost to follow up at outpatient screening.
Conduct quality assurance check on the use of the yellow card and ear sticker to correctly identify infants that need follow up. Share findings with QI team / develop action plan as needed.	February 2015	Quarterly	EHDI Data Specialist QI team	Data will be reviewed and a quality measure will be determined on the accuracy.	Increase in the quality of the identifying system to alert providers that an infant needs follow up.
Educate PCP, nurses, outpatient nurses on the yellow card and ear sticker use to identify infants that need follow up screening.	Yearly		EHDI Coordinator EHDI Follow UP Coordinator	Training will be conducted to address EHDI results that are recorded on the yellow card and on each individual medical folder.	Decrease the number of infants lost to follow up at outpatient screening.

Aim Statement 4

By August 31, 2015 the CNMI will increase the percentage of parent's knowledge of newborn hearing screening and importance of timely follow-up.

Changes / Activities (sequence as needed)	**Start Date**	**Estimated Completion Date**	**Lead Staff and Partner Support (where applicable)**	**Process Measures**	**Outcome Measures**
Develop and distribute and parent survey to a randomized sample of parents of infants to assess knowledge, attitudes and beliefs to determine a baseline.	October 2014	November 2014	EHDI Follow Up Coordinator QI team	Develop the survey and distribute it to parents.	A baseline percentage of the parents that a have knowledge of the newborn hearing screening program and importance of timely follow-up is established.
Educate parents in a culturally competent manner via brochures, handouts, advertisements etc. about newborn hearing screening, follow up and high risk indicators for late onset hearing loss.	December 2014	Ongoing	EHDI Follow Up Coordinator QI team	Develop educational materials and advertisement that provide information on the importance of timely follow-up with the focus on those infants with high risks for late on set hearing loss.	The EHDI program will have educational materials and advertisement that provide information on the importance of timely follow-up with the focus on those infants with high risks for late on set hearing loss.
Redistribute the parent survey to a randomized sample of parents evaluate efforts. Compile responses.	July 2015	June 2015	EHDI Follow Up Coordinator		Increased knowledge of newborn hearing screening and importance of timely follow-up

Aim Statement 5

By August 31, 2015 the CNMI will increase the percentage of PCP's knowledge and awareness of the need to monitor children with high risks for late onset and progressive hearing loss.

Changes / Activities (sequence as needed)	Start Date	Estimated Completion Date	Lead Staff and Partner Support (where applicable)	Process Measures	Outcome Measures
Review the data in the EHDI–IS to determine the number of infants with high risks that return after 6 months for an outpatient rescreen.	November 2014	December 2014	EHDI Data Specialist EHDI Coordinator EHDI Follow Up Coordinator QI team	Review charts, NICU nursery logs and data within the EHDI-IS to compare and determine number of infants with high risks that return after 6 months for an outpatient rescreen.	A baseline will be established on the number of infants with high risks that return after 6 months for an outpatient rescreen.
Develop an educational tool for primary care provides about the EHDI process focusing on the need to monitor for late onset or progressive hearing loss.	December 2014	January 2015	EHDI Coordinator QI team	Evidence of an educational tool to be used as a resource for PCP's	Increased PCP's knowledge and awareness of the need to monitor children with high risks for late onset and progressive hearing loss.
Distribute and conduct training for PCPs on the educational tool.	January 2015	February 2015	EHDI Coordinator EHDI Follow Up Coordinator	Evidence training for PCPs on the education tool (list of doctors contacted and training dates)	Increased PCP's knowledge and awareness of the need to monitor children with high risks for late onset and progressive hearing loss.