

PROPOSAL TO THE UNDERGRADUATE RESEARCH PROGRAM

by
Susan K. Tangmo
Department of Health Care Informatics

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Research/Internship Advisor
James Aspevig, MS, MPH

Newborn Hearing Screening Data Quality:
A Public Health Internship and Case Study

Background

The overall objective of this internship project will be to assist Montana's Newborn Hearing Screening and Intervention program (NBHSI) with the use of their current data system to identify and support follow-up for children and families who may have been either "lost to care" or passively refused care and further services offered by Montana's Newborn Hearing Screening and Intervention program.

The Healthy People 2020 initiative has described the importance of early screening and intervention to prevent and/or begin to compensate for hearing loss in newborns. The high-level aim is to mitigate the effects of any hearing deficits so that children may experience the normal development of language and related aspects of intellectual capability.

Failing to address hearing deficits in children as early as possible may result in:

- Social isolation
- Unnecessarily limited achievement in academics or work
- Unmet health needs (Office of Disease Prevention and Health Promotion, 2016a)

Moreover, the Agency for Healthcare Research and Quality has determined that significant health disparities exist between families of higher and lower economic standing (AHRQ, 2003). Reduced access to both routine and specialized health services, such as hearing screening and intervention, substantially adds to the burden on families of lower socio-economic status (Moeller, 2000).

The Children's Special Health Services section of the Montana State Department of Public Health and Human Services manages the Montana's statewide Newborn Hearing Screening and Intervention (NBHSI) public health program. The principle goal of the NBHSI program is to guarantee that all children born in Montana are provided with, and have access to, appropriate hearing screening services.

The program coordinates activities by all birthing hospitals in Montana. These hospitals generally conduct the initial hearing screening for the newborns, identifying children whose hearing may be impaired and targeting these children and their parents for the receipt of additional screenings and follow-up services. The Montana NBHSI program follows national guidelines to establish the following best practices:

- All babies born in Montana are to receive newborn hearing screening by one month of age; including second screenings if indicated;
- When needed, diagnostic services are to be performed by three months of age;
- Referral to early intervention services is to be completed by six months of age for all newborns with a diagnosis of permanent hearing loss. (Children's Special Health Services).

The above guidelines are also supported by the goals of Healthy People 2020 in relation to this project, which are given below:

ENT-VSL-1: Increase the proportion of newborns who are screened for hearing loss by no later than age 1 month, have audiologic evaluation by age 3 months, and are enrolled in appropriate intervention services no later than age 6 months

ENT-VSL-1.2: Increase the proportion of newborns who receive audiologic evaluation no later than age 3 months for infants who did not pass the hearing screening (Office of Disease Prevention & Health Promotion, 2016b)

The project itself most directly involves a review of data from the HiTrack information system, which is currently used to input the screening results of babies born in Montana. The HiTrack system provides much of the data used by the NBHSI program to communicate with the parents of children who have been identified as requiring follow-up screening after having failed an initial hearing test, which is usually delivered through the birthing hospital. Unfortunately, there are some cases that have been lost to follow-up after failing one or more hearing screenings. This is generally the result of a “passive refusal” by parents who non-responsive to the NBHSI’s attempts to communicate with them.

The intern will assist in re-establishing communication with the parents of children who have been lost to care by:

- 1) Querying data from HiTrack to identify cases where the children may have been lost to care in coordination with the organization that authors/supports the application.
- 2) Assisting in the creation of reminder notices to attempt to re-establish contact with the parents of these children.
- 3) Assisting the program’s professional staff so that they may update the status of children lost to care in the HiTrack system to (a) conclusively close those cases where the parent refuses follow-up; or (b) re-classifying the child’s status as receiving follow-up after contact has been re-established, or (c) otherwise resolving the case to improve the quality of data reported from the application
- 4) Make recommendations for information systems improvements to maintain the quality of the data after this project has closed.

Public Health Internship Objectives

- Study the database (HiTrack) used by the Montana NBHS program, identifying attributes that may already exist in the data to help support the quality review.
- Query HiTrack to identify patients that may have been “lost to care”
- Develop a process for issuing follow-up letters, or other communication, based on data extracted from HiTrack for parents who may have passively refused further screening and or intervention services by not responding to the results of earlier tests.
- Review/analyze the effect of changes to patient follow-up status in relation to data quality.
- Make recommendations to the NBHS program for improving and maintaining data quality.

Optional Research Approach

A case study approach will be taken with the “lost-to-care” and follow-up issues experienced by the NBHSI representing an instance of the type of case many health care organizations are living through as the health care system transitions away from an emphasis on episodic care delivered to individual patients, and toward an emphasis on population health and prevention. In this case the analysis will be directed to the program level with a focus on the NBHSI. The measurement of a specific, vulnerable sub-population’s access-to-care will serve to illustrate issues and challenges associated with, and the limitations on, measuring an aspect of the health status of mobile, highly changeable populations of patients and their caregivers. At this time, presumptive baseline measures may consist of (1) number and proportion of cases lost to follow up initially identified. (2) Classification of types of cases lost to follow-up. Presumptive performance measures following the intervention would consist of (3) Number and proportion of cases resolved and analysis of any significant differences in proportion of cases resolved among the different patient types identified (statistical test: Confidence Interval for the Difference between Two Proportions).

Note: The proposer will make all reasonable attempts to incorporate a formal research approach into the core internship. The IRB process would be initiated as soon as the Public Health Internship is approved. However, given the extremely short time-frame available to the project, Ms. Tangmo may need to pursue the “internship” aspect of the project and sacrifice the pure research component if the IRB cannot be approved in a very timely fashion.

Budget

A budget of \$300 is requested to support travel costs from Butte to Helena and back. For budget purposes, the mileage calculation of the distance from Butte to Helena and back is 136 miles for a round-trip. The public health intern must return to Butte in order to consult with their mentor and also to participate in their courses. Any reimbursement over \$300 will be paid by the HCI Department.

Budget calculation: Total Cost = (Mileage Rate) x (Distance) x (Number of Trips)

Total Cost = \$0.26/mile x 136 miles x 9 trips = \$318.24

Timeline: The project is divided into three major areas of activity as detailed in the Gantt chart below (Figure 1). These are (1) an academic literature review and review of technical and other documentation associated with HiTrack; (2) training and orientation activities to prepare the intern to work NBHSI; and (3) preparing and presenting the results of the work in a Public Health forum to staff from Montana Tech, DPHHS and the students and faculty of Health Care Informatics Department. The total duration of the project is planned at 74 days.

References

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<http://dphhs.mt.gov/publichealth/cshs/NewbornScreeningPrograms/NewbornHearingScreeningIntervention/NBHSIScreeningInformation.aspx>
- Office of Disease Prevention & Health Promotion (a). (2016, January 20). Hearing and Other Sensory or Communication Disorders. Retrieved from HealthyPeople.gov:
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- Office of Disease Prevention and Health Promotion (b). (2016, January 20). Objectives: Newborn Hearing Screening. Retrieved from Hearing and Other Sensory Communication Disorders: <https://www.healthypeople.gov/2020/topics-objectives/topic/hearing-and-other-sensory-or-communication-disorders/objectives>

Figure 1: NBHSI Public Health Internship Timeline

