

Early Identification and Early Intervention for Infants and Toddlers with Hearing Loss in the State of Ohio

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The intent of this study was to examine the process that exists between early identification of hearing loss for infants and toddlers to a direct referral to appropriate early intervention services. Licensed audiologists in the state of Ohio were surveyed regarding practice patterns concerning early identification and early intervention for infants and toddlers with hearing loss. Results revealed that the current referral process that links infants and toddlers who are identified with a hearing loss to the appropriate early intervention services is weak. Implications for implementation of a universal newborn hearing screening program are described.

Introduction

The critical component in early identification of hearing loss is linking the child to the appropriate follow-up services (Apuzzo & Yoshinaga-Itano, 1995). Currently in Ohio, discussion has been initiated regarding models for implementation of a statewide universal newborn hearing screening program. One of the major questions of interest is how the critical link between identification and follow-up will be established based on current programs and systems. The Ohio Department of Health (ODH) is responsible for facilitating the tracking of follow-up care for children who are identified with hearing loss in the state. ODH has established early intervention Central Coordinating Sites throughout the state for direct referral for any child who fails an initial hearing screening. Central Coordinating Sites are designed to be referral sites for young children identified with a hearing loss. The 10 established Central Coordinating Sites are located in various regions of the state, covering 53 of Ohio's 88 counties. A concern raised by ODH is that not all children being identified as having a hearing impairment are referred to the established sites (K. Buhner, personal communication, May 28, 1999). Children who are not receiving services at these sites may not be receiving services elsewhere. Without being able to track follow-up care, there is no opportunity to monitor children to document their progress and outcomes. To implement an effective universal newborn hearing screening program in Ohio, data must be obtained on the current referral process. This information will help to determine if early identification of hearing loss effectively leads to early intervention in the state of Ohio.

This study was conducted to obtain information from licensed audiologists in the state of Ohio regarding referral patterns for children from ages birth to three years. It is hoped that results can be generalized to other states, as similar issues exist nationwide. The need for universal newborn hearing screening has been well documented (Downs, 1994).

Method

Subjects

A list of 790 licensed audiologists in the state of Ohio was obtained from the Ohio Board of Speech Language Pathology and Audiology. A random sample of 500 names was used. This initial sample of 500 was selected in order to provide a sufficient sample for statistical testing.

Instrument

The survey, consisting of 18 questions, was constructed with assistance from the Survey Research Unit located at The Ohio State University. These questions were selected to target issues critical to identification and follow-up practices used by audiologists working with infants and toddlers (see Appendix A).

Procedure

The Dillman Method (1978) was employed for mailing the survey. Three consecutive mailings were sent over a time frame of two months. The first mailing was sent to all 500 audiologists and consisted of a cover letter, survey, and return self-addressed stamped envelope. A postcard was included in the mailing to initiate contact with the Ohio Department of Health, if the respondent was interested in becoming familiar with ODH's programs. In two weeks, a reminder postcard was sent to all participants who had not responded to the first mailing. A third mailing was sent two weeks after the reminder card to all participants from whom responses still had not been received. A tracking number was assigned to each recipient. The self-addressed stamped envelope was then coded to match a master list to facilitate tracking of responses. Survey results were then tabulated using the Statistical Package for the Social Sciences (SPSS version 9.0).

Results

Two hundred eighty-two surveys were returned after the series of three mailings, yielding a return rate of 56.4%. This return rate provided results to be interpreted with a 95% confidence level and sampling error being no more than +/- 5% (Dillman & Salant, 1994). Although 18 questions were available for analysis, only three questions (# 9, 10, and 12) were selected for discussion in this report.

Screenings

Approximately 63% (N=148) of respondents perform audiological screenings on children under 3, with diagnostic evaluations performed by approximately 66% (N=157). Newborn hearing screenings were reported to be performed by approximately 20% (N= 49) of respondents.

Infant Hearing Screening Assessment Program (IHSAP)

The program most commonly used to track early identification of hearing loss and early intervention in Ohio is the Infant Hearing Screening Assessment Program (IHSAP). This program establishes criteria to identify a child at risk for a hearing loss. The child who fails to pass the "paper screening" is then referred for further testing. IHSAP is a program offered through the Ohio Department of Health, which maintains a provider list of audiologists and tracks identification and follow-up care. Forty-two percent (N= 99) of respondents indicated they were providers of hearing assessment through IHSAP. However, the respondents that were not IHSAP providers may still screen infant hearing. Infants with hearing loss identified by these audiologists may not be tracked by ODH. It should be noted that 9% (N= 21) of respondents marked "Do not know," indicating they were unaware of whether or not they were IHSAP providers (see Figure 1).

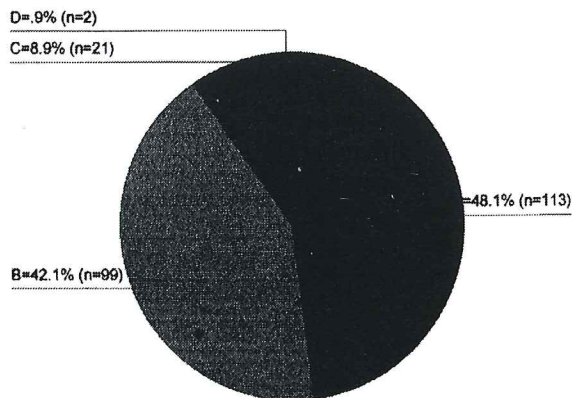


Figure 1: Summary of data for responses to the question, "Are you currently a provider of hearing assessment through Infant Hearing Screening Assessment Program (IHSAP) with Ohio Department of Health?"
 A represents "No" responses (n=113)
 B represents "Yes" responses (n=99)
 C represents "Do not know" responses (n=21)
 D represents surveys without answers (n=2)

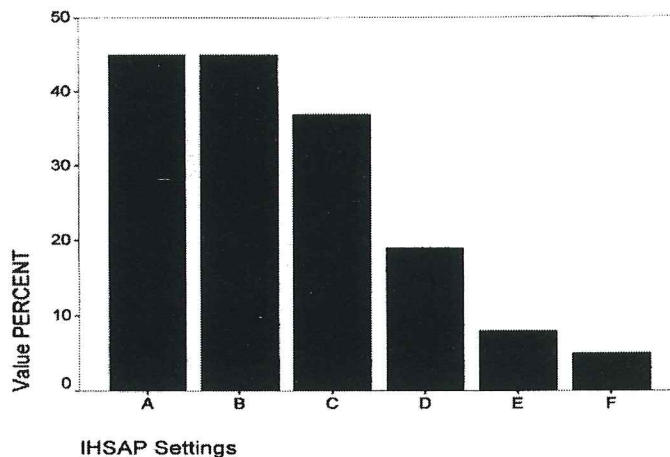


Figure 2: Summary of data for responses to the question, "If you answered that you were a IHSAP provider in the previous question, in what capacity are you involved in the program?"

- A represents 45% (n=45) "Hospital employee providing in-patient hearing assessments"
- B represents 45% (n=45) "Other facility providing out-patient hearing assessments"
- C represents 37% (n=37) "Hospital employee providing out-patient hearing assessments"
- D represents 19% (n=19) "Contract with hospital to perform in-patient assessments"
- E represents 8% (n=8) "Hospital employee supervising nurses, speech language pathologists or aids performing in-patient hearing assessments"
- F represents 5% (n=5) "other answers"

* Note: Some respondents marked multiple answers to this question.

Of the 99 respondents indicated participation in the IHSAP, approximately 72% (N= 72) provided services in the in-patient setting, with 82% (N= 82) having performed screenings in facilities outside of the hospital (Figure 2). Multiple responses were offered for this question, and a given audiologist may perform hearing screenings in both settings. These findings conflict with the assumption that newborns and infants are screened primarily in hospitals, the proposed vehicle for universal newborn hearing screening programs. In Ohio, the majority of those providing hearing screenings are providing those services in out-patient settings. This may result in limited tracking and/or referral of children identified in these settings due to the fact that those participants may not be IHSAP providers.

Referral Patterns

Figure 3 shows that 38% (N= 89) of respondents indicated that they refer to the ODH Central Coordinating Sites. These early intervention programs are located in selected parts of the state. This finding suggests that although ODH may be able to track outcomes in a sizeable number of children with hearing loss in Ohio, the majority of children may not be tracked by the state. Many respondents provided written comments regarding their perception of lack of programs and services available to infants and toddlers with hearing loss in the state of Ohio.

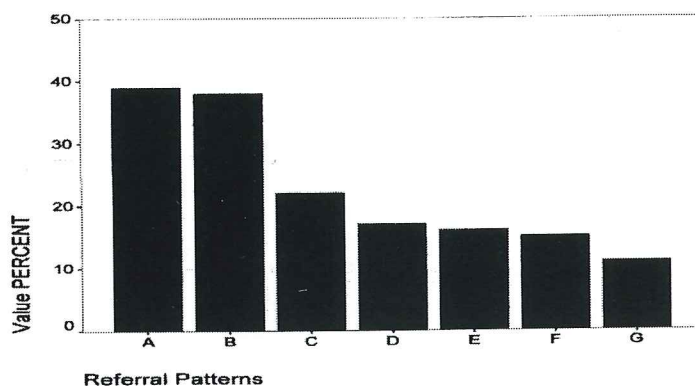


Figure 3: Summary of data for responses to the question, "What percentage of cases do you refer children birth through 3 years to the following programs?"

- A represents 39% (n=91) "Specialized programs for children with hearing loss"
- B represents 38% (n=89) "Early Intervention Central Coordinating Sites"
- C represents 22% (n=53) "Do not refer children under three"
- D represents 17% (n=41) "MR/DD Programs"
- E represents 16% (n=38) "Educational Audiologists"
- F represents 15% (n=36) Surveys without answers
- G represents 11% (n=27) Of respondents did not answer the question

*Note: Some respondents marked multiple answers for this question.

Discussion

If a state is to develop an effective universal newborn hearing screening program, a process for linking identification to intervention must be established. However, this study indicates that within the state of Ohio, several breaks exist in current practice patterns. Although UNHS programs are targeted through in-patient hospital settings, survey results revealed that actual identification is occurring in many out-patient facilities. This situation makes it impossible to track all children identified with a hearing loss. After identification, a direct referral needs to be made to the appropriate follow-up facility. Studies have shown children who receive services within a short time frame after identification have better developmental outcomes (Yoshinaga-Itano, Sedey, Coulter, & Albert, 1998). Currently, ODH tracks only those identified through IHSAP, and no mechanism exists to track the follow-up for others.

As few as 10 hospitals have reported implementing universal newborn hearing screening programs in the state of Ohio; however, 20% (N= 49) of survey respondents worked in universal newborn hearing screening programs. The high number of reported programs may be related to respondents misinterpreting the narrow definition of universal newborn hearing screening programs. The remainder of the respondents reported screening using a "high-risk" register approach. Studies indicated that this type of screening fails to identify 50% of children with hearing loss (Elssman, Matkin, & Sabo, 1987). Results from this survey show 42% (N= 99) of respondents were currently IHSAP providers and 57% (N= 134) were not providers or were unsure of their status as an IHSAP provider. Of the 99 respondents that were IHSAP providers, the majority reported providing screenings in out-patient settings. This poses the concern that children who fail the initial paper screening at birth may not receive

follow-up testing. The majority of all respondents worked in a clinical setting or within a private practice. These facilities may be identifying children with hearing loss yet may not employ IHSAP providers. Therefore, children identified at these sites may not be reported to the state, making it difficult to document the actual number of children in Ohio with hearing loss.

The last critical component for a universal newborn hearing screening program is referral to the appropriate intervention services. ODH has established Central Coordinating Sites located in selected areas of the state for direct referral of any infant who fails an initial hearing screening. Children in these programs can then be tracked by ODH. Figure 3 shows that 38% (N= 89) of respondents refer to these sites, 39% (N= 91) refer to specialized programs for children with hearing loss, 17% (N= 41) refer to MR/DD programs, and 22% (N= 53) do not refer. This survey also suggested that 63% (N= 148) of respondents perform audiological screenings on children under three and 66% (N= 157) perform diagnostic evaluations on children. The obvious concern is that children who fail the current paper screening and are identified as hearing impaired through the diagnostic screening process may not be receiving early intervention services. Therefore, only a minority of infants and toddlers with hearing loss can be tracked by the state in order to document their progress and determine outcomes. These findings suggest that although a connection does currently exist in Ohio between early identification of a hearing loss and placement into the appropriate early intervention service, the connection is weak.

In summary, many issues were addressed within the content of this survey. It demonstrated the need to further examine the current identification and intervention systems that exist in Ohio. A number of survey respondents commented on the need for a comprehensive directory of all services statewide which would be available as referral sources for children with hearing impairments. Individual educational audiologists may be a referral source for infants and toddlers. Ohio has a small number of Ohio Department of Education certified audiologists. These individuals are key players in the services available to young children with hearing loss. The need for educational audiology services is likely to increase as the link between identification and intervention becomes stronger.

Current technology allows for effective identification of hearing loss in infants and toddlers. However, in order for the desired outcomes in the communication, education, and social areas, a mechanism for linking young children and their families to necessary programs and services needs to be implemented. If a UNHS program is to be effective in Ohio, a formal comprehensive tracking program must be developed. In addition, current follow-up programs may need to be more effectively marketed and new programs and services will need to be developed.

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Early Identification and Early Intervention for Infants and Toddlers with Hearing Loss in the State of Ohio

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Appendix A

Early Identification of Hearing Loss

The following definition is provided as a reference to assist you in completing this questionnaire. Section 3701.501 (F) of the Ohio Revised Code states: "Hearing Assessment" means the use of audiological procedures by or under the supervision of an audiologist licensed under the section 4753.07 of the Revised Code, or by a neurologist or otolaryngologist, to identify infants who are at risk of hearing impairment.

1. How long have you been practicing as a licensed/certified audiologist in the state of Ohio? (Please indicate the number of years) _____ Years.

2. Please check your primary work setting?

- Hospital
 Private Practice
 Local or state government agency (Ohio Department of Education, ODH etc.)
 Educational setting (Educational Audiology)
 Not currently working in the field of audiology
Other _____

3. Do you currently hold an Ohio Department of Education certification in Educational Audiology?

Yes No

4. Do you perform audiological screenings on children under 3?
 Yes No

5. Do you perform diagnostic evaluations on children under 3?
 Yes No

6. Do you perform hearing aid fittings on children under 3?
 Yes No

7. What percentage of cases do you perform behavioral assessments on children in the following age groups?

% Birth to 6 months % 3 years to 6 years
 % 6 months to 1 year % 6 years to 12 years
 % 1 year to 3 years % 12 years to 18 years

8. Do you currently participate in a universal newborn hearing screening program?

Yes No Do not know

9. Are you currently a provider of hearing assessment through Infant Hearing Screening Assessment Program (IHSAP) with the Ohio Department of Health?

Yes No Do not know

10. If you answered "Yes" to number 9, in what capacity are you involved in the IHSAP? (please mark all that apply)

- Hospital employee providing in-patient hearing assessment
 Contract with hospital to perform in-patient assessments
 Hospital employee providing out-patient hearing assessment
 Other facility providing out-patient hearing assessment
 Hospital employee supervising nurses, speech/language pathologists or aides performing in-patient hearing assessments
 Contract with hospital to supervise nurses, speech/language pathologists or aides performing in-patient assessments

11. Please check the type of test you use to screen children under the age of 3 years?

ABR OAE/DPOAE/TEOAE Behavioral Techniques
 Do not evaluate children under 3
Other _____

12. What percentage of cases do you refer children birth through 3 years to the following programs? (please write the appropriate information on the line)

% Specialized programs for children with hearing loss
 % MR/DD programs
 % Early Intervention county Central Coordinating Sites

% Educational Audiologists
 I do not refer children under three
Other _____

Cochlear implants
 Educational Audiology

Thank you for your participation

13. Please check those services/therapy approaches which you provide for children under 3:

Total Communication Hearing aid fitting
 Cued Speech Screening/evaluation
 Auditory Verbal None provided
 Do not provide services for children under 3
Other _____

14. Please indicate percentages of follow-up services you provide for children under 3: (please write the information on the line)

% Hearing re-evaluations % Hearing aid fittings
 % Aural re-habilitation % Cochlear implants
 I do not provide follow-up services

15. Do you dispense hearing aids to children?

Yes No

16. Please check the funding sources utilized by your facility in providing hearing aids to children under 3:

BCMH
 Medicaid
 Private organizations
(Specify _____)
 No funding is available in my area
 Insurance
 HMO
 Private pay
 Do not provide hearing aids to children under 3
Other _____

17. Please check the courses that you had in your graduate program:

Auditory development
 Amplification for children under 3
 Diagnostics in pediatrics
 Counseling skills
 Types of communication methodologies
 Pediatric aural habilitation
 Educational Audiology

18. Please check the clinical experiences you had in your graduate program:

Infant hearing screening techniques
 Amplification in pediatrics
 Diagnostics in pediatrics
 Pediatric aural re-habilitation