Telehealth: Improving Children’s Access to Services in Urban Environments

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ABSTRACT

During the second year of this grant-funded project, speech, language, and hearing education and services were provided to families of children living in lower income Cleveland neighborhoods at two community health clinics through use of telepractice technology. Caregivers identified children for screening and received telepractice services during scheduled phone calls or videoconference visits. A speech-language pathologist and an audiologist were on-site to review and interpret results. Results were deemed as pass/fail by the facilitator. Results were also analyzed by the audiologist in real-time using NTR CONNECT. The agreement between the facilitator’s pass/fail recommendation and the audiologist’s recommendation was compared. Speech-language screenings were performed via Skype by the SLP. During the last month of the project, speech-language screenings were conducted by the facilitator on-site and supervised by the SLP. Results of on-site screening matched for CA were compared to screening conducted by telehealth.

INTRODUCTION

Approximately 25-30% of children referred to Cleveland Hearing and Speech Center (CHSC) by their pediatric or community health clinics for speech-language and/or hearing evaluations do not retain their initial appointments. A similar percentage of in-office therapy appointments are missed as a result of various issues faced by these families including transportation, scheduling difficulties, childcare issues or family crises. This project was designed to improve the health and well-being of this underserved urban community by increasing the accessibility of speech-language and hearing services to families with children born through 6 years of age.

METHODS

• Computer workstations were established CHSC and two community health clinics
• A speech-language pathologist and an audiologist trained the CHSC workstation
• Students served as on-site facilitators at the community health clinics
• Teleconferencing between workstations was established via Skype
• Six hours per week were devoted to screenings
• Children aged birth through 6 years were identified by physicians, nursing staff, or on facilitator and were offered speech, language and hearing screenings
• Hearing screenings were performed by the facilitator and were supervised by the audiologist via videoconferencing during the first year
• During the last 6 months of the project, pure tone screenings were performed by the audiologist via Skype and a PC based audiometer using remote desktop control (NTR CONNECT). Screenings were performed a second time by the facilitator on-site. 20 dB at 1000, 2000 & 4000 Hz was the criterion for passing.

• The agreement between the facilitator’s results and the audiologist’s results was compared
• OAEs and tympanometry were performed by the facilitator using the PC based instrument. Results were deemed as pass/fail by the facilitator. Results were also analyzed by the audiologist in real-time using NTR CONNECT.
• The agreement between the facilitator’s pass/fail recommendation and the audiologist’s recommendation was compared

• Speech-language screenings were performed via Skype by the SLP
• During the last month of the project, speech-language screenings were conducted by the facilitator on-site and supervised by the SLP. Results of on-site screening matched for CA were compared to screening conducted by telehealth

• Families assigned in consultation with the SLP or audiologist regarding screening results
• Families were given an ASHA brochure and an ASHA DVD regarding speech, language and auditory development
• Copies of screening results were distributed to caregivers and their healthcare provider
• Demographic information, screening results, and caregiver satisfaction with telehealth services were collected and analyzed

MATERIALS

• 3 Dell computer workstations with 17” monitors & Microsoft Office software
• 3 Microsoft LifeCam VX-5000 webcams & Skype 3.6 for Windows (free download at skype.com)
• 1 Earscan Acoustic Impedance Audiometer & OtoRead Automatic Handheld OAE Instrument
• Welch Allyn Otoscope
• 1 Med Rx Avant A2D Diagnostic Audiometer & 1 Welch Allyn Diagnostet
• 30 DELL computer workstations with 17” monitors & Microsoft Office software
• 30 LifeCam VX-5000 webcams & Skype 3.6 for Windows (free download at skype.com)
• 30 Earscan Acoustic Impedance Audiometers & 30 OtoRead Automatic Handheld OAE Instruments
• 30 Welch Allyn Otoscopes
• 30 Med Rx Avant A2D Diagnostic Audiometers & 30 Welch Allyn Diagnostets

RESULTS SUMMARY

• Year 1 Results
• 183 children were screened
• 163 children were screened
• 96% passed pure tone or OAE screen
• 96% passed pure tone or OAE screen
• 87% passed tympanometry
• 87% passed tympanometry
• 72% passed speech-language screen
• 58% passed speech-language screen
• 32% of children screened were under 3 years of age
• 41% screened were under 3 years of age
• 100% agreement between facilitator reading and audiologist’s analysis of OAE screening results (N=45)
• 100% agreement between facilitator reading and audiologist’s analysis of tympanometry results (N=55)
• 84% agreement between facilitator reading and audiologist’s analysis of tympanometry results (N=55)
• 93% agreement between on-site and telehealth speech-language screening results (N=5)
• 72% of families who scheduled an evaluation at CHSC after participating in telehealth services attended this appointment

CONCLUSIONS

• Families at an urban community health clinics accepted telehealth as a service delivery model for speech-language and hearing screenings and consultations
• Further discussions with these families and physicians/nursing staff revealed a strong interest in increasing the scope and frequency of services provided through telehealth
• This collaborative project with our community health clinics allowed us to work with younger children than we would typically see at Cleveland Hearing and Speech Center
• Telehealth provided a cost-effective means to engage families in their neighborhoods and have speech-language and hearing services integrated in young children’s health care

• Preliminary findings suggest telehealth in a service delivery model that has the potential to be a cost-effective strategy for providing speech, language and hearing services in urban community health clinics to very young children who may not otherwise be seen
• Preliminary data suggest that results of OAE screenings performed by a facilitator on-site and reviewed by an audiologist in real-time via telehealth are valid
• Preliminary findings suggest that pure tone screenings performed on children in an urban clinic via telehealth are valid
• Preliminary data suggest that speech-language screening performed on children in an urban clinic via telehealth are valid
• The audiologist’s ability to accurately interpret test results of OAE and tympanometry performed by the facilitator was enhanced by real-time transmission of data thereby reducing the rates of over- and under-referrals for follow-up

• Participation in telehealth services did not impact rates of attendance for first scheduled visits at CHSC

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REFERENCES


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