REMOTE EVALUATION AND TRAINING FOR AUGMENTATIVE COMMUNICATION DEVICES THROUGH TELEREHABILITATION

Andrew Jinks and Richard Simpson
University of Pittsburgh, Pittsburgh, PA 15213

INTRODUCTION

The provision of remote augmentative communication evaluation and therapy services to persons with complex communicative needs offers a unique opportunity to provide high quality AAC clinical services in patient's homes. A model for providing remote evaluations, training and therapy will be shared. This model is currently being studied through the Rehabilitation and Engineering Research Center on Telerehabilitation (RERC-TR) at the University of Pittsburgh. Use of a synchronous "and asynchronous" telerehabilitation infrastructure - VISYTER permits significantly improved video, audio and data monitoring over previously used low-bandwidth telephone systems. A secure system also protects sharing of medical information as opposed to open-ended video conferencing systems (i.e., Skype, Oovoo). The VISYTER system, developed at the University of Pittsburgh, has been designed to take into account the environments and requirements of rehabilitation services. The requirements include minimal equipment beyond what is available in many rehabilitation settings and minimal maintenance. In addition, the platform has been designed to be able to adjust to different bandwidths, ranging from 4G Internet to residential broadband connections. VISYTER is a secure integrated system that combines high-quality videoconferencing with access to electronic health records and other key tools in telerehabilitation such as stimuli presentation, remote multiple camera control and remote control of the display screen. These are particularly helpful and allow the AAC clinician to simultaneously see keyboard / touch screen access, users' facial expressions and whole body views.

SUBJECTS

Subjects in the current study include those with augmentative communication needs who have spelling ability, are English speakers, and have internet access in their homes. Initially, the study focused on patients with ALS, but has expanded to other diagnoses. Patients with aphasia are not currently included in the study. Graduate students serve as remote assistants during the telerehabilitation sessions. Patient's speech intelligibility is measured with an abridged version of the Assessment of Intelligibility of Dysarthric Speech. A variety of AAC devices (from manufacturers – DynaVox, Prentke-Romich company and tobii ATI) and access methods (direct selection, scanning, head pointing, and eye gaze) are trialed during the initial evaluation to give subjects the opportunity to choose a preferred communication option.

TRIALS

Once a device has been selected for consideration, a device loan is arranged through either the PIAT (Pennsylvania Initiative on Assistive Technology) library, the ALS Association loan closet or though an AAC device manufacturer. The potential for between one and five telerehabilitation sessions per patient are being studied. Remote sessions occur during the initiation and termination of the device loan period. With assistance from the expert clinician, AAC software selection, access method adjustments, customization and basic

programming are reviewed with the subject and family members. At the completion of the trial, an evaluation report is submitted and additional paperwork is obtained to apply for insurance funding. When subject's own devices are obtained, ongoing remote sessions are scheduled to assist the patient with effective set-up of the device. At the conclusion of each remote session, subjects complete a questionnaire expressing their satisfaction levels with the remote service delivery.

FOLLOW-UP AND OUTCOMES

After patients obtain their own AAC device, follow-up sessions focus on continued training and measurement of performance skill and device acceptance. Use of language activity monitoring coupled with several outcome measures is enabling investigators to determine effectiveness of this remote service delivery model. Outcome measures include the: Psychosocial Impact of Assistive Devices Scale (Gryfe and Jutai, 1999), Communication Effectiveness Scale (Beukelman, Garrett and Yorkston, 2007) and Proficiency Probe for Competence levels of AAC users (Jinks, 2010).

Preliminary data including results of 20 subjects in various stages of the evaluation and procurement process will be discussed. Subject and family member's initial response to remote service provision has been quite favorable. Subjects are comfortable with a remote visit by an AAC expert. Having a student assistant present in the home served to assist with positioning of cameras, AAC devices and problem-solving TR connections.

DISCUSSION

Discussion will also address technical and security challenges to service provision through internet access. We seek to determine if individuals with disabilities can obtain appropriate prescriptions, therapy and training in communication technologies through the use of a TR system. We anticipate that service delivery mediated with TR technology will enable us to provide better AAC services, and that such findings will facilitate the implementation of (and reimbursement for) TR services throughout the country.

REFERENCES

Gryfe, P and Jutai, J (1999) Psychosocial Impact of Assistive Devices Scale.

Beukelman, D, Garrett, K, and Yorkston, K (2007) Communication Effectiveness Scale for Individuals with ALS in Augmentative Communication Strategies for Adults with Acute or Chronic Medical Conditions. Brookes Publishing.

Jinks, A (2010) Proficiency Probe for Competence levels of AAC users, unpublished paper.

LEARNING OBJECTIVES

Participants will be able to identify components of a telerehabilitation service delivery program for providing remote augmentative communication services.

Participants will be able to identify outcome measures for determining satisfaction with telerehabilitation and augmentative communication service delivery.