The Development of ICU-Talk: An AAC Device for Intensive Care Units

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Abstract

ICU-Talk is a three year, multidisciplinary research project. The project team developed and tested a computer based AAC system with intubated patients in a medical intensive care unit (ICU). This session will describe the development of the system, the interface design and the patient trials. The challenges faced when working in the ICU with patients and nursing staff will be highlighted. Final results from the project will be presented along with a short video clip of the system in use. The discussion will include an overview of the next ICU-Talk project and future development areas.

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Background

ICU-Talk is a computer based AAC device developed specifically for intubated patients in intensive care units (ICU). A multidisciplinary team comprising a speech & language therapist, an ICU specialist nurse, software engineer and a doctoral student worked together on this three year project which was completed in July 2002. The aim of the project was to develop and evaluate an AAC device for alert and orientated patients in ICU who are unable to communicate verbally due to oral or tracheal intubation. Their inability to communicate is temporary and once the tubes are removed they are able to vocalise again.

There are no currently available AAC systems that have been developed specifically for patients in ICU. Research suggests that introducing AAC to this patient group is very complex and often unsuccessful (Fried-Oken et al, 1991). Although many patients attempt to communicate by mouthing, gesture or writing, nurses find it very difficult and time consuming to interpret these attempts (Albarran, 1991). Patients in ICU often have additional problems including physical weakness, reduced concentration and learning, memory difficulties, extreme fatigue and reduced motivation. These factors make designing a device for this patient group particularly challenging. This paper will outline the development of the ICU-Talk system and it's evaluations.

Method

The ICU-Talk system is designed to be easy to use and quick to learn. It comprises a choice of two interfaces, a database of prestored utterances, some of which can be personalised using a computer-based interview and uses synthesised speech. It can be accessed by touch screen, mouse emulation or a single switch. The database of phrases was developed by asking the nursing staff for examples of phrases patients frequently communicate to them and by recording the communication attempts of patients in ICU (MacAulay et al, in press). From the observation it was clear that patient not only communicate physical needs and wants but also ask about family and friends and attempt to engage in social interaction. In order to include some phrases which would allow this type of discourse to take place a computer-based interview was developed (Etchels et al, in press). This short interview is completed by a family member or close friend and allows personalised phrases to be included in the database for immediate use by the patient.

The ICU-Talk system was available to trial with patients in ICU for one year. Patients who met a set of selection criteria were invited to participate in the research project and trial the ICU-Talk system. Information about the patients use of the system was collected directly by logging their use of the system. Additional information was captured from patients, relatives and nurses using questionnaires and expert testimony.

Results

The final results from this project will be presented at this conference. Preliminary results show patients are able to use ICU-Talk to communicate needs, wants and for social interaction. Patients at times find it difficult to locate the utterance they want for the extensive database. The issue of data retrieval requires ongoing work. Patients use it to supplement natural methods of communication such as mouthing and facial expression. Nursing staff in ICU feel that it can assist in communicating with patients but the size of the system puts some patients off using it and can impede their vision of the patient at times.

Discussion

ICU-Talk has proved successful for a specific group of intubated patients in ICU. The complexity of the needs of the ICU patient and the ICU environment are such that a system designed specifically to meet their needs is required. Patient numbers are small so it is hoped to run a multi-centre project to further test the system and to introduce and test changes to the data retrieval methods employed in ICU-Talk.

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