ICU-Talk: A New AAC Device for Intensive Care Patients

MacAulay F, Etchels M, Judson A, Ashraf S, Brodie J, Ricketts IW, Waller A, Warden A, Shearer A, Alm N, Gordon B

Introduction

Improving communication for patients in intensive care units (ICUs) has been identified as an area that requires more research (Wojnicki-Johansson, 2001; Menzel, 1998), but little has been published about this area in recent years. AAC intervention for patients within ICU is often limited to those with a neurological condition or who have a prolonged stay in ICU. However, there is another group of patients who would benefit from AAC intervention. These patients are alert and attempting to communicate but are still intubated, either orally, or via a tracheostomy tube. For these patients this situation is temporary and usually occurs when their sedation is reduced prior to extubation. As soon as they are extubated they will be able to communicate using speech again. Currently these patients rely on mouthing, gesture, alphabet charts and writing to communicate with staff and relatives. It has been well documented in the literature that nurses and patients find these methods both frustrating and time consuming (Albarran, 1991; Ashworth, 1984). When questioned after their discharge from hospital, inability to communicate while in ICU is highlighted by patients as being the cause of frustration and fear (Russell, 1999; Menzel, 1998)

The ICU-Talk Project

The ICU-Talk was a three-year multi-disciplinary research project funded by the EPSRC (Engineering and Physical Sciences Research Council). The aim of the project was to develop and evaluate a computer based communication aid specifically for intubated patients in ICU. The project was staffed by a speech and language therapist, an ICU nurse, a software engineer and a doctoral student. The project was divided up into 3 phases, development, intervention and evaluation.

In the development phase the hardware was customised, and the software and interfaces developed. A suitable database of phrases was developed using data collected from ICU nurses and by observing ICU patients attempting to communicate. A computer interview tool was developed in order to provide the patients with some personalised phrases. The patients' relatives completed the interview and the information obtained was automatically turned into conversational phrases and questions which were added to the patients' database. The interfaces were designed to be simple to use and easy to learn so that only minimal training was required. Two different interface designs were developed, and both support single switch scanning, mouse emulation and touch screen. The hardware used was robust and waterproof so that it could be washed with disinfectant between patients. A special mounting system was built by the local medical physics department so the screen could be angled safely above a patient lying in bed or be used by a patient sitting in a reclining chair.

Results and Discussion

The ICU-Talk device was trialled with patients in the ICU at Ninewells Hospital, Dundee. A flowchart was developed which allowed nurses in ICU to identify potential users and refer them to the ICU-Talk project. 17 patients used the ICU-Talk device in total. Evaluation involved using questionnaires completed by the nurses and the patients' relatives and using information collected automatically by the computer, such as number of button presses and

This paper will describe the development of the ICU-Talk device and discuss the challenges encountered when working in the ICU environment with staff and patients. Two case studies will be presented to illustrate how ICU-Talk works and the issues involved in the evaluation.

References

Albarran, J.W. (1991) A review of communication with intubated patients and those with tracheostomies within an intensive care setting, *Intensive Care Nursing*, Vol. 7, pp. 179-186.

Ashworth, P. (1984). Staff-patient communication in coronary care units. *Journal of Advanced Nursing*, Vol. 9, pp.35-42.

Menzel, L .K., (1998) Facors related to the emotional responses of intubated patients to being unable to speak. *Heart & Lung*. Vol 27 No 4, pp 245-251.

Russell, S. (1999) An exploratory study of patients' perceptions, memories and experiences of an Intensive Care Unit, *Journal of Advanced Nursing*, Vol. 29, No. 4, pp. 783-791.

Wojnicki-Johansson, G. (2001) Communication between nurse and patient during ventilator treatment: patient reports and RN evaluations. *Intensive and Critical Care Nursing* 17, pp 29-39.