Trip Report

UK Critical Care Research Forum 6-7th June 2019

By Carla McClintock

As a critical care nurse currently in the process of applying for a HSc Research & Development PhD Fellowship I sought funding from the BACCN to present my research proposal at the twelfth annual UK Critical Care Research Forum (UKCCRF) in Leeds from 6th to 7th June 2019. UKCCRF is the leading critical care research meeting in the UK attended by active multidisciplinary researchers. It is the forum for discussing research priorities, obtaining feedback on research design, critical care community approval and support for upcoming research. My presentation entitled 'Feasibility of a Speech Recognition Application as a communication aid for critical care patients with tracheostomies' provided a brief overview of why such a study is needed now, what the study will involve, how it will be conducted and who will be involved.

In the UK, approximately 10,000 patients annually undergo a tracheostomy. Within the critical care setting tracheostomy is a common procedure to facilitate mechanical ventilation. Improved use of percutaneous tracheostomies and evidence for the potential benefits of early tracheostomies has seen an increase in the number of tracheostomy patients in ICUs. However, the position of the tracheostomy tube below the vocal cords prevents speech and patients are unable to communicate verbally. This compounds what is an already stressful and traumatic experience for the ICU patient. The impact of altered communication function has been described as one of the most stressful events of ICU admission and the presence of a tracheostomy tube with an inflated cuff significantly impacts upon an individual's ability to effectively communicate, to interact and to participate within the heath system. Patients report loss of voice leading directly to frustration, panic, anger, fear, a sense of depersonalisation, powerlessness and a sense of futility. Importantly studies report how emotional distress experienced in the ICU is a predictor of negative psychological outcomes during recovery.

Patients often rely on facial expressions, gestures and writing to communicate, but these are often ineffective. A Speech Recognition Application for the Voice Impaired (SRAVI) has been developed for lip reading and may provide a useful alternative communication aid for tracheostomy patients. My research study will deliver SRAVI as a communication aid for patients with tracheostomies who cannot speak but can move their lips normally. SRAVI is based on LipRead, a visual speech recognition (VSR) system, which analyses and translates

lip movement into recognisable words. It uses artificial intelligence to learn how an individual's lips moves and stores this function in the cloud. This allows various devices to access the system unlike eye gazing systems which are restricted to one device per individual. The SRAVI application can be deployed on android tablets and smartphones.

The overall aim of my study is to test the feasibility of a SRAVI within ICU/HDU to improve communication in patients with tracheostomies. This will be done by conducting a proof of concept feasibility trial to test the feasibility and acceptability of the speech recognition app. This will compare two forms of service provision: i. Usual care (control arm) and ii. Usual care plus access to speech recognition app (intervention arm). The study will also determine attitude towards the speech recognition application among tracheostomy patients, significant others and multidisciplinary team members and gather information on current UK standard practice in communicating with tracheotomised patients in ICU/HDU.

The opportunity to both attend and present at this conference was extremely valuable and contributed to both my personal and professional development. It provided me with the opportunity to network with critical care experts from many different countries and enabled me to disseminate current knowledge and encourage discussion and sharing of ideas surrounding my topic area. It also allowed me to explore my research design and methodology with other critical care researchers who have used similar approaches to further inform my research. The members of the forum confirmed that this proposal meets the current priorities for critical care research, was highly relevant and well designed to answer the questions addressed.

I am currently employed as a staff nurse in the critical care unit of Altnagelvin Hospital, Derry Northern Ireland. This enables me to see first-hand the experience of ICU patients. Furthermore, I myself am an ICU survivor having spent three months in ICU. I know only too well the impact of being rendered voiceless as a tracheostomy patient and the devastating impact of that experience long after the ICU event. I am passionate about improving the care of ICU patients and I am committed to pursuing a career in research that will help me to answer clinically driven research questions. I want to gain valuable postdoctoral skills and experience in critical care research and to pursue a research career within the HSC NI. I am keen to join the growing group of researchers within Queens University, Belfast and HSC NI with an interest in this area and, together, to make a difference to the lives of ICU patients.