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Which alternative communication methods are effective for voiceless patients in Intensive Care Units? A systematic review

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ABSTRACT

Objective: To assess the effectiveness of Augmentative and Alternative Communication (AAC) strategies to enable people who are temporarily voiceless due to medical intervention, to communicate.
Methods: A systematic review informed by a protocol published on an international register. Ten databases were searched from January 2004 to January 2017. Included studies assessed the effect of using AAC strategies on patient related outcomes and barriers to their use. All included studies were quality appraised. Due to the heterogeneity of interventions and outcome measures findings were narratively reviewed.
Results: Twelve studies met the inclusion criteria and were included in the review reporting outcomes from 1981 patient and 454 health professional participants. The quality of included studies were moderate to weak. AAC communication strategies increased the number of communication interactions, improved patient satisfaction with communication and reduced communication difficulties. Barriers to usage were device characteristics, the clinical condition of the patient, lack of timeliness in communication and staff constraints.
Conclusions: There is preliminary, but inconsistent evidence that AAC strategies are effective in improving patient satisfaction with communication and reducing difficulties in communication. A lack of comparable studies precluded the identification of the most effective AAC strategy.

Implications for Clinical Practice

- There is preliminary but inconsistent evidence that Alternative and Augmentative Communication (AAC) strategies are effective in improving patient satisfaction in communication and reducing difficulties in communication.
- The most effective AAC strategy could not be identified due to the lack of comparable trials.
- Barriers to using AAC strategies include poor positioning of the device, the medical status of the participant, the functionality an bulkiness of the device, the timeliness of communication, and staff time constraints or unfamiliarity with the equipment.

Contents

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Introduction

Intensive care units (ICUs) provide treatment and monitoring for patients with life threatening conditions. Respiratory support through intubation and mechanical ventilation is a common intervention received by almost half of all patients admitted to ICUs; a figure that equated to over 69,000 patients in 2012 in the United Kingdom (UK) alone (Intensive Care National Audit and Research Centre, 2014). Data from other countries indicates that mechanical ventilation is used globally (Rose et al., 2009; Wunsch et al., 2013). Whilst this is lifesaving treatment, patients are rendered temporarily voiceless which can cause psychological distress (Khalaila et al., 2011), frustration (Foster, 2010), and panic (Engström et al., 2013). Importantly emotional distress experienced in the ICU is a predictor of post-traumatic stress disorder during recovery (Wade et al., 2012). Effective communication strategies have the potential to improve long-term health outcomes of ITU survivors but are difficult to implement in clinical practice. Even when communication is possible, via written or non-verbal means, it seldom occurs in a timely fashion, leaving room for improvement (Happ et al., 2007).

The phrase Augmentative and Alternative Communication (AAC) strategies describes a set of tools, technologies and/or approaches (see Table 1) used to solve communicative challenges (International Society for Augmentative and Alternative Communication, 2014), and provide a potential solution to communication difficulties for voiceless patients. Although AACs are typically used by patients who have become voiceless due to acquired neurological or neuromuscular conditions, they can also be used to optimise communication for intubated patients in ICUs. The aim of this systematic review is to identify the most effective AAC strategies and potential barriers to their use in critical care settings.

Table 1
Examples of Augmentative and Alternative Communication (AAC) strategies.

Low-technology AAC	*High-technology AAC strategies*
• Communication/picture boards or books • Alphabet charts • Symbol charts • Paper and pen	• Speech-generating devices e.g. the DynaMyte and the MessageMate • Mobile technologies using 'apps' • Eye controlled assistive technology • TheGrid2 AAC package, Sensory Software International, UK. Running on standard PC integrated with an 'all-in-one' eye tracker and touch screen device • LifeVoice computer communication system (LifeVoice Technologies Inc, NJ).

Methods

A systematic review of the published literature was conducted as described in the search strategy. Accepted approaches to support the rigour of our methods were adopted, as described in the review protocol (CRD42015014761) which is registered on an international database http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42015014761. These approaches included the independent selection, review and appraisal of studies. The manuscript was structured to reflect the recommendations described in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline (Liberati et al., 2009) to reflect best practice and transparency in reporting of review methods.

Aim and objectives

To assess the effectiveness of Augmentative and Alternative Communication (AAC) strategies in enabling people who are voiceless due to medical intervention, to communicate, with the following objectives:

1. Identify the most effective AAC strategy
2. Identify the impact of AAC strategies on patient outcomes up to 12 months after implementation
3. Identify barriers to AAC use in ICU

Search strategy

An information technologist assisted the team in the development of a robust search strategy which was piloted, adapted for use and systematically applied across multiple data bases (see Appendix A). Studies published before 2004 were excluded to reflect the recent advances in technology. A search of grey literature was conducted using the Evidence Search database. Initial searches were completed on 7.10.14 and updated on 6.1.17.

Study selection

Titles and abstracts of studies published in English were independently assessed by two reviewers (HC and FA) for eligibility against the pre-determined inclusion and exclusion criteria (see Table 2) and categorised as 'possibly relevant' or 'clearly not relevant'. This process was repeated with full text articles (HC and FA or WM) grouping studies as 'relevant', 'definitely irrelevant' or

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