

An innovative augmentative and alternative communication method consisting of a mobile application (app) on an Apple iPad®, such as the Arthur app, can provide patients with barriers to verbal communication an easy means to express their needs, feelings, and questions. When using this technology, it is important to consider the right patient population at the right time, as well as the proper quantity and quality of information.

#### AT A GLANCE

- Augmentative and alternative communication devices offer a substitute when speech is absent or limited.
- Patients can use augmentative and alternative devices to communicate basic needs and ask questions.
- Augmentative and alternative communication devices can be used alone or in conjunction with other communication tools.

#### KEYWORDS

mobile application; device; communication; barriers; hospital; technology

#### DIGITAL OBJECT IDENTIFIER

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# The Arthur App

## Designing an augmentative and alternative communication method for use with hospitalized patients

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Verbal communication is impaired in patients requiring an alternative airway, such as an endotracheal tube or tracheostomy. Issues in communication between patients and members of the healthcare team within the healthcare system are a known risk factor of preventable patient harm (Burgener, 2017). Patients with head and neck cancer may require a temporary or permanent tracheostomy because of surgical interventions. The use of communication aids for patients with barriers to verbalization, such as an endotracheal tube and tracheostomy, has been shown to decrease patient anxiety (Hosseini et al., 2018).

Augmentative and alternative communication (AAC) is augmentative when it supplements existing speech, alternative when speech is absent or not functional, or temporary, such as when used with critically ill patients who are intubated (Elsahar et al., 2019). AAC strategies are considered low- or high-tech and include items such as alphabet boards, erasable boards and pens, picture boards, paper and pencil, and electronic screens. Appealing and practical aspects of the use of AAC mobile applications (apps) have been noted in the literature and include customization, animation, color-coding, autonomy, ease of understanding and learning, utility, engagement, and satisfaction (Boster & McCarthy, 2018; Crook et al., 2017; Lorusso et al., 2018).

Koszalinski et al. (2017) evaluated the use of a communication app called Speak

for Myself in critical care based on the perspectives of 12 nurses. Findings indicated that 42% of nurses acknowledged that their patients were able to communicate better—about pain needs in particular—with the use of the app (Koszalinski et al., 2017). Nurse researchers have developed a program of research targeting communication among nurses and nonvocal critically ill patients who were mechanically ventilated (NINRnews, 2017; Trotta et al., 2019). The SPEACS (Study of Patient–Nurse Effectiveness with Communication Strategies) trial was a quasi-experimental clinical trial that consisted of nursing education and basic, low-tech communication tools at the bedside. Happ et al. (2014) reported on a three-phase study using low-tech communication aids (phases 1 and 2), knowledge and skill training (phase 2), electronic communication devices (phase 3), and involvement of speech language pathologists (phase 3) and found that communication was most successful for pain with increased use of ACC modalities throughout the study phases.

The idea for an electronic communication app for the current study was a result of a staff member's encounter with a family member who was unable to speak because of an endotracheal tube. She resorted to a handmade, low-tech alphabet board at that time. The staff member's idea was submitted to the hospital's strategic innovation department and approved for further development. An interprofessional team engaged in numerous activities, including staff and former patient interviews, to determine appropriate messaging and