CLINICAL BOTTOM LINE:
Although evidence is limited, emerging research suggests that the use of AAC intervention (communication boards, specialised talking tracheostomy, electrolarynx and high tech AAC) in nonverbal ICU patients can result in improved communication effectiveness. No specific intervention was seen to be of greater benefit over another and there was no evidence that trialling AAC caused harm. More robust studies including large multi-site studies to compare the effectiveness of the various AAC options are needed as well new innovative communication techniques and equipment.

2. Clinical [PICO] Question
Does AAC assessment and intervention improve the communication effectiveness of patients in the intensive care setting?

3. SearchTerms/Systems:
Two searches were conducted with search terms / systems outlined below
- Psychinfo, Cinahl, Medline, EMBASE, Nursing@Ovid
- Search terms: ICU, ITU, intensive care, critical care, Adults, AAC, Augmentative and alternative communication, communication boards, Communication, effective communication, participation, inclusive care, patient centred care
- English articles only. Between 2003-2018


Criteria for including an article:
Three systematic review manuscripts that addressed our clinical question were identified during the above literature searches. In order to avoid over-reporting of data, any article that was included in the systematic reviews was not capped separately. Any papers that addressed our clinical question but were not included in the systematic reviews were capped separately. This left one treatment paper by Rose et al to also be capped (i.e. four papers in total were capped).

4. Quantity of the evidence based:
Four manuscripts were located and suitable for capping (3 Systematic Reviews - Carruthers et al., 2017; Finke et al., 2007; ten Hoorn et al., 2016 and treatment paper Rose et al., 2018).

5. Overall level of the evidence base:
III-2 - Carruthers et al., ten Hoorn et al., Finke et al
IV - Rose et al

---


PLEASE NOTE THE DATE WHEN THIS CAT WAS COMPLETED,
BECAUSE THE CLINICAL BOTTOMLINE MAY HAVE CHANGED IN LIGHT OF MORE RECENT RESEARCH.
6. Nature the evidence base:

<table>
<thead>
<tr>
<th>Feasibility</th>
<th>Efficacy</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>3</td>
</tr>
</tbody>
</table>

7. Overall findings from the evidence-base are:

☐ compelling  ☒ suggestive  ☐ equivocal

Comments

Overall, the evidence base was suggestive that different forms of AAC may improve communication effectiveness of patients in the ICU setting. No one form of AAC was seen to be superior to another and there was no identified harm from trialling the use with ICU patients. Different forms of AAC should be considered on a patient by patient basis with education provided to all communication partners of the patient to enhance communication effectiveness and patient satisfaction.

Carruthers et al. (2017)

There is a limited amount of low-medium level evidence to suggest that AAC intervention can result in improved communication effectiveness (as measured by number of interactions, reduced communication difficulty, and patient satisfaction with communication interactions) for patients who in the intensive care setting and unable to communicate, however further evaluation is required regarding the impact of a number of identified barriers to the use of AAC in this setting.

STUDY FINDINGS:

- Current evidence is limited by variability of study design (unable to easily compare studies) and use of researcher generated outcome measures.
- Preliminary evidence suggests that AAC (low and high tech) can increase number of communication interactions, reduce communication difficulties, and increase self-reported satisfaction with communication, however that it does not translate to differences in pain score, pressure sore incidence, use of sedation or use of physical restraints.
- Evidence suggests that with the right supports (e.g. from NS) ICU patients can acquire the skills required to use AAC competently.
- A number of barriers to using AAC in ICU/hospitals exist, including: time constraints, staff knowledge/competence with equipment, poor patient positioning, size/bulkiness of AAC devices and length of time taken to communicate using AAC devices (i.e. device functionality).

Carruthers et al. (2017)

Findings of this systematic review on communication interventions for conscious and mechanically ventilated patients in the ICU is that in general all four communication intervention types (communication boards, specialised talking tracheostomy tubes, electrolarynx and high tech AAC) showed demonstrable improvement in the patient’s ability to communicate. A combination of the communication methods is advisable.

STUDY FINDINGS:

- Current evidence were low to moderate level evidence and have a moderate to high risk of bias within the studies therefore results should be interpreted with caution and impacts the generalizability of the results.
- Emerging evidence suggests that these AAC types (listed above) can increase patient satisfaction, be restorative and compensatory to a patients’ communication and used to overcome physical limitations.
- Limitations in the application of AAC techniques were perceived to be time consuming and not always readily accessible.
- Across the studies included within the systemic review, limitations also included: the lack of descriptions of patient populations of individual studies; level of sedation; cognitive function; motor ability/power.
- Future research is needed with larger multi-site studies to compare the effectiveness of the various communication techniques, as well as new innovate communication techniques. Furthermore, it would be beneficial to include specifics regarding baseline patient data and characteristics, pre-required patient characteristics to use the devices, level of sedation, training duration for the usage of communication devices, and cost.
7. Comments continue

Finke et al (2008)
There were significant weaknesses identified by the PRISMA checklist. The results and themes were discussed with a good level of detail; however it is difficult to apply the conclusions given the weaknesses identified.

STUDY FINDINGS:
Findings fell into 4 themes - a. importance of nurse-patient communication; b. barriers to communication between nurses and patients; c. supports for communication; d. recommendations for improving communication between nurses and patients.

Results reflected opinions of all three participant groups (patients, nurses, family/carers). Seven of the twelve included studies reporting intrinsic or nurse initiated supports to facilitate communication. These supports included nursing staff training and experience working with people with disabilities, asking for help and sharing strategies to optimise communication. Four of the twelve studies specifically mentioned nursing familiarity with AAC systems as method of optimizing communication. The most consistent recommendation in the studies was that ‘nurses should receive training in AAC and the implications of severe communication impairment’.

Rose et al (2018)

STUDY FINDINGS:
Participants reported improved anxiety with electrolarynx use. Participants also reported increased communication ease and indicated perception of improved intelligibility at word level, but not sentence level however these was no change to levels of satisfaction with communication. Identified barriers to electrolarynx use were patient weakness, difficulty positioning the device effectively, and poor intelligibility at sentence level.

8. Results:

Carruthers et al (2017)
- Level III-2 (A systematic review, but of level 3 studies only). Low-medium level evidence.
- PRISMA score = 19/27 (level of analysis and lack of meta-analysis limited by the quality of the studies reviewed); also did not include background, participants, interventions, eligibility criteria, limitations, systematic review registration numbers.
- This systematic review suggested that current evidence is limited by variability of study design (unable to easily compare studies) and use of researcher generated outcome measures.

Finke et al (2008)
- Level III-2. Systematic review however nil discussion of study design or levels of evidence for any of the articles reviewed.
- PRISMA score 10/27. Method was not replicable with very limited transparency in data collection or study selection. No discussion of the risks of bias or strengths and weaknesses. No meta-analysis. No discussion of limitations.
- Clear qualitative and thorough discussion of results however difficult to apply given the weaknesses of the review.

ten Hoorn et al (2016)
- Level of study: Level III-2 (a systematic review however low-medium level evidence)
- Quality of evidence based on PRISMA: 21/27
- Overall this systematic review provides a structured overview of available low-medium level of evidence
- There was a moderate to high risk of bias in the studies included
- Unable to perform meta-analysis due to clinical heterogeneity and lack of details within individual studies regarding the methodology, interventions, and outcome of the included studies. Therefore, no statement could be made regarding which communication method is most effective.
- The authors of the systematic review developed an algorithm to facilitate the assessment and selection of a communication intervention with nonverbal and conscious mechanically intubated patients in the ICU. Whilst needs to be validated it may serve to guide use of assistive communication options in the ICU setting.
9. Recommendations:
Is evidence from current clinical practice the same as clinical bottomline?

- Yes (the CAT is now complete)
- No
- Undecided

Undecided because:

- More research evidence needed.
- More evidence on clinical practice is needed

If clinical practice is not the same as the bottomline, and the research evidence is compelling (or suggestive, if the issue is important and/or addressing an issue with limited if any research)

- Change is not needed to current clinical practice, because evidence from clinical practice shows that current practice is more effective/efficient than evidence-based recommendations. (CAT now complete)
- Change is needed to current clinical practice (then, complete box # 10).

10. Application to practice (when change has been indicated):

- Change is needed, and it is possible

From the research it is feasible for clinicians to begin to trial various AAC methods to facilitate communication effectiveness in conscious patients in the ICU settings. Although there is a low to medium level of evidence, emerging research suggests use of AAC can be utilised. Change could be implemented in the following ways:

- Determine appropriate patient populations and document specific patient characteristics that AAC may be suitable/non suitable (e.g. level of sedation); whether AAC can facilitate meaningful communication interactions
- Training to ICU staff on AAC option
- Individualised bedside training

Further research is needed with larger multi-site studies to compare the effectiveness of the various communication techniques, as well as new innovate communication techniques.

Discussion was held within our EBP group about current practice in the ICU and use of AAC with this patient population. There was consensus that we routinely use communication boards and verbal speech options via trache tube more than the use of an electrolarynx. As identified by Finke et al., ward based education on the use of AAC and individualised training to nurses are being undertaking to ensure the use of the AAC and effectiveness of the communication.