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**Improving Nurse Awareness and Knowledge of Utilizing Effective Alternative
Communication Methods with Mechanically Ventilated Patients: A Quality Improvement
Initiative**

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Abstract

Local Problem: Each day, almost half of patients in the hospital's Intensive Care Unit (ICU) require mechanical ventilation through an endotracheal tube. This intervention is often essential for patient's survival; however, it greatly obstructs the ability to communicate. The unit nurses' report trialing pen and paper or whiteboards, but often find patients lack the motor control and strength to produce legible written script. The unit nurses also report relying on eye and hand gestures for communication, which are often found to be ineffective.

Background: With the current evidence and changing practice in the ICU of using less sedation and increasing a patient's level of alertness while intubated, utilizing alternative communication methods are essential for providing effective patient care. The global aim for this quality improvement project was to improve nurse understanding on the importance of communication, and to improve the use of alternative communication methods. Specifically, the aim of this quality improvement (QI) project was to increase nurse awareness and nurse knowledge of using alternative communication methods with mechanically ventilated patients by 30% in two months.

Methods: Utilizing the Plan-Do-Study-Act (PDSA) framework, this quality improvement project performed a 5P's assessment, evaluated the baseline communication methods used by the ICU nurses, and gathered nurse feedback to assess baseline knowledge and perception of their communication with mechanically ventilated patients. A pre- and post-education survey was created using a Likert scale and contained five ordinal variables for each Likert item (statement) ranging from strongly disagree to strongly agree. The surveys were delivered via work email using the Qualtrics Survey Platform™ to assess nurse awareness and nurse knowledge of using alternative communication methods with mechanically ventilated patients.

Intervention: An educational PowerPoint™ was provided via work email to all full time RNs in the facility's ICU. The PowerPoint™ include information on: the introduction to the problem, purpose of the intervention, alternative communication methods, strategies to assist with use of alternative communication methods, and a reference to the resource folder that was placed in each nursing pod. In addition to the email containing the Qualtrics™ survey link and the embedded educational PowerPoint™, a resource folder was created for each pod. In-person sessions were held at change-of-shift huddles and during shifts on three dates to introduce the project and answer any follow up questions.

Results: Total aggregate data was used with a sample size of 11, however 2 of the participants did not complete the post-education survey. Using descriptive statistics, nurse awareness had an overall improvement of 22% and nurse knowledge had an overall improvement of 26%. Statistical significance was unable to be determined due to the small sample size and no inferential statistical analysis being completed.

Conclusion: The specific aim of this quality improvement project to improve both nurse awareness and nurse knowledge of alternative communication methods by 30% was not achieved. However, the results did demonstrate small improvements and the need for continued nurse education in for communicating with non-verbal, mechanically ventilated patients.

Keywords: Alternative communication strategies, Nurse education, Intensive Care Unit, Mechanical ventilation, Quality improvement

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Improving Nurse Awareness and Knowledge of Utilizing Effective Alternative Communication Methods with Mechanically Ventilated Patients: A Quality Improvement Initiative

Mechanical ventilation is an essential and life-saving intervention for patients with a critical illness. More than 300,000 people require mechanical intervention in the United States each year (National Healthcare Safety Network, 2023). While this intervention is considered a life-saving therapy, there is a high risk of complications and poor outcomes associated with the use of mechanical ventilation (National Healthcare Safety Network, 2023). To assist in the prevention of complications and to improve patient-centered care during all interventions and hospital admissions, the accrediting body of healthcare organizations within the United States, named The Joint Commission, has established a standard requiring all hospitals to identify a patient's communication need and to provide such accommodations (i.e., the need for hearing aids, glasses, language interpreters, or communication boards) in order to allow for patient communication during provision of care, treatments, and all services (The Joint Commission, 2011). Despite patient-centered communication standards being required for hospital accreditation by the Joint Commission, communication with patients who are non-verbal due to mechanical ventilation remains a challenge, and modern alternative methods that exist to improve communication are rarely used in the intensive care setting (Al-Yahyai et al., 2021).

In an intensive care unit (ICU), mechanical ventilation is a significant barrier to communication. Being unable to verbally communicate can increase feelings of frustration, lack of control, and stress in both the patient and the nurse providing care (Otuzoglu & Karahan, 2014). Studies of nurse feedback have also highlighted the feelings of frustration and inadequacy in providing quality care to patients due to the inability to communicate effectively and lack of

equipment and training to implement alternative communication strategies (Kyranou et al., 2022). Communication is further limited by patient factors such as sedation, level of consciousness, mental status, motor weakness, and restraint use (Happ et al., 2014). With healthcare professionals relying on unaided forms of communication such as head nodding and hand gestures, wrong decisions and inability to address a patient's needs can have negative effects on the recovery process (Otuzoglu & Karahan, 2014).

While there remains a question in the research regarding the relationship between ineffective communication on a patient's length of stay, adverse medical events, and ventilator-free days, numerous studies have shown the use of alternative communication methods can improve the efficiency of communication between patients and nurses, decrease patient frustration and anxiety, and allow for a faster expression of a patient's needs, which allows the nursing staff to better provide patient-centered care (Happ et al, 2015; Ten Horn et al., 2016). With an increase in hospitals in the United States implementing evidence-based light sedation protocols, there is an increased number of patients who are mechanically ventilated and alert, leaving them vulnerable to communication deficits.

Problem Description.

Approximately 40% of patients in an Intensive Care Setting (ICU) require mechanical ventilation through an endotracheal tube to aid with their respiration (Society of Critical Care Medicine, n.d.). This intervention is often essential for patient's survival; however, it greatly obstructs the ability to communicate. Verbal communication is not the only communication method impacted. Patients are usually in a soft restraint system or find themselves weak from inactivity, which interferes with one's ability to use hand gestures or written language on paper or a whiteboard. A systematic review by Ten-Hoorn et al. (2016) reported there is a significant

relationship between patients who lose the ability to speak and severe emotional reactions, such as frustration, anxiety, stress, and depression. With the current evidence and changing practice in the ICU of using less sedation and increasing a patient's level of alertness while intubated, utilizing alternative communication methods are essential for care (Ten-Horne et al., 2016). A study by Yoo, Lim, & Shim (2020) demonstrated ineffective communication can contribute to extended patient hospital stays, increase patient mortality, increase nurse burnout, and increase nurse job stress.

In the critical care setting, patient communication becomes deprioritized (Yoo, Kim, & Shim, 2020). In the setting of this quality improvement study, there is a current focus on reducing patient sedation despite being intubated; however, alternative communication methods are not frequently used. The unit nurses report having the Vidatak EZ board™, which should be stored outside each room in the eleven nursing pods for convenient accessibility and to reduce clutter in rooms when not needed. Per the unit's nursing staff, these boards in question are rarely used, often misplaced, and tend to increase patient and nurse frustration. Further inquiry on this unit has led to similar conclusion as a study by Patak et al. (2006) by identifying frustration and refusal of board use due to the overwhelming amount of irrelevant information and symbols on the board. While the study by Patak et al. (2006) is an older study, it is one of the only studies identified that specifically assessed the Vidatak EZ board™.

Barriers to using the alternative communication method, the Vidatak EZ board™, include: time limitations due to increased patient caseload and complexity, patient's often express frustration as the board is overwhelming with information, the information on the board is not fully relevant to the ICU, impaired upper extremity motor ability in conjunction with poor board placement, cognitive status, and impaired patient vision. With the listed barriers and

inaccessibility of the boards on the unit, the nursing staff often has no other means of communication despite efforts of eye gestures and limited hand gestures from a patient. The unit nurses' report trialing pen and paper or whiteboards as well, but often find patients lack the motor control and strength to produce legible written script. Ineffective communication between nurses and patients not only impact a patient's quality of care and vulnerability, but the nurses may also feel stress and frustration by not having the information to meet a patient's needs (Gropp, 2019).

Available Knowledge

Alternative communication methods, also referred to as augmentative and alternative communication, refers to processes that complement or replace verbal speech with a person with complex communication needs (Elsahar et al., 2019). Methods of alternative communication can be classified into two main categories: low-technology (low-tech), and high technology (high-tech) (Elsahar et al., 2019). Low-tech strategies include basic tools such as: pen and paper, whiteboard, communication board with pictures and symbols, and alphabet charts. High-tech strategies utilize electronic devices and integrated software, such as: smart devices, computer applications, and eye-controlled adaptive systems (Carruthers et al., 2017). These terms and devices are standardized in the literature, regardless of demographical differences.

After completing a literature review and critical appraisal of the existing literature, current evidence suggests the use of alternative communication methods by nurses for patients who are mechanically ventilated and non-verbal are safe and may have the ability to improve communication interactions and quality of care provided in the ICU setting. A systematic review by Carruthers et al. (2017) found enhanced communication using alternative communication methods had a significant impact on documented patient pain score, incidence of pressure ulcers,

physical restraint, and reduced sedation use. Conversely, Happ et al. (2015) found no statistically significant difference in documented pain level, acquired pressure ulcers, physical restraint use, or reduced sedation use between a control group and an intervention group that utilized low-tech alternative communication methods. However, in a 2014 article by Happ et al., communication exchanges around pain were found to statistically improve when nurses utilized both low-tech and high-tech alternative communication methods. The mentioned studies all took place greater than five years ago and involved a small sample size, indicating the need for additional research and higher level of evidence to accurately conclude if the use of alternative communication methods can impact physical patient outcomes.

Studies by Carruthers et al. (2017) and Happ et al. (2014), both had similar findings related to positive nursing behaviors around communicating with patients on mechanical ventilators when alternative communication methods were used after training sessions were provided to the nursing staff. Similarly, studies by Happ et al. (2015), Ten Horn et al. (2016), and Zaga et al. (2019) demonstrated comparable findings with Carruthers et al (2017) and Happ et al. (2014) in regards to improved communication interactions between nurses and patients, improved patient and nurse satisfaction with communication, reduced frustration and difficulty with communication, and improved efficiency of communication when alternative communication methods were used.

While all five studies assessed demonstrate positive results for the use of alternative communication methods by the nursing staff, only two of the studies include meta-analysis allowing for significance of findings to be interpreted (Happ et al, 2014; Happ et al, 2015). However, while the two studies noted above included quantitative data, it is important to note the

primary authors were the same in each of these quasi-experimental studies and can lead to bias in synthesis of the results.

When assessing the literature for evidence that may impact healthcare practice change, safety is an important factor for consideration. One article by Zaga et al. (2019) assessed for adverse events and patient safety surrounding the nurse driven use of alternative communication methods. The type of alternative communication method was also an important component with appraising the studies noted above. Happ et al. (2014), Ten Hoorn et al. (2016), and Zaga et al. (2019) incorporated a comparison between control groups and groups utilizing low-tech and high-tech. The three studies found no significant difference in successful communication interactions when comparing low-tech and high-tech methods used. However, level of evidence is limited and these findings indicate a need for further research to accurately make a conclusion on the best type of communication device to aid with nurse-patient interactions when a patient is non-verbal and mechanically ventilated in the ICU.

Rationale

The quality improvement (QI) project was be guided by the Plan-Do-Study-Act (PDSA) framework. The PDSA framework is recognized by the Institute for Healthcare Improvement and will allow for process planning, testing of interventions, and real-time analysis in order to understand outcomes that can allow for successful change interventions (Institute for Healthcare Improvement, n.d.). In the “Plan” stage, a 5Ps assessment was conducted to develop an understanding of the unit. Then, using insight collected from the 5Ps assessment, a review of the literature was then conducted to assess available knowledge on areas of potential improvement. In the “Do” stage, a pre-education survey was be conducted, followed by an educational presentation and resource packet that was placed on the unit. Following the implementation of

the educational-based intervention, a post-education survey was completed by participants. Next, the “Study” stage analyzed the results of the pretest and posttest survey and identified if the intervention was effective in improving nurse awareness and nurse knowledge of utilizing alternative communication methods in patients who are mechanically ventilated.

Specific Aim

The purpose of this QI project was to improve nursing understanding on the importance of patient communication in those who are unable to verbally communicate due to mechanical ventilation, and to improve the use of alternative communication methods between nursing staff and patients. When a patient has a tracheostomy or endotracheal intubation, the ability to verbally communicate with healthcare providers is impaired (Modrykamien, 2019). Currently, in the acute care facility of this QI project, those who are awake and mechanically ventilated rely on eye and hand gestures for communication. The Intensive Care Unit (ICU) in this facility has a Vidatak EZ™ communication board that can be used; however, the unit nursing staff does not utilize the board due to patient and nurse frustration and the board is often misplaced and cannot be located. For nurses, this can lead to stress, miscommunication, and inability to meet the patients’ needs (Modrykamien, 2019). For patient’s, this can lead to increased fear, distress, vulnerability, and frustration (Modrykamien, 2019). Therefore, the specific aim of this quality improvement project was to increase nurse awareness and nurse knowledge of using alternative communication methods with mechanically ventilated patients by 30% in two months.

Methods

Context

The development of the quality improvement (QI) project took place following the completion of a 5P Microsystem Assessment. The 5P assessment utilizes a framework that looks

at: a unit or facility's purpose, the population served, the professionals within the microsystem, processes used within the microsystem, and patterns that are important within the unit.

Purpose

The purpose of the 20-bed intensive care unit (ICU) where this quality improvement project was conducted is to provide care and improve the outcomes for patients admitted to this hospital facility with a complex condition or critical illness (Concord Hospital, 2023).

Importantly, the ICU purpose corresponds to the hospital's mission to meet the needs of all individuals being cared for and to provide medically necessary services to all persons, regardless of race, ethnicity, age, gender, color, sexual orientation, disability, or financial status. (Concord Hospital, 2023)

Patients

Between January 2023 and April 2023, this ICU has had an average patient age of 70.4 years. The top five diagnoses admitting patients to this unit include: major myocardial infarction, respiratory failure, cerebrovascular accident, sepsis, and cardiothoracic surgery. While the unit consists of 20 beds, the average census year-round is 18 beds occupied. With the severity of these diagnoses, the unit manager hypothesizes an average of 40% of patients on the unit per day require mechanical ventilation. The unit manager and unit nurses were unable to identify the average number of days on a ventilator. However, the Society of Critical Care Medicine recently reports the national average duration for mechanical ventilation in adult intensive care units ranges from four to seven days, translating to a week in a person's life where their ability to communicate and advocate for their needs is impaired (Society of Critical Care Medicine, n.d.). This ICU currently has an eight-day average length of stay.

Professionals

The unit of this QI project employs 70 Registered Nurses (RN) for direct patient care. Of those, only 42 RNs are considered full time. Nine RNs and two on-call RNs cover each 12-hour shift. In addition, there is one to two licensed nursing assistants, an advanced practicing nurse practitioner, and one to two respiratory therapists present on the unit each shift. During the day, a nurse educator, unit manager, social worker, dietician, pharmacist, rehabilitation services, and an attending medical doctor are also present on the unit. With a nurse caring for multiple patients and competing priorities related to unit demands and multidisciplinary collaboration, time to communicate with patients may be limited.

Processes

In regards to mechanical ventilation, ventilator-associated pneumonia protocols are in place and include frequent oral care and patient positioning interventions. There are also processes in place that include daily sedation vacations and spontaneous breathing trials to assess a patient's ability to wean from sedation and mechanical ventilation. Despite the process of sedation weaning and the goal Richmond Agitation and Sedation Scale (RASS) score of zero for each patient, there is no formal or informal process or standard of practice for communication methods for patients who are intubated, awake, and unable to verbally speak.

Patterns

Per verbal report from the unit manager, there is supposed to be a communication board in each of the 11 pods on the unit. The communication board used was the Vidatak EZ Board™. However, during the first four months of 2023, all of the communication boards have disappeared from the unit and, per discussion with the unit nursing staff, no new staff are aware of the existence of the communication boards. Further informal inquiry shows 77% of the unit nurses have tried using the Vidatak EZ Board™ communication board, but attempts with the

board have been limited to one or two patients due to the patient expressing frustration or refusal to use the board. Informal inquiry shows 55% of the nurses polled have had four or more patients within the past three months and 33% had at least two patients within the past three months who would have benefited from an alternative communication method. 100% of the nurses informally polled said they would be more inclined to try an alternative communication method following an educational session and modification to communication resources.

Cost/Benefit Analysis

Actual Cost

The QI project established an alternative communication methods packet that was placed in each pod for nurse accessibility. The packet included a simplified laminated poster of the most-used symbols determined by the unit nurses. The packet also included a paper with a list of evidence-based strategies to use with patients to improve nurse-patient communication and a document providing alternative evidence-based methods that can be used if the board is not the most appropriate for the individual patient. An algorithm was included to help guide the nurses in deciding what method may work the best for the specific nurse and patient.

Prior to packet distribution, an educational PowerPoint with inclusion of a pre- and post-test to assess nurse learning and knowledge was provided using the Qualtrics Survey Platform™, in which the University of New Hampshire has provided access. Following the launch of the educational PowerPoint, rounding was completed on three occasions across all shifts to answer any nurse questions and discuss the QI intervention as needed. For Material costs, please see Table 1.

Table 1***Material Cost***

Material	Price
One Reem of Staples 11"x17" Multipurpose Paper (Ledger size)	\$18.79
Simple Print cost at Staples for unit-specific communication board in color	\$0.66 per page x 11 pods totals \$7.26
Lamination cost	\$19.99
TOTAL COST	\$46.04

The total estimated time the nurse may spend taking the pre-and post-test and reading the educational PowerPoint is 15 minutes. Per discussion with the unit nurses, the average hourly pay for RNs in this facility is estimated to be \$31.25. Therefore, the cost of implementing this QI project on this unit should cost no more than \$7.81 per nurse if the nurse uses the full hypothesized time of 15 minutes to complete project intervention. Participation in this QI project intervention is voluntary and the time opportunity to complete the intervention is flexible, thus no patient care or safety will be impacted by this QI project implementation.

Opportunity Costs

According to the Agency for Healthcare Research and Quality (AHRQ), the average daily cost for a patient in the ICU on a mechanical ventilator is \$2,300, with this increasing to \$3,900 after the fourth day of a patient requiring mechanical ventilation (Agency for Healthcare Research and Quality, 2017). Increased caregiver and patient burden can be seen both in the short-term with increased complications and length of stay, as well as in the long term with slower patient recovery times and mental health impacts such as patient anxiety and stress. All of

these components can increase health costs for the patient and medical facilities. (Agency for Healthcare Research and Quality, 2017).

To help reduce ventilator-associate events, initiatives such as the “A2F Bundle” and the “Wake Up and Breathe Collaborative” have been researched and supported by the Center of Disease Control to help reduce sedation needs, improve spontaneous awakening and breathing trials, improve mobility, and reduce complications, all of which can impact a patient’s recovery, length of stay, days on a ventilator, and healthcare costs. The Center for Medicare and Medicaid Services (CMS) has also changed their reimbursement structure, which limits reimbursement for preventable adverse events and now has a reimbursement model directly tied to patient outcomes (Hurtig et al., 2019). An underlying focus on achieving positive patient outcomes and reducing the occurrence of adverse events needs to be patient communication, which is significantly impaired while on a mechanical ventilator.

Communication barriers have been shown to increase both the patient’s and nurse’s feelings of frustration, stress, and lack of control (Otuzoglu & Karahan, 2014). With nurses relying on unaided forms of communication, such as head nodding or hand gestures, incorrect decisions and an inability to address a patient’s needs can have negative effects on a patient’s recovery process (Otuzoglu & Karahan, 2014). With a review of the literature and inclusion of the AHRQ 2013b report, Hurtig et al. (2019) reported that reducing communication barriers led to a reduction of 671,440 preventable adverse events (e.g., ventilator associated pneumonia (VAP), pressure ulcers, falls, adverse drug events) and had an associated cost savings of \$6.8 billion annually in the United States. Hurtig et al. (2019) reported the average cost per VAP event was \$21,000 and the average cost per pressure ulcer was \$17,000. While there have been a limited number of studies assessing the correlation between adverse events, healthcare costs, and

the use of alternative communication methods, the financial and ethical implications of facilitating healthcare professional-patient communication can be significant. Each patient has the right to communication that is supported by the Joint Commission's hospital accreditation standards and each hospital has the responsibility to mitigate unnecessary costs, both with finances and patient health outcomes (Hurtig et al., 2019).

Intervention

The specific aim of this quality improvement (QI) project was to increase nurse awareness and nurse knowledge of using alternative communication methods with mechanically ventilated patients by 30% starting May 23, 2023 and ending July 1, 2023. To achieve the goal of this QI project, a Plan-Do-Study-Act (PDSA) framework was utilized.

The primary intervention to achieve the aim of this QI project was providing an educational PowerPoint™ electronically via email to the registered nurses, with inclusion of the nurse educator and nurse manager, on the facility's ICU. In addition to the educational PowerPoint, a resource packet was planned to be organized and placed on each of the 11 pods of the unit and in the two large central stations on each side of the unit.

The educational PowerPoint was bundled with a pre- and post-education survey assessing nurse awareness and nurse knowledge using the Qualtrics Survey Platform™, in which the University of New Hampshire has provided access. The PowerPoint™ included information on: the introduction to the problem, purpose of the intervention, alternative communication methods, strategies to assist with use of alternative communication methods, an algorithm for choice of method used dependent on patient presentation, and reference to the resource packet that will be in each pod. To aid in relaying the project and encourage nurse viewing of the educational material, a brief project introduction was planned for change of shift huddles on May 30, 2023,

June 1, 2023, and June 3, 2023 to coincide with email distribution. In-person follow up across shifts was planned to take place in June 2023 to answer questions and assist with new learning.

The QI project planned to implement an alternative communication methods resource to be placed in each nursing pod on the unit following an educational PowerPoint for the RNs in the intensive care unit. The alternative communication methods resource was planned to comprised of a packet that included an immediately accessible laminated picture communication board based the feedback from the unit nurses in order to encourage successful use, a list of evidence-based strategies to use with patients to improve nurse-patient communication, a document providing alternative evidence-based methods that can be used if the board is not the most appropriate method for the individual patient, and an algorithm to help guide the nurse in deciding what method may work the best for the nurse and patient.

Study of the Intervention

To assess the effectiveness of the education provided, quantitative data using a 5-point Likert scale was planned to be collected through a pre- and post-education survey. The survey was planned to include statements specifically relating to the domain of nurse awareness and the domain of nurse knowledge of alternative communication methods. A total improvement by 30% in both nurse awareness and knowledge of alternative communication methods as indicated by the pre- and post-survey was expected to indicate successful implementation of the intervention.

Measures

For this purpose of this project, “nurse awareness” was defined as the ability to understand what “alternative communication” is and the outcomes associated with the use of alternative communication methods. “Nurse knowledge” was defined as the ability to recognize specific types of alternative communication methods and strategies to improve the skill of

communication with non-verbal patients who are receiving mechanical ventilation. To complete data collection to assess the effectiveness of education provided for this QI project on nurse awareness and knowledge of alternative communication methods, an electronic pre- and post-survey using a 5-point ordinal Likert scale was planned to be distributed to key stakeholders in combination with the educational PowerPoint via email. Using this delivery method and measurement choice was planned to help provide insight into the quality of learning based on the education provided in order to bring new knowledge into daily clinical practice. The project's survey did not undergo psychometric testing as no validated questionnaire was found to fit the aim and outcome measures specific to this QI project.

In addition to improvements in nurse awareness and knowledge of alternative communication methods, another important measure planned to contribute to the success and effectiveness of this QI project was the survey response rate. This was planned to be completed by measuring the number of completed surveys in relation to the number of emails sent out. The survey was planned to be distributed to all 42 full-time RNs directly involved in patient care. To assist with measuring improvements and effectiveness of this QI project, a goal response rate was set to 30%. In-person presence on the unit and follow up inquiry with the RNs for any questions on the intervention was planned to be completed to help improve project awareness as online surveys can often be over looked. While online surveys may have a lower response rate compared to paper or phone methods, this method was chosen to reduce cost and resources required for measurement collection and to improve access of education to all RNs as availability is challenge due to scheduling, staffing, and patient needs (Daikeler et al., 2020).

Analysis

Results from the survey using the Likert scale used five ordinal variables for each Likert item (statement) ranging from strongly disagree to strongly agree. The variables were associated with a numerical value, with strongly disagree being assigned a numerical value of one and strongly agree being assigned a numerical value of five. This allowed the Likert scale ordinal categories to be analyzed using descriptive statistics. Descriptive statistics allowed for data analysis that provided a mean and standard deviations.

Ethical considerations

No ethical standards were compromised with this proposed QI project. All of the data collected was anonymous from voluntary participating ICU RNs and no identifiable information was collected or shared during this project. Each participant was provided an information sheet noting participation was voluntary. The completion of the pre-and post-education survey indicated their voluntary participation. No compensation or incentives were provided by the facility in which this project was located. The QI project was submitted to the University of New Hampshire Department of Nursing Quality Review Committee for review for criteria as a QI project that is exempt from full IRB review.

Results

Evolution of the Intervention

In the proposal, three dates were identified for when the project introduction and follow up would take place. Due to the increased time required to compile and construct the resources to be placed on the unit, the dates for project introduction and implementation took place on June 19, 2023, June 20, 2023, and June 22, 2023. On June 19, 2023, the printed resource material was placed on each pod in the ICU and an email containing the link for Qualtrics Survey Platform™ was sent to the 42 full time RN staff members. The link routed each participant to the pre-

education survey (see Appendix A), followed by the imbedded educational PowerPoint™ (see Appendix B) and post-educational survey (see Appendix A).

Demographic Data

Demographic questions in the survey included inquiry on years as a licensed RN and years as an RN in the ICU setting. Eleven RNs participated in the pre-education survey, indicating an initial response rate of 26%. Of the 11 participants that completed the pre-educational survey, 10 participants entered the requested demographic data. With the 10 participants who entered the demographical data, the average years of RN experience was 7.45 and the average years as an RN in the ICU was 4.83 (Table 1). Only nine of the 11 RNs who initially participated in the survey completed the post-educational survey, reflecting a total response rate of 22%.

Table 1

General Demographic Data Collected

General Characteristics	Total Sample (N=10) n (%)
Years of Experience as an RN	
0-1	3 (30%)
2-4	4 (40%)
5-10	1 (10%)
11-20	1 (10%)
21-30	0 (0)
31-40	1 (10%)
Years of Experience as an RN in the ICU	
0-1	6 (60%)
2-4	2 (20%)
5-10	0 (0)
11-20	1 (10%)
21-30	1 (10%)
31-40	0 (0)

Descriptive Statistical Analysis

In reviewing the statements directed to nurse awareness of alternative communication methods, the participants had an overall improvement of 22% between the pre-educational survey and post-education survey (Figure 1). Three statements were provided for participant rating on a 1 (strongly disagree) to 5 (strongly agree) Likert-type scale. Table 2 highlights the mean, standard deviation, range, and percent change for each statement.

Table 2

Descriptive Statistics for Key Study Variables

<u>Variable</u>	<u>Mean Score</u>	<u>Standard Deviation</u>	<u>Range</u>	<u>Percent Change between pre- and post- survey</u>
Nurse Awareness				
Pre – Understanding the types of alternative communication methods	3.91	0.67	1-5	
Post – Understanding the types of alternative communication methods	4.78	0.42	1-5	23% increase
Pre – Understanding risk factors	4.09	0.79	1-5	
Post – Understanding risk factors	4.78	0.42	1-5	17% increase
Pre – Confidence in assessment of methods	3.73	0.86	1-5	
Post – Confidence in assessment of methods	4.67	0.47	1-5	25% increase
Nurse Knowledge				
Pre – Strategy identification	3.73	0.86	1-5	
Post – Strategy identification	4.78	0.42	1-5	28% increase
Pre – Confidence in implementation	3.82	0.72	1-5	
Post – Confidence in implementation	4.56	0.50	1-5	20% increase
Pre – Location of resources	3.64	1.23	1-5	
Post – Location of resources	4.78	0.42	1-5	31% increase

The first statement assessed the participants understanding of the types of alternative communication methods that can be used with non-verbal patients in the ICU. Strongly disagree referred to a participant having no awareness of alternative communication method options and

strongly agree indicated the participant is fully aware of alternative communication method options that can be used. In the pre-educational survey, three of the 11 respondents (27%) perceived their understanding of alternative communication method types as neither agree nor disagree, whereas six out of the 11 respondents (55%) perceived their understanding as somewhat agree, and two of the 11 respondents (18%) perceived their understanding as strongly agree according to their self-report. Following the educational PowerPoint™ and resource review, two of nine respondents (22%) perceived their understanding as somewhat agree and the remaining seven respondents (78%) perceived their understanding as strongly agree.

The second statement related to nurse awareness assessed the participants understanding of risk factors associated with impaired communication between a patient and nurse. Strongly disagree referred to a participant having no understanding of potential risk factors associated with impaired communication and strongly agree indicated the participant was fully aware of the risk factors associated with impaired communication. In the pre-educational survey, three of the 11 respondents (27%) perceived their understanding as neither agree nor disagree, whereas four out of the 11 respondents (36%) perceived their understanding as somewhat agree, and four of the 11 respondents (36%) perceived their understanding as strongly agree according to their self-report. Following the educational PowerPoint™ and resource review, two of nine respondents (22%) perceived their understanding as somewhat agree and the remaining seven respondents (78%) perceived their understanding as strongly agree.

The third statement related to nurse awareness assessed the participants confidence in the ability to assess which communication method may work best for each individual patient. Strongly disagree referred to a participant having no awareness or understanding on how to assess which communication method would work best for each patient and strongly agree

indicated the participant fully understood how to assess which communication method would work best for each patient. In the pre-educational survey, one of the 11 respondents (1%) perceived their confidence as somewhat disagree, three of the 11 respondents (27%) perceived their confidence as neither agree nor disagree, five of the 11 respondents (45%) perceived their confidence as somewhat agree, and two of the 11 respondents (18%) perceived their confidence as strongly agree according to their self-report. Following the educational PowerPoint™ and resource review, three of nine respondents (33%) perceived their confidence as somewhat agree and the remaining seven respondents (67%) perceived their confidence as strongly agree.

In reviewing the statements directed to nurse knowledge of using alternative communication methods with mechanically ventilated patients, the participants had an overall improvement of 26% between the pre-educational survey and post-education survey (Figure 1). Three statements were provided for participant rating on a 1 (strongly disagree) to 5 (strongly agree) Likert-type scale. Table 2 also highlights the mean, standard deviation, range, and percent change for each statement related to nurse knowledge.

The first statement assessed the participants ability to identify various strategies that can be used to aid in the effective use of alternative communication methods. Strongly disagree referred to a participant not having the ability to identify any alternative communication method options and strongly agree indicated the participant could identify numerous alternative communication method options that can be used with a mechanically ventilated patient. In the pre-educational survey, one of the 11 respondents (1%) perceived their ability as somewhat disagree, three of the 11 respondents (27%) perceived their ability as neither agree nor disagree, five of the 11 respondents (45%) perceived their ability as somewhat agree, and two of the 11 respondents (18%) perceived their ability as strongly agree according to their self-report.

Following the educational PowerPoint™ and resource review, two of nine respondents (22%) perceived their understanding as somewhat agree and the remaining seven respondents (78%) perceived their understanding as strongly agree.

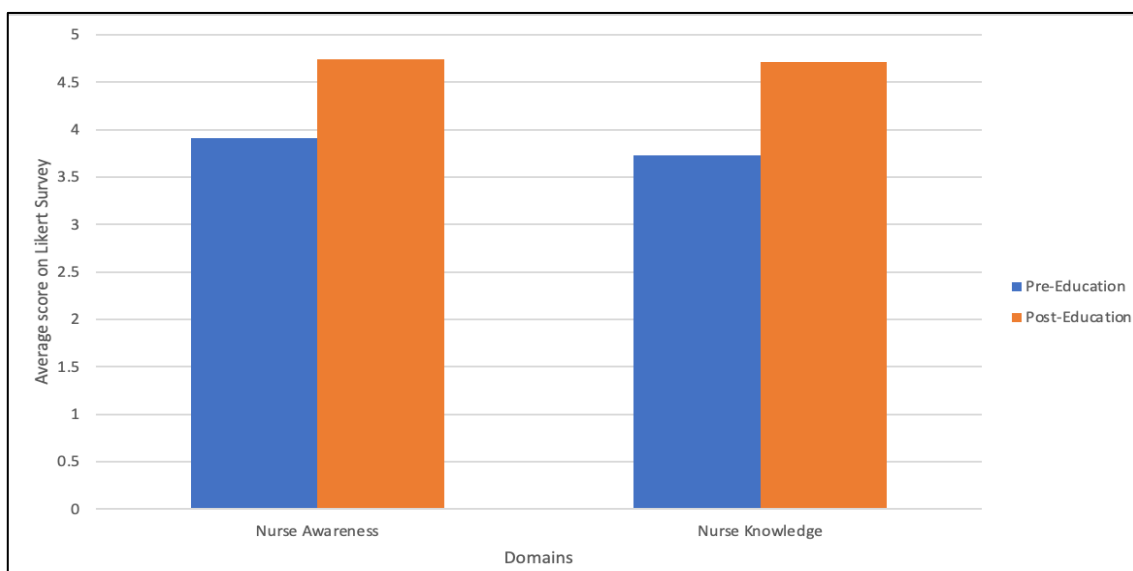
The second statement assessed the participants confidence in the ability to implement an alternative communication method that best meets the needs of each patient. Strongly disagree referred to a participant having no confidence in their ability to implement an alternative communication method that would best meet the needs of each patient and strongly agree indicated the participant was fully confident in their ability to implement an alternative communication method that would best meet the needs of each patient. In the pre-educational survey, four of the 11 respondents (36%) perceived their confidence as neither agree nor disagree, whereas five out of the 11 respondents (45%) perceived their confidence as somewhat agree, and two of the 11 respondents (18%) perceived their confidence as strongly agree according to their self-report. Following the educational PowerPoint™ and resource review, four of nine respondents (44%) perceived their confidence as somewhat agree and the remaining five respondents (56%) perceived their confidence as strongly agree.

The third statement assessed the participants knowledge of where to locate alternative communication resources and material on the unit. Strongly disagree referred to a participant not knowing where to find any alternative communication resources on the unit and strongly agree indicated the participant knew precisely where to locate the alternative communication resources. In the pre-educational survey, one of the 11 respondents (1%) perceived their knowledge as strongly disagree, one of the 11 respondents (1%) perceived their knowledge as somewhat disagree, two of the 11 respondents (18%) perceived their knowledge as neither agree nor disagree, four of the 11 respondents (36%) perceived their ability as somewhat agree, and three

of the 11 respondents (27%) perceived their ability as strongly agree according to their self-report. Following the educational PowerPoint™ and resource review, two of nine respondents (22%) perceived their understanding as somewhat agree and the remaining seven respondents (78%) perceived their understanding as strongly agree.

Figure 1

Overall Comparison of Change in Nurse Awareness and Nurse Knowledge



Contextual Elements

Three in-person introduction presentations were given at the change of shift huddles, two day-shifts huddles and one night-shift huddle. Prior to the change of shift huddle, face-to-face follow ups were completed with the current on-shift nurses at each station to answer any questions or review material. Due to the demands of the ICU, there was limited overall reach within the unit as no formal meeting took place and following up with the nurses was conducted during their shift while the nurses also had to monitor assigned patients and provide patient care. With these factors and the low response rate, only aggregate data was used for statistical analysis.

Another contextual element that interacted with the intervention relates to the delivery of the education. With the reliance on a PowerPoint™ and hand-out material, the nurses were encouraged to participate in self-learning since there was no formal presentation. This may have limited a nurse's ability to connect meaning or new learning to the best of their ability based on their learning preference, creating an unintended consequence.

Missing Data

Upon review of the data submitted through the Qualtrics Survey Platform™, two RNs provided acknowledgement of the participation information sheet, but failed to complete any of the pre-education survey questions. Therefore, these two nurses were excluded from the data analysis. Two nurses also completed the pre-educational survey questions and were redirected to the educational PowerPoint™, however failed to complete any of the post-education survey questions. The pre-education survey responses of these two participants were still included in the overall data analysis.

Discussion

Summary

Key findings in this quality improvement project related to nurse awareness and nurse knowledge. The target range of 30% improvement was not achieved in either domain. However, improvement was still demonstrated with nurse awareness increasing by 22% and nurse knowledge increasing by 26%. With no inferential statistical analysis being performed, meaningful change was not able to be determined.

The low response rate of the post-intervention survey, limited number of nursing staff in each huddle, and the absence of a formal group presentation may have contributed to the lower overall improvement scores. By using the Plan-Do-Study-Act (PDSA) framework, future

opportunities could build on this framework and create additional cycles based on initial data collection. Obtaining further feedback from the nurses on the unit, providing formal presentations and in-person demonstrations of the use of the material, and scheduling more educational opportunities to reach the greatest number of nurses, are all recommendations that may improve future outcomes of this quality improvement initiative.

The strengths of this project included the placement of the resource materials and communication tools in each of the unit pods in order to improve accessibility and knowledge. While there was a low response rate on the surveys, the online format allowed the nurses to complete the surveys and review the educational material at their own pace during a shift, which allowed for the learning to be flexible during a busy work shift. While the data collected demonstrated minimal improvement, key stakeholders reported great appreciation and excitement for this project as it was relevant and beneficial to both the nursing staff and for patient care on the unit as it allowed for easily accessible material and simple boards to improve communication through ease of use.

Interpretation

When reviewing the data for nurse awareness, only small improvements were observed for each statement. As can be seen in Table 2, the greatest increase occurred in the third statement relating to the nurse's confidence in assessing which communication method may work best for a patient. In the pre-education survey, the mean was 3.73 with a standard deviation of 0.86. There was also a larger variance of 0.74 compared to the variance of 0.22 observed for this statement on the post-education survey. These results demonstrated that nurses were more confident after the intervention. The included algorithm and assessment resources may have been helpful in impacting the improved confidence and overall score of this section. The limited

overall improvement in nurse awareness may also be influenced by the demographics of the RNs who participated in this QI initiative. While exposure to specific communication methods may be limited, the importance of communication with patients in general is a part of nursing education. Seventy percent of the survey participants have been practicing as RNs for 4 or fewer years, meaning the possibility of the participants feeling confident in their awareness for communication importance impacted their scoring choices on the survey. With the pre-education survey scores for nurse awareness averaging 3.91, little room is left for improvement.

Overall improvements for nurse knowledge, while still below the 30%, demonstrated a greater increase when compared to nurse awareness. The overall average improvement of nurse knowledge based on the data from three statements was 26%. The large standard deviations in the pre-education survey, especially in statement three with a standard deviation of 1.23, compared to the low standard deviations in the post-education survey helped demonstrate positive change alongside the higher mean scores of the post-education survey. This data helped demonstrate the improvement in a nurse's ability to access alternative communication material, which can help nurses provide improved patient care to an estimated 40% of the unit's patient population who are on mechanical ventilators per day.

Comparison with Other Publications

Many of the studies assessing alternative communication methods used by nursing professionals lacked randomization and had small sample sizes. With nurses' comfort and confidence in implementing various strategies being partially subjective, many of the studies highlight the importance for providing the time for education and follow up reviews to improve the use of alternative communication strategies (Ten Horn et al., 2016; Happ et al., 2014). Education and supportive material were provided in this quality improvement project to increase

nurse knowledge and material accessibility, however a key difference between the studies was the time spent on the initial education.

Happ et al. (2015) provided participants with a one-hour training on alternative communication methods and supplies, and then the completion of rounding for further collaboration and teaching. Happ et al. (2015) used pre- and post-tests to measure nurse comfort, knowledge, and satisfaction with communication with mechanically ventilated patients. The authors too had a low number of participants, limiting sample size and generalizability. Happ et al. (2014) demonstrated significant improvement in successful communication, nurses seeking clarification in conversations, and pain identification in the groups of nurses that completed a four-hour training session and had accessible low technological alternative communication supplies. While this quality improvement initiative was unable to complete a four-hour training or group education session, the comparable studies supported the benefits of providing education and having accessible resources for the nursing staff to promote effective communication with mechanically ventilated patients.

Impact of this Quality Improvement Initiative

Despite the limited time providing education to the nursing staff at the facility and the limited reach due to multiple shifts and variable schedules of each nurse, the intervention was delivered in a timely and organized manner to allow for flexible and accessible learning for all nurses. The unit manager, as well as two other nurse leaders on the unit, provided positive feedback on the post-survey and verbalized appreciation for the thoroughness and thoughtfulness of this project. The nurse manager verbally reported personally continuing the education to her staff on the importance of communication with non-verbal patients. The nurses who attended the huddles and engaged in follow up discussions on the June 19, 2023, June 20, 2023, and June 22,

2023 conveyed understanding for the importance of finding ways to communicate and provided appreciation for the simple picture communication board. With the nurses in this ICU relying heavily on unaided forms of communication, this quality improvement project hopes to continue to improve the nurses' utilization of and comfort surrounding the alternative communication tools. In turn, this can help the nurses meet the needs of each patient by aiding in the ability of the patients to participate in their care.

With time restraints between project implementation and data analysis, follow up on use of the communication boards and algorithm in real time did not occur as had been initially planned. A larger participant size was also anticipated. The online-only format for the surveys may have impacted the ability to complete the pre- and post-education survey during one shift, therefore limiting the number of participants. When completing the planning phase of this quality improvement project, feedback was provided by nine of the ICU nurses. While the intent was to obtain feedback to help improved buy-in to facilitate change, the reach may not have been high enough as the number of nurses who provided feedback correlates to the number of respondents on the post-education survey. The online delivery and resource folder also relied on self-education by the nurses. This may have impacted learning and decreased buy-in as some of the nurses may learn best in person with visual demonstrates and hands on practice at the time of education. Therefore, future recommendations for such an initiative include making the time for in-person presentations and demonstrations of the use of communication tools.

Actual Costs

The direct costs of this QI project were from the materials to construct the folder placed in each pod for nurse accessibility. The actual cost for printing the folder material, printing the large picture board and alphabet board, and laminating all folder material totaled \$146.68. The

printing cost was higher than anticipated due to the increase in price for the 11x16 sized copies at the printing service. The estimated time a participant spent taking the pre- and post-education survey and reviewing the resources remained at 15 minutes. Therefore, the cost of implementing this QI project on this unit should have cost no more than \$7.81 per nurse if the nurse used the full time of 15 minutes to complete the project intervention. Participation was voluntary and the time opportunity to complete the intervention was flexible, thus no patient care or safety was be impacted by this QI project implementation.

Opportunity Costs

While no cost saving measures were directly observed during the intervention, there remains a strategic trade-off associated with taking the time to educate the ICU nurses to improve communication methods with mechanically intubated patients. As noted in the project proposal, the Agency for Healthcare Research and Quality (AHRQ) reports the average daily cost for a patient in the ICU on a mechanical ventilator is \$2,300, with this increasing to \$3,900 after the fourth day of a patient requiring mechanical ventilation (Agency for Healthcare Research and Quality, 2017). There remains an increased risk for both short- and long-term complications and greater length of stay the longer a patient is sedated and mechanically ventilated, which can increase health costs for the patient and medical facilities. (Agency for Healthcare Research and Quality, 2017).

Communication barriers have been shown to increase both the patient's and nurse's feelings of frustration, stress, and fear (Otuzoglu & Karahan, 2014). With the unit nurses relying on unaided forms of communication, a misunderstanding or an inability to address a patient's needs can have negative effects on a patient's outcomes (Otuzoglu & Karahan, 2014). Hurtig et al. (2019) reported reducing communication barriers led to a reduction of 671,440 preventable

adverse events and had an associated cost savings of \$6.8 billion annually in the United States. While further time is recommended for educating nurses on the effective use of alternative communication strategies beyond this quality improvement initiative, this is a significant trade-off for the chance to mitigate any risk and cost associated with adverse events and healthcare outcomes that could have been reduced with improved communication.

Limitations

Limitations with this quality improvement initiative include: time, small sample size, online-only delivery, self-teaching components, and limited generalizability. The unanticipated time to construct and assemble to resource folder shortened the window of opportunity for presentation of the material and for adequate follow up at the facility's ICU. This limited the sample size by limiting the number of shifts in which introduction and follow up could be provided. To adjust for this limitation, education and follow up was provided in the last few hours of the nurses ending their shift during, both nights and days, and huddle was attended for both night and day shifts as well. Two flyers were placed on the unit, one on each side's bulletin board, with a QR™ code to the survey and an email was sent out to the work email of all 42 full time RNs on the unit to help extend the reach to nurses not present for any of the shift-change huddles.

The small sample size and missing data limited the ability to perform inferential statistics and assess for meaningful change. Utilizing an online-only survey tool was also another limitation. By using an online-only survey tool with instructions for PowerPoint™ and material review, the participants had to rely on self-learning and lacked hands on demonstration that may have facilitated more visual and hands-on learning types. A study by De Leeuw, Woltier, & Kool (2020) discussed the importance of tailoring education to all learning styles and to provide

adequate on-site training to improve the outcomes of learning through a primarily digital format. For the QI initiative, while hard copies of educational material and communication tools were supplied, the primary delivery did not meet the needs of all learning styles or individual needs and may have limited the number of survey participants.

In addition, the use of online technology may have influenced the participant demographics and digital literacy. The study by De Leeuw, Woltier, & Kool (2020) further identified that nurses who were not as familiar with digital technology often had insufficient and ineffective learning through digital formats. For the QI initiative, a majority of the respondents were newer practicing nurses with less than five years of experience. Personal practice, technology-change resistance, or comfort with digital learning are all potential impacts that could have influenced the demographics of the QI initiative.

Lastly, the quality improvement initiative took place at a 20-bed ICU in the state of NH. With the small size of the ICU, limited patient diversity, and the average patient age of 70.4 years old, generalizability for this QI initiative is limited. The results of this project may not be representative of larger ICUs or ICUs with a more diverse nurse and patient population.

Conclusion

With a large number of patients requiring mechanical ventilation in the ICU and current practice changes encouraging lighter patient sedation, more patients are at risk for ineffective communication (Kyranou et al., 2022). While evidence is limited in determining the impact of communication on patient outcomes, evidence does support the safe and effective use of alternative communication methods for improving perceived communication between nurses and mechanically ventilated patients. The specific aim of this quality improvement project to improve both nurse awareness and nurse knowledge of alternative communication methods by

30% was not achieved; however, the results demonstrated the need for continued nurse education and the room for improvement in regards to effectively communicating with non-verbal, mechanically ventilated patients. With approximately 40% of the unit's patients intubated per day and the reliance on hand gestures and eye movement for communication between these patients and nurses, the intervention for this quality improvement project was relevant and an initial step in helping provide quality patient care that aligns with the unit's mission to meet the needs of all individuals being cared for, regardless of race, ethnicity, age, gender, color, sexual orientation, disability, or financial status. (Concord Hospital, 2023)

As patient outcomes and quality improvement are components of the Clinical Nurse Leader (CNL), anticipating risks and aiding in the coordination of patient care through staff education on alternative communication methods would be a recommended CNL implication. The CNL would have the ability to gather this unit information and data over time and assess financial and patient outcomes. In conjunction, both lateral integration between unit RNs and multidisciplinary team, as well as vertical hierarchy integration between unit staff, management, and hospital administrators can be facilitated by the CNL to improve united and effective patient care.

Recommendations for future steps involve continued assessment of evidence-based practice regarding alternative communication methods and potential technological advancements. This quality improvement initiative would also benefit from another PDSA cycle to change the delivery method of education in order to improve nurse learning and reach a larger sample size. For a leader to create change, full stakeholder buy-in and feedback is needed to help build motivation and create positive behaviors for change.

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Appendix A

Pre- and Post-Education Survey



Participation Information Sheet Acknowledgement (copy attached). [Participant information sheet](#)

☐ I read the participation information sheet and consent to project participation (click here)

How many years of experience do you have as a nurse?

How many years of experience do you have as an ICU nurse?

Select the most appropriate agreement level to the below statement

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I understand the types of alternative communication methods that can be used with non-verbal patients in the ICU.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I understand the risk factors associated with impaired communication between a patient and nurse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I am confident in my ability to assess which communication method may work best for each individual patient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can identify various strategies that can be used to aid in the effective use of alternative communication methods to improve patient-nurse communication.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to implement an alternative communication method that best meets the needs of each patient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know where to locate alternative communication resources/ materials on the unit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

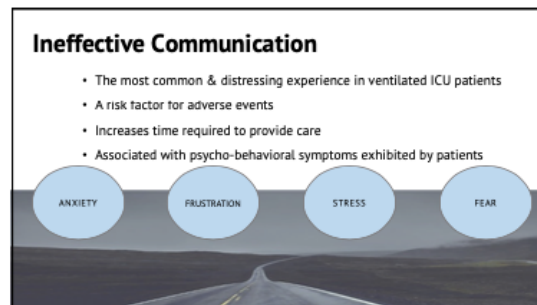
If you have any comments or feedback, please feel free to share here!

Appendix B

Educational PowerPoint™



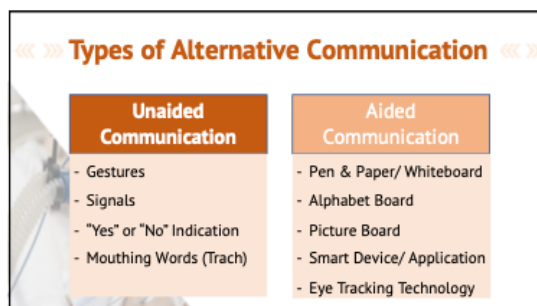
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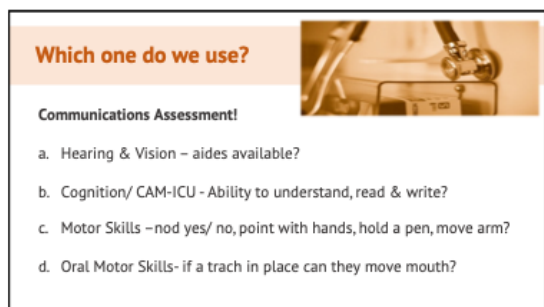
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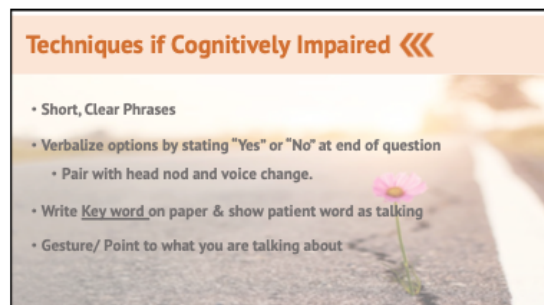
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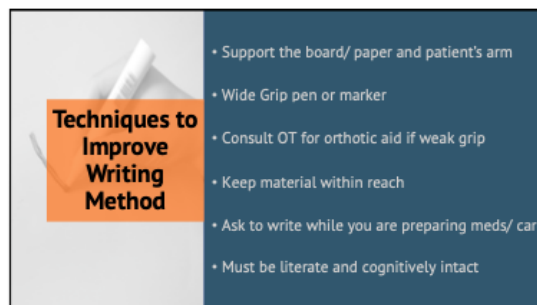
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Techniques to Improve Use of Alphabet Board

- Use board with highlighted vowels and control phrases
- Say each letter out loud to confirm spelling.
- Use "May I guess", rather than shouting out word
- Monitor board placement
- Use assisted scanning if patient unable to complete spelling due to fatigue
 - Scan board slowly with your finger & have patient nod or sign when you get to the letter

9



Techniques to Improve Use of Picture Board

- Give board in advance to allow for learning
- Use assisted scan technique if they are unable to point
 - Use line by line approach & then move within the topics to help save time
- Have patient nod, blink, or other signal when at desired line or picture
- Use board with simplified choices to reduce frustration
- Monitor board placement
- Obtain glasses if needed


10



For More Information, Reference:

- Red folder in each pod & white binder in both fish bowls. Each contains:
 - Board options
 - Marker
 - Further Educational Material
 - Device Application Information
 - Algorithm to aid method choice

11

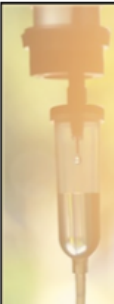


HELP CHANGE THE NARRATIVE

Please help by reviewing folder & completing the brief post-survey.

Thank you!

12



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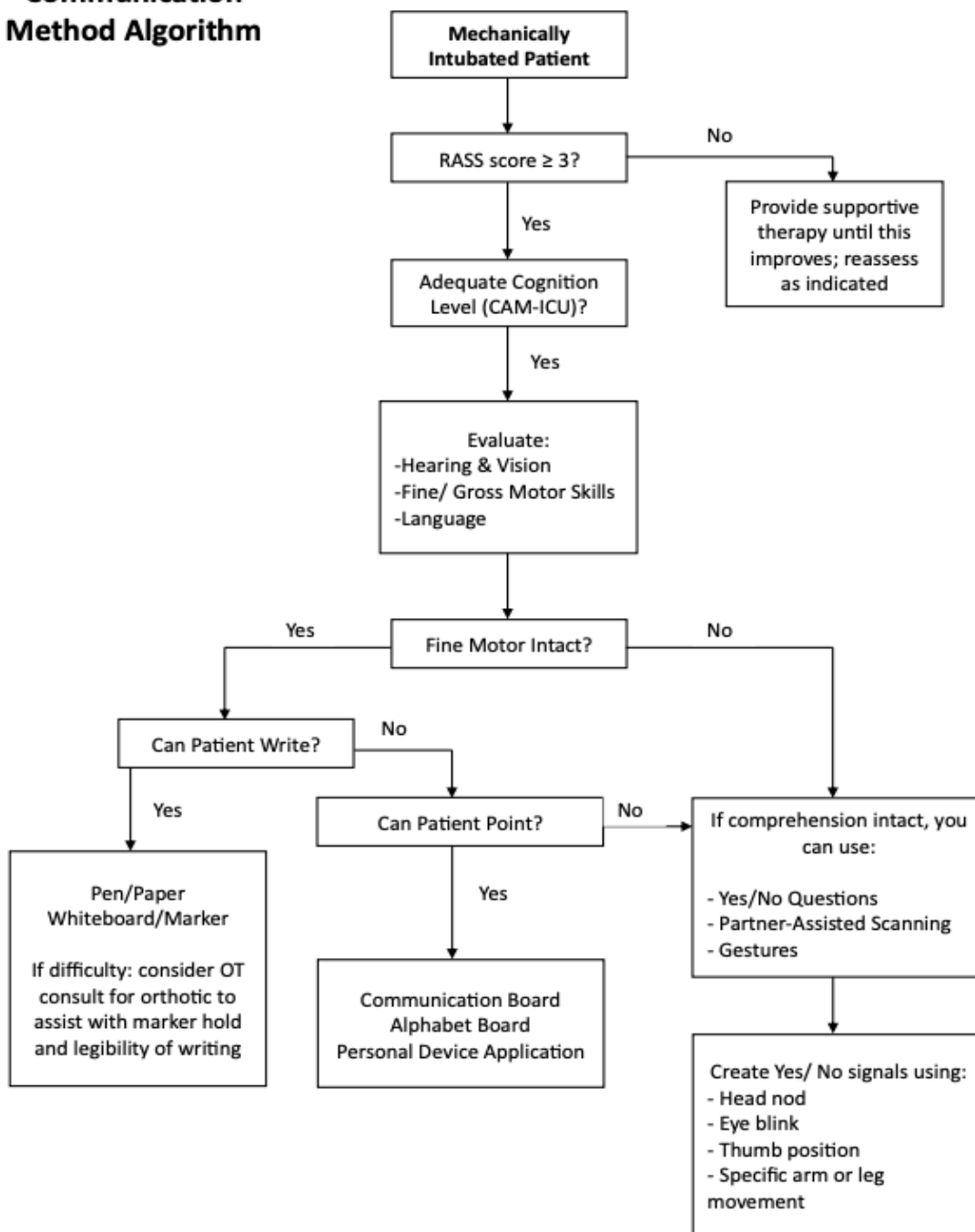
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Appendix C

Communication Method Algorithm

Communication Method Algorithm



Appendix D

Partner-Assisted Scanning Method

Partner-Assisted Auditory Scanning

Use With: Patients who cannot speak or write

Steps:

1. **Nurse:** Read aloud and point to each category
2. **Patient:** Using a pre-determined signal for "yes", the patient will indicate when the desired category is reached
3. **Nurse:** Turn page to the selected category and read each phrase aloud as you point
4. **Patient:** Using the same "yes" signal, the patient will indicate when the specific phrase has been reached

Categories

- **HELP**
- **Physical Needs**
- **Hygiene/ Appearance**
- **Family/ Feelings**
- **Greetings/ Questions**
- **Control Phrases**

HELP

Breathing: I am having trouble breathing

Pain

- I feel sick
- My chest hurts
- I need medicine
- I have a headache
- I have a stomach ache
- My throat hurts

Physical Needs

Bathroom:

- I need to use the bedpan
- I need to use the urinal

Temperature: (once established, provide options using Y/N questions)

- I feel Cold
- I feel Hot

Oral Needs:

- I need to be suctioned
- My mouth is dry, I need a swab

Hygiene/ Appearance

Hair:

- I need to wash my hair
- I need to comb/ brush my hair

Face/ Body:

- I need to wash my face
- I need to wash my hands
- I need to be bathed

Mouth:

- I need to brush my teeth

Family

I would like to talk to my: _____

- | | |
|---------------------|----------------------|
| • Significant other | • Mother |
| • Daughter | • Father |
| • Son | • Other: (Spell out) |

Feelings

- I am worried
- I am lonely
- I am scared

Greetings/ Questions**Hello:**

- How are you?
- What is the plan for the day?

Questions:

- Who?
- What?
- When?
- Where?
- Why?
- How?

Reference

Garrett, K.L., Happ, M.B., Tate, J.A. 2006. University of Pittsburgh School of

Nursing and Duquesne University. SPEACS: Communication. Developed

with funding from the National Institutes of Health (5R01-HD043988).

Control Phrases

You did not understand me.

Nevermind....it's not that important.

Let's try again.

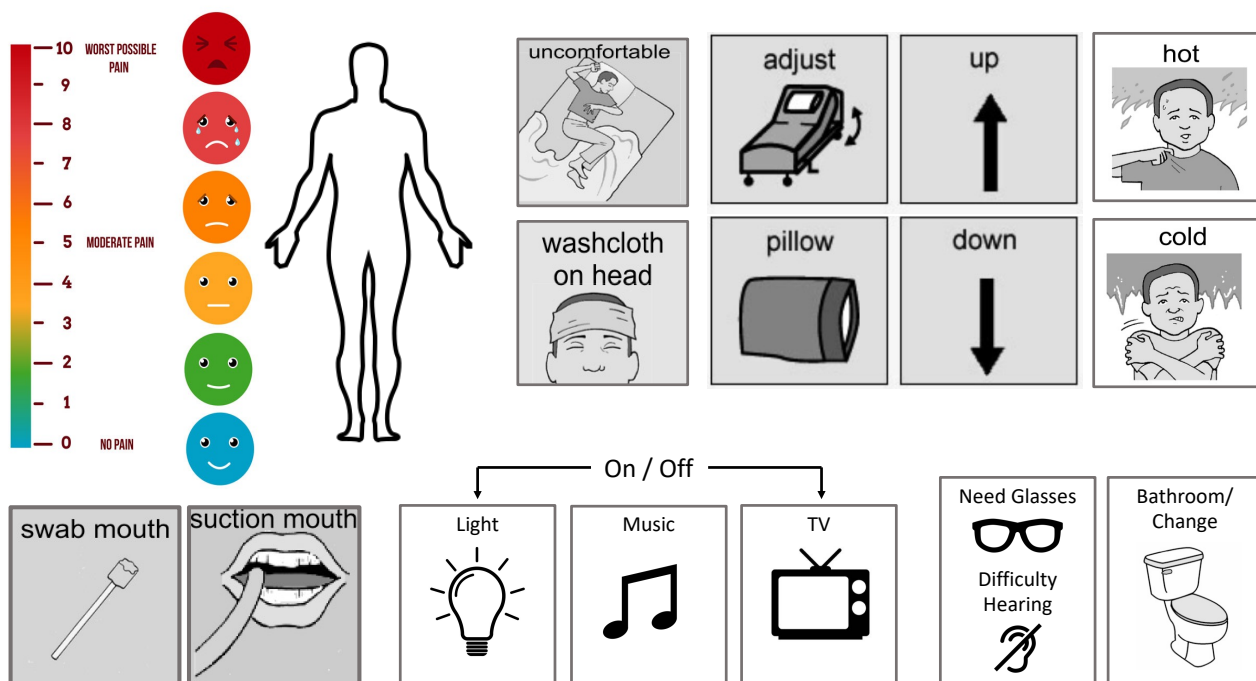
I would like to be left alone right now.

Please get the spelling board.

Please get the picture board.

Appendix E

Simple Picture Communication Board & Alphabet Board



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In *Augmentative Communication Strategies for Adults with Acute or Chronic Medical Conditions* by D.R. Beukelman, K.L. Garrett, & K.M. Yorkston (Brookes Publishing, 2007).

