Project Title

Evaluating The Implementation of Critical Care Pain Observation Tool (Cpot) In Intubated Adult Patients In A Multi-Disciplinary Intensive Care Unit

Project Lead and Members

Project lead: Senior Nurse Manager (Snm) Patricia Leong,

Project members: Senior Staff Nurse (Ssn) Jolene Teh, Ssn Beh Zi Leu, Ssn Geraldine Soo, Ssn Melvine Jr, Assistant Nurse Clinician (Anc) Nor'ain Binte Mohamed, Ssn Leong Shiaw Yi, Ssn Jomilyn Buenaventura, Ssn Arumugam Vanitha, Advanced Practitioner Nurse (Apn) Agnes Chong

Organisation(s) Involved

Ng Teng Fong General Hospital, Jurong Community Hospital

Healthcare Family Group(s) Involved in this Project

Medical, Nursing

Applicable Specialty or Discipline

Intensive Care Unit

Project Period

Start date: May 2020

Completed date: Oct 2020

Aims

- To equip 100% of staff nurses working in ICU with the knowledge of how to assess pain using CPOT in 6 months through e-learning and roadshow.
- To implement CPOT assessment and integrate documentation into EPIC system within 12 months.
- To standardize and evaluate the use of CPOT at the end of implementation.

Background

See poster appended / below

Methods

See poster appended / below

Results

See poster appended / below

Lessons Learnt

CPOT has successfully been implemented to assess pain for ICU patients and full integration with the EPIC system to allow proper documentation and follow up. It allows collaborative assessment and discussion with physicians or allied healthcare professionals on improving pain experience using CPOT as a scale. However, there are still limitations on the use of CPOT towards neurological patients. Thus, further research will still be needed in order to evaluate the effectiveness on this group of patients. Further improvements and researches have yet to be done to evaluate CPOT compliance for nurses. As such, audit will be conducted in the future to ensure 100% usage and compliance in the ICU. Further research can be done to work with other allied healthcare professionals on using CPOT concomitantly with the administration of sedative and analgesic agents.

Conclusion

See poster appended / below

Project Category

Care & Process Redesign, Quality Improvement, Clinical Practice Improvement, Training & Education, Education Platform, Virtual Learning Platform

Keywords

Critical Care Pain Observation Tool, E-Learning, Roadshow, Assessment

Name and Email of Project Contact Person(s)

Name: Jolene Teh Pui San

Email: Jolene_Teh_Pui_San@nuhs.edu.sg

EVALUATING THE IMPLEMENTATION OF CRITICAL CARE PAIN OBSERVATION TOOL(CPOT) IN INTUBATED ADULT PATIENTS IN A MULTI-DISCIPLINARY INTENSIVE CARE UNIT

MEMBERS: SENIOR NURSE MANAGER(SNM) PATRICIA LEONG, SENIOR STAFF NURSE (SSN) JOLENE TEH, SSN BEH ZI LEU, SSN GERALDINE SOO, SSN MELVINE JR, ASSISTANT NURSE CLINICIAN(ANC) NOR'AIN BINTE MOHAMED, SSN LEONG SHIAW YI, SSN JOMILYN BUENAVENTURA, SSN ARUMUGAM VANITHA, ADVANCED PRACTITIONER NURSE(APN) AGNES CHONG,

- ❑ SAFETY
- ☑ QUALITY
- ☑ PATIENT EXPERIENCE
- ❑ PRODUCTIVITY
- ❑ COST

Define Problem, Set Aim

Pain is defined by World Health Organization (WHO) as "an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage,". It is common for intensive care unit (ICU) patients to experience acute pain from surgical procedures, the presence of endotracheal tube (ETT), surgical drains and nursing procedures such as wound dressing, ETT suctioning and 2 hourly turning. Unresolved pain experience can lead to several complications, such as postoperative myocardial infarction from increased heart rate and blood pressure, increased patient agitation with unnecessary prolongation of sedation, thus resulting in longer ICU and hospital stays. Studies also reported insufficient sleep and post-traumatic stress disorder in patients. Appropriate pain management depends on the accuracy and comprehensive assessment of pain, to then guide on administration and titration of analgesia.

Self-reporting pain is considered to be the gold standard for pain assessment. Often, it remains undetected and underestimated, which prevent appropriate pain management in critically ill mechanically intubated patients. The use of Behavioral Pain Scale (BPS) in Ng Teng Fong General Hospital (NTFGH) is under utilized for intubated patients. The lack of assessment component in the BPS scale, "compliance with ventilator assessment", resulting in its inability to detect unrelieved pain due to restricted chest wall movement in intubated ICU patients.

The American Society of Pain Nursing Management recommends using a validated pain scale where patient's self-report is not achievable. Two validated tools are recommended in the practice guidelines, namely Critical Care Pain Observation Tool (CPOT) and BPS with ventilator component. However, neither of these tools have yet to be implemented in our ICU. The best practice should include a valid and reliable pain assessment tool, so that patient's pain experience can be managed accurately and timely. Hence, there should be an implementation of using CPOT as pain tool assessment in NTFGH ICU. Between the two options, CPOT was chosen based on its feasibility and robust psychometric properties for detecting pain in medical, surgical and trauma ICU patients. CPOT has been tested with more than 550 ICU intubated adults of various diagnoses and is recommended for clinical use by the Society of Critical Care Medicine. Reported correlations between the CPOT score and the patient's self-report of pain intensity at rest is ($P<0.001$).

Aims

- To equip 100% of staff nurses working in ICU with the knowledge of how to assess pain using CPOT in 6 months through e-learning and roadshow.
- To implement CPOT assessment and integrate documentation into EPIC system within 12 months.
- To standardize and evaluate the use of CPOT at the end of implementation.

Establish Measures

Pre and post e-learning test was conducted to examine ICU nurses' understanding of pain, pain assessment and management of pain. The result shows that more than 90% of nurses are able to identify self reporting as the gold standard and faced challenges to assess pain accurately, contributed by delirium, language barrier and ETT intubation. 96.15% of nurses were able to recognize goals of pain management, such as facilitating recovery with proper use of analgesia, thus allowing patients to return to normal daily living. 92.94% of nurses agreed that CPOT should be used to assess pain in an intubated patient. However, 7.06% still chose self reporting by patient, vitals, and BPS without the ventilator component.

Nurses are responsible for pain assessment, prevention and reduction of pain. Therefore, without a standardised valid tool, nurses fail to understand pain in unconscious patients, thus resulting in a decreased quality of pain management. Nurses can only make effective decisions for pain management through repeated and regular evaluations of pain intensity. In the absence of such scale, the effectiveness of nursing and medical treatment cannot be accurately determined.

Analyse Problem

Table 1 : Behavioural Pain scale
(For patient unable to provide a self report of pain score 0-10 for Clinical Observation)

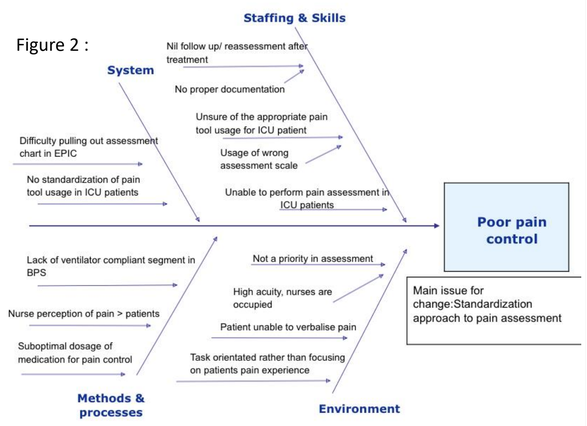
Face	0 Face muscle relaxed	1 Facial muscle tension, frown, Grimace	2 Frequent to constant frown, clenched jaw
Restlessness	0 Quiet, relaxed appearance normal movement	1 Occasional restless movement, shifting position	2 Frequent restless movement may include extremities or head
Muscle tone*	0 Normal muscle tone, relaxed	1 Increased tone flexion of fingers and toes	2 Rigid tone
Vocalisation **	0 No abnormal sounds	1 Occasional moans, cries, whimpers or grunts	2 Frequent or continuous moans, cries, whimpers or grunts
Consolability	0 Content, relaxed	1 Reassurance by touch or talk. Distractible	2 Difficult to Comfort by touch Or Talk

This is the BPS (Table 1) which was previously used for intubated patients. Under the vocalisation section, an indicator (**) explains that this cannot be used for patients with artificial airway. Therefore, it is not considered a validated tool for pain assessment in intubated patients.

The absence of "compliance to the ventilator" assessment indicator leads to risk of poor pain assessment and inappropriate pain reporting.

Secondly, Ishikawa (fish bone) diagram (figure 2) was used to analyze the problems that may lead to poor pain control. There is no standardization and valid pain assessment tool in NTFGH ICU for intubated patients. Thus, the probable change that we can act on is to standardize and implement a pain assessment tool in our ICU.

Figure 2 :



Select Changes

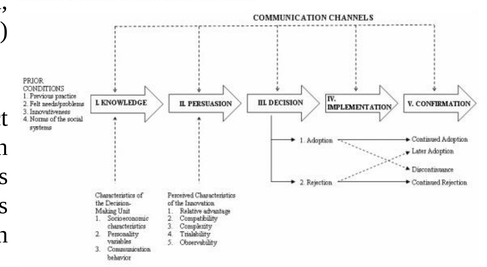
A change management team, comprising of medical physicians, nurse managers, Advanced Practice Nurse (APN) and nurses, is essential to maintain continuity. The team incorporated Ishikawa (fish bone) diagram to identify problems faced with the old assessment tool as shown from (figure 2). With that, application of the new change was proposed and implemented using the Rogers' five characteristics innovation decision process: knowledge, persuasion, decision, implementation and confirmation communication channels (figure 2.1) with top down and bottom up approach.

Train the Trainers model was used. This method offers distinct advantages over other training models because trainees typically learn faster and retain information better. The PDSA framework is implemented as it is an efficient trial-and-learning methodology and is more likely to lead to practice changes across different disciplines when the changes are visible, measurable and evidence based.

However, there are limitations. An example is that ideas to achieve goals were often context specific. Therefore, influencing change can be difficult where system differs in new settings.

The Innovation-Decision Process

Rogers (2003) described the innovation-decision process as "an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation" (p. 172). For Rogers (2003), the innovation-decision process involves five steps: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation. These stages typically follow each other in a time-ordered manner. This process is shown in Figure 2.1.

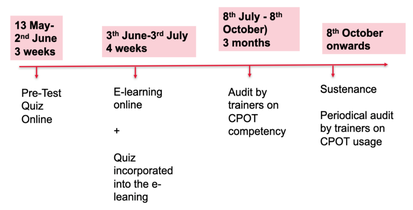


Test & Implement Changes

Plan / Do / Study / Act

Ideas were planned and proposed during ICU disciplinary meetings, where there were discussions on implementing the CPOT measurement in the EPIC system with the various stakeholders, which includes ICU consultants, ICU nurse clinicians and nurses. Trainers were identified and facilitated by APN to spearhead this change. Roadshows, roll calls, ICU presentations to doctors, nurses and other allied health professionals were conducted to introduce and increase awareness of the new tool.

Figure 2.2



The timeline (figure 2.2) above was carefully planned, starting with a pre-test online quiz on the hospital's e-learning platform to review nurses' understanding on pain assessment and management, followed by e-learning and post-test quiz for a period of 4 weeks to enhance, support and sustain learning. Subsequently, the nurses practiced CPOT on patients at bedside, with guidance by the trainers. Readily accessible CPOT scale via the intranet in ICU page and CPOT learning cards attached in the patients' room were put up to enhance and support the new implementation. The nurses' competency are assessed post training and teaching with a total of 2 assessments on ICU patients. Feedback was done individually with the trainer and his/her assigned group of nurses to ensure accurate and correct use of CPOT. Periodical audit is done after ensuring all nurses' competencies are checked to ensure the sustainability of the change. Documentation of CPOT assessment on progress note by nurses was done temporarily on EPIC system till May 2020 when CPOT was added in flowsheet documentation in EPIC.

Below are the results reported during the post e-learning test and the surveys carried out after EPIC implementation.

Results

CPOT e-learning

Post e-learning test was conducted and 85.53% of nurses agreed that confusion, delirium from acute illness, motor impairment and fully sedated patients will limit CPOT assessment. 92.29% of nurses were able to identify the 4 indicators correctly and 81.18% of nurses agreed that CPOT reduction of 3 is a successful pain management intervention. As our aim is to ensure 100% compliance to the use of CPOT in NTFGH ICU setting, a survey was done to evaluate the implementation and nurses perception on the use of CPOT after the EPIC upgrade. We received a total of 101 respondents comprising of both staff nurses and senior staff nurses. Out of 101 responses, 78.2% attended the CPOT training through the use of e-learning. 100% of ICU nursing staff attended the in-service talk given by the trainer.

Knowledge of CPOT

Prior to e-learning, 50% of the nurses were not aware of CPOT. The results deduced that amongst 78.2% of attendees, most of the learners were able to rule out the components and the scoring of CPOT and 88.3% agreed that using e-learning training sessions were adequate in helping them to understand the application of CPOT. 72.3% of nurses find CPOT relatively simple to use and understand except for 6 participants who either felt uncertain and disagreed. Further questions were asked to evaluate nurses' perception on the components of CPOT and results showed that body movement and muscle tension had a higher response where nurses are uncertain and find it difficult to assess. The result is relatively similar to a study done by Gelinas et a., (2014) whereby body movement and muscle tension were identified as difficult indicators to evaluate due to the fact that the absence of movements does not imply the absence of pain. Moreover, physical restraints and altered level of consciousness could also trigger over exaggeration or absence of movement in intubated patients.

Patient care, communication and the use of CPOT

Up to 73.3% indicated that CPOT has a positive influence in patient assessment and 66.3% agreed that CPOT allows them to accurately evaluate the pain score and report them in a timely manner. 82.2% of the nurses are confident in using CPOT and agreed that it helps in effective communication among nurses and team doctors. Nurses felt that having a CPOT checklist guide card at the patients' bedside is helpful during the assessment of the patients and they would recommend CPOT to be used in other healthcare institutions as well.

Spread Changes, Learning Points

CPOT has successfully been implemented to assess pain for ICU patients and full integration with the EPIC system to allow proper documentation and follow up. It allows collaborative assessment and discussion with physicians or allied healthcare professionals on improving pain experience using CPOT as a scale. However, there are still limitations on the use of CPOT towards neurological patients. Thus, further research will still be needed in order to evaluate the effectiveness on this group of patients. Further improvements and researches have yet to be done to evaluate CPOT compliance for nurses. As such, audit will be conducted in the future to ensure 100% usage and compliance in the ICU. Further research can be done to work with other allied healthcare professionals on using CPOT concomitantly with the administration of sedative and analgesic agents.

Ng Teng Fong General Hospital

Jurong Community Hospital