COMFORT AND KNOWLEDGE ANALYSIS OF NEURO-TRAUMA INTENSIVE CARE CLINICIANS PRE/POST EDUCATION INTERVENTION AND IMPLEMENTATION OF A PALLIATIVE CARE SCREENING INSTRUMENT

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ABSTRACT

Purpose: The purpose of the scholarly project is to examine how an educational intervention and implementation of palliative care (PC) screening instrument impacts clinician comfort and knowledge regarding PC in the neuro-trauma intensive care (NTICU) setting in an academic health setting over the course of four weeks.

Methods: An evidence-based comfort and knowledge questionnaire was administered utilizing the Research Electronic Data Capture (REDCap) application software. A PC screening instrument was used to screen NTICU patients who may benefit from a PC consult following a week-long staff educational intervention. The clinicians' demographic information were collected and reported in frequencies and percentages. The Wilcoxon signed-ranks test and Fisher's exact test were used to analyze the clinicians' comfort and knowledge data.

Sample and Setting: The sample (n = 8) consisted of NTICU bedside registered nurses, registered nurse (RN) case managers, and social work case managers who volunteered to participate in the study. All patients admitted to the 12-bed NTICU were eligible to be screened by these clinicians for PC.

Results: There were no statistically significant differences among pre- and post-intervention data where individual clinician comfort and knowledge questions were examined. There was no statistically significant change in nurses' overall median knowledge scores ($Z = -1.414$, $p = 0.500$). There was, however, a statistically significant change among nurses' overall median comfort scores ($Z = -2.232$, $p = 0.031$).

Nursing Implications: Nurses are able to screen patients for PC and communicate this need to providers for early PC referrals and consultations. A potential change in nursing comfort and knowledge regarding patients who may benefit from PC referral exists.

Keywords: palliative care, ICU, neuro-ICU, triggers

DEDICATION

I would like to take this opportunity to express my deepest gratitude to those individuals who have provided unwavering physical and emotional support to me during the completion of my DNP program. First, I would like to thank my best friend and partner, Derrick; without his constant encouragement, calming spirit, and grounding presence over the last few years, pursuing this degree would not have been possible. You are one of the most inspiring individuals I have ever known. I also want to personally thank my close friends and family for their support and guidance through my academic journey. Much gratitude goes to my hospice coworkers, providers, and management team, specifically fellow nurse practitioner, Heather Linkous. They allowed me the opportunity to balance both work and school. Without the encouragement and patience exhibited by them, this journey would not have been possible. A special thanks goes to my project mentor, Dr. Phyllis Whitehead, for her endless knowledge and expertise of palliative care, acknowledgement of the unique role APRNs have in this field, and unceasing positivity and guidance through the scholarly practice project process. Finally, I would like to recognize my DNP advisor, Dr. Kathryn Reid, who was always available for consultation, guidance, and advice throughout the process. I cannot express enough thanks to my scholarly practice project team for their continued support and encouragement: Dr. Kathryn Reid; Dr. Kenneth White, my second reader; Dr. Phyllis Whitehead, and Dr. Ivora Hinton, project statistician.

TABLE OF CONTENTS

LIST OF TABLES

Chapter I

Introduction

Background

Palliative care (PC), a term introduced in the early 1970s, evolved from hospice care and is a form of specialized interprofessional practice that includes an emphasis on pain and symptom management for patients diagnosed with serious illnesses/diseases including those with a terminal prognosis (HPNA, 2013). PC utilizes an interdisciplinary healthcare team approach to provide patient and family centered care that is holistic and value-based in order to alleviate suffering, promote quality of life, and facilitate advance care planning. Interdisciplinary teams generally consist of but are not limited to the following: medical director, advanced practice nurse (nurse practitioner or clinical nurse specialist), registered nurse, pharmacist, social worker, chaplain, bereavement coordinator, and volunteer coordinator. In addition to minimizing symptom burden, PC teams emphasize patient leadership in directing care goals in order to help minimize existential suffering. PC may be provided in inpatient and outpatient settings, however it is more often utilized in the inpatient setting (CAPC, 2018a). By aggressively managing symptom burden, it has been proposed that utilizing PC may decrease healthcare costs, reduce readmission rates, and improve quality of life. More research is needed in this field secondary to relatively new implementation of PC in healthcare dating to early 2000 (Rabow et al., 2013).

Acute neurological conditions can be emergent, devastating, and life-threatening to individuals and their loved ones. To optimally treat these disorders, patients are admitted to a Neurological Intensive Care Unit (neuro-ICU) which may include the management of surgical and traumatic conditions with resulting neurological insults. Conditions such as stroke, traumatic brain injury (TBI), neurogenic shock, brain tumors, brain hemorrhages, and neuromuscular

emergencies that affect the central nervous system, peripheral nervous system (PNS), or both, are treated in the neuro-ICU. According to the Centers for Disease Control and Prevention (CDC) "stroke is the fifth leading cause of death in the United States (U.S.) affecting approximately 795, 000 individuals each year and killing about 140, 000 annually" (HHS, 2017b).

Secondary to the serious nature of strokes, the American Heart Association (AHA) and the American Stroke Association (ASA) published a statement in 2014 stressing the importance of all stroke patients having access to palliative care (Holloway et al., 2014). As with strokes, all other neuro-ICU conditions have the potential to be life-altering, debilitating, costly, and may result in death. Neurological insults not only affect the patient but place a huge stress and potential burden on family members and loved ones; these individuals may be decision makers in the neuro-ICU when the patient lacks capacity or are caregivers at discharge should the patient survive. Should the patient approach the end of life while in the ICU, the American College of Critical Care Medicine (ACCM) issued a position statement in 2008 highlighting the need for specialized and comprehensive symptom management and end-of-life care in the ICU setting (Truog et al., 2008).

The CDC defines a TBI as "a disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head, or penetrating head injury" (HHS, 2017c). Common causes of TBIs include falls, motor vehicle accidents, and traffic-related incidents (HHS, 2017c). The incidence and prevalence of TBIs in the U.S. has risen over the past decade with a "total combined rate of TBI-related hospitalizations, ED visits, and deaths climbing from a rate of 521.0 per 100, 000 in 2001 to 823.7 per 100, 000 in 2010" (HHS, 2017d). One potential side effect of a TBI is chronic traumatic encephalopathy which may affect a patient's cognitive and functional abilities, including but not limited to thinking, sensation, language, and emotion

(HHS, 2017c). This serious brain injury may result in epilepsy as well as increase one's risk of developing Alzheimer's disease, Parkinson's disease, and other dementias. The Glasgow Coma Scale (GCS) is a tool to assess coma and impaired consciousness and is used as a severity guide for TBIs. Elements of the scale include eye response, verbal response, and motor response. The lowest and most severe GCS score is a three, which reflects a patient who is in a coma or has died. A fully awake individual would score a GCS of 15, which is the highest score possible using this clinical assessment tool. A TBI is classified as being severe in patients with a GCS less than eight, moderate with scores of nine to 12, and mild with scores ranging from 13 to 15 (HHS, 2017c). TBIs are one of the most common cause for admission to a neuro-ICU as these patients require specialized medical care to quickly assess, diagnosis, treat, and manage this potentially life-threating condition.

The Center to Advance Palliative Care (CAPC) is the leading resource for the development of palliative care in the U.S. This national organization provides various healthcare systems with the knowledge, educational materials, research, training, and tools needed to implement and integrate palliative care within their organization. CAPC has created initiatives to advanced palliative care in the ICU specifically; this project is called the Improve Palliative Care in the ICU (IPAL-ICU). The project includes evidence-based practice research, expert knowledge, various educational materials including screening tools, and video training opportunities.

Roczen, White, and Epstein (2016) performed a systematic review of literature following recommendations by IPAL-ICU and CAPC consensus reports. A total of 12 research studies were included in the review which examined how PC practices in the ICU setting were related to clinical and nonclinical outcomes (Roczen, White, & Epstein, 2016). PC interventions generally

occurred within the first 72 hours of a patient ICU admission. Clinical and nonclinical outcomes reviewed in the article included hospital/ICU mortality, symptom management, treatment options, length of stay (LOS), and satisfaction with care (Roczen, White, & Epstein, 2016). The authors concluded that the integration of PC in the ICU setting can augment the care of patients diagnosed with serious or life-limiting conditions (Roczen, White, & Epstein, 2016). Though there is currently no neuro-ICU specific PC screening tool, the IPAL-ICU resources provide guidance for this Neuro-Trauma ICU (NTICU) scholarly project.

Study Aims and Purpose

The purpose of the scholarly project is to examine how an educational intervention and implementation of a PC screening instrument impacts clinician comfort and knowledge regarding PC screening and recommendation in the NTICU setting in an academic health setting over the course of four weeks.

Theoretical Framework

The Comfort Theory

The proposed theoretical framework used in this project is Dr. Katharine Kolcaba's Comfort Theory (Appendix A, Figure 1; Kolcaba, 2003 & Kolcaba, 2007). Permission was granted from Kolcaba to use both the Comfort Theory theoretical framework and model (see Appendix A). As a middle range nursing theory, this framework can be utilized in various healthcare settings with a variety of patient populations. Of note, a 'patient' may consist of individuals, institutions, communities, or families (Petiprin, 2016). In this, Kolcaba describes holistic comfort, which exists in the forms of relief, ease, and transcendence, to be the result of holistic nursing care in which physical, sociocultural, environmental, and psychospiritual needs have been addressed (Krinsky, Murillo & Johnson, 2014). The theory describes the outcome of

comfort to be patient and family centered secondary to identifying comfort as a basic human desire and need. The author proposes that better comfort management not only promotes greater nursing satisfaction but also higher patient satisfaction (Kolcaba, 2003).

The model begins with gathering subjective and objective data through intentional nursing assessments to identify a patient's healthcare need; nursing interventions and care plans are then tailored to target each need to maximize patient comfort. Following the implementation of interventions, the nurse continues to assess and reassess the impact of the intervention on the patient's comfort and make changes when appropriate. Intervening variables are defined as elements that cannot be changed such as age, gender, race, socioeconomic status, support systems, personal values and beliefs, and prognosis. Enhanced comfort is obtained through nursing assessments identifying healthcare needs, comforting patient-specific tailored nursing interventions, and intervening variables. Additional factors which impact enhanced comfort are health-seeking behaviors, which are behaviors that patients seek out to maximize health outcomes. Health-seeking behaviors also contribute to institutional integrity, which consist of an organizations' mission, values, and financial stability (Petiprin, 2016). Organizations seek to develop best practice and protocols through ongoing research and institutional development of policies and procedures in order to increase their institutional integrity. The theorists report that as the institutional integrity increases, so does the health-seeking behavior of patients and enhanced comfort (Petiprin, 2016). Health-seeking behaviors may lead to a change in a patient's internal behaviors, external behaviors, or a peaceful death.

Kolcaba (2003) also applied this theory to the comfort of nurses specifically in the *Theoretical framework for a study of nurses' comfort* (see Appendix A, Figure 2). The framework suggests that nurses' comfort and nurses' health-seeking behaviors are interrelated

and that health-seeking behaviors impact their overall morale, productivity, and stress-related illness or injury (Kolcaba, 2003). It is theorized that improved patient outcomes and higher patient satisfaction is achieved when nurses have higher morale, increased productivity, and less stress-related illness or injury (Kolcaba, 2003). Kolcaba (2003) describes the desire of nurses to have independence, to practice autonomously within their scope, and to receive respect for their decisions impacting their institution, unit, and patient care.

The use of a PC screening instrument can help foster nurses' ability to effectively comfort. The goal of the screening instrument is to guide initiation of an interdisciplinary discussion of whether or not a patient may benefit from an inpatient PC consultation from the inpatient PC team. Initiating a PC consult and goals of care (GOC) conversation between the PC team and patient/family could positively influence the patient's health seeking behaviors and increase comfort. Identifying the patient's GOC is crucial in order to understand the patients' desires and wishes regarding their care received during their hospitalization, especially when their plan may vary from the healthcare teams' plan. This consultation could aid in decreasing symptom burden and increasing patient satisfaction, leading to increased institutional integrity of the healthcare system.

In order to develop a strategy, policy, or protocol for initiating PC triggers on the NTICU, clinicians' comfort and knowledge regarding PC screening must first be appreciated. Therefore, the PICOT question for this scholarly project is as follows: In the NTICU, how does clinician education and the implementation of a PC screening instrument impact comfort and knowledge for recommending palliative care consults over a 4-week time period?

Chapter II

Review of the Literature

Methods of Integrated Literature Review

In order to identify and evaluate the impact of palliative care screening in the NTICU setting, the PI systematically reviewed the literature from January 2000 to May 2018. The search of the Cochrane database included the key words “palliative care” and “neuro ICU”, which generated one randomized controlled trial. When searching the CINAHL database using the key words “palliative care” and “neuro ICU” and “triggers” no citations were yielded, so key words were changed to “palliative care” and “neuro ICU” which yielded four results. The CINAHL database was also searched using the key terms “palliative care” and “ICU” and “triggers” which yielded 119 results, however only five fit the PICOT question. Utilizing the PubMed database with “palliative care” and “neuro ICU” and “triggers” no results were yielded; on a second search using key words of “palliative care” and “neuro ICU” seven citations were yielded. The references were hand searched for examination of generated systematic reviews which yielded additional articles. There were 12 articles included in the literature review based on inclusion and exclusion PICOT criteria. Inclusion criteria were: (1) any study that discussed the impact of PC services administered to patients in a neuro-ICU, and (2) any study that examined the implications of PC triggers in a neuro-ICU, and (3) any study that examined the effects of PC on symptom burden and quality of life in a neuro-ICU. Exclusion criteria were: (1) studies that referenced PC outside of the neuro-ICU setting, (2) studies without an English language abstract, (3) studies that did not have full text available for view, and (4) articles which presented information strictly as a letter to the editor. The search was limited to studies published after the year 2000 in an attempt to capture data representing most current practice and statistics.

Additionally, since the specific field of palliative medicine is relatively new, the PI did not research articles earlier than this date. Randomized controlled trials and qualitative studies were included in this search. Refer to Appendix B for a more detailed summary of the search criteria.

Consensus Statements and Guidelines

The article by Aslakson, Curtis, and Nelson (2014) examined peer-reviewed literature, consensus statements, and guidelines on the use of PC services in the ICU. The author's objectives were to provide a review of the literature promoting the use of PC for critically ill adults in order to promote and support the implementation of PC as a way of providing comprehensive healthcare to this patient population (Aslakson, Curtis, & Nelson, 2014). The author examined opportunities and challenges for ICU PC improvement which included barriers such as unrealistic expectations for ICU therapies, confusion of PC with hospice and end-of-life care, misconception with the use of PC to hasten death, ICU clinician demands limiting their availability and time to adequately provide PC, and system and culture influences on the use of PC in the ICU (Aslakson, Curtis, & Nelson, 2014). The authors examined the use of the national performance improvement initiative developed by the Voluntary Hospital Association (VHA) called the "Care and Communication Bundle" (Nelson et al., 2006). The PC "bundle" was developed to identify quality measures of routine monitoring and performance feedback in the ICU (Nelson et al., 2006). Within the "bundle" the quality measures were divided into sections according to ICU day one, ICU day three, and ICU day five with a goal of early identification and performance to optimize comprehensive healthcare. For example, by the end of ICU day one, measures included identifying a medical decision maker, advance directive and code status, implement routine pain assessments including management, and communication with family members (Nelson et al., 2006). Their recommendations included that an interdisciplinary

meeting should occur no later than ICU day five. Aslakson, Curtis, and Nelson (2014) also discussed the advantages of the consultative model for PC services, which was described as the use of expert PC clinicians providing specialist PC in the ICU. One recommendation was to incorporate the opinions of the specialized PC provider with the primary care team to provide comprehensive healthcare. The authors summarize that the integration of PC in the ICU is essential to providing comprehensive healthcare to critically ill patients, however "further research is needed to understand how to provide the most effective and efficient PC in the ICU" (Nelson et al., 2006, p. 2428).

Neuro-ICU Palliative Care Screening

In the Creutzfeldt et al. (2015) study, a quality improvement project using a parallel-group prospective cohort design, researchers examined a single neuro-ICU at a large, academic medical center examining patients admitted over a three-month time period. During the described time period, 130 patients were admitted to the service and screened for PC needs utilizing their screening tool which including the following four questions: "(1) Does the patient have distressing physical or psychological symptoms?, (2) Are there specific support needs for the patient or family?, (3) Are treatment options matched with patient-centered goals?, (4) Are there disagreements among teams and family?" (Creutzfeldt et al., 2015, p. 1677). The intervention group was compared with a control group of 132 patients who were not screened. Results revealed that screening increased family conferences which showed a positive trend toward increased PC consultations.

CAPC Screening Criteria

Lapp and Iverson (2015) conducted a retrospective, descriptive, exploratory study examining the CAPC screening criteria to create a tool to identify patients with a high likelihood

of having unmet PC needs. The instrument was a predictor of mortality based on the number of PC criteria met. Medical records of 200 randomly selected patients admitted to an ICU were reviewed. Results revealed that a large majority of patients who met criteria for PC did not utilize the service which suggested they had unmet PC needs.

PC Triggers

The use of triggers for palliative care was examined in the retrospective cohort study of ICU admissions conducted by May, Guohua, Blinderman, and Wunsch (2014). The authors found that the top five triggers identifying ICU admissions included the following: "(1) ICU admission after hospital stay greater than or equal to ten days, (2) multisystem organ failure greater than or equal to three systems, (3) stage IV malignancy, (4) status post cardiac arrest, and (5) intracerebral hemorrhage requiring mechanical ventilation" (May, Guohua, Blinderman, & Wunsch, 2014, p. 428). The authors concluded that a variety of multiple triggers may help to identify patients in the ICU who are appropriate for PC, however how often triggers are used to identify these patients is currently unknown.

Family Satisfaction and PC Checklist

A prospective, longitudinal cohort study completed in a single, 30-bed neuro-ICU in a regional stroke and level one trauma center was conducted by Creutzfeldt et al. (2017). Family members were surveyed post neuro-ICU discharge during March and October 2015. Conclusions of the study revealed that the use of a PC needs checklist had no statistical measurable effect on family satisfaction scores or long-term psychological outcomes and that further research is needed to meet the PC needs of neuro-ICU family members (Creutzfeldt et al., 2017).

Qualitative Studies with Clinicians

Schultz et al. (2017) explored how family members, nurses, and physicians experience

the PC and supportive care needs of patients with severe acute brain injury (SABI) in a neuro-ICU. This was a qualitative research design consisting of semi-structured interviews conducted in a 30-bed neuro-ICU in a regional comprehensive stroke and level-one trauma center in the U.S. Identified themes were (1) hope and (2) personhood (Schultz et al., 2017). The researchers provided practical suggestions for PC and supportive care interventions based on the perspectives of clinicians and family members. The authors highlight the need for further research regarding this specific patient population and its unique needs, including the needs specific to the neuro-ICU, to optimize communication strategies.

Goals of Care and Decision-Making

Tran, Back, and Creutzfeldt (2016) conducted a retrospective electronic chart review of patients admitted to the neuro-ICU for greater than 24 hours who received a PC consultation between January and August 2014. Only 4% (25) of patients received a PC consultation with the majority of consultations being performed to establish and clarify GOC. The majority of differences found between those patients who received consultations and those who did not were regarding ICU LOS and death. The most common themes identified in the PC consults were: "(1) discussion prognosis, (2), eliciting patient and family values, (3) understanding medical options, and (4) identifying conflict" (Tran, Back, & Creutzfeldt, 2016, p. 266). The authors concluded that early identification and initiation of PC consults may be beneficial in the neuro-ICU, enhance coping mechanisms, and the decision-making process.

CAPC-IPAL Project

The CAPC-IPAL project has been utilized to incorporate PC into various ICUs. As previously mentioned, the project includes evidence-based practice research, professional expertise, educational materials including screening tools, and video training opportunities for

use in developing and implementing PC in the ICU setting. Mosenthal et al. (2012) critically reviewed literature regarding the implementation of PC in the surgical and trauma intensive care units in a report from the IPAL-ICU project advisory board. The authors highlight the lack of evidence supporting the most effective PC delivery system, but note that clinicians in surgery, critical care, and PC should collaborate in order to identify PC needs and challenges to improve the use of PC, identify and develop triggers for PC consultation, and develop practical models and tools for use in providing comprehensive care to this specialized patient population. Frontera et al. (2015) published a report from the IPAL-ICU project advisory board focused on patients with neurocritical illness. Conclusions of their report acknowledge that neuro-ICU patients and families oftentimes are subject to sudden and devastating illnesses that affect a patient on cognitive and functional levels. The literature suggests clinicians should focus on decision-making at the time of a crisis, patient and family GOC discussions should be addressed and include symptom relief and family emotional support.

Screening and Trigger Model

The Mun et al. (2017) article utilized the recommendations provided by the IPAL-ICU project as it related to a new PC program developed in their specific ICU. The authors noted the use of the consultative model for their PC needs as a means to strengthen their already existing PC team. The use of a screening instrument and trigger criteria was also implemented; the trigger criteria included the following: "(1) advanced cancer, (2) chronic and severe cognitive dysfunction, (3) consistency with or lack of goals of care, (4) conflict with goals of care, (5) multiorgan system failure, and (6) ICU length of stay greater than seven days" (Mun et al., 2017, p. 110). The authors were able to successfully integrate a trigger model and screening instrument into their ICU utilizing guidelines provided by the IPAL-ICU project.

The Jones and Bernstein (2017) pilot study was conducted in a suburban healthcare system in the Northern Kentucky/Greater Cincinnati area which adopted triggers in an attempt to increase PC consultations in one of the system's ICUs. The chosen ICU was a 16-bed unit that had the least number of PC referrals the previous year. The triggers used in this study were: "(1) intensive care unit stay greater than 2 weeks, (2) stage IV malignancy, (3) aged 75 years or greater with multisystem organ failure, and (4) stroke scale greater than 4" (Jones & Bernstein, 2017, p. 107). The results favored the implementation of a PC trigger set which resulted in increased PC consults. The team also surveyed staff, which included nurses, physicians, and one advanced care provider, on their attitudes, comfort, and utility of the PC trigger set.

Summary of the Integrated Literature Review

The field of palliative medicine and integration of standard PC is widely underutilized across all fields of medicine, specifically the ICU setting. The use of PC in the ICU is critical in order to provide comprehensive care to patients with high symptom burden with potentially lengthy hospitalizations and associated healthcare costs.

Implications for Nursing

Nursing plays a critical role in the early identification of patients who may benefit from PC consultations and services. Bedside RN staff and RN case managers have the unique role of providing direct hands-on care to patients with life-limiting illnesses. Bedside nurses aid in admitting patients to the ICU, perform initial and ongoing assessments, identify critical changes in patient status, and help to coordinate pain and symptom management with providers. RN case managers help to assist and coordinate patient's care while in the ICU setting and plan for transfer or discharge depending on the patient's disposition. Nurses are able to screen patients for PC and communicate this need to providers for early PC referrals and consultation. They serve as

liaisons between the patient, family, and healthcare providers. Nurses advocate for their patients and provide insight to their patient's GOC and may help to facilitate these conversations based on the intimate relationship established by their role.

Implications for Scholarly Project

In order to provide comprehensive quality care for patients in the ICU setting, researchers recommend establishing early identification and screening for those who may benefit from a PC consultation (CAPC, 2018c). Educating ICU staff members on the current evidence in the literature and positive implications of early PC for those patients who meet criteria is essential. The comfort and knowledge of ICU staff requires assessment prior to the implementation of a PC trigger instrument, as it may impact the use of the established screening tool. There is currently a well-established inpatient PC unit which includes clinicians trained to organize patient and family conferences on GOC in the hospital in which the scholarly project took place. Various members of the NTICU staff expressed an interest in PC education and need for additional PC referrals and consults in order to provide comprehensive interdisciplinary care to patients in this 12-bed unit.

Rationale for Project Question

Though research supports the integration of PC in the ICU and multiple societies have published practice recommendations and guidelines, there is no standard process for the identification and implementation of triggers or screening tools for the neuro-ICU (CAPC, 2018c). There is also no standard or routine screening of patients who may benefit for PC services in the NTICU of interest. Clinician comfort, perception, attitudes and beliefs, and culture within the healthcare system and NTICU may contribute to inadequate screening of patients for PC. Further research needs to be completed in order to develop a standard NTICU

screening instrument. This will aid in the early identification of patients who may benefit from PC, its implications on the management of symptom burden, GOC conversations, and utility for nursing staff.

PICOT Research Question

The PICOT question for this scholarly project is as follows: In the NTICU how does clinician education and the implementation of a PC screening instrument impact comfort and knowledge for recommending palliative care consults over a four-week time period?

Chapter III

Methods

Quality Improvement Design

The scholarly project was a pilot, feasibility, qualitative study consisting of an evidenced-based comfort and knowledge survey administered to NTICU bedside clinicians (bedside nursing staff, nursing case managers, and social workers). The project included a pre- and post-intervention electronic survey on PC comfort and knowledge, PC educational intervention, PC screening of NTICU patients over a four-week time period, and weekly check-ins by the PI during the designated four weeks to follow up with NTICU staff members. The initial survey was administered utilizing the REDCap application software, which is a secure web application that was approved by the healthcare institution in which the project took place. Following the initial survey, a one-week educational intervention was completed with NTICU staff members. After the education week was complete, the goal was for clinicians to screen all eligible NTICU patients each day they were admitted to the unit over the designated four-week screening period. Exclusion criteria for NTICU patients were any patient under the age of 18 years. Exclusion criteria for clinicians included any float or resource staff members who had not received education on the scholarly project. A post-intervention survey was administered via REDCap immediately following the completion of the screening time period.

Study Aims and Purpose

The purpose of the scholarly project was to examine how an educational intervention and implementation of PC screening instrument impacts clinician comfort and knowledge regarding PC.

Definition of Terms

- Palliative care: CAPC defines PC as the "specialized medical care for people living with serious illness. It focuses on providing relief from the symptoms and stress of a serious illness. The goal is to improve quality of life for both the patient and the family" (CAPC, 2018b). PC is provided by specialty trained interdisciplinary team members which may consist of a medical director, advance practice registered nurse, RN case manager, social worker, chaplain, bereavement coordinator, volunteer coordinator, music therapist, massage therapist, and volunteers. It may take place in outpatient and inpatient settings and is appropriate for patients of any age diagnosed with a serious illness. It may be utilized as a complementary specialty in addition to curative treatments.
- Neuro-Trauma Intensive Care: Neurocritical care or neuro-intensive care is a sub-specialty of medicine that treats acute life-threatening conditions of the nervous system. Illnesses that may be treated include stroke, TBI, neurogenic shock, brain tumors, brain bleeds, and neuromuscular emergencies, which affect the CNS, PNS, or both. NTICUs manage patients with acute life-threatening neurological conditions in addition to those involving surgery or trauma to the nervous system.
- Palliative care screening instrument: A list of criteria to help identify patients in the NTICU who may benefit from a PC referral and consultation. The screening instrument was developed by the PI and PC practice mentor following a literature review.
- Clinician(s): For the purpose of this scholarly project, "clinician" refers to bedside RNs, RN case managers, and social work case managers.

Project Setting

The project took place in a 700-bed tertiary, community-based, academic hospital in Southwest, VA. The hospital has a level one trauma center and has achieved Magnet designation. Enrollment and implementation of the intervention was conducted in a single 12-bed NTICU which has been nationally and regionally recognized as a neuro-ICU or trauma-ICU in Virginia receiving the American Association of Critical-Care Nurses (AACN) Beacon Award. Recipients of this distinguished award must meet AACN criteria in categories such as appropriate staffing and staff engagement, evidence-based practice and processes, and outcome measurements (AACN, 2018). The NTICU for this project stabilizes and treats patients with traumatic injuries or who require neurosurgical intervention. Providers are from a variety of specialties, which may include the following: hospitalist group, neurosurgery, orthopedic surgery, plastics, surgical/critical care, and trauma. Nurses on the NTICU provide bedside care to all patients admitted to the unit, regardless of provider specialty. The unit has designated social workers, RN case managers, nursing assistants, a CNS, and nursing unit director.

Description of the Sample

NTICU bedside nurses, RN case managers, and social workers were eligible to participate in the voluntary pre- and post-intervention survey administered through REDCap. Exclusion criteria for clinicians included any float or resource staff members who had not received education on the scholarly project. All patients admitted to the NTICU were eligible to be screened for PC by the following clinicians: bedside RN, RN case manager, and/or social worker. Secondary to the CNS occasionally providing bedside RN care to patients on the unit, eligibility to complete the survey and screen patients was granted. It was preferred by the PI that the screening was a collective effort during the interdisciplinary team (IDT) rounds, which

occurred Monday through Friday, however it was not required that all clinicians provide input. Though formalized IDT meetings did not take place on Saturdays and Sundays, patients could be screened during this time. Patients were screened utilizing a paper-screening instrument, which was located at the unit nursing station in a specialty marked envelope. Once a patient was screened, the clinician(s) placed the completed form in a separate specially marked envelope for ease of organization and tracking. The goal was to screen all eligible patients every day throughout the designated four-week screening period. For example, patients who remained on the unit for consecutive days were eligible to be screened each day they were admitted to the unit.

Measures

Comfort and Knowledge Survey

The Comfort and Knowledge Survey was administered to all bedside RNs, RN case managers, and social workers employed in the NTICU. This survey selected for the scholarly project was adapted from Fedel, Joosse, and Jeske (2013) comfort and knowledge survey. Permission from Patrice Fedel to use the survey was obtained (see Appendix C). The selected questionnaire has a Cronbach's alpha of 0.803 (Fedel, Joosse, & Jeske, 2013). The first five questions pertain to clinician comfort with responses using a Likert-type scale. The following three questions are knowledge-based questions of PC and require a true or false answer. The knowledge questions were originally adopted from the palliative care quiz for nursing (PCQN) developed by Ross, McDonald, and McGuinness in 1996 (Ross, McDonald, & McGuinnes, 1996; Fedel, Joosse, & Jeske, 2013). Additional questions were included by the principal investigator (PI) with input from the project practice mentor based on expert opinion and experience in PC, along with questions aimed at collecting demographic information on the

survey participants. Based on practice expert opinion and for measurement purposes, an additional question was added to the post-intervention survey, which assessed the respondents' confidence in advocating for a PC consultation. (see Appendix D)

Palliative Care Screening Instrument

For this scholarly project, a PC screening instrument (see Appendix D) was utilized by the following clinicians: social workers, RN case managers, and bedside nurses. The instrument was developed by the PI and PC mentor based on a literature review and lack of standardized PC screening tool in the NTICU, which is aimed at identifying patients who would potentially benefit from a PC consultation. A PC medical director and field expert also reviewed the instrument prior to implementation. All patients admitted to the NTICU, with the exception of those under age 18, were eligible to be screened.

The first section of the PC screening instrument included a medical record number of each patient screened, date of screening, and profession of screener(s) as a means of data collection and analysis. The second and final section of the instrument included a total of six questions which were as follows:

- Does the patient have life-limiting conditions and/or stage IV malignancy and/or distressing physical or psychological symptoms?
- Does the family have concerns about prognosis or treatment options?
- Do we need to (re)address patient goals of care or target treatment towards them?
- Is the patient ICU length of stay ≥ 3 days?
- Do you think the patient would benefit for a PC referral?
- Was the patient referred to PC?

Questions one through three were used with permission from Creutzfeldt, who has published previous screening instruments on PC in the NTICU (see Appendix C).

Procedures

Upon obtaining Institutional Review Board (IRB) approval (see Appendix E), the comfort and knowledge survey was administered to NTICU bedside nurses, RN case managers, and social workers with the REDCap application software. REDCap is a secure web application that can be utilized in HIPAA-compliant environments and is approved by the healthcare institution in which the project took place. It is designed so users can create personalized surveys for research purposes. Each respondent was issued a unique link in order for surveys to be paired and analyzed. The IRB approved an email script to be included with the surveys; consent to participate in the scholarly project was assumed in the voluntary completion of the administered surveys as per the approved IRB email script (see Appendix E).

The survey was sent via email listserv by the REDCap administrator. The initial survey remained open for a two-week time period in order to capture as many staff members as possible; for those staff who had not completed the survey following one week, a reminder was sent by the REDCap administrator.

Following the initial survey, an educational intervention on the PC screening instrument and screening protocol was provided by the PI. Originally, the recommendation by NTICU management was for the PI to provide staff education during their monthly staff meeting. Secondary to unforeseen circumstances, the staff meeting was cancelled and the educational intervention was modified. The PI created an educational presentation (see Appendix C) which was emailed to all unit bedside RNs, RN case managers, social work case managers, clinical nurse specialist (CNS), and unit director. The PI also performed face-to-face education for

various staff members on one day of the education week. The NTICU day-shift unit champion volunteered to provide education to other clinical team leaders and staff face-to-face. The unit CNS, a designated night shift RN, and a social work case manager, who had received detailed face-to-face education from the PI, also volunteered to educate staff members during the week. An education flip-board with the same educational materials sent by email was placed at the central nursing station for the education week, at an attempt to capture additional staff members. The recommendation to utilize the flip-board was made by the CNS, as that is how routine education is administered to staff. Inservice completion forms were included in the education flip-board material to track the numbers of staff members who completed the education.

After the completion of the education intervention, the PC screening instrument was placed at the central nursing station in a clearly-marked envelope. The goal was to have all patients admitted to the NTICU screened during the designated time period. Ideally, patients were screened at least Monday through Friday and discussed during the IDT rounds of bedside RNs, RN case managers, and social workers. Once screening was complete, the instrument was placed in a designated folder at the central nursing station which was accessible only to the PI for data analysis. Throughout the screening time period the PI maintained close contact with the NTICU RN unit champion, unit director, CNS, night-shift RN, and social work case manager to identify questions or concerns with the project. The PI did visit the NTICU periodically to answer questions in person and collect screening material.

The original plan was to screen patients for a total of six weeks, however based on feedback from the unit director and CNS, it was recommended the screening time period be reduced to four weeks. This was in part due to multiple projects being implemented on the unit at the same time, as well as the six-week screening time period occurring over major holidays. The

PI evaluated the number of completed PC screenings at the end of four weeks, discussed the potential change with the project mentor, and it was decided to reduce the screening time to the staff recommendation of four weeks. Other than the recommendation to reduce the screening period, no issues or concerns were reported to the PI or project mentor.

Following the four-week patient screening period, the post comfort and knowledge survey was administered via REDCap. The survey remained open for a two-week time period in order to capture as many staff members as possible; for those staff who had not completed the survey following one week, a reminder was sent by the REDCap administrator.

Protection of Human Subjects

The PI completed the Collaborative Institutional Training Initiative (CITI) program training prior to the project proposal and implementation. The specific curriculum completed involved modules regarding the IRB for Health Sciences Research of Human Research. Modules were completed through the University of Virginia (UVA). Additional CITI IRB training was completed through the project site institution and included modules in the Biomedical group, part of the Human Research curriculum. Permission to complete the scholarly project on the NTICU was granted by the NTICU unit director and clinical nurse specialist (CNS) several months before the project took place (see Appendix C). Prior to initiating the project, multiple meetings between the unit director, CNS, PI, and PC mentor took place prior to discuss the purpose and aims of the project as well as gain feedback on unit processes. A NTICU RN unit champion was identified and volunteered to assist the PI with project planning and education that best fit the needs and culture of the unit. IRB approval was obtained through the project site institution and UVA prior to beginning the scholarly project as described in see Appendix E. The only patient information collected during the project was a medical reference number (MRN) on the PC

screening instrument. PC screening instruments collected by unit staff members were placed in a designated folder at the NTICU nursing station and were only accessible to the PI. Per IRB recommendations, the PI-stored data on a private share drive was created by the project site institution. Following the completion of the data entry, the MRNs were deleted on all electronic files. The MRNs were also removed from the paper PC screening instruments. Electronic survey respondents were de-identified and their unique REDCap link allowed for comparison of pre- and post-intervention survey data.

CHAPTER IV

Results

Data Analysis of Pre- and Post-Intervention Data

The comfort and knowledge questionnaire was sent to 42 NTICU staff members consisting of bedside RNs, RN case managers, social workers, and CNS. As previously described, the CNS often takes care of patients at the bedside; therefore, the staff member was included in the survey data. A total of 13 (30.95%) staff members responded to the pre-intervention survey with a return of eight staff members completing the post-intervention survey questionnaire. Table 1 in Appendix F displays the pre- and post-intervention demographics of participants. The majority of participants identified were bedside RNs (92.3% pre-intervention, 100% post-intervention) holding a bachelor's degree (76.9% pre-intervention, 75% post-intervention) with zero-ten years of experience in their current profession (76.9% pre-intervention, 62.5% post-intervention). Table 2 (see Appendix F) displays confirmed staff education completed during the educational intervention week (60.6% bedside RN, 100% social work case management, 0% RN case management, 100% unit director and CNS).

The primary outcomes measured in this scholarly project were changes in bedside RN, RN case manager, and social work case manager comfort and knowledge which was determined by a comparison of participants who completed both the pre- and post-intervention (n = 8). Data was analyzed using the Statistical Package for the Social Sciences (SPSS), Version 24. As shown in Table 3 (see Appendix F), the Likert score used for each of the five comfort questions was as follows: slightly comfortable, neutral, somewhat comfortable, very comfortable. Frequencies and percentages of all five comfort pre- and post-intervention participant responses are reported in

Table 3. Secondary to the small sample size, the nonparametric Wilcoxon signed-rank test was used to compare pre- and post-intervention responses for each question.

There was an increase in the number of participants who felt "very comfortable" (62.5% pre-intervention, 75% post-intervention) and decrease in those who felt "somewhat comfortable" (37.5% pre-intervention, 25% post-intervention) when participants were asked how comfortable they were in identifying which patients are at the end of life, though data was not statistically significant ($p = 1.000$). When asked how comfortable participants were in identifying which patients have chronic illness with limited treatment options, most reported "very comfortable" in both the pre- and post-intervention data (62.5%, 87.5%). The third question regarding the comfort of identifying which patients have decreased functional ability, 50% (4) reported "very comfortable" in the pre-intervention and 87.5% (7) in the post-intervention, though not statistically significant. Participants in the pre-intervention reported they were "somewhat comfortable" and "very comfortable" equally (50%) when asked how comfortable they were in assessing that a patient needed a PC consult. Post-intervention survey responses to this question showed an increase in how many participants felt "very comfortable" (87.5%). Finally, the fifth comfort question assessed the comfort of clinicians to request PC consults from physicians. There was a decrease in the number of nurses who felt "slightly comfortable" (25% pre-intervention, 12.5% post-intervention), decrease in "neutral" responses (12.5% pre-intervention, 0% post-intervention), no change in those who felt "somewhat comfortable" (25% pre-intervention, 25% post-intervention), and increase in nurses who felt "very comfortable" (37.5% pre-intervention, 62.5% post-intervention). Though there were no statistically significant changes when each comfort question was analyzed individually, there was a statistically significant

change among nurses when overall median pre-intervention comfort score was compared to overall median post-intervention comfort score ($Z = -2.232$, $p = 0.031$).

Knowledge questions for pre- and post-intervention participants are reported in Table 4 (see Appendix F) with the most appropriate true or false answer. In the first knowledge question "Palliative care is appropriate only in situations where there is evidence of a downhill trajectory of deterioration" only 87.5% (7) participants chose the most appropriate answer (false). There was an improvement to 100% in the post-intervention. When asked if "palliative care should only be provided for patients who have no curative treatments available" 100% of nurses answered with the most appropriate response of false in both the pre- and post-intervention. The third knowledge question assessed whether or not "the philosophy of palliative care is compatible with that of aggressive treatment" with the most appropriate response being true. Only 37.5% (3) nurses answered correctly in the pre-intervention compared to 25% (2) in the post-intervention. The nonparametric Fisher's exact test for the third knowledge question was 0.107, indicating data was not significant. There was no statistically significant change among nurses when overall median pre-intervention knowledge was compared to overall median post-intervention knowledge ($Z = -1.414$, $p = 0.500$).

There were two general questions asked on the pre- and post-intervention. The first was asked whether or not there have been times the responder felt PC would have been appropriate for their patient. All nurses responded "yes" to this question on both the pre- and post-intervention. The second question asked if the participant had ever recommended a PC consult for one of their patients. Six out of eight (75%) answered "yes" on the pre-intervention compared to all nurses answering "yes" on the post-intervention. There was one question added to the post-intervention that was not included on the pre-intervention questionnaire, "I feel more confident

advocating for a palliative care consultation". For this question, all of the respondents answered "yes" (100%).

Data Analysis of Palliative Care Screening Instrument

During the four-week screening period there were 73 total admissions to the NTICU. Of the 73 patients admitted, a total of 69 patients were screened for PC using the PC screening instrument which resulted in a 94.5% capture rate. When the PI was analyzing data, there were 70 patients who had screening paperwork completed, however one of the patients' instruments was left blank with the exception of the MRN, date, screener information, and comment of "withdrew care". Since the NTICU team withdrew care on this patient prior to the IDT rounds, the patient was not eligible for a PC consult and was therefore not included among those patients who were screened. When reviewing dates of screening, there were no patients screened on either Saturdays or Sundays. This may explain why not all 73 patients admitted to the unit were screened. For example, if a patient was admitted and discharged over the weekend, the patient would be missed since screening did not take place.

The frequencies of PC patient screenings organized by clinicians is displayed in Table 5 (see Appendix F). The table is also organized by whether or not the patient was referred to PC and whether the patient was eligible for PC but not referred. Instructions to clinicians on the PC screening instrument included, "only need one 'yes' to qualify for a PC consult". Table 5 does not take into account individual patients, but rather the total number of screenings completed for each category. For those patients who were eligible for PC but not referred, the highest number of screenings were completed by bedside RNs (40.2%), followed by social work case managers (31.6%), and RN case managers (14.5%).

As Table 6 in Appendix F outlines, 35 (50.7%) of the 69 total patients screened were

eligible for PC, however only 6 patients (8.7%) were referred. This results in a total of 29 (42%) potential missed consults. Specific patient information was not collected in this project, so it is not known why these patients were not referred or perhaps not deemed to be eligible from a provider standpoint. Of the 34 (49.3%) of patients were not eligible for a PC consult, 100% were not referred to PC (Table 7, Appendix F).

Table 8 in Appendix F outlines by survey question, the factors triggering PC consults for patients eligible for PC that were not referred. The most common question to trigger a PC consult but not yield a referral was question four, "Is the patient ICU length of stay ≥ 3 days?" This question was checked a total of 26 times (32.9%). The average LOS for November 2018 was 5.22 days and the average LOS for December 2018 was 3 days on the unit. The second most common question, checked 17 (21.5%) times, that was selected was question one, "Does the patient have life-limiting conditions and/or stage IV malignancy and/or distressing physical or psychological symptoms?" In future studies on this unit, more patient information is needed to help answer why these questions may have been selected but not yield a PC consult.

Chapter V

Discussion

Conclusion

The purpose of this scholarly project was to examine how an educational intervention and implementation of a PC screening instrument impacts clinician comfort and knowledge regarding PC in the NTICU setting in an academic health setting over the course of four weeks. As previously described, this scholarly project utilized the comfort and knowledge survey from Fedel et al. (2013) as a means of replication in order to reproduce similar results to increase nursing comfort and knowledge in the ICU setting. Findings from the Fedel et al. (2013) study resulted in only one statistically significant improvement in nursing comfort level, which was on the fourth question (p-value = 0.005) (Fedel et al., 2013, p. 2017). Furthermore, pre- and postpaired results of all comfort questions revealed a statistically significant result ($p = 0.040$) (Fedel et al., 2013, p. 2017). Though there were no statistically significant changes in the scholarly project when each comfort question was analyzed individually pre- and post-intervention, there was a statistically significant change among nurses when overall median pre-intervention comfort was compared to overall median post-intervention comfort ($Z = -2.232$, $p = 0.031$), which was similar to findings in the Fedel et al. (2013) study. The results of the individual comfort scores could be due to the small sample size in this project ($n = 8$). The change in overall comfort levels post-intervention suggests that educating nurses on PC, a PC screening instrument, and having them complete PC screenings on their patients, may contribute to increased comfort in identifying which patients are eligible for PC consults. It may also lead to nurses advocating for PC consults when discussing these patients with their providers.

There was no statistically significant change among nurses when overall median pre-intervention knowledge was compared to overall median post-intervention knowledge ($Z = -1.414$, $p = 0.500$). The knowledge question analysis may also have been influenced by a small sample size. Results may indicate that further nursing education is needed to assess when PC is appropriate, when it should be provided, and how the philosophy of PC is compatible with that of aggressive treatment.

The overall capture rate of patients screened for PC was 94.5% which indicates that it is feasible for bedside RNs, RN case managers, and social work case managers to complete a PC screening instrument on patients during daily rounds. Though only 17.1% of patients eligible for PC services according to the screening instrument received a PC consultation, clinicians did not refer patients who were not eligible. Future projects with additional patient data would need to be completed to obtain information on why patients were not referred. Given the study design and screening instrument used it is unclear why PC consultations did not occur.

It is encouraging to know that nurses on the NTICU who completed the pre- and post-intervention felt that their patients would have benefited from PC consultations, and that 75% on the presurvey and 100% on the postsurvey had recommended a PC consult. This may demonstrate a positive cultural environment on the unit in regards to PC. It may also be a result of increased comfort, knowledge, and/or awareness through the use of the screening instrument.

The total number of PC consults completed during this scholarly project time-period were 6, which is the same as the total number completed during the same time period in 2017. Based on PC provider comments, the NTICU tends to be one of the highest referring ICUs in the hospital, so it was not surprising the number did not increase.

Strengths and Weakness of the Design

There were several strengths and weaknesses in this project. One strength was the scholarly project was completed in a tertiary, not-for-profit, community-based, academic healthcare facility with level one trauma status and Magnet designation. The NTICU has also been the recipient of two Beacon Awards, which recognizes excellence in the categories of skilled communication, staff collaboration, effective decision making, adequate staffing, meaningful recognition, and authentic leadership. It was the only neurological or trauma ICU in Virginia to receive this award at the time of the first designation. The nurses on the unit lead and participate in research year-round and are interested in improving clinical practice for increased quality care. This was evident during this study secondary to the unexpected success with an exceptionally high participation and PC screening capture rate of 94.5% during the study time period.

The hospital has a well-established PC unit with specially trained physicians and APRNs to provide expert care in patient pain and symptom management as well as facilitate GOC conversations. Care provided by the PC team may occur on the inpatient PC unit or through referrals and consults throughout the hospital. The project may provide opportunities for culture change in the NTICU regarding PC as well as increase awareness of what a PC patient may look like, including the referral process. The PC screening instrument consists of only six questions so NTICU staff members were able to screen patients easily.

There were several limitations in this project. It was completed in a single medical facility in a 12-bed NTICU which limits its generalizability to other patient populations, ICUs, regions, or facilities. There is no current standardized screening tool for PC in the NTICU and as a result the PC screening instrument was created by the PI based on a literature review, so it

lacks validity and reliability. Though there was success with the context of PC screenings completed in the study, sustainability to continue PC screenings is lacking. The number of participants in the pre- and post-intervention were very small, so the data analysis was limited. Survey data is difficult as it relies on the response of and willingness of participants. The four-week time frame limited the number of patients screened for PC services and data collection. The original educational intervention had to be changed secondary to the cancellation of the unit staff meeting, so the PI was unable to educate a large majority of staff face-to-face. The NTICU had multiple projects being implemented at the same time the scholarly project was taking place, so staff may have felt overwhelmed in completing additional tasks. The time period of the project was originally planned for early Fall, however due to IRB and unit needs, it was delayed until November 2018 which caused portions of the project to occur over major holidays. IDT rounds of bedside RNs, nursing case managers, social work case managers, CNS, and unit director only occur Monday through Friday which may have resulted in missed screening opportunities on the weekends. There were numerous staff changes to bedside RNs, social work case managers, and RN case managers which may have impacted the patient screening and response to surveys. The PI is not employed in the NTICU and is unfamiliar to staff members, so there may have been some reluctance in screening patients or participating in the project altogether.

Nursing Practice Implications

Nursing plays a critical role in the early identification of patients who may benefit from PC consultations and services. Bedside RN staff and RN case managers have the unique role of providing direct hands-on care to patients with life-limiting illnesses. Bedside nurses aid in admitting patients to the ICU, perform initial and ongoing assessments, identify critical changes in patient status, and help to coordinate pain and symptom management with providers. RN case

managers help to assist and coordinate patient's care while in the ICU setting and plan for transfer or discharge depending on the patient's disposition. Nurses are able to screen patients for PC and communicate this need to providers for early PC referrals and consultation. They serve as liaisons between the patient, family, and healthcare providers. Nurses advocate for their patients and provide insight to their patient's GOC and may help to facilitate these conversations based on the intimate relationship established by their role. The PC screening instrument, including education on use, may change the comfort level of NTICU nurses in screening patients for a PC referral as well as empower them through increased nurse advocacy and quality patient care. With increased knowledge and comfort of patients who may benefit from a PC referral, nurses have the potential to help decrease patient LOS, symptom burden, and associated healthcare costs. The PC screening instrument may help to empower bedside nurses through increased clinician comfort, decision-making, and autonomous nursing practice which can influence institutional integrity and positive health seeking behaviors among patients and nurses.

Products of the Doctorate of Nurse Practice Project

Following the completion of the proposed scholarly project, a final report and presentation will be submitted to the UVA School of Nursing faculty for review towards meeting the requirements of the Doctor of Nursing Practice degree. Study findings will be reported to the NTICU, UVA, designated advisor and practice mentor, as well as to facility nursing leadership, if appropriate. A manuscript will be submitted to Libra, UVA's scholarly repository, as well as to the *Journal of Hospice & Palliative Nursing*. The PI will continue to work with the practice mentor in order to edit and update the PC screening instrument used in this project to aid in a sustainable screening process in the NTICU. One long term facility goal is to have a PC

screening instrument available for use by nursing staff on all appropriate ICU settings throughout the hospital.

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Appendix A

Permission to use Comfort Model:

rachel bryant <rlb2ps@virginia.edu>
To: kathykolcaba@yahoo.com
Good afternoon Dr. Kolcaba,

I am currently working on my Doctorate of Nursing Practice degree at the University of Virginia and would like to use your Comfort Model as the theoretical framework in my project.
Do I have your permission to use the framework as well as use the model image from your website www.thecomfortline.com? Thank you for your consideration. Best,

Rachel L. Bryant
2019 DNP Candidate

Kathy Kolcaba <kathykolcaba@yahoo.com>
To: rachel bryant <rlb2ps@virginia.edu>
Rachel, you have my permission to use anything on my web site.
Thank you for supporting Comfort Theory. Dr. K

Sent from my iPhone

rachel bryant <rlb2ps@virginia.edu>
To: Kathy Kolcaba <kathykolcaba@yahoo.com>
Thank you Dr. Kolcaba. Best,

Rachel Bryant

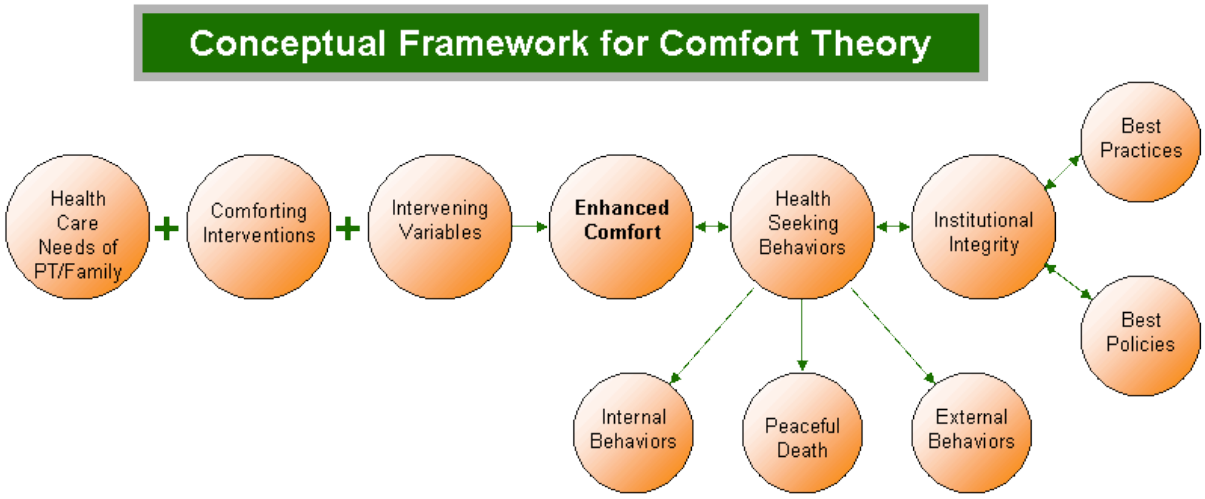


Figure 1. Conceptual Framework for Comfort Theory. Reprinted from Comfort Line Media, Copyright K. Kolcaba, 2007, retrieved June 6, 2018 from http://www.thecomfortline.com/files/conceptualframework.gif.

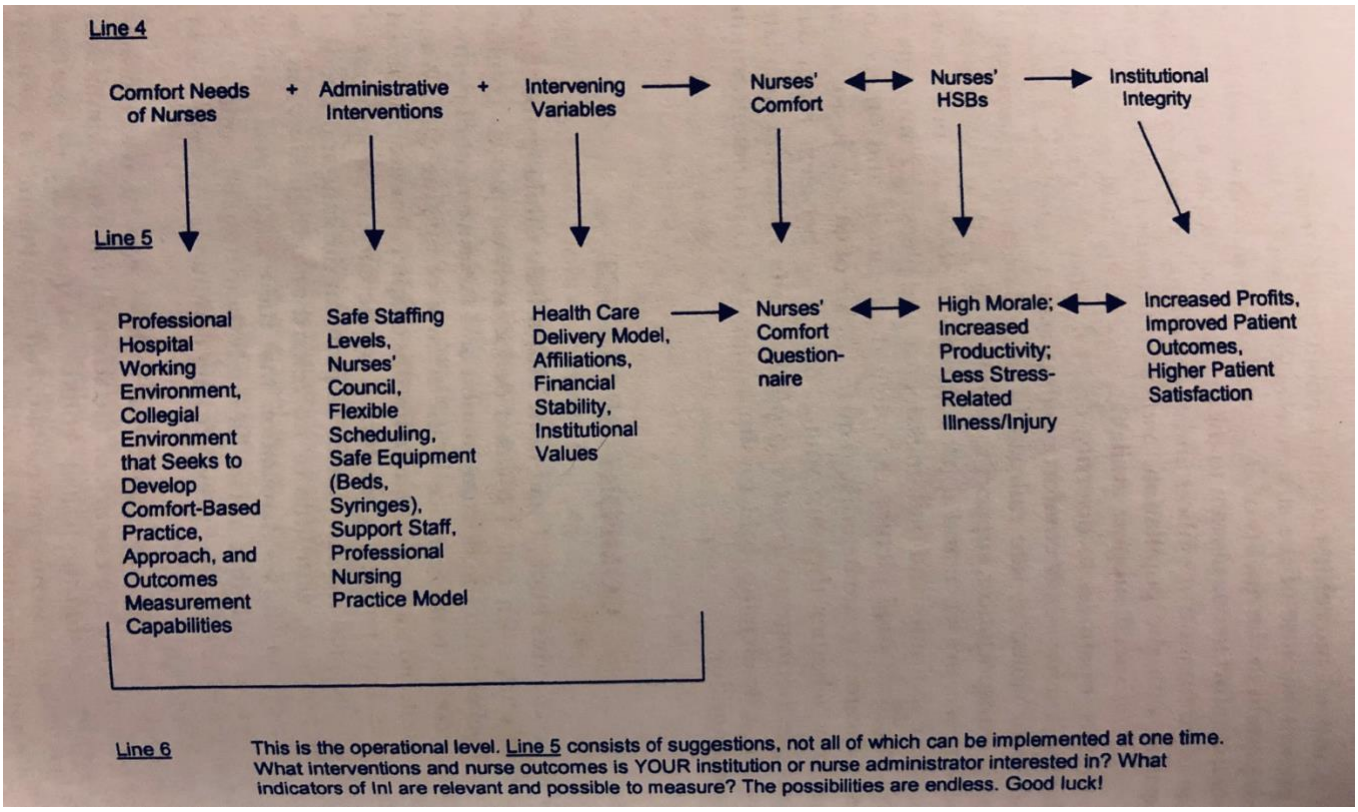


Figure 2. Theoretical framework for a study of nurses' comfort. Reprinted from Kolcaba, K. (2003). *Comfort theory and practice: A vision for holistic health care and research.* New York, NY: Springer Publishing Company.

Appendix B

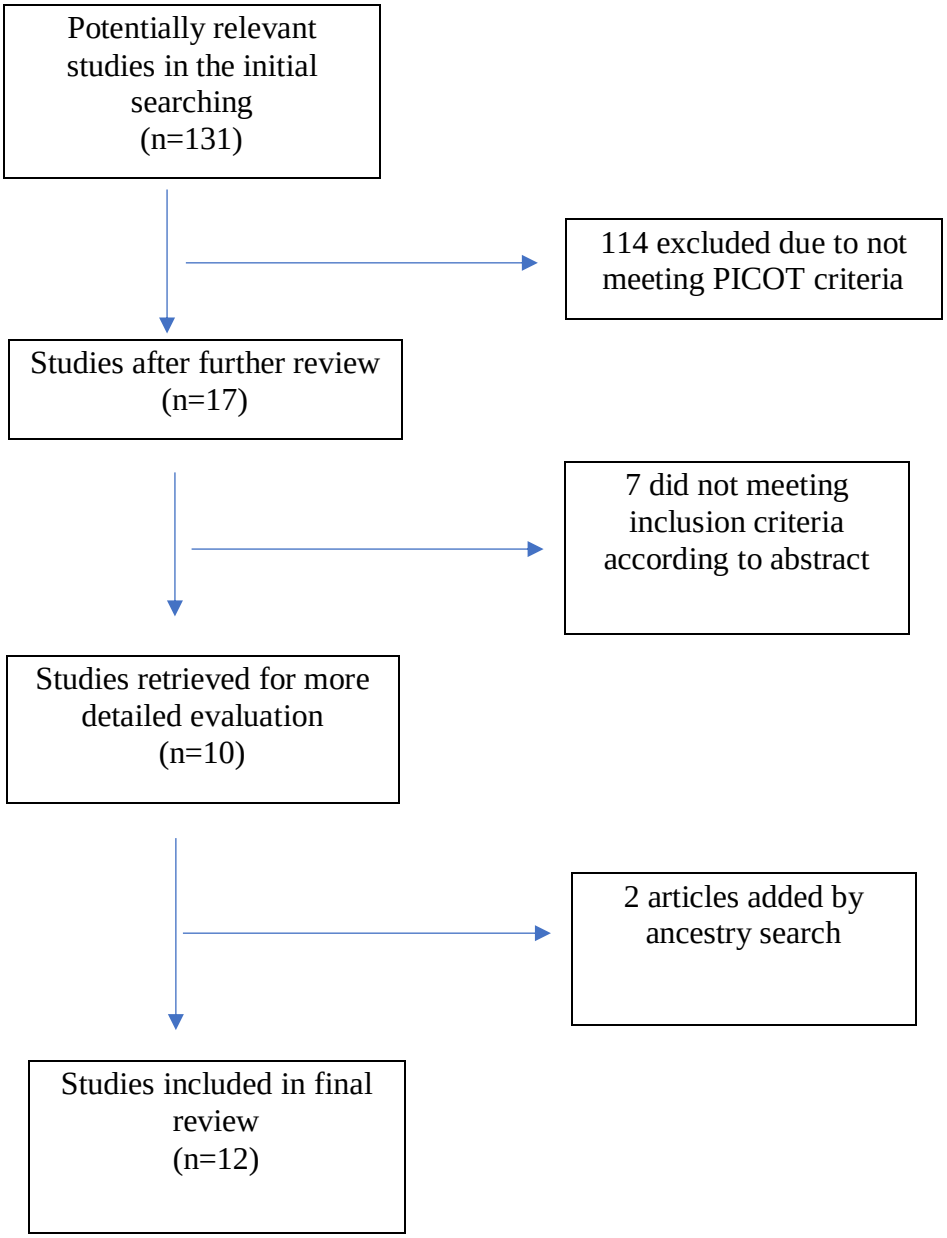


Figure 3: Flow Chart for Systematic Review

Appendix C

Permission to use Comfort Knowledge and Survey:

- Rachel Bryant sent the following message at 4:20 PM
  View Rachel's profile
  Rachel Bryant

  Rachel Bryant 4:20 PM
  I am a DNP student at UVA with a project of assessing RN comfort in the NTICU. I was contacting you in hopes of getting permission to use your Comfort Survey used in your article "Use of the Palliative Performance Scale version 2 in obbtaining palliative care consults". Best, Rachel B.

  - **Patrice Fedel** is now a connection

- JUN 12Rachel Bryant sent the following message at 5:00 AM
  View Rachel's profile
  Rachel Bryant

  Rachel Bryant 5:00 AM
  Good morning Patrice. Thank you for adding me as a contact. Would you mind if I used your comfort questionnaire in my DNP scholarly project? I'm proposing to survey RNs in the NTICU with the hopes of increasing palliative care referrals and consultations. I appreciate your consideration.
- Patrice Fedel sent the following message at 5:04 AM
  View Patrice's profile
  Patrice Fedel

  Patrice Fedel 5:04 AM
  Of course I give you permission to use my survey. Good luck with your project and please let me know the results
- JUN 14Rachel Bryant sent the following message at 12:50 PM
  View Rachel's profile
  Rachel Bryant

  Rachel Bryant 12:50 PM
  Thank you! I really appreciate it. I will keep you updated with the results. Thanks again, Rachel

Permission to use Palliative Care Needs Screening Tool:

rachel bryant <rlb2ps@virginia.edu> Jul 7 (2 days ago)

Good evening Dr. Creutzfeldt,

I am currently working on my Doctorate of Nursing Practice degree at the University of Virginia. The scholarly project will focus on the implementation of a palliative care screening instrument in the NTICU setting. I am emailing as I would like to use some of the palliative care screening questions outlined in your 2015 article "Palliative Care Needs in the Neuro-ICU". Do I have your permission to use these questions? Thank you for your consideration.

Best,

Rachel Bryant, FNP-C
UVA 2019 DNP Candidate

Claire J. Creutzfeldt 1:24 AM (7 hours ago)

to me

Rachel -

Thank you for reaching out. Absolutely you can use our checklist - we have modified it a little and it is now called the SuPPOrTT checklist. I have attached our green sheet which we run through on every patient every day in the neuro-ICU, starting with the SuPPOrTT questions. We'll be publishing on this checklist soon, so there'll be a reference for your paper, as well, soon!

Let me know if you have questions about this!

rachel bryant <rlb2ps@virginia.edu> 9:02 AM (2 minutes ago)

to Claire

Dr. Creutzfeldt,

Thank you for your quick response and for allowing me to use the checklist. Since your new SuPPOrTT checklist is not yet published, would you prefer me to use the questions from your previous article? I appreciate your willingness to share your knowledge and expertise. I am also happy to share results from my study once completed.

Best,

Rachel Bryant
UVA DNP Candidate

Education Material/Email to NTICU:

Dear NTICU Staff,

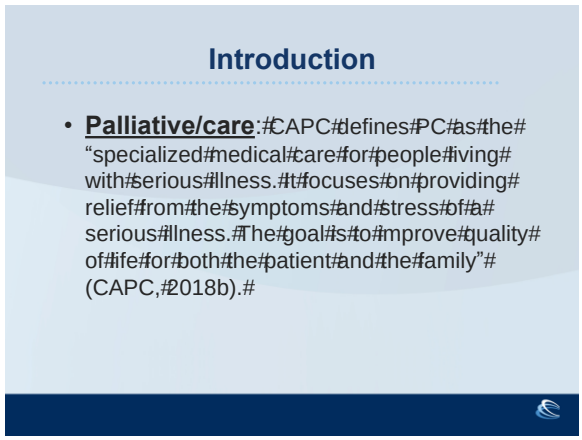
Secondary to the weather forecast and cancellation of the November NTICU staff meeting, Phyllis Whitehead and I will be unable to educate staff tomorrow as planned. Please find the NTICU Palliative Care Screening Instrument and PowerPoint with education material attached to this email.

I was able to meet several members of the team on the unit today to perform some face-to-face education; thank you! I have placed educational materials on the unit as well as inservice forms to sign when you've completed the education This is located in the flip boards next to _____ educational materials. The unit now has two brightly colored folders (one green and one blue) located under the TV in the "urgent communication" bin for screening instruments.

Our education time will end on Monday morning, November 19. If you're unable to get to the unit before then, but have completed the education by reviewing documents in this email, **please email me** so that I can add your name to the list.

We thank you again for taking time to help our project efforts! Feel free to contact me with any questions, comments, or concerns. We look forward to working with the team for the next several weeks.

Rachel Bryant & Phyllis Whitehead



Study Aims

- Implement clinician-driven (nurse case manager, bedside nurse, and social worker) PC screenings
- Evaluate the impact of clinician education and implementation of a PC screening instrument on the comfort and knowledge of clinicians in recommending PC consults

Purpose

The purpose of the project will be to examine if an education intervention and implementation of PC screening instrument increases clinician comfort and knowledge regarding PC screening and recommendation in the neuro/trauma intensive care unit (NTICU) in an academic health setting over the course of six weeks.

Research Question

In the NTICU, how does clinician education and the implementation of a palliative care (PC) screening instrument impact comfort and knowledge for recommending palliative care consults over a 6 week time period?

Description of the Sample

- All NTICU bedside nurses, RN case managers, and social workers are eligible to participate in pre- and post-surveys and screening implementation
- Patients admitted to the NTICU are eligible to be screened
- Inclusion Criteria
  - RNs, RN case managers, and social workers must be employed in the NTICU
  - Patient must be admitted to the NTICU
- Exclusion Criteria
  - Float/resource staff members who have not received education
  - Patients 18 years of age

Palliative Care Screening Instrument

- **Goal: Every patient in NTICU screened every day**
  - Excluding patients 18 years old
- Screening done by NTICU bedside RNs, RN case managers, **social workers** daily at 1:30 rounds
  - Can be screened at any time on weekends
- Start date: **Monday, November 9th**
- End date: **Sunday, December 30th**
- Screening instruments will be kept on unit. separate folder for completed forms will be available on unit.

Palliative Care Screening Instrument

MRN: _____

Date of screening: _____

Profession of screener(s) (please check):
- □ Bedside RN
- □ RN Case Manager
- □ Social Worker

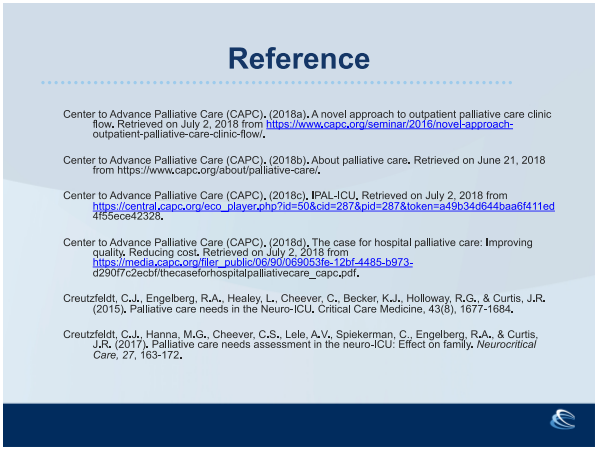
**Please complete form if any answers are "yes". (Only need one "yes" to qualify for a PC consult.)

1. Does the patient have life-limiting conditions and/or stage IV malignancy and/or distressing physical or psychological symptoms?
   □ Yes □ No
2. Does the family have concerns about prognosis or treatment options?
   □Yes □No
3. Do we need to (re)address patient goals of care or target treatment towards them?
   □Yes □No
4. Is the patient ICU length of stay ↑ 3 days?
   □Yes □No
5. Do you think the patient would benefit for a PC referral?
   □ Yes □ No
6. Was the patient referred to PC?
   □ Yes □ No

*Screening instruments will be printed in blue and located in a labeled folder at the nurse's station. A separate labeled folder for completed surveys will also be located at the nurse's station.

*Questions are based on current literature related to NTICU, ICU, and PC data.

*Please complete survey in its entirety.
*If one answer is “yes” the patient COULD qualify for a PC consult.
**We are NOT asking staff to make the PC consult or consult provider to refer patient for PC consult, unless they feel comfortable doing so. We are merely wanting to screen patients to see if the screening instrument is one that would be appropriate for nursing staff and social workers to complete, as well as if this instrument could be used to screen patients in Carilion ICU settings for PC.



Permission to complete proposed project on NTICU:

From: Bryant, Rachel L.
Sent: Wednesday, May 30, 2018 5:27 PM
To: Loftus, Kelli L.; Harvey, Ellen M.
Cc: Whitehead, Phyllis B.; Bryant, Rachel L.
Subject: Follow up from NTICU PC Project Meeting

Kelli and Ellen,

Thank you again for taking time out of your busy schedules to meet today to discuss my scholarly project. I appreciate your feedback, suggestions for the project moving forward, and discussion of the most appropriate clinician contacts for buy-in. I will be in touch within the next few weeks regarding what a "unit champion/contact" would look like. Please do not hesitate to contact me with any additional questions/comments/concerns you may have as your input is invaluable. Thanks again,

Rachel B.

Appendix D

Comfort and Knowledge Pre Survey

Comfort Questions:

1. How comfortable are you in identifying which patients are at the end of life?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

2. How comfortable are you in identifying which patients have chronic illness with limited treatment options?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

3. How comfortable are you in identifying which patients have decreased functional ability?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

4. How comfortable are you in assessing that a patient needs a palliative care consult?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

5. How comfortable are you in requesting a palliative care consult from the physician?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

Knowledge Questions:

6. Palliative care is appropriate only in situations where there is evidence of a downhill trajectory of deterioration.

True False

7. Palliative care should only be provided for patients who have no curative treatments available.

True False

8. The philosophy of palliative care is compatible with that of aggressive treatment.

True False

General Questions:

9. Have there been times you felt palliative care would have met your patient's needs?

Yes No

10. Have you ever recommended a palliative care consult for one of your patients?

Yes No

Demographic Information:

11. What's your current profession?

Bedside RN RN Case Manager Social Worker

12. Years in your current profession? (please list in whole numbers)

13. Years in the ICU in your current profession? (please list in whole numbers)

14. Your highest education received in your current position/profession. (please select one)

Associate's degree Bachelor's degree Master's degree Doctoral degree

Comfort and Knowledge Post Survey

Comfort Questions:

1. How comfortable are you in identifying which patients are at the end of life?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

2. How comfortable are you in identifying which patients have chronic illness with limited treatment options?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

3. How comfortable are you in identifying which patients have decreased functional ability?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

4. How comfortable are you in assessing that a patient needs a palliative care consult?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

5. How comfortable are you in requesting a palliative care consult from the physician?

Slightly comfortable Neutral Somewhat comfortable Very comfortable

Knowledge Questions:

6. Palliative care is appropriate only in situations where there is evidence of a downhill trajectory of deterioration.

True False

7. Palliative care should only be provided for patients who have no curative treatments available.

True False

8. The philosophy of palliative care is compatible with that of aggressive treatment.

True False

General Questions:

9. Have there been times you felt palliative care would have met your patient's needs?

Yes No

10. Have you ever recommended a palliative care consult for one of your patients?

Yes No

11. I feel more confident advocating for a palliative care consultation.

Yes No

Demographic Information:

12. What's your current profession?

Bedside RN RN Case Manager Social Worker

13. Years in your current profession? (please list in whole numbers)

14. Years in the ICU in your current profession? (please list in whole numbers)

15. Your highest education received in your current position/profession. (please select one)

Associate's degree Bachelor's degree Master's degree Doctoral degree

Palliative Care Screening Instrument

MRN: _____

Date of screening: _____

Profession of screener(s) (please check):

☐ Bedside RN

☐ RN Case Manager

☐ Social Worker

**Please complete form if any answers are "yes". (Only need one "yes" to qualify for a PC consult.)

1. Does the patient have life-limiting conditions and/or stage IV malignancy and/or distressing physical or psychological symptoms?

   ☐ Yes ☐ No

2. Does the family have concerns about prognosis or treatment options?

   ☐Yes ☐No

3. Do we need to (re)address patient goals of care or target treatment towards them?

   ☐Yes ☐No

4. Is the patient ICU length of stay ≥ 3 days?

   ☐Yes ☐No

5. Do you think the patient would benefit for a PC referral?

   ☐ Yes ☐ No

6. Was the patient referred to PC?

   ☐ Yes ☐ No

Appendix E

IRB Approved Email to NTICU

Dear NTICU staff,

Hello! My name is Rachel Bryant. I work for Carilion Clinic as a FNP in hospice in _____ and _____ Counties. I am a DNP student at the University of Virginia and have the opportunity to partner with Dr. Phyllis Whitehead to complete my DNP project on the NTICU. The research project title is, "Identification and Implementation of a Palliative Care Screening Instrument in a Neuro Trauma Intensive Care Unit". The study's aims and purpose are as follows:

- Implement clinician-driven (nurse case manager, bedside nurse, social worker) palliative care screenings over six weeks

- Evaluate the impact of clinician education and implementation of a PC screening instrument on the comfort and knowledge of clinicians in recommending PC consults

Bedside RN staff, RN case managers, and social workers play a critical role in the early identification of patients who may benefit from palliative care consultations and services. There is no risk involved in your completion of the surveys associated with this study, since all data will be collected anonymously, but also no direct benefit to you. Should you choose to take part, please click on the link to the survey provided below. Your participation is greatly appreciated and will help to develop a palliative care screening instrument for future use in the ICU setting.

Your participation in this research is voluntary, and you will not be penalized in any way if you refuse. Responding to the pre and post surveys provides your consent to have your answers included in the research. You will not be individually identified in any summary of project results nor will your identity be known to the researchers.

Feel free to contact me at any time if you have questions, comments, or concerns. Thank you and we look forward to working with the NTICU team,

INSERT SURVEY LINK

Rachel L. Bryant, MSN, FNP-C, RN, ACHPN

IRB Approval Documents

CARILION CLINIC
Institutional Review Board

September 28, 2018

Phyllis Whitehead, PhD, APRN/CNS, ACHPN, RN-BC
Palliative Care
CRMH

Approval Date: 9/28/2018
Expiration Date: 9/27/2019

Re: IRB Approval for Protocol #2647, "Identification & Implementation of a Palliative Care Screening Instrument in a Neuro Trauma Intensive Care Setting"

The Carilion Clinic Institutional Review Board (IRB) **fully approved** the above referenced study via expedited review procedure under category #7 of 45 CFR 46.110. This approval is limited to the activities conducted by the research team members as described in the final submitted IRB Application, received September 28, 2018. Modifications may not be initiated without prior IRB review and approval except where necessary to eliminate apparent immediate hazards to human participants.

The Expiration Date above is the last date any research activities may take place if the study has not been reapproved. If this study is expected to extend beyond one year, please submit a continuing review request at least **30 days prior to the expiration date**. HHS regulations at 45 CFR 46.109(e) require that continuing review of research be conducted by the IRB at intervals appropriate to the degree of risk but not less than once per year. The regulations make no provision for any grace period extending the conduct of the research beyond the Expiration Date. Once research activities have been completed, please submit a closure form least 30 days prior to the Expiration Date.

OBTAINING INFORMED CONSENT: Delegated research team members are responsible for obtaining informed consent in the manner approved by the IRB.

The IRB has determined that a waiver of the subjects' signature as documentation of consent for the NTICU staff invited to complete the study-related surveys is justified under 45 CFR 46.117 (c1/c2). Written information describing the research is to be provided to potential subjects in the form of an introductory email inviting their participation.

In conducting this study, you are required to follow the requirements attached as "INVESTIGATOR GUIDANCE: Investigator Obligations (IRB-800)".

This letter conveys IRB approval only and does not grant institutional approval. If your research involves any Carilion Clinic facilities, then separate arrangements must be made with the appropriate hospital or medical staff department or committees, along with the Carilion Clinic Department of Research and Development.

Institutional Review Board
2001 Crystal Spring Avenue, SW, Suite 202 Roanoke, VA 24014-2465 P.O. Box 13367 Roanoke, VA 24033-3367

The Carilion Clinic Institutional Review Board would like to thank you for the opportunity to review this protocol. We wish you the best and look forward to learning of your results.

If you have any questions, please do not hesitate to contact Janet McDowell at the IRB by email at jdmcdowell@carilionclinic.org or by phone at 981-8015.

cc: Paul Skolnik, MD, Chair, Carilion Department of Medicine
Kim Carter, PhD, RN, Senior Director of Nursing Research and Evidence-Based Practice
Kristina Cooper, Organizational Integrity and Compliance
Carley Emerson, MS, Human Protections Administrator
Francis X. Farrell, PhD, Research and Development
Daniel Harrington, MD, VP, Academic Affairs
Michelle Rothrock, Research and Development
Charles J. Schleupner, MD, Chair, Carilion IRB
Mattie Tenzer, Health Analytics
Min Wang, Research Analytics
IRB files

Institutional Review Board
2001 Crystal Spring Avenue, SW, Suite 202 Roanoke, VA 24014-2465 P.O. Box 13367 Roanoke, VA 24033-3367

1. PURPOSE

1.1. This guidance describes the obligations of Principal Investigators conducting <Human Research> overseen by this Carilion Clinic's local IRB.
1.2. For research overseen by an IRB other than Carilion Clinic's local IRB, investigators should follow the requirements of that IRB.

2. GUIDANCE

2.1. Do not begin research until you have the IRB approval letter and obtained all other required approvals, such as R&D authorization, biosafety approval, and approvals of departments or divisions that require approval of the use of their resources.

2.1.1. If there are any questions about whether you are conducting research involving human subjects, submit form Human Subjects Research Determination and wait for the IRB's determination before commencing the study.

2.2. Personally conduct or supervise the research.
2.3. Protect the rights, safety, and welfare of subjects involved in the research.
2.4. Conduct the research in accordance with the relevant current protocol approved by the IRB, and comply with all requirements and determinations of the IRB, as well as Federal, state, and local laws and regulations, and be guided by the principles contained in the Belmont Report.
2.5. Ensure the research protocol is consistent with the proposal for funding for extramural or intramural support
2.6. Employ sound study design in accordance with the standards of your discipline and design studies in a manner that minimizes risks to subjects.
2.7. Ensure that there are adequate resources to carry out the research safely. This includes, but is not limited to, sufficient investigator time and oversight of all research team members, appropriately qualified research team members, equipment, and space.
2.8. Ensure that research staff are qualified (e.g., including but not limited to appropriate training, education, expertise, credentials, protocol requirements and, when relevant, privileges) to perform procedures and duties assigned to them during the study

2.8.1. Investigators and research staff are required to complete initial human subjects training and continuing training at least every three years through CITI Program (citiprogram.org).
2.8.2. If the study involves Protected Health Information under HIPAA, all research team members must also complete one time training in HIPAA
2.8.3. If the study is a clinical trial, GCP training through CITI Program is also highly encouraged.

2.9. Unless the IRB affirmatively approved a protocol to include the following populations, such subjects may not be enrolled:

2.9.1. Adults unable to consent
2.9.2. Children
2.9.3. Neonates of uncertain viability
2.9.4. Nonviable neonates
2.9.5. Pregnant women
2.9.6. Prisoners
2.9.7. Individuals unable to speak English

2.10. When consent, parental permission, or assent are required by the IRB, ensure that they are obtained utilizing the IRB stamped form and documented in accordance with the relevant current protocol as approved by the IRB prior to any study procedures being performed.
2.11. Submit proposed modifications to the IRB prior to their implementation.

- 2.11.1. Do not make modifications to the research without prior IRB review and approval unless necessary to eliminate apparent immediate hazards to subjects.

2.12. Submit Continuing Review in the time frame requested by the IRB.
2.13. Submit a study closure to end the IRB's oversight;

- 2.13.1. When **all** the following apply:
  - 2.13.1.1. The protocol is permanently closed to enrollment;
  - 2.13.1.2. All subjects have completed all protocol related interventions and interactions;
  - 2.13.1.3. No additional identifiable private information about the subjects is being obtained;
  - 2.13.1.4. Analysis of private identifiable information is completed.
- 2.13.2. When a study has expired or been administratively closed due to a continuing review not being submitted before expiration

2.14. If research approval expires, immediately stop all research activities including analysis of identifiable data, and do not resume the research study until the Continuing Review has been approved by the IRB.
2.15. Promptly report to the IRB the information items listed in "INVESTIGATOR GUIDANCE: Prompt Reporting Requirements (IRB-801)".
2.16. Follow Carilion Clinic's requirements to disclose financial interests.

- 2.16.1. Disclose conflicts of interest for all study team members on submission of an initial review.
- 2.16.2. Disclose changes to your conflicts of interest.
  - 2.16.2.1. On submission of continuing review
  - 2.16.2.2. Within 30 days of discovering or acquiring (e.g., through purchase, marriage, or inheritance) a new financial interest that would have required disclosure on initial review

2.17. Retain research records for the greater of:

- 2.17.1. If all participants are adults: at least three years after completion of the research
- 2.17.2. If participants are children: until all participants are 18 years of age, or for three years after the completion of the research, whichever is longer
- 2.17.3. If the study involves Protected Health Information, research records must be maintained for a minimum of six years after the completion of the research.
- 2.17.4. For drug studies conducted under an IND, two years following the date a marketing application is approved for the drug for the indication for which it is being investigated; or, if no application is to be filed or if the application is not approved for such indication, until two years after the investigation is discontinued and FDA is notified.

2.17.5. For device studies conducted under an IDE or abbreviated IDE, two years after the latter of the following two dates: The date on which the investigation is terminated or completed, or the date that the records are no longer required for purposes of supporting a premarket approval application or a notice of completion of a product development protocol.
2.17.6. The retention period required by the sponsor
2.17.7. The retention period required by local, state, or international law.
2.17.8. The retention period required by a site that is not part of Carilion Clinic.

2.18. Contact the Research & Development Department regarding the need for a contract and letter of indemnification if your study involves any funding or resources from an outside source, or if you will be sharing data outside of Carilion Clinic prior to publication. If it is determined that either a contract or letter of indemnification is needed, subjects cannot be enrolled until these documents are complete.
2.19. Maintain confidentiality of all information gained during the conduct of research at Carilion Clinic, including but not limited to information about patients, employees, physicians, and customers.
2.20. Do not accept or provide payments to professionals in exchange for referrals of potential subjects ("finder's fees").
2.21. Do not accept payments designed to accelerate recruitment that were tied to the rate or timing of enrollment ("bonus payments") without prior IRB approval.
2.22. Notify the IRB immediately if involved in any regulatory or misconduct litigation or investigation by the FDA, or if you are debarred by the US FDA from involvement in clinical research studies.
2.23. If unable to perform the duties as outlined above for an extended period of time, you will close the study or transfer the duties of PI to the sub-investigator or to another qualified individual.

3. REFERENCES

3.1. 21 CFR §50, §56
3.2. 45 CFR §46

CARILION CLINIC
Institutional Review Board

October 1, 2018

Phyllis Whitehead, PhD, APRN/CNS, ACHPN, RN-BC Palliative Care
CRMH

Re: IRB Approval for Protocol #2647, "Identification & Implementation of a Palliative Care Screening Instrument in a Neuro Trauma Intensive Care Setting"

The Carilion Clinic Institutional Review Board (IRB) **fully approved** a modification to the above referenced study via expedited review procedure. The change to the study was a request to collect medical record numbers on the palliative care screening tools. This is to enable the research team to match successive screening tools completed for the same patient over several days. MRNs will be removed from the screening tools when the patient is no longer in the NTICU; they will not be recorded when the researcher is collating responses to the patient's screening. Approval of the study continues to be limited to the activities described in the most recent version of the IRB Application. Research activities have now been approved via expedited review procedure under categories #7 and #5 of 45 CFR 46.110. Further modifications may not be initiated without prior IRB review and approval except where necessary to eliminate apparent immediate hazards to human participants.

You are reminded that September 27, 2019 is the last date any research activities may take place if the study has not been reapproved. If this study is expected to extend beyond one year, please submit a continuing review request at least **30 days prior to the expiration date**. HHS regulations at 45 CFR 46.109(e) require that continuing review of research be conducted by the IRB at intervals appropriate to the degree of risk but not less than once per year. The regulations make no provision for any grace period extending the conduct of the research beyond the Expiration Date. Once research activities have been completed, please submit a closure form least 30 days prior to the Expiration Date.

OBTAINING INFORMED CONSENT: Delegated research team members are responsible for obtaining informed consent from staff members participating in the study in the manner approved by the IRB.

The IRB has determined that a waiver of the staff member subject's signature as documentation of consent for this project is justified under 45 CFR 46.117 (c1/c2). Written information describing the research is to be provided via electronic mail to the staff member subjects of the study.

The IRB determined that a **waiver** of consent for collection of identifiable patient information for this study is justified under 45 CFR 46.116 (d).

HIPAA WAIVER:
The IRB has determined that a **partial** HIPAA waiver of research subject authorization for this

project is justified under 45 CFR 46 164.512.

This letter conveys IRB approval only and does not grant institutional approval. If the change to your research affects any Carilion Clinic facilities, then separate arrangements must be made with the appropriate hospital or medical staff department or committees, along with the Carilion Clinic

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Department of Research and Development.

The Carilion Clinic Institutional Review Board would like to thank you for keeping this protocol current. We wish you the best and look forward to learning of your results.

If you have any questions, please do not hesitate to contact Janet McDowell at the IRB by email at jdmcdowell@carilionclinic.org or by phone at 981-8015.

cc: Kristina Cooper, Organizational Integrity and Compliance Carley Emerson, MS, Human Protections Administrator Francis X. Farrell, PhD, Research and Development Daniel Harrington, MD, VP, Academic Affairs

Dee Myers, Patient Safety and Quality Michelle Rothrock, Research and Development Charles J. Schleupner, MD, Chair, Carilion IRB Mattie Tenzer, Health Analytics
Min Wang, Health Analytics
IRB files

Option C: Typically used by a person who will continue working on their research at their previous institution after transferring to UVA. No research protocol will be opened to enroll additional subjects at UVA.

I confirm that:

☐Yes ☐No I am a student, employee or faculty member of UVa but I was employed by another institution when the research was begun.

☐Yes ☐No All subjects were or will be enrolled at the outside institution & all data will remain there.

☐Yes ☐No The research will be overseen by a non-UVA IRB and, if applicable, the HIPAA Privacy Board of my previous institution. This includes completing training in human subject research protections or other training as required by the outside institution.

☐Yes ☐No There is no funding for this study or if there is funding, it will be handled by my previous institution.

☐Yes ☐No I have notified the IRB of Record that I have transferred to UVA and that a UVA IRB will not be overseeing my work on this research protocol.
ATTACH COPY OF THE OUTSIDE IRB APPROVAL/DETERMINATION.

Option D: Typically used by a UVa Faculty member who has an appointment or clinical privileges at another institution. Research to be conducted at outside institution. Research protocol will not be opened to enroll subjects at UVA facilities.

I confirm that:

☐Yes ☐No I am a faculty member of UVA and I have an appointment or clinical privileges at another institution.

☐Yes ☐No All subjects will be enrolled at the other institution and all data will remain there.

☐Yes ☐No The research will be overseen by a non-UVA IRB and, if applicable, the HIPAA Privacy Board of the other institution. This includes completing any training in human subject research protections or other training as required by the other institution.

☐Yes ☐No There is no funding for this study or if there is funding, it will be handled by the other institution.

☐Yes ☐No I have notified the IRB of Record that a UVA IRB will not be overseeing my work on this research protocol.
ATTACH COPY OF THE OUTSIDE IRB APPROVAL/DETERMINATION for this protocol.

FOR IRB-HSR OFFICE USE ONLY

☒ UVa personnel are not considered to be working as an Agent for UVa on this project.
No approvals from the UVa IRB-HSR are required.
UVA Study Tracking # 21045

☐ UVa personnel are considered to be working as an Agent for UVa on this project.
Submit a research application to the UVa IRB-HSR.

Karen Mills _____ 10-02-18

Signature of IRB Chair, Director or Designee Date

Appendix F

Table 1

Demographics of pre- and post-intervention participants

	Presurvey (n = 13)		Postsurvey (n = 8)	
Characteristics of participants	Frequency	%	Frequency	%
Current Profession				
Bedside RN	12	92.3	8	100.0
RN Case Manager	0	0.0	0	0.0
Social Worker	1	7.7	0	0.0
Highest Professional Degree				
Associate's Degree	0	0.0	0	0.0
Bachelor's Degree	10	76.9	6	75.0
Master's Degree	2	15.4	1	12.5
Doctoral Degree	1	7.7	1	12.5
Years in current profession				
0-10 years	10	76.9	5	62.5
15-20 years	1	7.7	1	12.5
≥ 30 years	2	15.4	2	25.0

Table 2

Confirmed staff education

Variable	Total Possible Number	Education Confirmed	%
Bedside RN	33	20	60.6
Social Worker	6	6	100.0
RN Case Managers	2	0	0.0
Unit Director and CNS	2	2	100
Total	43	28	65.1

Table 3

Comfort questions and scores for pre- and post-intervention participants

Survey question	Response	Presurvey (n = 8) Frequency	%	Postsurvey (n = 8) Frequency	%	Z*	p-value
How comfortable are you in identifying which patients are at the end of life?						-0.577	1.000
	Slightly Comfortable	0	0.0	0	0.0		
	Neutral	0	0.0	0	0.0		
	Somewhat Comfortable	3	37.5	2	25.0		
	Very Comfortable	5	62.5	6	75.0		
How comfortable are you in identifying which patients have chronic illness with limited treatment options?						-1.732	0.250
	Slightly Comfortable	0	0	0	0.0		
	Neutral	1	12.5	0	0.0		
	Somewhat Comfortable	2	25.0	1	12.5		
	Very Comfortable	5	62.5	7	87.5		
How comfortable are you in identifying which patients have decreased functional ability?						-1.732	0.250
	Slightly Comfortable	0	0.0	0	0.0		
	Neutral	0	0.0	0	0.0		
	Somewhat Comfortable	4	50.0	1	12.5		
	Very Comfortable	4	50.0	7	87.5		
How comfortable are you in assessing that a patient needs a palliative care consult?						-1.000	0.625
	Slightly Comfortable	0	0.0	0	0.0		
	Neutral	0	0.0	1	12.5		
	Somewhat Comfortable	4	50.0	0	0.0		
	Very Comfortable	4	50.0	7	87.5		
How comfortable are you in requesting a palliative care consult from the physician?						-1.890	0.125
	Slightly Comfortable	2	25.0	1	12.5		
	Neutral	1	12.5	0	0.0		
	Somewhat Comfortable	2	25.0	2	25.0		
	Very Comfortable	3	37.5	5	62.5		

*Wilcoxon signed-rank test

Table 4

Knowledge questions for pre- and post-intervention participants

	Best answer presurvey		Best answer postsurvey	
Survey question	Frequency	%	Frequency	%
Palliative care is appropriate only in situations where there is evidence of a downhill trajectory of deterioration (false)	7	87.5	8	100
Palliative care should only be provided for patients who have no curative treatments available (false)	8	100	8	100
The philosophy of palliative care is compatible with that of aggressive treatment (true)	3	37.5	2	25

Table 5

Frequencies of palliative care patient screenings organized by clinicians

Variable	Frequency	%
Was the patient referred to PC? = Yes		
Bedside RN	10	76.9
RN Case Manager	1	7.7
Social Worker	1	7.7
Bedside RN, RN Case Manager, and Social Worker	1	7.7
Total	13	100
Was the patient referred to PC? = No		
Bedside RN	81	44.7
RN Case Manager	25	13.8
Social Worker	53	29.3
Bedside RN and Social Worker	1	0.6
Bedside RN, RN Case Manager, and Social Worker	15	8.3
CNS	6	3.3
Total	181	100
Was the patient eligible for PC but not referred? = Yes		
Bedside RN	47	40.2
RN Case Manager	17	14.5
Social Worker	37	31.6
Bedside RN and Social Worker	1	0.9
Bedside RN, RN Case Manager, and Social Worker	10	8.5
CNS	5	4.3
Total	117	100

Table 6

Palliative care screening of eligible patients (N=69)

Variable	Frequency	%
Total Patients Eligible for PC Consult	35	50.7
Total Number of PC Consults	6	8.7
Total Number Missed Consults	29	42.0

Table 7

Palliative care screening on noneligible patients (N=69)

Variable	Frequency	%
Total Patients Not Eligible for PC Consult	34	49.3
Total Number Not Eligible and Not Referred	34	100.0

Table 8

Factors triggering PC consult for patients eligible for consult but not referred to PC

Variable	Frequency	%
Question Selected by Screener		
1. Does the patient have life-limiting conditions and/or stage IV malignancy and/or distressing physical or psychological symptoms?	17	21.5
2. Does the family have concerns about prognosis or treatment options?	10	12.7
3. Do we need to (re)address patient goals of care or target treatment towards them?	15	19.0
4. Is the patient ICU length of stay ≥ 3 days?	26	32.9
5. Do you think the patient would benefit for a PC referral?	11	13.9
Total	79	100.0

Appendix G

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Title Page

COMFORT AND KNOWLEDGE ANALYSIS OF NEURO-TRAUMA INTENSIVE CARE CLINICIANS PRE/POST EDUCATION INTERVENTION AND IMPLEMENTATION OF A PALLIATIVE CARE SCREENING INSTRUMENT

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Abstract

The purpose of the scholarly project is to examine how an educational intervention and implementation of PC screening instrument impacts clinician comfort and knowledge regarding PC in the NTICU setting in an academic health setting over the course of four weeks. The sample consisted of NTICU bedside registered nurses, RN case managers, and social work case managers who volunteered to participate in the study. An evidence-based comfort and knowledge questionnaire was administered utilizing the REDCap application software. A PC screening instrument was used to screen NTICU patients who may benefit from a PC consult following a week-long staff educational intervention. There were no statistically significant differences among pre- and post-intervention data where individual clinician comfort and knowledge questions were examined. There was no statistically significant change in nurses' overall median knowledge scores ($Z = -1.414$, $p = 0.500$). There was a statistically significant change among nurses' overall median comfort scores ($Z = -2.232$, $p = 0.031$). Nurses are able to screen patients for PC and communicate this need to providers for early PC referrals and consultations. A change in nursing comfort and knowledge regarding patients who may benefit from PC referral exists.

Keywords: palliative care, ICU, neuro-ICU, triggers

Background

Palliative care (PC), a term introduced in the early 1970s, evolved from hospice care and is a form of specialized interprofessional practice that includes an emphasis on pain and symptom management for patients diagnosed with serious illnesses/diseases including those with a terminal prognosis.[1] By aggressively managing symptom burden, it has been proposed that utilizing PC may decrease healthcare costs, reduce readmission rates, and improve quality of life.

Acute neurological conditions can be emergent, devastating, and life-threatening to individuals and their loved ones. To optimally treat these disorders, patients are admitted to a Neurological Intensive Care Unit (neuro-ICU) which may include the management of surgical and traumatic conditions with resulting neurological insults. According to the Centers for Disease Control and Prevention (CDC) "stroke is the fifth leading cause of death in the United States (U.S.) affecting approximately 795, 000 individuals each year and killing about 140, 000 annually".[2] Secondary to the serious nature of strokes, the American Heart Association (AHA) and the American Stroke Association (ASA) published a statement in 2014 stressing the importance of all stroke patients having access to palliative care.[3] Neurological insults not only affect the patient but place a huge stress and potential burden on family members and loved ones; these individuals may be decision makers in the neuro-ICU when the patient lacks capacity or are caregivers at discharge should the patient survive. Should the patient near the end of life while in the ICU, the American College of Critical Care Medicine (ACCM) issued a position statement in 2008 highlighting the need for specialized and comprehensive symptom management and end-of-life care in the ICU setting.[4]

Roczen, White, and Epstein[5] performed a systematic review of literature following recommendations by Improving Palliative Care in the ICU (IPAL-ICU) and the Center to

Advance Palliative Care (CAPC) consensus reports. A total of 12 research studies were included in the review which examined how PC practices in the ICU setting were related to clinical and nonclinical outcomes.[5] PC interventions generally occurred within the first 72 hours of a patient ICU admission. Clinical and nonclinical outcomes reviewed in the article included hospital/ICU mortality, symptom management, treatment options, length of stay (LOS), and satisfaction with care.[5] The authors concluded that the integration of PC in the ICU setting can augment the care of patients diagnosed with serious or life-limiting conditions.[5] Though there is currently no neuro-ICU specific PC screening tool, the IPAL-ICU resources provide guidance for this Neuro-Trauma ICU (NTICU) scholarly project.

The institution in which the project took place has a well-developed inpatient PC unit which includes highly trained clinicians specialized in providing both PC and end-of-life services. The inpatient PC physicians and advanced practice nurses treat patients on the inpatient PC unit and also provide PC consult services throughout the 700-bed not-for-profit hospital through a referral basis. PC consults may be provided in various units throughout the hospital and include patient and family GOC discussions. Though research suggests a PC intervention could positively influence the healthcare of patients admitted to a neuro-ICU, there is currently no standard instrument to screen and evaluate patients for a PC intervention or consult.[5] The purpose of the scholarly project was to examine how an educational intervention and implementation of a PC screening instrument impacts clinician comfort and knowledge regarding PC in a NTICU.

Summary of the Integrated Literature Review

The article by Aslakson, Curtis, and Nelson[6] examined peer-reviewed literature, consensus statements, and guidelines on the use of PC services in the ICU. The authors

examined opportunities and challenges for ICU PC improvement which included barriers such as unrealistic expectations for ICU therapies, confusion of PC with hospice and end-of-life care, misconception with the use of PC to hasten death, ICU clinician demands limiting their availability and time to adequately provide PC, and system and culture influences on the use of PC in the ICU.[6] Authors examined the use of the national performance improvement initiative developed by the Voluntary Hospital Association (VHA) called the "Care and Communication Bundle".[7] The PC "bundle" was developed to identify quality measures of routine monitoring and performance feedback in the ICU.[7] The authors summarize that the integration of PC in the ICU is essential to providing comprehensive healthcare to critically ill patients, however "further research is needed to understand how to provide the most effective and efficient PC in the ICU".[7]

Tran, Back, and Creutzfeldt[8] conducted a retrospective electronic chart review of patients admitted to the neuro-ICU for greater than 24 hours who received a PC consultation between January and August 2014. Only 4% (25) of patients received a PC consultation with the majority of consultations being performed to establish and clarify GOC. The authors concluded that early identification and initiation of PC consults may be beneficial in the neuro-ICU, enhance coping mechanisms, and the decision-making process.

Screening tools and PC trigger instruments have been analyzed in several studies. In the Creutzfeldt et al.[9] study, a quality improvement project using a parallel-group prospective cohort design, researchers examined a single neuro-ICU at a large, academic medical center examining patients admitted over a three-month time period. During the described time period, 130 patients were admitted to the service and screened for PC needs utilizing their screening tool. The intervention group was compared with a control group of 132 patients who were not screened. Results revealed that screening increased family conferences which showed a positive trend

toward increased PC consultations. The use of triggers for palliative care was examined in the retrospective cohort study of ICU admissions conducted by May, Guohua, Blinderman, and Wunsch.[10] The authors concluded that a variety of multiple triggers may help to identify patients in the ICU who are appropriate for PC, however how often triggers are used to identify these patients is currently unknown. The Jones and Bernstein[11] pilot study was conducted in a suburban healthcare system in the Northern Kentucky/Greater Cincinnati area which adopted triggers in an attempt to increase PC consultations in one of the system's ICUs. The chosen ICU was a 16-bed unit that had the least number of PC referrals the previous year. The results favored the implementation of a PC trigger set which resulted in increased PC consults. The team also surveyed staff, which included nurses, physicians, and one advanced care provider, on their attitudes, comfort, and utility of the PC trigger set.

The CAPC-IPAL project has been utilized to incorporate PC into various ICUs. Mosenthal et al.[12] critically reviewed literature regarding the implementation of PC in the surgical and trauma intensive care units in a report from the IPAL-ICU project advisory board. The authors highlight the lack of evidence supporting the most effective PC delivery system, but note that clinicians in surgery, critical care, and PC should collaborate in order to identify PC needs and challenges to improve the use of PC, identify and develop triggers for PC consultation, and develop practical models and tools for use in providing comprehensive care to this specialized patient population. Frontera et al.[13] published a report from the IPAL-ICU project advisory board focused on patients with neurocritical illness. Conclusions of their report acknowledge that neuro-ICU patients and families oftentimes are subject to sudden and devastating illnesses that affect a patient on cognitive and functional levels. The literature suggests clinicians should focus on decision-making at the time of a crisis, patient and family

GOC discussions should be addressed and include symptom relief and family emotional support. The Mun et al.[14] article utilized the recommendations provided by the IPAL-ICU project as it related to a new PC program developed in their specific ICU. The authors noted the use of the consultative model for their PC needs as a means to strengthen their already existing PC team. The use of a screening instrument and trigger criteria was also implemented. The authors were able to successfully integrate a trigger model and screening instrument into their ICU utilizing guidelines provided by the IPAL-ICU project.

Methods

The scholarly project was a pilot, feasibility, qualitative study consisting of an evidenced-based comfort and knowledge survey administered to NTICU bedside clinicians (bedside registered nursing staff, nursing case managers, and social workers). The project took place in a 700-bed tertiary, community-based, academic hospital in Southwest, VA. The initial survey was administered utilizing the REDCap application software, which is a secure web application that was approved by the healthcare institution in which the project took place. Following the initial survey, a one-week educational intervention was completed with NTICU staff members. After the education week was complete, the goal was for clinicians to screen all eligible NTICU patients each day over the designated four-week screening period. Exclusion criteria for NTICU patients were any patient under the age of 18 years. Exclusion criteria for clinicians included any float or resource staff members who had not received education on the scholarly project. A post-intervention survey was administered via REDCap immediately following the completion of the screening time period. The project was considered a pilot, feasibility design secondary to the healthcare institution and NTICU lacking a formalized PC patient screening instrument.

Comfort and Knowledge Survey

The Comfort and Knowledge Survey was administered to all bedside nurses, RN case managers, and social workers employed in the NTICU. Consent to participate in the scholarly project was assumed in the voluntary completion of the administered surveys as per the approved IRB email script (see Appendix E). This survey selected for the scholarly project was adapted from Fedel, Joosse, and Jeske[15] comfort and knowledge survey. Permission from Patrice Fedel to use the survey was obtained. The selected questionnaire selected has a Cronbach's alpha of 0.803.[15] The first five questions pertain to clinician comfort with responses using a Likert-type scale. The following three questions are knowledge-based questions of PC and require a true or false answer. The knowledge questions were originally adopted from the palliative care quiz for nursing (PCQN) developed by Ross, McDonald, and McGuinness in 1996.[16] Additional questions were included by the PI with input from the project practice mentor based on expert opinion and experience in PC, along with questions aimed at collecting demographic information on the survey participants. Based on practice expert opinion and for measurement purposes, an additional question was added to the post-intervention survey, which assessed the respondents' confidence in advocating for a PC consultation.

Palliative Care Screening Instrument

The PC screening instrument used in the project was based on the literature review and lack of standardized PC screening tool for the NTICU. It is a list of criteria to help identify patients in the NTICU who may benefit from a PC referral and consultation. All patients admitted to the NTICU, with the exception of those under age 18, were eligible to be screened. Clinicians eligible to screen were bedside RNs, RN case manager, and social workers on the unit. The first section of the PC screening instrument included a medical record number of each patient screened, date of screening, and profession of screener(s) as a means of data collection

and analysis. The second and final section of the instrument included a total of six questions which were based on a literature review, input from the project practice mentor, and expert opinion from the PC medical director.

Procedures

Upon obtaining IRB approval, the comfort and knowledge survey was administered to NTICU bedside registered nurses, RN case managers, and social workers with the REDCap application software. The initial survey remained open for a two-week time period in order to capture as many staff members as possible. Following the initial survey, an educational intervention on the PC screening instrument and screening protocol was provided by the PI. Originally, the recommendation by NTICU management was for the PI to provide staff education during their monthly staff meeting, however the staff meeting was cancelled and the educational intervention was modified. The PI created an educational PowerPoint presentation which was emailed to all unit bedside RNs, RN case managers, social work case managers, clinical nurse specialist (CNS), and unit director. The PI also performed face-to-face education for various staff members on one day of the education week. A NTICU day-shift unit champion volunteered to provide education to other clinical team leaders and staff face-to-face. The unit CNS, a designated night shift RN, and a social work case manager, who had received detailed face-to-face education from the PI, also volunteered to educate staff members during the week. An education flip-board with the same educational materials sent by email was placed at the central nursing station for the education week, at an attempt to capture additional staff members.

After the completion of the education intervention, the PC screening instrument was placed at the central nursing station in a clearly-marked envelope. The goal was to have all patients admitted to the NTICU screened during the designated time period. Ideally, patients

were screened at least Monday through Friday and discussed during the IDT rounds of bedside RNs, RN case managers, and social workers. Once screening was complete, the instrument was placed in a designated folder at the central nursing station which was accessible only to the PI for data analysis. Throughout the screening time period the PI maintained close contact with the NTICU RN unit champion, unit director, CNS, night-shift RN, and social work case manager to identify questions or concerns with the project. The PI did visit the NTICU periodically to answer questions in person and collect screening material. Following the four-week patient screening period, the post comfort and knowledge survey was administered via REDCap. The survey remained open for a two-week time period in order to capture as many staff members as possible; for those staff who had not completed the survey following one week, a reminder was sent by the REDCap administrator.

Results

Data Analysis of Pre- and Post-Intervention Data

The comfort and knowledge questionnaire was sent to 42 NTICU staff members consisting of bedside RNs, RN case managers, social workers, and CNS. A total of 13 (30.95%) staff members responded to the pre-intervention survey with a return of eight staff members completing the post-intervention survey questionnaire. Table 1 displays the pre- and post-intervention demographics of participants. The majority of participants identified were bedside RNs (92.3% pre-intervention, 100% post-intervention) holding a bachelor's degree (76.9% pre-intervention, 75% post-intervention) with zero-ten years of experience in their current profession (76.9% pre-intervention, 62.5% post-intervention).

The primary outcomes measured in this scholarly project were changes in bedside RN, RN case manager, and social work case manager comfort and knowledge which was determined

by a comparison of participants who completed both the pre- and post-intervention (n = 8). Data was analyzed using the Statistical Package for the Social Sciences (SPSS), Version 24. As shown in Table 2, the Likert score used for each of the five comfort questions was as follows: slightly comfortable, neutral, somewhat comfortable, very comfortable. Frequencies and percentages of all five comfort pre- and post-intervention participant responses are reported in Table 2. Secondary to the small sample size, the nonparametric Wilcoxon signed-rank test was used to compare pre- and post-intervention responses for each question.

There was an increase in the number of participants who felt "very comfortable" (62.5% pre-intervention, 75% post-intervention) and decrease in those who felt "somewhat comfortable" (37.5% pre-intervention, 25% post-intervention) when participants were asked how comfortable they were in identifying which patients are at the end of life, though data was not statistically significant (p = 1.000). When asked how comfortable participants were in identifying which patients have chronic illness with limited treatment options, most reported "very comfortable" in both the pre- and post-intervention data (62.5%, 87.5%). The third question regarding the comfort of identifying which patients have decreased functional ability, 50% (4) reported "very comfortable" in the pre-intervention and 87.5% (7) in the post-intervention, though not statistically significant. Participants in the pre-intervention reported they were "somewhat comfortable" and "very comfortable" equally (50%) when asked how comfortable they were in assessing that a patient needed a PC consult. Post-intervention survey responses to this question showed an increase in how many participants felt "very comfortable" (87.5%). Finally, the fifth comfort question assessed the comfort of clinicians to request PC consults from physicians. There was a decrease in the number of nurses who felt "slightly comfortable" (25% pre-intervention, 12.5% post-intervention), decrease in "neutral" responses (12.5% pre-intervention,

0% post-intervention), no change in those who felt "somewhat comfortable" (25% pre-intervention, 25% post-intervention), and increase in nurses who felt "very comfortable" (37.5% pre-intervention, 62.5% post-intervention). Though there were no statistically significant changes when each comfort question was analyzed individually, there was a statistically significant change among nurses when overall median pre-intervention comfort score was compared to overall median post-intervention comfort score ($Z = -2.232$, $p = 0.031$).

Knowledge questions for pre- and post-intervention participants are reported in Table 3 with the most appropriate true or false answer. In the first knowledge question "Palliative care is appropriate only in situations where there is evidence of a downhill trajectory of deterioration" only 87.5% (7) participants chose the most appropriate answer (false). There was an improvement to 100% in the post-intervention. When asked if "palliative care should only be provided for patients who have no curative treatments available" 100% of nurses answered with the most appropriate response of false in both the pre- and post-intervention. The third knowledge question assessed whether or not "the philosophy of palliative care is compatible with that of aggressive treatment" with the most appropriate response being true. Only 37.5% (3) nurses answered correctly in the pre-intervention compared to 25% (2) in the post-intervention. The nonparametric Fisher's exact test for the third knowledge question was 0.107, indicating data was not significant. There was no statistically significant change among nurses when overall median pre-intervention knowledge was compared to overall median post-intervention knowledge ($Z = -1.414$, $p = 0.500$).

There were two general questions asked on the pre- and post-intervention. The first was asked whether or not there have been times the responder felt PC would have been appropriate for their patient. All nurses responded "yes" to this question on both the pre- and post-

intervention. The second question asked if the participant had ever recommended a PC consult for one of their patients. Six out of eight (75%) answered "yes" on the pre-intervention compared to all nurses answering "yes" on the post-intervention. There was one question added to the post-intervention that was not included on the pre-intervention questionnaire, "I feel more confident advocating for a palliative care consultation". For this question, all of the respondents answered "yes" (100%).

Data Analysis of Palliative Care Screening Instrument

During the four-week screening period there were 73 total admissions to the NTICU. Of the 73 patients admitted, a total of 69 patients were screened for PC using the PC screening instrument which resulted in a 94.5% capture rate. When the PI was analyzing data, there were 70 patients who had screening paperwork completed, however one of the patients' instruments was left blank with the exception of the MRN, date, screener information, and comment of "withdrew care". Since the NTICU team withdrew care on this patient prior to the IDT rounds, the patient was not eligible for a PC consult and was therefore not included among those patients who were screened. When reviewing dates of screening, there were no patients screened on either Saturdays or Sundays. This may explain why not all 73 patients admitted to the unit were screened.

As Table 4 outlines, 35 (50.7%) of the 69 total patients screened were eligible for PC, however only 6 patients (8.7%) were referred. This results in a total of 29 (42%) potential missed consults. Specific patient information was not collected in this project, so it is not known why these patients were not referred or perhaps not deemed to be eligible from a provider standpoint. Of the 34 (49.3%) of patients were not eligible for a PC consult, 100% were not referred to PC.

Table 5 outlines by survey question, the factors triggering PC consults for patients

eligible for PC that were not referred. The most common question to trigger a PC consult but not yield a referral was question four, "Is the patient ICU length of stay ≥ 3 days?". This question was checked a total of 26 times (32.9%). The average LOS for November 2018 was 5.22 days and the average LOS for December 2018 was 3 days on the unit. The second most common question, checked 17 (21.5%) times, that was selected was question one, "Does the patient have life-limiting conditions and/or stage IV malignancy and/or distressing physical or psychological symptoms?". In future studies on this unit, more patient information is needed to help answer why these questions may have been selected but not yield a PC consult.

Discussion

Conclusion

The purpose of this scholarly project was to examine how an educational intervention and implementation of a PC screening instrument impacts clinician comfort and knowledge regarding PC in the NTICU setting in an academic health setting over the course of four weeks. Though there were no statistically significant changes when each comfort question was analyzed individually pre- and post-intervention, there was a statistically significant change among nurses when overall median pre-intervention comfort was compared to overall median post-intervention comfort ($Z = -2.232$, $p = 0.031$). The results of the individual comfort scores could be due to the small sample size in this project ($n = 8$). The change in overall comfort levels post-intervention suggests that educating nurses on PC, a PC screening instrument, and having them complete PC screenings on their patients, may contribute to increased comfort in identifying which patients are eligible for PC consults. It may also lead to nurses advocating for PC consults when discussing these patients with their providers.

There was no statistically significant change among nurses when overall median pre-intervention knowledge was compared to overall median post-intervention knowledge ($Z = -1.414$, $p = 0.500$). The knowledge question analysis may also have been influenced by a small sample size. Results may indicate that further nursing education is needed on when PC is appropriate, when it should be provided, and how the philosophy of PC is compatible with that of aggressive treatment.

The overall capture rate of patients screened for PC was 94.5% which indicates that it is feasible for bedside RNs, RN case managers, and social work case managers to complete a PC screening instrument on patients during daily rounds. Though only 17.1% of patients eligible for PC services according to the screening instrument received a PC consultation, clinicians did not refer patients who were not eligible. Future projects with additional patient data would need to be completed to obtain information on why patients were not referred. Given the study design and screening instrument used it is unclear why PC consultations did not occur. It is encouraging to know that nurses on the NTICU who completed the pre- and post-intervention felt that their patients would have benefited from PC consultations, and that 75% on the presurvey and 100% on the postsurvey had recommended a PC consult. This may demonstrate a positive cultural environment on the unit in regards to PC. It may also be a result of increased comfort, knowledge, and/or awareness through the use of the screening instrument. The total number of PC consults completed during this scholarly project time-period were 6, which is the same as the total number completed during the same time period in 2017. Based on PC provider comments, the NTICU tends to be one of the highest referring ICUs in the hospital, so it was not surprising the number did not increase.

Strengths and Weakness of the Design

There were several strengths and weaknesses in this project. One strength was the scholarly project was completed in a tertiary, not-for-profit, community-based, academic healthcare facility with level one trauma status and Magnet designation. The hospital has a well-established PC unit with specially trained physicians and APRNs to provide expert care in patient pain and symptom management as well as facilitate GOC conversations. The PC screening instrument consists of only six questions so NTICU staff members were able to screen patients easily.

There were several limitations in this project. There is no current standardized screening tool for PC in the NTICU and as a result the PC screening instrument was created by the PI based on a literature review, so it lacks validity and reliability. The number of participants in the pre- and post-intervention were very small, so the data analysis was limited. The four-week time frame limited the number of patients screened for PC services and data collection. The NTICU had multiple projects being implemented at the same time the scholarly project was taking place, so staff may have felt overwhelmed in completing additional tasks. IDT rounds of bedside RNs, nursing case managers, social work case managers, CNS, and unit director only occur Monday through Friday which may have resulted in missed screening opportunities on the weekends. There were numerous staff changes to bedside RNs, social work case managers, and RN case managers which may have impacted the patient screening and response to surveys.

Nursing Practice Implications

Nursing plays a critical role in the early identification of patients who may benefit from PC consultations and services. Bedside RN staff and RN case managers have the unique role of providing direct hands-on care to patients with life-limiting illnesses. Bedside nurses aid in admitting patients to the ICU, perform initial and ongoing assessments, identify critical changes

in patient status, and help to coordinate pain and symptom management with providers. RN case managers help to assist and coordinate patient's care while in the ICU setting and plan for transfer or discharge depending on the patient's disposition. Nurses are able to screen patients for PC and communicate this need to providers for early PC referrals and consultation. They serve as liaisons between the patient, family, and healthcare providers. Nurses advocate for their patients and provide insight to their patient's GOC and may help to facilitate these conversations based on the intimate relationship established by their role. The PC screening instrument, including education on use, may change the comfort level of NTICU nurses in screening patients for a PC referral. With increased knowledge and comfort of patients who may benefit from a PC referral, nurses may suggest a PC referral be made which could increase patient quality of life, decrease LOS, decrease symptom burden, and may decrease healthcare costs.

Tables

Table 1

Demographics of pre- and post-intervention participants

Characteristics of participants	Presurvey (n = 13) Frequency	%	Postsurvey (n = 8) Frequency	%
Current Profession				
Bedside RN	12	92.3	8	100.0
RN Case Manager	0	0.0	0	0.0
Social Worker	1	7.7	0	0.0
Highest Professional Degree				
Associate's Degree	0	0.0	0	0.0
Bachelor's Degree	10	76.9	6	75.0
Master's Degree	2	15.4	1	12.5
Doctoral Degree	1	7.7	1	12.5
Years in current profession				
0-10 years	10	76.9	5	62.5
15-20 years	1	7.7	1	12.5
≥ 30 years	2	15.4	2	25.0

Table 2

Comfort questions and scores for pre- and post-intervention participants

Survey question	Response	Presurvey (n = 8) Frequency	%	Postsurvey (n = 8) Frequency	%	Z*	p-value
How comfortable are you in identifying which patients are at the end of life?						-0.577	1.000
	Slightly Comfortable	0	0.0	0	0.0		
	Neutral	0	0.0	0	0.0		
	Somewhat Comfortable	3	37.5	2	25.0		
	Very Comfortable	5	62.5	6	75.0		
How comfortable are you in identifying which patients have chronic illness with limited treatment options?						-1.732	0.250
	Slightly Comfortable	0	0	0	0.0		
	Neutral	1	12.5	0	0.0		
	Somewhat Comfortable	2	25.0	1	12.5		
	Very Comfortable	5	62.5	7	87.5		
How comfortable are you in identifying which patients have decreased functional ability?						-1.732	0.250
	Slightly Comfortable	0	0.0	0	0.0		
	Neutral	0	0.0	0	0.0		
	Somewhat Comfortable	4	50.0	1	12.5		
	Very Comfortable	4	50.0	7	87.5		
How comfortable are you in assessing that a patient needs a palliative care consult?						-1.000	0.625
	Slightly Comfortable	0	0.0	0	0.0		
	Neutral	0	0.0	1	12.5		
	Somewhat Comfortable	4	50.0	0	0.0		
	Very Comfortable	4	50.0	7	87.5		
How comfortable are you in requesting a palliative care consult from the physician?						-1.890	0.125
	Slightly Comfortable	2	25.0	1	12.5		
	Neutral	1	12.5	0	0.0		
	Somewhat Comfortable	2	25.0	2	25.0		
	Very Comfortable	3	37.5	5	62.5		

*Wilcoxon signed-rank test

Table 3

Knowledge questions for pre- and post-intervention participants

	Best answer presurvey		Best answer postsurvey	
Survey question	Frequency	%	Frequency	%
Palliative care is appropriate only in situations where there is evidence of a downhill trajectory of deterioration (false)	7	87.5	8	100
Palliative care should only be provided for patients who have no curative treatments available (false)	8	100	8	100
The philosophy of palliative care is compatible with that of aggressive treatment (true)	3	37.5	2	25

Table 4

Palliative care screening of eligible patients (N=69)

Variable	Frequency	%
Total Patients Eligible for PC Consult	35	50.7
Total Number of PC Consults	6	8.7
Total Number Missed Consults	29	42.0

Table 5

Factors triggering PC consult for patients eligible for consult but not referred to PC

Variable	Frequency	%
Question Selected by Screener		
1. Does the patient have life-limiting conditions and/or stage IV malignancy and/or distressing physical or psychological symptoms?	17	21.5
2. Does the family have concerns about prognosis or treatment options?	10	12.7
3. Do we need to (re)address patient goals of care or target treatment towards them?	15	19.0
4. Is the patient ICU length of stay ≥ 3 days?	26	32.9
5. Do you think the patient would benefit for a PC referral?	11	13.9
Total	79	100.0

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