

COMFORT AND KNOWLEDGE: NURSE-DRIVEN PALLIATIVE CARE SCREENINGS
ON ADMISSION TO THE NEURO ICU

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By

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ABSTRACT

It is estimated that 20% of patients will die in the intensive care unit (ICU) or shortly after discharge (Kapo & Siegel, 2013). Patients with neurological conditions account for 10-15% of all ICU admissions (Kramer & Zygun, 2014). Mortality rates for common conditions including intracerebral hemorrhage and anoxic brain injury range above 50% and the majority of survivors leave with some degree of disability or cognitive deficits (Frontera et al., 2015). Neurocritical illness outcomes are unpredictable making prognostication difficult. This can prolong hospitalization and delay defining goals of care, particularly with life limiting or life-sustaining treatments (Frontera et al., 2015).

The Neurosurgical ICU (neuro ICU) patients are not routinely screened for palliative care (PC) consultations. Unmet palliative care needs can result in inadequate symptom management, delayed established goals of care, increased length of stay and decreased patient and family satisfaction. The purpose of this project was to determine if implementing an education intervention and screening tool could increase nurse comfort and knowledge in recommending palliative care consults. There is no consistent process to integrate palliative care in the Neuro ICU despite the literature supporting early palliative care screening (Baker, Luce & Bosslet, 2015; Cortez et al., 2015; Weissman & Meier, 2011).

An electronic survey on comfort and knowledge of PC was distributed to nurses before and after the intervention. The intervention consisted of education about the Center to Advance Palliative Care (CAPC) definition of PC, review of patient case studies, and hands-on use of the screening tool. Data was collected during six-weeks of nurse-driven screening on admission.

The nurses' comfort with assessing for PC consults increased from 62.5% to 91.7% and requesting consults from a physician, 58.4% to 75%. Nurses' knowledge of PC being compatible with aggressive treatment increased from 41.7% to 95.8%. Nurses recommended PC in 66.7% of cases that three or more screening criteria selected. The data suggested that implementing a screening tool and education intervention can increase nurses' comfort and knowledge in recommending palliative care consults. The screening tool highlighted that more than 62% of patients in the Neuro ICU had a palliative care need.

Key words: Palliative care. Neuro ICU. Palliative care screening/triggers.

DEDICATION

I have been ever so humbled by this journey and filled with gratitude for the support from my family and friends. This paper is dedicated to those that are flowers that have grown through the concrete. I dedicate this to my mother and sister, both who have always been pillars of strength and encouragement. I also dedicate my work as an example to my nieces that you can accomplish anything that you set your mind to. I offer my deepest gratitude for my Great-Uncle Mike for planting the desire for higher education and to be unstoppable in the pursuit of my goals. I want to thank Darlene for being a special friend and mentor; your knowledge, care and expertise influenced my nursing practice to what it is today, may you rest in peace my dear friend. I also, want to thank Ana Stohler for her constant encouragement and being my driving force to push me to my full potential personally and professionally. I also want to give a special thanks to my butterfly sisters that helped me when my wings had trouble remembering how to fly. Finally, I want to acknowledge those that supported me from behind the scenes, those that provided me with obstacles that made me stronger and to those that kept up with my well-being and progress to ensure my success with this project.

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Chapter I

Introduction

Neurocritically ill patients suffer from sudden acute neurological events. These events can be catastrophic and debilitating, often affecting the quality of life of patients and families, thus, increasing their need for palliative care. Palliative care as defined by the Center to Advance Palliative Care (CAPC) is:

...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. Palliative care is provided by a team of palliative care doctors, nurses, social workers and others who work together with the patient's other doctors to provide an extra layer of support. It is appropriate at any age and at any stage in a serious illness and can be provided along with curative treatment.

Although palliative care (PC) is specialized medical care that optimizes quality of life for patients with chronic or critical illness, it is not well utilized in the neurosurgical intensive care unit (neuro ICU) (Tran, Back, & Creutzfeldt, 2016). In the acute phase, treatments in the neuro ICU are focused on time-sensitive aggressive management with an ultimate goal of reduction in permanent disability and death (Frontera, et al., 2015). Neurocritical illness is unpredictable; this increases uncertainty in prognostication and decisions regarding goals of care, particularly with life-limiting or life sustaining treatments (Frontera, et al., 2015). During the acute phase, the severity of their neurocritical illness, affects most patients capacity to participate in major healthcare decisions, placing the burden on families to make decisions on behalf of the patient (Creutzfeldt, et al., 2015). The neuro ICU survivors leave with a degree of permanent disabilities and the recovery period can be prolonged with many issues that impact physical and

psychological well being resulting in emotional burdens for patients and families (Knies & Hwang, 2016; Creutzfeldt, et al., 2015; Frontera et al., 2015).

Within neurocritical care, integrating PC is essential to bring extra support to patients and families. For these reasons, screening encourages early PC consults in the neuro ICU. (Tversky, Cheng, Mahmud, Schloss, & Wright, 2016; Hussain, Adams, Allgar, V. & Campbell, 2014; Knies, & Hwang, 2016). Palliative care and critical care have many common goals, but the challenge is creating a more collaborative interdisciplinary relationship that works together for the improvement in the quality of care of patients and families during their critical illness and beyond.

Description and Statement of the Problem

There is no current standardized screening tool or consistent practice to screen patients for PC needs in the neuro ICU. As a result, there is little data that explores the integration of palliative care practices in conjunction with neurocritical care. Integrating PC in the neuro ICU has been difficult to adopt in practice due to the nature of the neurocritically ill patient population (Rubin, Bonomo, & Hemphill, 2017). The devastating neurologic insults can result in debilitating conditions and or death. These insults are often are unexpected, and emergent treatments are initiated to preserve life before providers have an understanding of the prognosis (Kross, et al., 2014). There are no well-defined prognostication tools available to aid providers, making it difficult to give definitive outcomes; as a result, providers are reluctant to involve PC as an approach (Fedel, Joosse, & Jeske, 2014; Frontera, et al., 2015; Rubin, Bonomo & Hemphill, 2017; Schutz, Coats, Engelberg, Curtis & Creutzfeldt, 2016).

Background and Significance of Problem

Approximately 20% of Americans die during or immediately after an ICU stay, often with significant suffering (Kapo & Siegel, 2016). Patients and families experience prolonged hospitalizations due to delayed establishment of goals of care, ineffective management of symptoms associated with critical illness and inconsistent communication amongst providers regarding the current health state of the patient (Creutzfeldt et al., 2015). Despite the importance of integrating palliative care in critical care, there is an underlying culture that prohibits its full incorporation as part of the ICU management healthcare team (Finkelstein, Goldstein, Horton, Eshak, Lee, & Kohli-Seth, 2016).

Screening provides earlier identification of the needs in order to help involve PC services to support patients and families. Evidence has shown that having standard criteria that triggers PC consults can increase consultation rates from 41% to 82% and reduce 30 day re-hospitalizations from 36% to 17% (Perrin & Kazanowski, 2015). The change would require a significant paradigm shift in the surgical specialty to have a willingness to involve PC earlier in the disease process and a compromise to focus on goals of care as well as a definitive cure (Bradley, Weaver & Brasel, 2010). These needs contribute to the patient experience and add the importance of patient centered care. Patient centered care focuses on customizing care that is respectful of the patient's' needs and wishes (IOM, 2001).

Patients in the neuro ICU are a unique population because of their unpredictable neurocritical illness and their PC requirements may be different from patients admitted to medical or surgical ICUs (Creutzfeldt, Wunsch, Curtis, & Hua, 2015).

Neurocritical care, as defined by the Neurocritical Care Society (NCS) is:

the intensive care management of patients with life-threatening neurological and neurosurgical illnesses such as massive stroke, bleeding in or around the brain (subarachnoid hemorrhage, intracerebral hemorrhage, subdural hemorrhage, intraventricular hemorrhage), brain tumors, brain trauma, status epilepticus, nerve and muscle diseases (myasthenia gravis, Guillain-Barre Syndrome), spinal cord disorders and the cardiopulmonary complications of brain injury (n.p.).

Despite advances in neurocritical care, most patients suffer permanent disability and mortality rates are above 50% for the common neurocritical conditions such as intracranial hemorrhage (ICH) and anoxic brain injury (ABI) (Frontera, et al., 2015). In 2010, there were 130,000 stroke-related deaths, 70% were attributable to ischemic stroke and 16-percent to intracerebral hemorrhage (ICH). Fifty-percent of stroke-related deaths occurred in hospitals (Holloway et al., 2014). ICH mortality occurs as a result of withdrawal of life supporting measures in the ICU (Murthy, Moradiya, Handley & Ziai, 2016). In addition, traumatic brain injuries account for approximately 30% of all injury related deaths in the United States (Center for Disease Control, n.d.). An estimated 11,000 spinal cord injuries (SCI) occur in the U.S from trauma (American Association of Neurological Surgeons, n.d.). SCIs patients have prolonged hospital stays, increased risk of complications, and hemodynamic instability as a result of their spinal injury (Stricsek, Ghobrial, Wilson, Theofanis, & Harrop, 2017). There are nearly 80,000 new cases of primary brain tumors diagnosed. One-third or 32% of brain and CNS tumors are malignant, and 17,000 diagnosed with brain tumors will die (American Brain Tumor Association, n.d.).

The costs of extended stays in intensive care are astronomical, and can be financially and emotionally agonizing to families and patients (Jenko, Adams, Johnson, Thompson & Bailey, 2015). In 2011, 26.9% of hospital stays in 29 states, ICU charges accounted for 47.5% of aggregate total hospital charges... and ICU services were 2.5 times higher in cost than other hospital stays (Barrett, Smith, Elixhauser, Honigman & Pines, 2014). The average length of stay and costs were 12.9 days and \$24,541 for terminal ICU hospitalizations and 8.9 days and \$8,548 for non-ICU terminal hospitalizations (Angus et al., 2004).

Palliative care consultations through use of a screening tool will enable the neuro ICU team to find ways to activate PC services in practice. Many healthcare institutions are focused on improving patient care delivery, especially to enhance the patient and family experience, provide customized care, and decrease costs and length of stay. ICUs are examining ways to include PC through the development of screening criteria to identify patients with unmet PC needs (Cortez et al, 2013).

In a 2014 study, the Center to Advance Palliative Care (CAPC) determine that proactive PC consultation was associated with a reduction of \$1,700 per admission for live discharges and reductions of \$4,900 per admission for patients who died in the hospital yielding savings of more than \$1.3 million for a 300-bed community hospital and more than \$2.5 million for the average academic medical center (CAPC, 2014). PC not only benefits patients with life-threatening disease but families also benefit with the interdisciplinary approach that PC provides. By adding PC to the critical care team there could be a synergistic effect (Baker, Luce & Bosslet, 2015). Patients would receive appropriate critical care from the intensivist and have the PC team customize care for the patient as a whole person.

Utilizing PC is effective and efficient. The limitations of critical illness are diminished for patients and families by aligning care with their beliefs and values, enabling providers to reduce emotional burdens and the use of ICU resources, without affecting mortality (Jenko, Adams, Johnson, Thompson & Bailey, 2015). Initiating PC through the use of a screening tool is one of many ways to involve palliative care in the neuro ICU.

Palliative care focuses on care for patients with critical and or advance illness with an aim to improve quality of life along the continuum of the disease process (Rodriguez, Marr, Rajput, & Fahy, 2015). In fact, throughout the literature many studies and various organizations such as Neurocritical Care Society (NCS), the Society of Critical Care Medicine (SCCM) and American Heart Association (AHA) all support the need of implementing early palliative care during a patient's ICU course (Baker, 2015; Cortez, 2013; Weissman, 2011).

Screening for PC helps to create a standard for initiating consults. The screening tool allows for identification of patients that have unmet PC needs and who have a higher potential for mortality (Lapp & Iverson, 2015). Research supports nurse-driven PC screenings and consults because they have a significant role in daily patient care and collaboration with the interdisciplinary teams (Fedel, Joosse, & Jeske, 2013; Wallace, Weber, D'Aboy & Pierce, 2015). The nursing clinical practice is instrumental in fostering collaboration, coordination and maintaining continuity of care. Nurses can best advocate for appropriate referrals when given adequate resources and tools to assist in suggesting PC referrals (Fedel, Joosse, & Jenske, 2015). The nursing experience provides an advantage to consistently assess and evaluate the needs of patients and families through their consistent care and interactions. As a result, more appropriate PC consults are generated (Wallace, Weber, D'Aboy & Pierce, 2015).

There are various screening tools for PC consultation. Unfortunately, there are no validated tools to serve this purpose. The Center to Advance Palliative Care (CAPC) ICU screening tool is culmination of criteria that was found to be consistent in the literature amongst experts and national standards (Lapp & Iverson, 2015). The CAPC ICU screening tool is a 22-item checklist separated into three sections. If a patient meets one or more criteria it alerts providers to further examine the need for PC consultation. The CAPC ICU screening tool has shown there is a correlation with higher mortality as a patient meets multiple criteria (Lapp & Iverson, 2015).

Organizational Needs Assessment

This project took place in single 14-bed neuro ICU at an urban, tertiary, academic medical center. A physician medical director leads the neuro ICU, nursing director and two direct care nurse managers. The healthcare team consisted of neuro ICU nurses, the surgical ICU (SICU) team, primarily responsible for critical care management; and the neurosurgical team, primarily responsible for the neurosurgical care. The SICU team was comprised of an intensivist and advance practice clinicians (APC) with a collaborative practice model. The neurosurgical team consisted of an attending surgeon, residents and APCs, with an underlying hierarchical practice model. These teams worked together with the nurses to provide care in the neuro ICU.

Culture Assessment

The overarching culture in the neuro ICU is rooted in hierarchy. There are teams that work collaboratively, but the majority of decisions, especially regarding PC consultations must be approved by the attending neurosurgeon. The life saving ethos of surgeons yields the perspective that PC and critical care are mutually exclusive when caring for the critically ill. There is a division amongst nurses and some clinicians regarding the importance of involving PC

with this patient population, with majority of nurses in favor of PC consultations. Proactive PC consultations are often met with resistance. Nurses lack comfort and confidence in recommending PC for their patients out of concern for possibly being admonished. Palliative care is perceived as a commitment to limiting therapy that would contribute to the self-fulfilling prophesy, that poor outcomes would manifest prematurely as a result of this management decision despite underlying disease (Rubin, Bonomo & Hemphill, 2017; Knies & Wang, 2016).

The “rescue mission” culture is also present in provider's clinical practice. The “rescue mission” culture is when the surgeon develops a personal obligation to protect patients and strong internalization of patient outcomes, and feelings of failure with patient death or poor to outcomes. (Aslakson, Curtis & Nelson, 2014; Frontera, et al., 2015; Mosenthal, et al., 2012). This also yields to unrealistic expectations of patient outcomes and is translated to patients and families As a result, providers manage patients with a goal of salvaging recovery for discharge from the ICU as a success measure, despite disability and quality of life.

Provider knowledge and education on PC vary based on education and experience. The neuro ICU nurses possess a degree of comfort in engaging in conversation on patient status, goals and family communication. In addition, nursing education standardly integrates palliative practices into the curriculum. Historically, medical education has primarily focused on cure through medicine. Many providers do not have any formalized training in PC. The inconsistent knowledge and understanding of PC fostered preconceived notions or assumptions about PC in the neuro ICU. Mosenthal et al, (2012), explained that some providers associate palliative medicine with “giving up” or hospice-like treatment modalities for their patients. Providers and families’ assumption that hospice and palliative care are the same treatment strategies utilized at the end of life, also present a challenge to integrating palliative care as part of the critical care

interdisciplinary team. Assumptions that PC equates to hospice, continues to add to the barriers of adoption of PC in intensive care. (Baker, Luce, Bosslet, 2015).

Current Practice

There are no policies to support any specific process to integrate PC in the neuro ICU. The neuro ICU has no standardized screening tool is utilized. Variations in PC consulting practices contribute to the barriers of creating polices for incorporating PC in the daily practice. PC consults are at the discretion of the attending physician and must be approved by the neuro ICU attending physician prior to initiating PC consultation. The common trigger for PC, in most cases is if prognosis is noted to be poor, imminent death or if difficulty with establishing goals of care.

Lack of Palliative Care Staff

Historically the PC team was a contracted group at this facility. During the time of the project the PC team transitioned to an officially recognized department at this institution. The PC team was in the process of building their brand and strategy on how to make the greatest impact to increase consultations. Strategic partnership with key specialties such as advanced heart failure, helped to support the value of PC being a consistent member of the interdisciplinary team.

Organizational Values

Despite the barriers, there were many possibilities for change in the neuro ICU. As a major academic center, the organization had a primary mission to provide innovative and evidence based practice medicine. This facility had a focus to lead the region with the highest quality and latest medical advances through excellence in patient care, education and research.

The guiding principle was founded upon a commitment to treating all with compassionate care. Responsiveness to the needs of patients was the model of excellence for patient-centered care.

Opportunities for Culture Change

At the start of this project, a pivotal cultural change began with the new partnership between PC and the Advanced Heart failure teams. This partnership created a culture change that embraced the integration of PC in chronic and critically ill patient care as part of the interdisciplinary team. This enabled PC to work more closely with the SICU teams and cardiac surgeons. As the need increased for PC, the institution provided more staff and support that allowed the PC team to provide a team dedicated to service the ICUs.

The use of an interdisciplinary model of care (IMOC) has unified disciplines and increased communication amongst providers. The IMOC has also increased the involvement of families in patient care and healthcare decision-making. In the neuro ICU, there were many nurses and physician champions in favor of integrating of PC. The PC team along with nursing leadership had initiated clinical discussions on ways to increase consultations and increase awareness and education regarding PC.

PICOT Research Question

The PICOT is an acronym (problem/population, intervention, comparison, outcome and time) utilized to formulate an evidence based practice question (Melnyk, Fineout-Overholt, Stillwell, & Williamson, 2010). The PICOT question for this project is as follows:

In the Neuro ICU, how does education and implementing a screening tool impact nurse comfort and knowledge for recommending palliative care consults over six-weeks?

The aims of this study are the following:

- Implement nurse-driven PC screenings
- Evaluate the impact of education and a screening tool on the comfort and knowledge of nurses in recommending PC consults
- Identify the most common screening criteria met in the neuro ICU patient population

The purpose of this project was to examine if an education intervention and screening tool increased nurse comfort and knowledge in recommending palliative care consults.

Theoretical Framework

The Comfort Theory

The framework used for this scholarly project was the Comfort Theory by Katharine Kolcaba (Appendix A). Permission for use was obtained by Dr. Kolcaba, who also confirmed that the use of the Comfort Theory was public domain. The comfort theory is a conceptual framework that analyzes patient comfort through nurses' intentional assessment of patient and family needs. Nurses utilize the assessments to activate interdisciplinary, collaborative strategies to enhance patient's comfort to help improve outcomes for the patient, family, clinical practice and the institution (Kolcaba, 2010).

The Comfort Theory begins with the nurse assessment of the patient's unidentified comfort needs. Intervening variables such as past experiences, age, attitude, emotional state, support system, prognosis, and finances, are evaluated to create customized care to increase comfort. The increase in patient comfort motivates the patient to participate in health-seeking behaviors (HSB) or a peaceful death. The desired result of enhanced comfort and health-seeking behaviors is to increase institutional integrity with the development of best clinical practices and policies to support the evidence and interventions for HSB and patient comfort.

For the project the nurse screening using the CAPC ICU screening tool allowed for the assessment of healthcare needs and intervening variables with the goal of identifying patients in need of comfort interventions, in this case a PC consult. The PC consult would help activate an interdisciplinary approach to create interventions to enhance comfort and health seeking behaviors. The ultimate outcome would be to increase institutional integrity and create policies to support nurse-driven PC screening to involved PC teams.

Evidenced Based Practice Model of Implementation

The Iowa Model

The evidence based practice model used for this project was the Iowa model. Permission for use was obtained from the University of Iowa Hospitals and Clinics. The Iowa Model was used by this particular healthcare system, and for the sake of continuity was used for this project. The Iowa Model is a process developed by Dr. Marita Titer, which uses a step-by-step guide for the implementation of research that begins with a problem or knowledge focused trigger. The clinical problem identified was the lack of a standardized tool for PC screening in the neuro ICU. The process is described in Table 1.

Table 1 Iowa Model.

Step 1: Clinical Problem	No standardized screening tool to identify patient for PC consult Questions: <ul style="list-style-type: none"> • Can a nurse-driven use of the CAPC ICU screening tool be used to identify neuro ICU patients appropriate for palliative care consults? • How will training and use of the CAPC ICU screening tool affect the comfort and knowledge of nurses screening and identifying patients for palliative care consults?
Step 2: Is this an Organizational priority?	The institution goals are to increase patient and family centered care. Patient and Family Advisory Council for Quality and Safety (PFACQS) council and Patient and Family Centered care committee (PFCC) focus on innovative care practices to enhance family and patient comfort and experiences
Step 3: Form a team	Interdisciplinary team formed: ICU physicians, palliative care team and nursing and key leadership, use of the ICU PFCC
Step 4: Assemble literature & research	Embase & PubMed review, including key words: palliative care, intensive care, neurocritical care, palliative care consults, palliative care trigger
Step 5: Critique and Synthesis	Sufficient literature that focused on implementing PC consults & screening in medical and surgical ICUs, but little research on neuro ICU
Step 6: Pilot change	<ul style="list-style-type: none"> • Nurses education on PC definition and use of CAPC ICU screening tool • Survey pre/post education and screening tool implementation • Target Outcomes: Consistent use of a PC screening tool on admission. Identification of patients for PC consults. Increase nurses comfort and knowledge post use of CAPC ICU admission screening. Customizing CAPC ICU screening tool for use according to most common criteria met
Step 7: Implementation & Follow up	<ul style="list-style-type: none"> • Customize CAPC ICU screening tool criteria for patient the population • Institute policy and protocol for implementation • Create staff training on PC and admission screening • Transition customized screening in the electronic medical record for long-term evaluation of target outcome-increasing PC consults • Follow up with PC team to evaluate- increase in consults and appropriateness of trigger criteria • Evaluate screening criteria to ensure capture of appropriate patients • Advocate for nurse-driven PC consultations once trigger tool customized and approved by interdisciplinary team • Modify protocol as needed annually based on needs

Definition of Terms

- Palliative care- Palliative medicine as defined by the Center to Advancing Palliative Care (CAPC): Palliative care, and the medical sub-specialty of palliative medicine, is 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. Palliative care is provided by a team of palliative care doctors, nurses, social workers and others who work together with a patient's other doctors to provide an extra layer of support. It is appropriate at any age and at any stage in a serious illness and can be provided along with curative treatment (n.d.).
- Neurocritical care Intensive Care-As defined by the Neurocritical care society, neurocritical care is the intensive care management of patients with life-threatening neurological and neurosurgical illnesses such as massive stroke, bleeding in or around the brain (subarachnoid hemorrhage, intracerebral hemorrhage, subdural hemorrhage, intraventricular hemorrhage), brain tumors, brain trauma, status epilepticus, nerve and muscle diseases (myasthenia gravis, Guillain-Barre Syndrome), spinal cord disorders and the cardiopulmonary complications of brain injury (NCS, n.p.).
- Palliative care Trigger tool-a list of criteria utilized to identify patients that meet the need for palliative care referral
- Unmet Palliative care needs- Palliative care needs are the elements that shape the patient and family experience. Palliative care needs can involve physical, emotional, and spiritual distress, patient-family-provider communication about achievable goals for care and decision-making, coordination for continuity of care and support for practical needs of both patients and families across settings (Meier, 2012).

Conclusion

Palliative care in the neuro ICU can exist to contribute to successful outcomes in patient and family care. The advantages of having specific criteria that identify patients for PC consults can also create a culture more amenable of including palliative care within the ICU culture (Knies & Wang, 2016). The implementation of a screening tool will help to build a foundation for the consistent utilization and future integration of PC in the neuro ICU.

Chapter II

Review of the Literature

Introduction to Search Criteria

Current literature was reviewed for evidence supporting the screening and implementation of PC screening in the neuro ICU. The online literature search was completed utilizing PubMed and EMBASE. The initial search was within the years 2006-2017 and extended to include the years 2000-2017 due to the limited amount of literature available. Key words used were “neurocritical care”, “palliative care”, “palliative care screening”, “palliative care triggers” and “neuro ICU”. The PubMed search included various combinations of keywords. The keywords such as “neurocritical care and palliative care” yielded 14 articles narrowed down to seven, “neurocritical care and palliative care” resulted 52 articles narrowed down to six articles, “palliative care screening and neuro ICU” resulted in three articles narrowed down to two, “palliative care screening and neurocritical care” resulted in 18 articles, narrowed down to two. The EMBASE search used keywords, “palliative care,” “stroke, SAH, neurocritical care, neuro ICU, neurosurgery” and “screening test, screening, trigger, tool, clinical assessment tool, consult” which yielded 1430 results. That was narrowed down to articles printed in English in from the past 10 years, and keywords such as neuro ICU, neurocritical care that yielded 52 results. An additional hand search from the articles was completed to obtain more literature that pertained to neurocritical care and PC. These articles from both literature searches were reviewed for relevancy to this project that addressed PC in neurocritical care.

Synthesis of Evidence

In review of the literature, integration of palliative care screening in the neurocritical ICU was relatively unexplored. Evidence on PC screenings in the neuro ICU was very limited and of poor quality. Overall, literature found were reviews, consensus reports, recommendations on palliative care in the neurocritical care ICU. The lack of quantity and quality articles revealed the need to explore the implementation of palliative care screenings in the neuro ICU further.

Palliative care in the neuro ICU.

The integration of PC is a relatively new and unexplored area. It could be attributed to the fact neurocritical care is a relatively new specialty that emerged in the 1980s (Wijdicks, 2013). Despite the growing acceptance in the literature and amongst major governing bodies in support that PC is as a component of high-quality care for patients with serious illness, it remains underutilized in the surgical critical care setting (Finkelstein, Goldstein, Horton, Eshak, Lee, & Kohli-Seth, 2016; Bradley, Weaver & Brasel, 2010).

The Improving Palliative Care in the ICU or IPAL-ICU Project from the Center to Advance Palliative Care (CAPC) has been useful in providing guidelines and tools to help in integrating and improving PC in the ICU. Frontera et al. (2015) created a report from the IPAL-ICU project that specifically addressed integration PC in neurocritical care. A review was performed of the literature to evaluate the clinical issues that arose in neurocritical care. Prognostication aids, best practices for establishing goals of care, symptom management and evaluation of life-limiting and life sustaining treatments were evaluated. The goal was to create a report for recommendations on integration of PC in neurocritical illness.

Borasio (2013) discussed in his German based opinion paper that palliative care should not be separate from medical care. This paper encouraged the philosophy of it is simply a way to

add PC as a goal of medical care that consistently included quality of life at all costs. It also expressed the importance of PC integration with neurological diseases to support customization of care for symptom management.

The Chahine, Malik, & Davis (2008) study was a retrospective chart review that examined the most common neurologic diagnoses and reasons for palliative medicine consultations. They found that majority of the consults were for symptom management and evaluation for comfort measures. The researchers also came to the conclusion that palliative medicine is needed in the neurologic and neurosurgical patient population. They also noted that the inclusion of tools that assess symptoms for non-communicative patients is important in including patients in their care.

Knies and Hwang, (2016), discussed major issues in integrating PC with neurocritical care. The article examines the best practice models of care for PC in the neuro ICU. In addition they comment on the difficulties with effectively establishing goals of care in this patient population. Like previous articles they explore how shared decision making, goals of care, and clinician competencies all contribute to the core of how PC is integrated in neurocritical care.

In the Liu, et al. (2017) study, a retrospective case series over 5 years at an academic hospital, they examined more than 200 patients with neurological issues that had PC services during their hospitalization. The findings described that majority of patients required PC services were those that were severely debilitated unable to speak or interact with their care, suffered from acute stroke, and discharge disposition was either death or to hospice. The majority of the consults included establishing or clarifying goals of care, comfort measures or symptom management and psychosocial support management. They concluded with the recommendations that all patients and families should be provided with primary PC services upon diagnosis.

An Owens & Flom, (2005) article provided an overview of evidence to support use of PC in the neuro ICU. It discussed the domains of quality Palliative Care specific to PC practitioners. In addition, a brief overview of the common issues in the ICU such as pain, symptom management, communication and withholding and or withdrawal of life sustaining treatments, that could be improved with the integration of PC.

Rubin, Bonomo, and Hemphill III, (2017), conducted a review that discussed three circumstances that arose in the neuro ICU: prognostication, family-physician discussions and determination of death. Prognostication is the most discussed topic and provides great challenges for providers. Patient outcomes vary with neurocritical care and despite having outcome prediction models, committing to a specific outcome is a challenge to determine. In the neuro ICU a phenomenon of self-fulfilling prophecy exists where it is believed that early limitations in care will lead to poor outcomes because of the care decision rather than progression of neurocritical illness. This Rubin, Bonomo and Hemphill review supports the literature that PC in the neuro ICU is beneficial but underutilized.

Tran, Back, & Creutzfeldt, (2016) conducted a qualitative study and retrospective chart review of patients in neuro ICU that did receive a PC consult. The goals were to identify content and key themes of PC consultation, explore reasons for PC consult and discuss most common recommendations from PC team. Four clinical themes emerged from PC consultations: discussing prognosis, patient and family values, medical options and identifying conflicts. Findings revealed the PC consultants spoke to families regarding the possibilities of prognosis/functional recovery, but defaulted the prognostication to the neurologists and intensivists. PC specialists evaluated family readiness, coping and communication styles to

improve the primary team's communication. PC consults did come late during hospitalization, when patients demonstrated high PC needs.

Palliative care triggers and screening.

The development of PC triggers or screening was a common recommendation in the literature. The Center to Advance Palliative Care (CAPC), an organization dedicated to the integration of palliative care in practice, created projects specifically to assist with integration of PC through the improving PC in the ICU project (IPAL-ICU). The IPAL-ICU project recommends customizing triggers to fit the institution's goal and patient population (Nelson et al., 2013). Hussain, Adams, Allgar and Campbell (2014) observed data that showed increased triggers revealed disease progression. Results suggested that using defined referral criteria based on triggers would enable patients to have access to PC at an appropriate state in their illness. They concluded that having a screening process to trigger PC can foster early proactive palliative care involvement. Prompt identification of needs can ensure they are tended to as a whole by the care team.

The Creutzfeldt, Wunsch, Curtis, and Hua, (2015) article was a retrospective cohort study that examined the prevalence of PC trigger criteria in neuro ICUs compared to non-neuro ICU admissions. The trigger tool they used was validated but was not specific to the neuro ICU patient population. The data revealed that in the neuro ICU the most common trigger was intracerebral hemorrhage with mechanical ventilation. Trends in the data supported that PC needs in the neuro ICU are different than non-neuro ICUs.

Creutzfeldt, Engelberg, Healey, Cheever, Becker, Holloway, and Curtis (2015) conducted a quality improvement project that examined identifying PC need through development of a Palliative Care Needs Screening Tool. The tool consisted of 4 questions:(1) Does the patient

have distressing physical or psychological symptoms? (2) Are there specific support needs for patient or family? (3) Are treatment options matched with patient-centered goals? (4) Are there disagreements among teams and family? They sought to evaluate the palliative needs versus initiating PC based on diagnosis. Goals were to evaluate prevalence of PC needs by screening tool, and comparing care received for patients with and without screening. The results revealed the needs were mainly social support and goals of care. There was increase in documented family meetings and PC consultations.

Conclusion

Early PC interventions seemed to be of some degree of benefit to patients. The trigger or screening tools were helpful to identify patients with PC needs. There was an overall theme that more criteria revealed higher mortality. The neuro ICU patient population is unique and has its own set of PC issues. The literature supports customizing the trigger tools to accommodate some of those needs prove to be helpful in early identification.

Chapter III

Methods

Design and Implementation Plan

This scholarly project used a descriptive pre/post evidence-based practice intervention design. The project began with a pre-intervention electronic survey that explored the bedside nurse's comfort and knowledge of making PC recommendations. The survey was created on and distributed through SurveyMonkey© and was open for participants for a two week period. The survey included a cover letter explaining the project and instructed the subjects that participation in the survey indicated implied consent. In addition, respondents were asked to create a customized identification to maintain anonymity and allow the pre and post surveys to be paired later for data analysis. During the survey period, three reminder emails were sent to all neuro ICU nurses to increase participation. After the pre-intervention survey closed, education and training on use of the Center to Advanced Palliative Care (CAPC) ICU screening tool was performed in person over a two-week timeframe.

The education materials were initially distributed to the nursing staff via email listserve. Two weeks of in-person education was performed. All participants received an educational packet that had the PowerPoint presentation, timeline about the study, an article about the CAPC ICU screening tool and the CAPC ICU screening tool for practice. During the in-person sessions, the CAPC definition of PC was used to serve as the foundation for open discussion on PC. After the open discussion, a sample patient case scenario was reviewed using the CAPC ICU screening tool. The nurses practiced using the checklist, followed by a question and answer session regarding the tool and or project.

After the two week education period, the CAPC ICU screening tool began. The tool was distributed via purple paper for nurses to complete on admission at the bedside. The nurses were instructed to place all completed screening tools in a lock box in the staff break room. The screening took place over six-weeks. At the end of the six-week screening, the post-intervention survey was distributed via SurveyMonkey© and was open for a two-week duration for respondents to complete. During the survey period, three reminder emails were sent to all neuro ICU nurses to increase participation.

Project Setting

The project was conducted on a single 14-bed neurosurgical ICU (neuro ICU) in a tertiary, urban academic medical center in Washington, DC. The neuro ICU team is comprised of intensivists, neurosurgeons, neurologists, stroke fellows, advanced practice clinicians (APC) that include physician assistants (PA) and nurse practitioners (NP), surgical critical care fellows, neurology and neurosurgical residents and fellows, and neurosurgical nurses. The neuro ICU operates under an open care model, in which the neurosurgeon or neurologist is the primary attending of record and, the critical care intensivist serve as critical care consultants, providing critical care during their ICU course.

Sampling Plan

All neuro ICU nurses were eligible to voluntarily participate in the pre and post survey. Implied consent was indicated by participation in the survey. All respondents were asked to create a custom identification to link their pre and post test results and maintain anonymity. Surveys that were completed in their entirety with matching pre/post identification were used in the data analysis.

All patients admitted to the neuro ICU were expected to be screened. The patient inclusion criteria were limited to patients admitted to the neuro ICU specifically under the neuroscience service which included neurosurgery, neurology and neurology stroke. Patients were excluded if they were under 18 years of age and ICU length of stay less than 24 hours.

Human Subjects

The principal investigator (PI) completed the Collaborative Institute Training Initiative (CITI) training. This training consisted of modules that focused on Biomedical and Social-Behavioral-Educational education. Institutional review board (IRB) approval was obtained from Georgetown University and the project site. Patient information was de-identified. Any electronic information was password protected and paper information stored in a locked box stored in the facility's critical care administrative office, solely accessible to the PI.

Instruments

Comfort and Knowledge Survey

A comfort and knowledge survey originally published by Fedel et al. (2014) was used for this project. Fedel granted permission for use of this survey for this project. The tool was noted to have a Cronbach alpha of .80, indicating good reliability (Jenko, Adams, Johnson, Thompson & Bailey, 2015). The published survey had five questions regarding comfort and three regarding knowledge. These questions were validated by content experts and included questions adopted from the palliative care quiz for nursing (PCQN) (Fedel, Joose & Jeske, 2014). The first five questions on comfort used a four-point Likert scale. The four-point Likert scale was revised to remove the option between "slightly comfortable" and "somewhat comfortable" (Jenko, Adams, Johnson, Thompson & Bailey, 2015). The last three questions were true/false knowledge questions that were reviewed and evaluated by context experts. In addition, the PI developed,

five optional questions that included comfort on patient needs in the neuro ICU, Ethics consults for PC consults, PC recommendations on rounds and two open ended questions, one on professional experiences and the other for general feedback. Three demographic questions were included that pertained to nursing years of experience and educational preparation. The survey concluded with the request to create custom user identification. The survey was given to neuro ICU nurses before education on palliative care and CAPC ICU screening tool use and repeated after the six-week screening intervention.

Center to Advancing Palliative Care (CAPC) ICU Screening Tool

The Center to Advance Palliative Care (CAPC) is a national organization that is the leading resource in implementation of PC in health systems. Its vision is PC everywhere, and is accomplished through training, metrics and technical to support PC integration in practice.

The CAPC ICU screening tool is a culmination of evidence-based screening criteria consistent in the literature amongst experts and national standards for PC consultation (Lapp & Iverson, 2015). This screening tool is based on a published list of triggers that was implemented in a study by Lapp & Iverson (2015) and derived their list from the CAPC compilation of PC screening criteria. The tool was a 22-item checklist separated into three sections. One or more criteria met indicated to providers to further examine the need for PC consultation. This screening tool was selected because of the comprehensive list of criteria and its basis on the body of evidence based-criteria from the literature and national experts and the Center to Advance Palliative Care. In addition, the question at the end of the screening tool *As a nurse would you refer this patient to palliative care?*, to get nurse feedback on their recommendation of palliative care despite the items selected on the screening tool.

Procedures

Upon IRB approval, flyers and emails were distributed to neuro ICU staff where the pilot project was implemented. A series of presentations to nursing, advance practice clinicians and physician groups was given regarding the PC screening to commence in the neuro ICU. The nurse comfort and knowledge survey was electronically distributed prior to the coordination of unit education and implementation of the screening process. The survey was voluntary and participants gave implied consent by completing the survey. Each nursing participant's identity was anonymous, and nurses were responsible for creating a custom identification to link the pre/post survey results for analysis. The pre-intervention survey was open for two weeks. After the survey period closed, educational meetings took place and all nursing staff were educated. The education consisted of the Center to Advancing Palliative Care (CAPC) definition of PC, overview of the research project relevance to nursing practice, followed by a case study. The case study provided hands on education on use of the CAPC ICU screening tool. After the education intervention, the CAPC ICU screening tool was implemented on admission over a six-week period. Data from the CAPC ICU screening tool was collected using a paper data sheet. At the end of the screening period, a post-intervention survey was distributed to staff and open for two weeks.

Data Collection

Data was collected from the CAPC ICU screening tool over a six-week period via a paper data sheet. In addition, collected information from all demographics from the patient medical records were; age, gender, race, primary diagnosis, length of stay and discharge disposition, and code status. A statistician was consulted for data analysis.

The outcomes measured were the following:

- Distribute and screen patients on admission to the neuro ICU for six weeks using the paper CAPC ICU screening tool
 - Evaluate the number of patients screened and number of potential PC consults
 - Collect data to identify patients that meet any of the criteria
 - Examine correlation with nurse recommendation for consult with screening criteria selected
 - Identify criteria most and least frequently identified
 - Patient demographics: gender, race, age, ICU length of stay, discharge disposition

- Nurse pre and post survey results on PC and screening tool comfort and knowledge
 - Evaluate if there was an increase in comfort and knowledge after education on PC recommendation

Table 2 Data Outcomes.

Outcome	Data Collection	Measure
Nurse comfort & knowledge	Voluntary electronic email Survey Instrument	Pre/post comfort & knowledge mean scores
Screening feasibility	Completed paper screening tools	Total number screenings completed of all patients admitted
Potential consult incidence	Completed paper screens	Total eligible patients Least and most screening criteria

Data Management

Completed paper screening tools were collected in a lock box on the unit. The researcher emptied the box regularly and stored all the screening tools from the screening period stored in a locked box in a locked office in the surgical critical care administration area. All data was transcribed to a password-protected spreadsheet stored on the facility's computer. All data was de-identified. Upon completion of this study all data will be destroyed and shredded at the facility. Aggregate data was presented representing averages or generalizations about the responses as a whole. No identifiable responses were presented in the final form of this study.

Chapter IV

Evaluation and Results

The sample (N=24), was primarily bachelors prepared nurses that had 0-5 years of experience as a general nurse and ICU nurse.

Table 3 Nurse Participants' Characteristics.
(N = 24)

	<i>n</i>	%
Years as RN		
0-5 years	19	79.2
6-10 years	2	8.3
11-15 years	3	12.5
Years as ICU RN		
0-5 years	19	79.2
6-10 years	3	12.5
11-15 years	2	8.3
Education		
Bachelors (nursing)	23	95.8
Masters (nursing)	1	4.2

Answers to questions about comfort dealing with patients potentially in need of PC, knowledge about PC, and use of PC consults were asked both before and after training. All tests were one-tailed because it was anticipated that comfort would increase following training. The Wilcoxon signed ranks test was the appropriate test for paired binary and ordinal data.

Table 4 Participants' Reported Comfort in Dealing with Palliative Care Issues Before and After Training.

	Pre	Post	Z*	p (one-tailed)
How comfortable are you in identifying which patients are at the end of life?			1.09	.138
Very uncomfortable <i>n</i> (%)	0	2 (8.3)		
Somewhat uncomfortable <i>n</i> (%)	5 (20.8)	1 (4.2)		
Somewhat comfortable <i>n</i> (%)	9 (37.5)	8 (33.3)		
Very comfortable <i>n</i> (%)	10(41.7)	13(54.2)		
How comfortable are you in identifying which patients have chronic illness with limited treatment options?			2.08	.019
Very uncomfortable <i>n</i> (%)	0	1 (4.2)		
Somewhat uncomfortable <i>n</i> (%)	4 (16.7)	1 (4.2)		
Somewhat comfortable <i>n</i> (%)	12(50.0)	7 (29.2)		
Very comfortable <i>n</i> (%)	8 (33.3)	15 (62.5)		
How comfortable are you in identifying which patients have decreased functional ability?			1.73	.042
Very uncomfortable <i>n</i> (%)	0	1 (4.2)		
Somewhat uncomfortable <i>n</i> (%)	1 (4.2)	0		
Somewhat comfortable <i>n</i> (%)	10(41.7)	4 (16.7)		
Very comfortable <i>n</i> (%)	13(54.2)	19 (79.2)		
How comfortable are you in assessing that a patient needs a palliative care consult?			3.12	.001
Very uncomfortable <i>n</i> (%)	1 (4.2)	0		
Somewhat uncomfortable <i>n</i> (%)	8 (33.3)	2 (8.3)		
Somewhat comfortable <i>n</i> (%)	12(50.0)	13(54.2)		
Very comfortable <i>n</i> (%)	3 (12.5)	9 (37.5)		
How comfortable are you in requesting a palliative care consult from the physician?			2.33	.010
Very uncomfortable <i>n</i> (%)	5 (20.8)	1 (4.2)		
Somewhat uncomfortable <i>n</i> (%)	5 (20.8)	5 (20.8)		
Somewhat comfortable <i>n</i> (%)	10(41.7)	9 (37.5)		
Very comfortable <i>n</i> (%)	4 (16.7)	9 (37.5)		

*Wilcoxon signed ranks test

There were significant increases in comfort in all areas except identifying patients who are at the end of life. There was an increase from 79.2% being comfortable identifying patients

at the end of life before training to 87.5% comfortable after training, but the increase was not statistically significant. For identifying chronic illness with limited treatment options, the percentage of participants who were comfortable went from 83.3% pre-training to 91.7% post-training. For identifying patients with decreased functional ability, 95.8% were somewhat or very comfortable both before and after training. The percentages that were very comfortable increased from 54.2% pre-training to 79.2% post-training. Those comfortable with assessing that a patient needs PC consult increased from 62.5% pre-training to 91.7% post training.

Finally, those comfortable requesting a PC consult from a physician increased from 58.4% pre-training to 75% post-training.

Table 5 Participants' Knowledge of Use of Palliative Care Before and After Training.

	Pre n (%)	Post n (%)	Z*	p (one- tailed)
Palliative care is appropriate only in situations where there is evidence of a downhill trajectory of deterioration			1.41	.079
True	0	2 (8.3)		
False (correct)	24 (100)	22(91.7)		
Palliative care should only be provided for patients who have no curative treatments available			0.58	.283
True	2 (8.3)	1 (4.2)		
False (correct)	22(91.7)	23(95.8)		
The philosophy of palliative care is compatible with that of aggressive treatment			2.65	.004
True (correct)	10(41.7)	17(70.8)		
False	14(58.3)	7 (29.2)		

*Wilcoxon's signed rank test

The vast majority of participants correctly answered the first two knowledge questions, therefore there was little room for training to make a difference and no significant differences were seen in the percentages who correctly said that the statements *Palliative care is appropriate only in situations where there is evidence of a downhill trajectory* and *Palliative care should only be provided for patients who have no curative treatments* were false. All participants correctly answered the question about downhill trajectory prior to training. Unfortunately two participants changed to the incorrect answer post training, but the difference was not significant. The percentage who correctly answered the question about no curative treatments went from 91.7% pre-training to 95.8% post-training, but the difference was not statistically significant. Only 41.7% correctly said the statement *the philosophy of palliative care is compatible with aggressive treatment* was true pre-training. Post-training, the percentage significantly increased to 70.8%.

Table 6 Participants' Use of Palliative Care Before and After Training.

	Pre	Post	Z*	p (one-tailed)
How often to you feel uncomfortable about your patients' needs not being met in the neuro ICU?)			1.90	.029
Never <i>n</i> (%)	0	0		
Seldom <i>n</i> (%)	4 (16.7)	6(25.0)		
Somewhat often <i>n</i> (%)	8 (33.3)	13(54.2)		
Very often <i>n</i> (%)	12(50.0)	5 (20.8)		
How often do you consult Ethics in order to initiate a palliative care consult?			0.63	.264
Never <i>n</i> (%)	7 (29.2)	7 (29.2)		
Seldom <i>n</i> (%)	10(41.7)	10(41.7)		
Somewhat often <i>n</i> (%)	7 (29.2)	6 (25.0)		
Very often <i>n</i> (%)	0			
How often have you recommended a palliative care consult for one or your SICU patients in rounds?			3.00	.002
Never <i>n</i> (%)	12(50.0)	5 (20.8)		
Once a month <i>n</i> (%)	10(41.7)	13(54.2)		
3 times a month <i>n</i> (%)	1 (4.2)	3 (12.5)		
Greater than 4 times a month <i>n</i> (%)	1 (4.2)	3 (12.5)		

*Wilcoxon signed ranks test

Training seemed to have decreased the feeling that patients' needs were not being met in the neuro ICU. Before training, 83.3% indicated they were sometimes or often uncomfortable about their patients' needs not being met. The percentage decreased to 75% after training, a statistically significant drop. However, the majority of participants continued to feel that their patients' needs were not being met in the neuro ICU.

Training made no difference in the percentage of participants who consulted Ethics in order to initiate a PC consult. The responses were identical pre- and post-training with the exception of one person who did not answer the question post-training. This is not surprising as the question asked about actual use of ethics consultation rather than intent to use. Participants would not have had time to change their practice much by the time the post-training survey was given. A follow-up some months post-training might show different results.

Training had a significant impact on making recommendations for palliative care consults during rounds. Half the participants had never made such a recommendation pre-training compared with only 20.8% post-training.

Patient Characteristics

Of 81 patients, three were missing information about the admitting team and two were missing information about ICU length of stay. When the sample was restricted to those known to be stroke, neurology, or neurosurgery and with length of stay in ICU of 24 hours or more, the patient sample size was reduced to 56. For these patients, median length of stay in the ICU was 3 days, ranging from 1 to 22 days. The median rather than the mean, which was 4.3 ($SD = 4.5$) days. The median is the 50th percentile, so half the sample had three or fewer days; half more than three days.

Patients ranged in age from 21 to 91, with mean age of 56.7($SD = 18.1$). As can be seen in Table 5, patients were predominantly admitted to the neurosurgical service (82.1%). The vast majority (94.6%) who were Full Code, two of whom were changed to DNR-LT; the remaining 5.4% were admitted with DNR code. The admission GCS averaged 11.9 ($SD = 4.1$). The score was positively skewed, however, with a median of 15 and 50.9% of the patients having a score of 15. The most common admission diagnoses were SDH (21.8%), ICH (18.2%), CVA (16.4%), and brain mass (14.5%).

Table 7 Patient Characteristics. (N = 56)

	n	%
Gender		
Male	35	62.5
Female	21	37.5
Race		
White	18	32.1
Black	28	50.0
Hispanic	4	7.1
Asian	2	3.6
Other	4	7.1
Admission Service		
Stroke	8	14.3
Neuro	2	3.6
Neurosurgical	46	82.1
Admission Code		
Full	53	94.6
DNR	3	5.4
Admission Diagnosis		
ICH	10	18.2
CVA	9	16.4
SDH	12	21.8
SAH	3	5.5
Brain Mass	8	14.5
Pituitary Mass	2	3.6
Aneurysm	1	1.8
Hydrocephalus	1	1.8
Seizure	1	1.8
C2fx	1	1.8
T12 burst	1	1.8
Polytrauma	1	1.8
Lumbar dehiscence	1	1.8
SDH/SAD	1	1.8
Other	3	5.5
Disposition		
Home	22	39.3
SAR	9	16.1
Expired	6	10.7
Donor	1	1.8
NRH	9	16.1
Inpatient	2	3.6
Acute Rehabilitation	4	7.1
OSH	1	1.8
SNF	2	3.6
Had Palliative Consult	2	3.6

For the two patients who had a palliative consult, the GCS were 7 and 9. One had an admission diagnosis of ICH and one of CVA.

Table 8 Number of Patients with CAPC Tool Criteria.

	n	%
Disease Criteria		
Advanced stage IV cancer	1	1.8
Multi-organ failure (at least 2 organs)	2	3.6
Major acute neurological insult	12	21.4
Advanced dementia or severe cognitive impairment	3	5.4
Intracranial hemorrhage requiring mechanical ventilation	8	14.3
Chronic liver disease	0	0
Chronic renal disease ± chronic dialysis	2	3.6
Status post cardiopulmonary arrest	1	1.8
Advanced chronic obstructive pulmonary disease	2	3.6
Severe congestive heart failure class III or IV	2	3.6
Utilization Criteria		
Frequent hospital or ICU admissions (>1 for same condition within 3 months)	2	3.6
>1 ICU admission during the same hospital stay	2	3.6
Admission from nursing home	2	3.6
Consideration of PEG tube placement	2	3.6
Consideration of tracheostomy placement	2	3.6
Consideration of ethics consultation	1	1.8
Consideration of start renal replacement therapy during ICU stay	2	3.6
Other Criteria		
Conflicts regarding goals, DNR order, treatment decisions	1	1.8
Lack of social support	6	10.7
Would not be surprised if patient died in next 12 months	7	12.5
Anticipated discharge to long-term acute care facility	3	5.4
Homebound due to chronic illness	2	3.6
	Median	Range
Number of Disease Criteria per Patient	0	0-5
Number of Utilization Criteria per Patient	0	0-3
Number of Other Criteria per Patient	0	0-3
Number of all Criteria per Patient	1	0-6

The most frequent CAPC criteria checked by these nurses were *major acute neurological insult*, marked for 12 patients (21.4%), followed by *intracranial hemorrhage requiring mechanical ventilation*, marked for 8 patients (14.3%), *would not be surprised if patient died in*

next 12 months for 7 patients (12.5%), and *lack of social support* for 6 patients (10.7%). None of the other criteria were marked for more than 3 patients. Over one-third (37.5% or 21 patients) had no criteria checked on the CAPC tool. Of those who checked criteria, 25 (71.4%) had only 1 criterion checked, 2 (5.7%) had two criteria checked, 4 (11.4%) had 3 criteria checked, and 4 (11.4%) had 6 criteria checked.

At the end of the CAPC tool, nurses were asked if they would refer the patient to palliative care. Of those patients for whom the question was answered (10 patients had missing answers), nurses said *Yes* for 10 patients (21.7%) and *No* for 36 (78.3%). There was a significant relationship between answers to this question and the number of total criteria checked. Nurses were more likely to say *Yes, they would refer this patient to palliative care* as the number of criteria checked increased, *Mann Whitney U* = 80.5, *p* = .004. Of the 46 patients for whom nurses answered this question, referral to palliative care was recommended in 5% of cases with no criteria checked, 26.3% of cases where only 1 criterion was checked, and in 66.7% of cases where 3 or more criteria were checked. There were not clear patterns of response for the number of disease criteria, utilization criteria, or other criteria. Interestingly, nurses did not answer this question in the affirmative for the two patients who did receive a palliative consult.

Chapter V

Discussion and Conclusions

The primary purpose of this project was to examine if an education intervention and screening tool increased nurse comfort and knowledge in recommending PC consults. The study aimed to implement nurse-driven palliative care screenings, assess the education intervention on nurses' comfort and knowledge of PC screening, identify the most common screening criteria selected, and evaluate nurse recommendation for PC consults. Nurse-driven screening was implemented to capture the data on neuro ICU patients that met criteria according to the CAPC ICU screening tool. Overall, the data showed an increase in comfort and knowledge with PC recommendations. Nurses were more likely to recommend PC referral when a patient met more criteria on the screening tool. Utilizing a screening tool gave nurses a checklist to aid in identifying patients for potential PC consultation.

Discussion of Findings

Over 95 percent of the nurses surveyed were bachelor's degree prepared and 79.2% reported being in clinical practice as nurse between zero to five years. This indicated a relatively junior staff, with only 12.5% and 8.3% of staff having six to 10 years or 11-15 years experience respectively. The junior staff experience might have contributed to why most were not comfortable or knowledgeable on PC recommendations prior to the intervention. In addition, due to the inexperience, the nurses might not have had any experiences with palliative care or navigating goals of care discussion with patients and families.

The data suggested that implementing training and a standardized screening tool does increase nurse comfort and knowledge with identifying PC needs and making recommendations for a consult. The three questions had a statistically significant increase: *comfort assessing need for a*

palliative care consult, comfort requesting PC consults from the physician, and knowledge of the philosophy of PC being compatible with aggressive treatment. This was indicative of an overall culture change on the unit and more encompassing understanding of PC.

The screening tool criteria revealed that patients in the neuro ICU met more criteria that were specific to this patient population, the top three being the following: major acute neurological insult, ICH requiring mechanical ventilation and not being surprised if the patients died in the next 12 months. This suggests that a customized PC screening tool for the neuro ICU patient population would be more appropriate for capturing more screening criteria for a PC consult. The significant correlation of multiple criteria checked and nurse recommendation for a PC consult revealed that the screening tool influenced nurses' likelihood of referral.

The patient demographics revealed patients were majority male, African American. The top three common diagnoses were subdural hematoma (27%) intracerebral hemorrhage (23%), stroke (20%). These diagnoses are common in the literature that are prevalent in the neuro ICU and demonstrate higher PC needs.

Limitations

There are several limitations to this study to be discussed. The first limitation is the project was executed in a single academic medical center, on a 14-bed ICU that specialized in neurocritical care. This reduced the project's generalizability to other patient populations outside of neurocritical care. The exclusion criteria also further narrowed down the patients to the neuroscience services, 18 years and older, that were admitted to the neuro ICU greater than 24 hours that decreased the sample size from 81 to 56 patients.

The second limitation was the project timeline. The timeline included three phases: multi-modal education, a six-week nurse-driven screening period and pre/post survey distribution. The

protocol began with a pre-implementation anonymous survey that was distributed electronically and open for two weeks. The peak response rate was on day one with six participants. There was marked increase in responses for the pre and post surveys when reminder emails were distributed during the two week period. The post-implementation survey was also open for two weeks with a peak response rate on day six. The maximum response rates were within a week, consideration for a shortened duration for the survey might have yielded a higher response rate. Electronic surveys could have been sent to the participants spam inbox, which could have contributed to low response rates. The electronic survey also launched a week after the institution transitioned to an electronic charting system, which could have interfered with nurse participation in the electronic survey.

The education portion was a three-pronged approach, all staff was given the education and screening tool training materials via staff email listserve, followed by two weeks of in-person education and training sessions, and the distribution of information packets to attendees. The education was simple and consisted of the CAPC definition of PC, case studies for hands on use of the CAPC ICU screening tool, followed by open question and answer discussion. This could have not been enough education for some nurses to understand the use of the tool and definition of PC which could have interfered with proper screening in practice.

The screening took place over six-weeks. This timeframe was too short to capture an adequate number of patients for screening. A longer screening period would have given more time to nurses to fully incorporate the screening process as part of their work flow and more opportunity to capture a wider variety of patients.

The third limitation was use of the CAPC ICU screening tool. The tool is an evidence-based tool and presented twenty-two general options. This screening tool might have not

captured the PC needs specific to the neuro ICU patients. Some criteria might have been difficult to determine on admission such as consideration of tracheostomy/ PEG tube placement due to inability to project a patient's hospital course. Other criteria could have been omitted such as classification of heart failure, if not documented in the admission history. The screening despite training, ultimately depended on nurse interpretation of what criteria the patient met on admission. This could have lead to over or under selection of screening items. Screening only on admission was a limitation within itself. Patients needs fluctuate throughout the hospitalization, and screening during one time period does not adequately capture patients that might present with PC needs beyond admission. In addition, the screening tool had no evidence of reliability and validity, despite it being a culmination of evidence-based criteria developed from experts. The timeline for the project did not allow for reliability testing, and would recommend this tool be tested for validity and reliability.

Implications for Practice

There is no standard screening process for neuro ICU patients. Nurse-driven palliative screening can be utilized to identify patients in need of PC consults. Implementing a screening tool revealed the neuro ICU patients did meet various criteria on the screening tool for a PC consults. Nurses are more comfortable and knowledgeable with PC and screening patients for unmet PC needs after education and training. There is a need to customize the tools screening criteria for neuro ICU patient population needs. This would be best suited through customizing screening criteria through an interdisciplinary discussion on specific criteria and number of criteria needed for PC consult. It would also be helpful to integrate an automatic process to screen on admission with other screenings done (i.e. depression, OSA, ID, skin, ETOH use etc.).

More research is needed on best practices of integrating PC in neuro ICU, specifically with nurse-driven screening and or nurse-driven PC consults based on screening tool criteria.

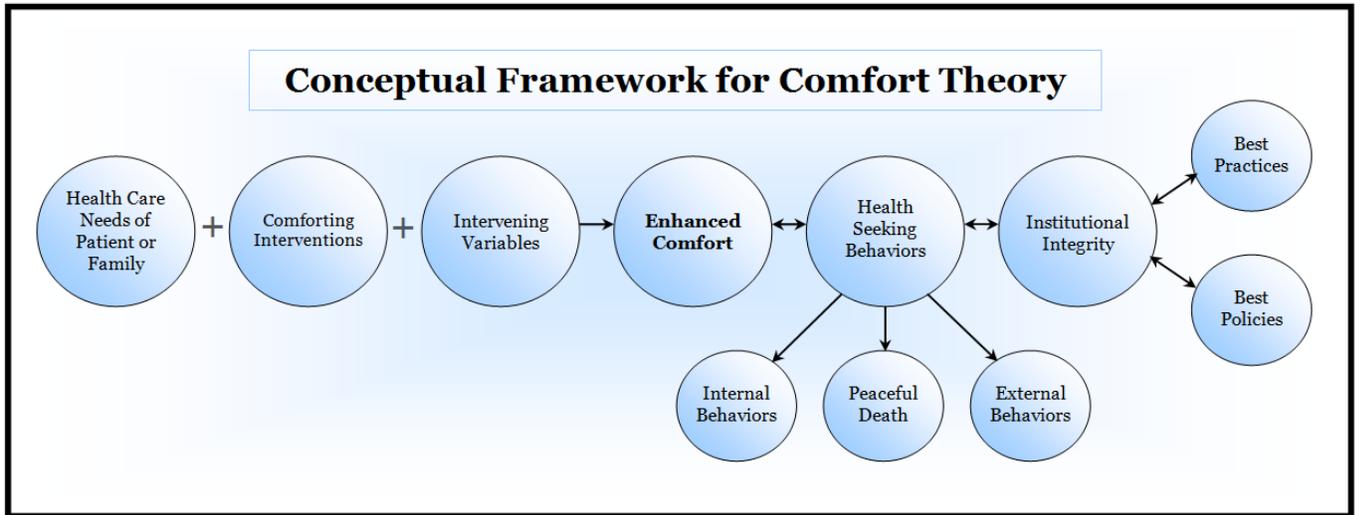
Recommendations for Further Study

Further research is needed to determine the criteria appropriate for the neuro ICU patient population that will initiate a PC consult. More data is also needed to determine the specific number of criteria that will trigger an order for a PC consult. It would be beneficial to examine the patients identified for PC needs through the integration of PC screening in the electronic medical record along with the other screening tools that are completed on admission to the neuro ICU by the bedside nurse.

Conclusion

The importance of integrating PC in the neurocritically ill patient population is evident. This DNP project sought to increase nurse knowledge and comfort in recommending palliative care through education and use of a PC -screening tool. The project showed that majority of the patient population demonstrated a clear PC need identified on admission. The data showed overall statistically significant increase in nurse comfort and knowledge. There was an impactful change with an education intervention and a screening tool. The showed that nurses, if given the proper tools, they will effectively and appropriately advocate for the patients need PC based on evidence based practice. This DNP projected demonstrated that targeted education and use of a screening tool increased nurses knowledge and comfort with recommending PC consultations. It showed that basic education can impact the culture and change clinical practice so evidence based tools can be effectively utilized to identify patients with PC needs. The statistically significant results that demonstrated a culture change with increased knowledge shows that there are possibilities to open doors to integrating PC screenings in the neuro ICU patient population

Appendix A
Comfort Theory



Appendix B

Nurse Comfort and Knowledge Survey Tool

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

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

Very comfortable	Somewhat comfortable	Somewhat uncomfortable	Very uncomfortable
------------------	----------------------	------------------------	--------------------

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

Very comfortable	Somewhat comfortable	Somewhat uncomfortable	Very uncomfortable
------------------	----------------------	------------------------	--------------------

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

Very comfortable	Somewhat comfortable	Somewhat uncomfortable	Very uncomfortable
------------------	----------------------	------------------------	--------------------

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

Very comfortable	Somewhat comfortable	Somewhat uncomfortable	Very uncomfortable
------------------	----------------------	------------------------	--------------------

6. Palliative care is appropriate only in situations where there is evidence of a downhill trajectory of deterioration. (check one option)

True	False
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7. Palliative care should only be provided for patients who have no curative treatments available. (check one option)

True	False
------	-------

8. The philosophy of palliative care is compatible with that of aggressive treatment. (check one opt

True	False
------	-------

9. How often do you feel uncomfortable about your patients needs not being met in the neuro ICU? (check one option)

Never	Somewhat never	Somewhat often	Very Often
-------	----------------	----------------	------------

10. How often do you consult Ethics in order to initiate a palliative care consult? (check one option)

Very Often	Somewhat often	Somewhat never	Never
------------	----------------	----------------	-------

11. Please share any experiences that reflect instances where patients benefited or could have benefited from palliative care in the neuro ICU.

12. How often have you recommended a palliative care consult for one of your SICU patients in rounds? (check one option)

Greater than 4 times a month	3 times a month	Once a month	Never
------------------------------	-----------------	--------------	-------

13. Other feedback. (about survey, screening tool or pilot project)

Demographic Questions:

14. Years as a registered nurse (check one option)

0-5 years	1
6-10 years	2
11-15 years	3
16-20 years	4
More than 20 years	5

15. Years as an ICU registered nurse (check one option)

0-5 years	1
6-10 years	2
11-15 years	3
16-20 years	4
More than 20 years	5

16. Your highest educational preparation as a registered nurse (check one option)

Associate degree in nursing	1
Bachelors degree nursing	
Bachelors degree (non-nursing)	
Masters degree nursing	
Masters degree (non-nursing)	
Doctorate degree (non-nursing)	
Doctorate degree nursing	

Appendix C

Center to Advance Palliative Care (CAPC) ICU Screening Tool

Disease Criteria Tool-Center for Advancing Palliative Care (CAPC)	Check if applicable
Advanced stage IV Cancer	
Multiorgan failure greater than or equal to 2 organs	
Major acute neurological insult (CNS trauma, post-CPR encephalopathy, malignant stroke)	
Advanced dementia or severe cognitive impairment	
Intracranial hemorrhage requiring mechanical ventilation	
Chronic liver disease	
Chronic renal disease +/- chronic dialysis	
Status Post cardiopulmonary arrest	
Advanced chronic obstructive pulmonary disease	
Severe congestive heart failure class III or IV	
Utilization Criteria	
Frequent hospital or ICU admissions (>1 admission for the same condition within 3 mos.)	
>1 ICU admission during the same hospital stay	
Admission from nursing home	
Consideration of PEG tube placement	
Consideration of tracheostomy placement	
Consideration of ethics consultation	
Consideration to start renal replacement therapy during ICU stay	
Other Criteria	
Conflicts regarding goals, DNR order, treatment decisions	
Lack of social support, eg. homelessness, chronic mental illness	
“No” answer to “surprise question: Would you be surprised if this patient died in the next 12 months?”	
Anticipated discharge to long-term acute care facility	
Homebound due to chronic illness	

As a nurse would you refer this patient to palliative care? Yes or No

Appendix D

Permission for Use of CAPC ICU Screening Tool

Examination of a Palliative Care Screening Tool in Intensive Care Unit Patients

5 messages

Danielle M. Smith <dm1324@georgetown.edu>
To: Elizabeth.Rizzi@gmail.com

Thu, Dec 22, 2016 at 3:41 PM

Dr. Lapp,

My name is Danielle McCamey Smith and I'm currently a DNP student at Georgetown University and an Acute Care NP in the SICU at Washington Hospital center. I am interested in studying ways to integrate palliative care in critical care.

I came across your research and I wanted your permission to replicate some elements you used in addition the version of the CAPC trigger tool at my institution?

Please let me know your thoughts.

Thank you in advance for your time and expertise.

Happy Holidays!

—

Danielle McCamey Smith

Liz <elizabeth.rizzi@gmail.com>
To: "Danielle M. Smith" <dm1324@georgetown.edu>

Thu, Dec 22, 2016 at 3:54 PM

Absolutely! You have my permission. Please let me know if I can be of any further assistance. Good luck!

Liz

[Quoted text hidden]

Appendix E

Permission for Use of Comfort and Knowledge Survey

- Hello, I'm DNP student, my scholarly project is on RN-driven PC screenings. I wanted your permission to use the comfort and knowledge survey that was used in the article "Use of the Palliative Performance Scale version 2 in obtaining palliative care consults." Thanks!
dm1324@georgetown.edu

11:29 PM

- **Patrice Fedel** is now a connection
- Patrice Fedel sent the following message at 11:30 PM



[View Patrice's profile](#)

Yes you have my permission to use my survey. Good luck with your project
11:30 PM

- Aug 15Danielle McCamey sent the following messages at 8:56 AM
Awesome thanks so much!!

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