Palliative Needs Screening Tool In A Neurocritical Care Unit

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Abstract

Background: A problem for seriously ill-hospitalized patients is that palliative care conversations are not considered early in hospital stays. Early effective provider-patient palliative care discussions are associated with decreased length of stay, earlier hospice referrals, and decreased use of nonbeneficial life sustaining therapies. Despite the prevalence of pilot studies, few studies focus on patients with neurocritical illness. Prediction tools used in the neurocritical care unit are specific to a diagnosis and help identify illness outcomes and mortality risk in patients. When compared to non-neuro units, neuro-patients had similar palliative care triggers.

Local Problem: At a large academic medical center palliative care screening is not completed early in the patient's admission to a neurocritical care unit using a validated palliative needs screening tool.

Interventions: This quality-improvement project assessed if the palliative needs screening tool can be used to identify unmet palliative needs in a neurocritical care unit. A five-criteria screening tool has been validated in multiple intensive care units in patients with similar palliative care needs to neurocritical care patients. A palliative needs screening tool can be used to identify patients with unmet palliative care needs early in a hospital stay. All patients admitted to the 10-bed east side of the neurocritical care unit will be screened within 48 hours of admission.

Results: The sample size was 62 patients over the six-week implementation period. Few patients were identified with unmet palliative care needs using the palliative needs screening tool. Data indicates that this screening tool does not identify patients within a neuro-population that would benefit from a palliative care consultation. Advance practice providers completed a palliative needs questionnaire on admitted patients to evaluate for anticipated palliative care needs for this population. Advance practice providers identified that in 69% of cases goals of care were not identified and 54% of the time there were specific social and support needs that the families or patients needed. Distressing physical and/or psychological symptoms were an identified need in 57% of patients screened with the anticipated palliative need questionnaire.

Conclusions: The palliative needs screening tool does not identify neurocritical patients who are at risk of unmet palliative care needs. It is unclear if all neuro-intensive care units from previous studies were also patients admitted to trauma-neurocritical care unit similar to the unit used in this project. Despite a lack of positive screening with the palliative needs screening tool, providers were thinking about palliative care needs their patients may have, though no screening or data collection was done for this specifically. This project highlights the need for a specific palliative needs screening tool for the neuro-critical population. A screening tool specific to neurocritical patients will need to be developed that focuses on common palliative needs in a neuro-critical intensive care unit.

Palliative Needs Screening Tool in a Neurocritical Care Unit

Background and Significance of Palliative Care Consultations

Palliative care conversations identify and clarify patient goals and values in order to align

treatments with those goals and values (Zalenski et al., 2017). A significant problem for

seriously ill hospitalized patients is that palliative care (PC) conversations are not happening

early in their hospital stays. Creutzfeldt, Wunsch, et al., (2015) and Zalenski, et al., (2015)

assessed patients admitted to an intensive care unit (ICU) for unmet palliative needs. Both

groups of researchers found that approximately 14% of patient admissions to ICUs had one or

more unmet palliative needs based on diagnoses (Creutzfeldt, Wunsch, Curtis, & Hua, 2015;

Zalenski et al., 2017). Earlier effective physician-patient end of life (EOL) discussions are

associated with decreased length of stays (LOS), less aggressive care near death, earlier hospice

referrals, and decreased use of nonbeneficial life sustaining therapies (Hua, Li, Blinderman, &

Wunsch, 2014; Markin et al., 2015; Mohamed, Muhammed, Singh, & Sudhakar, 2016; Zalenski

et al., 2017).

Palliative care (PC) focuses on patient and family support by a) aligning patient

preferences and with patient treatment, b) effective communication about goals of care, c) family

and patient support, d) transitional planning, and e) symptom relief. Palliative care is not

something that is helpful only at the end of life; it addresses complex patient symptoms and can

be incorporated with curative and disease-focused treatments simultaneously throughout the care

trajectory, (Meghani & Hinds, 2015). Nelson et al. (2013) identified the lack of a screening tool

as one of several causes of delayed or absent meeting of PC needs early in the ICU admission.

The benefits of PC for patients and families are easily understood. In addition, hospitals also

benefit from early implementation of PC, through reduced ICU resources used and a lower cost of care without increasing mortality rates (Nelson et al., 2013).

There are many articles describing implementation of a palliative care needs screening tool (PNST) in hospital units such as the medical intensive care unit (MICU), surgical intensive care unit (SICU), step-down units, and long-term acute care (LTAC), and rehabilitation facilities (Finkelstein et al., 2016; Henderson et al., 2017; Hua et al., 2014; Jenko, Adams, Johnson, Thompson, & Bailey, 2015; Mosenthal et al., 2012; Trout, Kirsh, & Peppin, 2012). Despite the prevalence of many early pilot studies, very few studies focus specifically on patients with neurocritical illness. Neurocritical illness often has a sudden and abrupt onset in patients who were in relatively good health and are now suddenly facing potentially severe physical and cognitive dysfunction or death (Frontera et al., 2015). The goal of PC screening is to assess for unmet palliative care needs early in the patient's admission to a neurocritical care unit (NCCU) in a large urban academic hospital.

The purpose of this Doctor of Nursing Practice (DNP) project was to identify unmet palliative care needs in a NCCU. The short-term goal of this DNP project was for NCCU providers to identify patients with unmet PC needs using a PNST, with 80% compliance within 48 hours of admission to the NCCU. The long-term goal was to identify unmet PC needs and have those needs addressed either by the NCCU providers or by referral and collaboration with the PC consult service.

Theoretical Framework

The Kolcaba Comfort Theory (KCT) is a fairly recent theory that evolved from a graduate thesis addressing multiple disciplines (Kolcaba, K., 2015). This theory of comfort identifies three clear key concepts relating to different types of comfort (relief, ease, and

transcendence), along with recognizing comfort as a broader theory and a part of holistic nursing (see Figure 1).

The KCT describes **relief** an easing of the physical pain and discomfort patients can endure related to surgery or a physiologic process occurring within their body. **Ease** is conceptualized as a state of contentment, this can relate to how one feels once pain is relieved or anxieties are calmed. Lastly, **transcendence** is a state of comfort that occurs when one rises above one's personal challenges no matter what they are. These three theory categories are simple and focus around comfort at the center of human desire, response to stimuli, and the center of patient-oriented care (Kolcaba, Tilton, & Drouin, 2006).

The KCT has been shown to be very flexible in its use for both research and practice (Coelho, Parola, Escobar-Bravo, & Apóstolo, 2016). Favoring application in many different areas of nursing, KCT is also advantageous for patients who are unable to interact with their nurse due to injury and illness; such as patients who have had certain neurocritical illnesses or are intubated or sedated. Nurses provide many aspects of comfort such as a warmed blanket, flexible accommodations for families, these interventions were largely invisible due to documentation practices. The KCT emphasized that comfort is more than medications and relief of physical pain. Providing comfort is a universal language that is understood across languages, cultures, and education levels (Kolcaba et al., 2006). A study by Coelho et al. (2016), identified comfort sources are simple they can significantly affect the state of comfort one feels.

Evidence Review

This literature review focused on the need to identify patients with unmet palliative care needs in a NCCU setting. The review will begin with a discussion of the PC needs of patients in a NCCU. A discussion of communication issues between providers and patients and their

families in the NCCU will follow. Finally, an evaluation of a palliative needs screening tool

(PNST) precedes the discussion of a study that implemented the same PNST.

Frontera et al. 2015 conducted a systematic literature review to determine the best

practice for symptom management and variability within neurocritical ill patients. The

researchers found that neurocritical illness in 70% of patients has a sudden onset without a

previous loss of physical or cognitive functions and no associated co-morbid conditions.

Appendix B shows trajectories for patients without life-supporting therapies. Prognostication

tools such as the Glasgow Coma Scale, Hunt-Hess Grade, and the Intracranial Hemorrhage score

are used to predict mortality while the National Institutes of Health Stroke Scale (NIHSS) is used

to predict functional outcome for patients. These scales are generalized to a wide population of

patients, application to an individual level is more uncertain and harder to communicate to

families. Most studies have included patients who have had life-sustaining intervention

withdrawn, early do not resuscitate directives have doubled short- and long-term mortality

leading to a difficult evaluation in mortality scales. Practitioners are overly pessimistic and

inaccurate with outcome prediction in the first 72 hours of neurocritical illness; they are then

overly optimistic when talking with families. Identifying patients and family with unmet

palliative care needs early in the stay can help communication and decision making that is

effective (Frontera et al., 2015). The following study further evaluated the communication issues

between providers and patients/families.

Tran, Back, & Creutzfeldt 2016 performed a retrospective, qualitative analysis to explore

why NCCU physicians requested palliative care consultations in one 30-bed NCCU between

January and August 2014. The researchers also reviewed the recommendations of the palliative

care consultants to identify common themes. Four common palliative care referral request needs

were noted: 1) discussing prognosis and expected outcomes, 2) determining patient and family

values, 3) understanding treatment options, and 4) identifying conflict. The researchers

identified communication recommendations for providers to support a family's readiness,

comprehension, and coping levels (Tran et al., 2016). The following two studies implemented

PNSTs to identify patients who had unmet palliative care needs.

Hua, Li, Blinderman, & Wunsch 2014 explored the incorporation of a PNST to identify

unmet palliative care needs in NCCU. Using a list of five published palliative care needs, 13%

of patients had unmet palliative care needs across 179 NCCUs. The list of five published

palliative care needs are; 1) ICU admission following a hospital stay greater than or equal to 10

days, 2) age greater than 80 with two or more life-threatening comorbidities (as defined by Acute

Physiology and Chronic Health Evaluation II definitions of severe chronic organ insufficiency);

3) diagnosis of active stage IV malignancy; 4) status post cardiac arrest; or 5) diagnosis of

intracerebral hemorrhage requiring mechanical ventilation (Hua et al., 2014). The researchers

found that patients with unmet palliative care needs who died in the ICU had shorter lengths of

stay (1.7 d vs. 2.6 d), had a higher combined hospital mortality and discharge to hospice or a PC

unit (39.7% vs 11.1%; $p < 0.001$; 95% Confidence Interval), and they had higher rates of

treatment limitations (DNR 12.9 vs 3.0, life-sustaining treatment limited or withheld 2.0 vs. 0.8,

life-sustaining treatment withdrawn or comfort care 13.7 vs 3.1).

Creutzfeldt, Wunsch, Curtis, & Hua 2015, performed a retrospective analysis of an ICU

admissions from a database. The researchers included patients in the database from two NCCUs

and five non-neuro-ICUs from 2001-2008. The authors compared previously identified PC

consultation triggers (same five PC needs as listed above) between NCCUs and non-neuro-ICUs.

In addition, the team compared the patient admission characteristic and frequency of life-

sustaining therapy limitations between the patients who had PC consultation triggers. Lastly, the authors compared patient outcomes between the two groups (*N*=385,770). PC consultation triggers were a similar prevalence for patients admitted to a NCCU as compared to those in a non-neuro ICU (15.8% vs. 13.9%; p=0.44). Patients admitted to the NCCU were older (mean age 62.2 ± 16.8 vs. 59.8 ± 16.2; p=0.05), had a higher level of function before admission (*p*=0.03), and had more life-sustaining therapy limitations (*p*<0.001) than the non-neuro-ICU group. The two groups had similar ICU mortality (*p*=0.14), hospital mortality (*p*=0.20), in hospital death/discharge to hospice (*p*=0.31) (Creutzfeldt, Wunsch, et al., 2015). This highlights that patients in the neuro-ICU have a similar distribution of PC consult triggers and similar outcomes as patients in non-neuro-ICUs. While some patient characteristics differ between these groups, the overall need for palliative care does not differ (Creutzfeldt, Wunsch, Curtis, & Hua, 2015).

Creutzfeldt, Engelberg, et al. (2015) conducted a pilot quality improvement project that used the same published palliative care needs screening tool (PNST) listed above to identify unmet palliative care needs in a single 30-bed NCCU (N=130) from September through November 2013. The researchers sought to explore the effect of the PNST on patient care and outcomes. Unmet palliative care needs were identified in 62% (80/130 patients) of patient admissions. Of those patients who had identified needs, the most common need identified was social support (53%; n=69). Followed by determining goals of care (28%; n=36) and distressing symptoms (12%; n=16) (Creutzfeldt, Engelberg, et al., 2015).

Synthesis of Evidence

Prognostication tools used in the NCCU are very specific to a diagnosis and help to identify outcome variables and mortality risks in patients. A PNST can be used to identify

patients with unmet PC needs early in a hospital stay. When unmet PC needs are identified, providers are notified via the nurse or via the electronic health record. Because these patients have unmet PC needs they have communication needs unique to these families. The author has identified a validated PNST that has been successfully implemented in NCCU setting (Creutzfeldt, Engelberg, et al., 2015; Creutzfeldt, Wunsch, et al., 2015; Hua et al., 2014).

Methods

Sample and Setting

This project was a quality improvement project that focused on identifying patients with unmet palliative needs in a NCCU of a large urban academic medical center. All patients admitted to the 10-bed east side of the NCCU during the project implementation period were screened within 48 hours admission. The sample size was 61 patient admissions over a seven-week project implementation period.

Procedures and Timelines

Pre-implementation education.

The project lead (PL) educated the advanced practice providers (APPs) (N=12) on the neuro-critical care unit (NCCU) 27 August-7 September 2018. The PL meet with providers on an individual and/or small group basis to review palliative care and its associated outcomes. The training also included a review of the palliative care needs screening tool (PNST) and a list of the most common unmet palliative care needs (appendix C). An explanation and example of how to fill out the checklist and unmet needs list was provided. Finally, the pre-implementation education included documentation instructions for the location of blank, completed, and how many forms need to be filled out daily.

Project implementation.

Distribution.

The PNST and list of the most common unmet palliative care needs were placed by the PL in the APPs central office. The blank PNSTs were in a manila envelope taped to the cabinets above the APPs desks. Taped next to the clear plastic sleeve will be a large manila envelope labeled for placement of completed PNSTs. Distribution of the PNST will took place 27 August-7 September 2018. These sheets were available throughout the data collection phase and were replenished by the PL and the clinical site representative (CSR) as needed.

Compliance monitoring.

The PL or the CSR monitored compliance with the use of the PNST daily during the 1-week education period (27 August-7September 2018) with a compliance goal of 80 percent. During the7-week implementation period (9 September-27 October 2018), compliance was monitored on a weekly basis. The completed PNSTs were collected by the PL and were stored in a folder at the CSR's locked desk in the APP central office. The data from the PNSTs were compiled by the PL onto one computer that is not connected to the clinical computer network. None of the data collected contained patient identifiers. During this pilot period, weekly feedback emails were sent out from the PL informing the APPs of progress, educational points that needed to be corrected, and any questions from the APPs were addressed.

Data Collection and Tools

The blank and completed forms were maintained in the locked APP office until collected by the PL, weekly. The PL invited the providers to complete a System Usability Scale (SUS) at the end of the data collection period (28 Oct – 3 Nov 2018) and individual item analysis of the SUS was calculated. The SUS provides a single reference score of the usability for a wide variety of products from the participants' view. It consists of 10 statements that have a 5-point scoring scale with higher scores indicating better usability. SUS scores above 70 indicate a passable product, better products have scores

in the high 70s to upper 80s and the best products have scores better than 90 (Bangor, Kortum, & Miller,

2008).

A reliability analysis was performed on the ten statements used in the SUS (Bangor et al., 2008).

The Cronbach's alpha score was 0.911 compares with reliability values. The SUS was tested on a

variety of interfaces (paper, computer, cell phone, etc.) and the scores do not vary by the type of

interface (α=.05, p < .001). In addition when compared to other studies the SUS is reliable from small

to large study sizes ((Kortum & Peres, 2014). The SUS is permitted for non-commercial, academic

purposes without prior permission.

Data Analysis

The demographic and PNST compliance were analyzed using descriptive statistics using

Microsoft Excel. The SUS responses were scored using standard methodology to determine

overall usability. Finally, narrative response to the four open-ended questions were assembled in

appendix H for inclusion in the results section. Qualitative analysis of these narrative responses

is beyond the scope of this paper. The results of this analysis will be presented at the final

project meeting (25 Nov-1 Dec 2018). The completed DNP Project will be disseminated during

January - April 2019.

Human Subject Protection

No protected patient information will be collected. Ages of patients will be recorded in

10-year groups without any further identifying data collected. Diagnosis will be recorded with

the least specific description (e.g. ischemic stroke, seizure). A request for a Non-Human

Subjects Determination request will be submitted to the University of Maryland, Baltimore

Institutional Review Board.

Plan for Sustainability

Based on the results of palliative needs identified, the site will be able to identify the need for additional palliative care support on the NCCU. The data can provide support for the implementation of using a PNST by nursing staff for the screening of patients on admissions.

Results

Practice Changes

This project found that a palliative screening tool specific to the neurocritical population is needed. Outcomes of this project add to the limited studies of the palliative needs screening tool and it's use in the neurocritical population.

Data Analysis and Outcomes

After a six-week implementation period, 62 patients were screened using the palliative needs screening tool. Of these patients, 57% were female and the largest age distribution was 60-69 years old with 12 patients (Figure 4). The second and third largest age groups were 50-59 (seven patients) and 30-39 (six patients). The PNST identified 8% (n=26) of patients as having unmet palliative care needs (Figure 5). Ten patients were identified due to metastasis of a prior known malignancy, six had a diagnosis of intracranial hemorrhage, and six patients were admitted to the ICU after being hospitalized for >10 days (Figure 6). The PNST did not accurately identify patients within the neuro-population who would benefit from a palliative care consultation in the project population. A screening tool tailored to the neuro-population should be explored.

Associations

During the evaluation period five patients were discharged to an inpatient palliative care unit. Advance practice registered nurses (APRNs) identified that in 69% of cases goals of care were not identified and 54% of the time there were specific social and support needs that the

families or patients needed (Table 2). They also identified 57% of the time that patients had

distressing physical and/or psychological symptoms. These perceived needs do not match the

8% of patients that were identified as having unmet palliative care needs. According to the

anonymous open-ended questions that four of the eleven providers responded to, the overall

feeling was that the tool was very subjective but easy to use. After the implementation period,

seven providers completed the follow-up survey. The average usability score of the criteria was

67.50.

Unintended Consequences

The evaluation of patients and their possible common palliative care needs was more

complicated and took APRNs longer to evaluate than intended. When it became clear that the

PNST was not screening these patients as previous studies indicated it would, staff were asked to

complete appendix C at the time of admission. Appendix C was completed from week two until

the end of implementation to attempt to gather provider anticipated palliative care needs based

on their experience, knowledge, and presentation of the patient.

Discussion

Association Between Interventions and Outcomes

The purpose of this Doctor of Nursing Practice (DNP) project was to identify unmet

palliative care needs in a NCCU. After implementation 8% (n=26) patients were identified with

having unmet palliative care needs. Ten of these patients had a known prior malignancy and the

rest had a new qualifying diagnosis that resulted in them being identified as having unmet

palliative care needs. For those patients with a known prior malignancy it is unknown if they

had already been referred to palliative care, thus potentially inflating the number of patients who

needed a new palliative care consult. The results of this project do not support the use of the

PNST within the neuro critical care population.

Comparison of results with findings from other publications

After a review of the literature regarding the PNST in the neuro critical care unit it was

expected that this study would identify similar outcomes, however that was not the case within

the project ICU. Previous studies identified 15.8% and 62% of admissions in two different

neuro-ICUs met qualifications for a palliative care referral based on the PNST (Creutzfeldt,

Engelberg, et al., 2015; Creutzfeldt, Wunsch, et al., 2015). Compared to a study across multiple

specialty non-neuro ICUs, which identified 13.8% of admissions in non-neuro ICUs (Hua et al.,

2014). The reason for such a low rate of screening in this project is unclear. Previous studies do

not clearly identify what each aspect of neurology the neuro-ICUs of the study focuses on, this

project was implemented in a trauma-oriented neuro-ICU. Previous studies are not clear as to

the type of neuro-patients they primarily admit.

Reasons for differences between observed and anticipated outcomes

Some of the responses to the open-ended SUS questionnaire might account for the

observed and anticipated outcomes. Two providers found the PNST confusing to fill out and the

way the questions were asked they were unsure how to fill out the form. Providers also felt that

the tool was very subjective and because a patient's status changes so much from admission to

discharge that they didn't want to trigger a consult unnecessarily.

Comments were made on the open-ended questions about the tool being very subjective

but easy to use. After talking with some of the providers at the results briefing it was determined

that the providers assumed both sides of the form, they were asked to fill out comprised of the

PNST. When in fact one side was the PNST and the other side was Unmet Palliative Care Needs

Identified by the provider. These needs were based on the provider assessment of the patient at the time of admission.

Due to the poor screening of the PNST, the SUS results were anticipated to be very low, indicating that the process itself has issues. For reference a score below puts the process as having cause for concern (Kortum & Peres, 2014).

Strengths of this Project

One major strength of this project is that it got the neuro-APPs to think about palliative care consults for their patient population. Despite the results, based on the project evaluation responses; providers came out of this implementation period thinking more about palliative care benefits for their patients and their families. Providers also spent extra time during the implementation period to fill out the unmet palliative needs survey on each patient. They continued to be flexible and supportive of the project even when it meant they spent more time filling out a second form.

Limitations

This study has multiple limitations. This study has a small number of neuro ICU patients. Only one side of the whole neuro ICU was utilized in this study, the study sample could have potentially been larger, but similar patient diagnosis and populations are admitted to both sides. Second, the palliative care triggers evaluated were not specific to a neuro population. These patients are admitted to the hospital after unique life-altering events and likely lived at home independently prior to inciting event. Third, this project did not take into account overnight admission and shifts that were not covered by the APPs from the NCCU and instead were residents from elsewhere within the hospital.   Finally, this tool took additional time for providers to complete when a patient was admitted. With the additional time it took to fill out, providers

realized it was not identifying patients at the rate they thought it would and participation dropped off about halfway through the implementation period.

Efforts Made to Minimize and Adjustments Made

Throughout the study period weekly visits were made to the unit and APRNs were reminded to fill out the PNST with a face to face interaction with the PC. In addition, the site champion also reminded providers during her own shifts. Two weeks into the project, providers were asked to fill out the anticipated needs portion of the tool, even when patients did not screen positive for a consolation with the PNST. Providers were also asked to fill out a screening tool for any patients they took on that were admitted overnight, when it became evident that covering providers were doing a lot of admissions overnight and this population was being missed. Halfway through the project implementation period colorful signs were placed throughout the APP office in prominent places such as the refrigerator, microwave and only door out of the office. Sites and signs were changed on a weekly basis.

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Conclusion

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This quality improvement project demonstrated that the current PNST is not suitable for every neuro-critical care unit and highlights the need for a specific palliative care needs trigger tool for the neuro-critical population. It guides future decision making and actions when evaluating patients for palliative needs and shows that there is more work to be done when screening patients for palliative care consultations. The APPs stated that there is was benefit in using a screening tool. A tool would trigger consultations without the provider needing to decide or worry about the reaction of the family or patient. However, this specific tool was a burden for the staff to fill out and did not trigger the number of patients first anticipated. Future use of this tool should be limited to other populations and a more specific tool should be developed for the

neuro-critical population. A trigger tool centered around the most common palliative needs of

the neuro population should be researched and evaluated in a neuro-critical ICU.

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Evidence Table

Table 1

Summary Table of Palliative Care Literature Review

Author, year	Study objective/intervention or exposures compared	Design	Sample (N)	Outcomes studied (how measured)	Results	Level and Quality Rating
Frontera et al. (2015)	Identify challenges, communication, and decision making for patients and families.	Systematic literature review	Articles reviewed and sited (n = 149).	1)Tools and limitations of prognosis • Impact of withdrawing life-sustaining treatment (ICH, SAH, and TBI patients who received do not resuscitate or withdrawal of life-sustaining treatments doubled short- and long-term mortality) • Practitioner variability (either overly pessimistic or overly optimistic and inaccurate in predicting outcomes within the first 72 hours) 2)Establishing goals of care • Integrating interprofessional team	Recommendations were formed to guide the application of palliative care into management of neuro-critically ill patients.	5 A

Author, year	Study objective/intervention or exposures compared	Design	Sample (N)	Outcomes studied (how measured)	Results	Level and Quality Rating
				approach (Huddle together with family for each critical decision point) • Timing of care discussions (From time of admission all options should be discussed with patient and families) • Shared decision making (Patient's values, goals, and preferences are center of decision making) • Prognosis Communication (Describe and estimate prognosis with realistic daily activities expected of patient) 3) Withdrawal of life-sustaining therapies (written protocol specific to patient and family values, goals, and preferences) • Symptom management • Organ donation		

Author, year	Study objective/intervention or exposures compared	Design	Sample (N)	Outcomes studied (how measured)	Results	Level and Quality Rating
				• Time to death		

Hua et al. 2014	1) Determine prevalence of patients who had unmet palliative care needs based on five identified needs
	• ICU admission after hospital stay >/= 10 days
	• Multisystem organ failure greater than three systems
	• Stage IV malignancy
	• Status post cardiac arrest
	• Intracerebral hemorrhage requiring mechanical ventilation.
	2) Identify the highest amount off unmet palliative care needs by combining
		Retrospective cohort study.	ICU admissions (n = 385,770), patients meeting one or more palliative care need (n = 53,124).	• Unmet palliative care need identified with a screening tool consisting of five trigger points
				• Identify characteristics of patients at-risk for having unmet palliative care needs
				• Assess for differences in mortality outcomes between patients with and without unmet palliative care needs.
					• Patients with unmet palliative care needs (13.8%)
					• At-risk characteristics present in 85.4% of patients who had any unmet palliative care need(s)
					  • >80 years old
					  • Male
					  • African-American
					• Mortality
					  • Meeting triggers (39.7%)
					  • Not meeting triggers (11.1%) ($p<0.001$; 95% CI)
						3 B

Author, year	Study objective/intervention or exposures compared	Design	Sample (N)	Outcomes studied (how measured)	Results	Level and Quality Rating
	multiple needs lists.					
Tran et al. 2016	Explore how palliative care is delivered to patients with brain injury.	Retrospective qualitative analysis of current practice of palliative care consultations in a single neurological intensive care unit.	Neuro-intensive care unit palliative care consultations (25), patients (605)	• Patients who received a PC consultation (25; 4%) vs without (580) • Length of stay (8.2 vs 2.8 days) • Death in NCCU (56% vs 11%)	The four primary issues addressed were: • Discussing prognosis • Eliciting patient and family values • Understanding medical options • Identifying conflict Palliative care recommendations included: • How to match communication to individuals • Family member readiness and comprehension.	6 B
Creutzfeldt, Engelberg, Healey, Cheever,	To explore the effect of a PNST on patient outcomes and care, to determine the	Pilot quality improvement study.	Patients who were screened for identified unmet	1) Identify the prevalence of palliative care needs in the neuro-ICU (Does the patient meet	Unmet palliative care needs were identified in 62% of patients screened (n = 80).	3 B

Author, year	Study objective/intervention or exposures compared	Design	Sample (N)	Outcomes studied (how measured)	Results	Level and Quality Rating
Becker, Holloway, & Curtis, (2015)	prevalence of unmet palliative care needs.		palliative care needs with PNST (*n* = 130), patients who were not screened for unmet palliative care needs with PNST (*n* = 132).	Palliative Needs Screening Tool criteria) 2) Compare care received with those who were and were not screened with the PNST using regression approaches adjusted for age, gender, and GCS. 3) Compare palliative care needs identified with this tool to previously published tools using descriptive statistics between needs identified screening to diagnosis-based screening. 4) Compare palliative care needs to those without palliative care needs using adjusted analysis (chi-square, t-test, and logistic regression).	• Patients more likely to have documented family meeting • More palliative care consults in those screened. • Social work consultation increases • Spiritual care consultation	
Creutzfeldt, Wunsch, Curtis, & Hua, (2015)	This study had three goals 1) Assess frequency of previous palliative care consult triggers	This retrospective cohort study of all ICU admissions in two hospitals	Neuro-ICU admissions (1,268), non-neuro-ICU admissions (13,694).	Characteristics of Neuro-ICU patients compared to non-neuro-ICU patients within the same hospital using chi-squared, t test, and Mann-Whitney U tests.	Neuro-ICU patients: • Independent prior to admission	3 B

Author, year	Study objective/intervention or exposures compared	Design	Sample (N)	Outcomes studied (how measured)	Results	Level and Quality Rating
	2) Compare characteristics and outcomes between neuro-ICU and non-neuro-ICU admission triggers. 3) Compare life-sustaining therapy between neuro-ICU and non-neuro-ICU patients.	with neuro-ICUs that participated in project IMPACT. There were 1,269 admissions to two neuro ICUs and 13,694 admissions to non-neuro ICUs within the same two hospitals. This study identified 15.8% of patients with one or more triggers for PCC.		Five PCC triggers. 1) ICU admission following hospital stay >10 days. 2) Age >80 with 2+ life-threatening comorbidities 3) Diagnosis of active stage IV malignancy 4) Status post cardiac arrest 5) Diagnosis of ICH requiring mechanical ventilation.	• Common trigger, "ICH with mechanical ventilation" • More likely to have withdrawal of life-sustaining therapy. Non-neuro-ICU patients: • Common trigger, "ICU admission following hospital stay >10 days" Neuro-ICU has different indicators than MICU and SICU.	

Note: IPAL-ICU Improving Palliative Care in the Intensive Care Unit; ICU = intensive care unit; PNST = Palliative Care Needs

Screen Tool, SICU = surgical intensive care unit, MICU = medical intensive care unit, SD = standard deviation, PCC = palliative care

consult, RN = Registered Nurse; ICH = intracerebral hemorrhage.

Common Palliative Care Needs

Table 2

Common Palliative Care Needs

Common Palliative Care Needs	Yes	No
1. Direct discharge to hospice or palliative care unit?	5 (11.9%)	37 (88.0%)
2. Are there specific social/support needs for the patient and/or family?	23 (54.7%)	19 (45.2%)
3. Have goals of care been identified?	13 (30.9)	29 (69.0%)
4. Are treatment options matched with patient-centered goals?	27 (64.2%)	14 (33.3%)
5. Distressing physical and/or psychological symptoms?	24 (57.1%)	18 (42.8%)
6. Disagreements within or between the providing teams and family?	6 (14.2%)	36 (85.7%)
7. Change to "do not resuscitate" (DNR).	6 (14.2%)	36 (85.7%)
8. Is pain currently being managed?	33 (78.5%)	9 (21.4%)
9. Spiritual support needs met?	25 (59.5%)	15 (35.7%)
10. Does patient have an advanced directive?	8 (19.0%)	33 (78.5%)

Note: This table depicts ten common palliative care needs that have been identified in the literature. Advance practice providers anticipated potential needs for each patient upon admission.
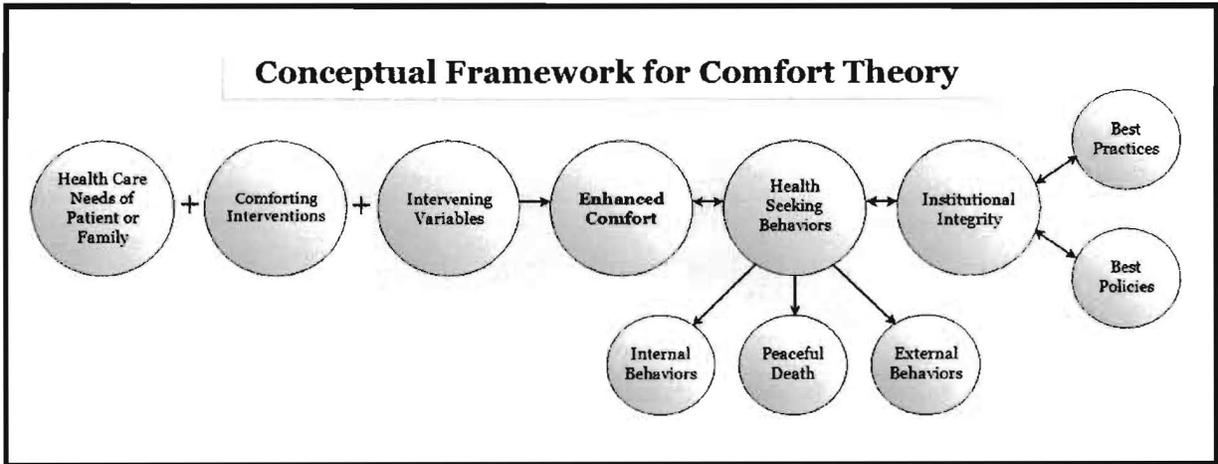
Figures

Conceptual Framework for Comfort Theory

Figure 1. Kolcaba's Comfort Theory Model. This model is used to illustrate the components that affect patient decisions about their health decisions. Reprinted from "Conceptual framework for comfort," by K. Kolcaba, 2015, retrieved from http://comfortcareinnursing.blogspot.comlp/comfort-theory-major-concepts.html.
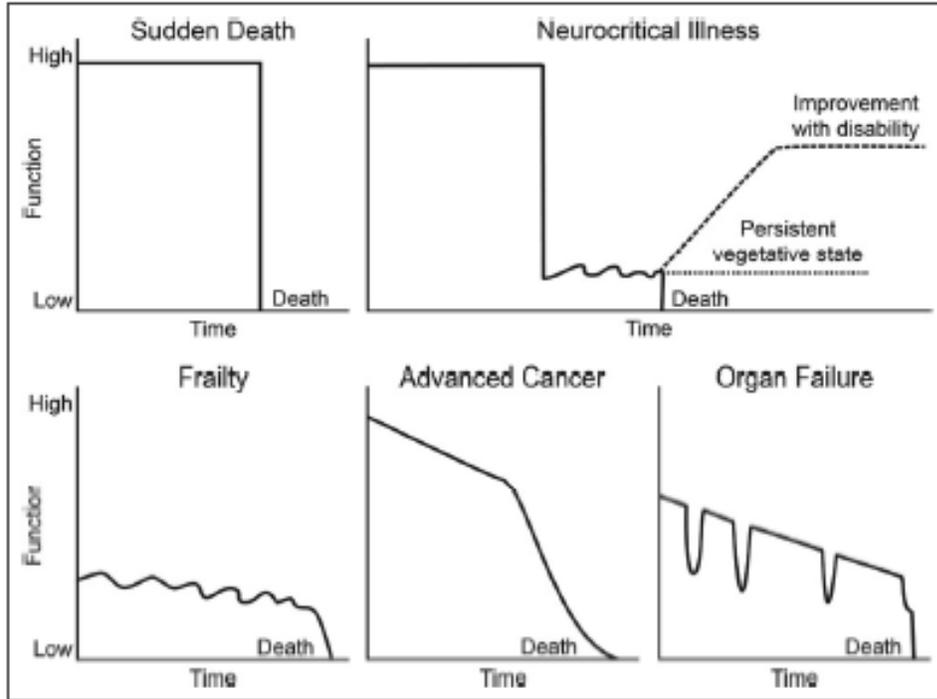
Figure 2. Trajectories of Neurocritical Illness. Reprinted from "Integrating palliative care into the care of neurocritically ill patients: A report from the improving palliative care.in the ICU project advisory board and the center to advance palliative care," by J. A. Frontera, et al, 2015, *Critical Care Medicine, 43(2)*, 1964-1977.

Study Phase	Time Frame	Events
Education	2 Weeks 27 Aug. – 8 Sep. 2018	Individual and group education of APPs
Run-In	2 Weeks 27 Aug. – 8 Sep. 2018	Dry run of evaluations with individual APP feedback
Implementation	7 Weeks 9 Sep. – 27 Oct. 2018	Weekly audits of PNST. Weekly email reminders. Group and individual feedback
Evaluation	1 Week 28 Oct – 3 Nov 2018	Distribution of SUS and questionnaire to all APPs.
Analysis	1 Week 4 – 10 Nov 2018	Analysis completed
Dissemination-Informal	1 Week 25 Nov – 1 Dec 2018	Informal dissemination of findings to APPs.
Dissemination-Formal	Jan – Feb 2019	Formal manuscript submitted

Figure 3 Implementation plan. Flow diagram of Implementation of a Palliative Care Needs Screening Tool in a neurocritical care unit.
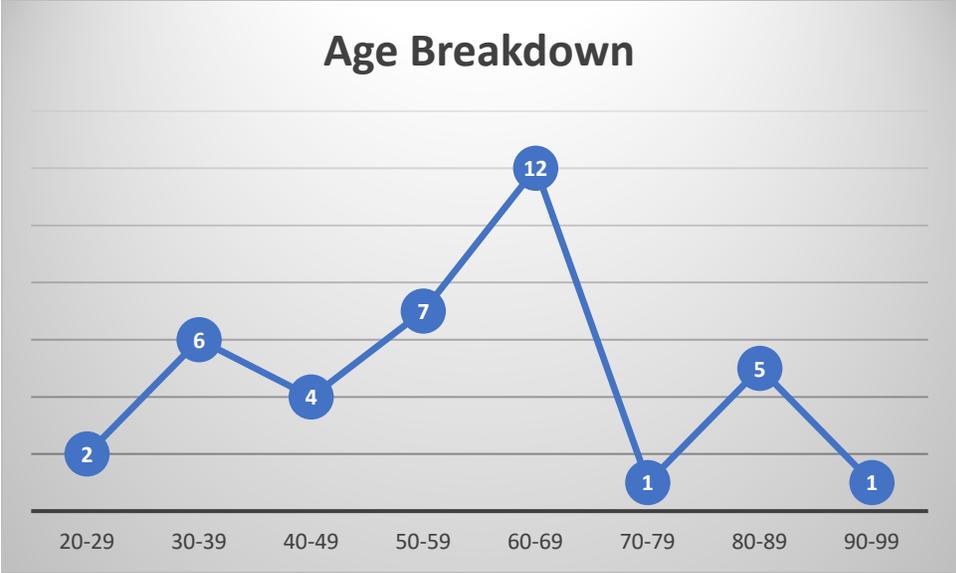
Figure 4 Age breakdown. Distribution of patient ages screened.
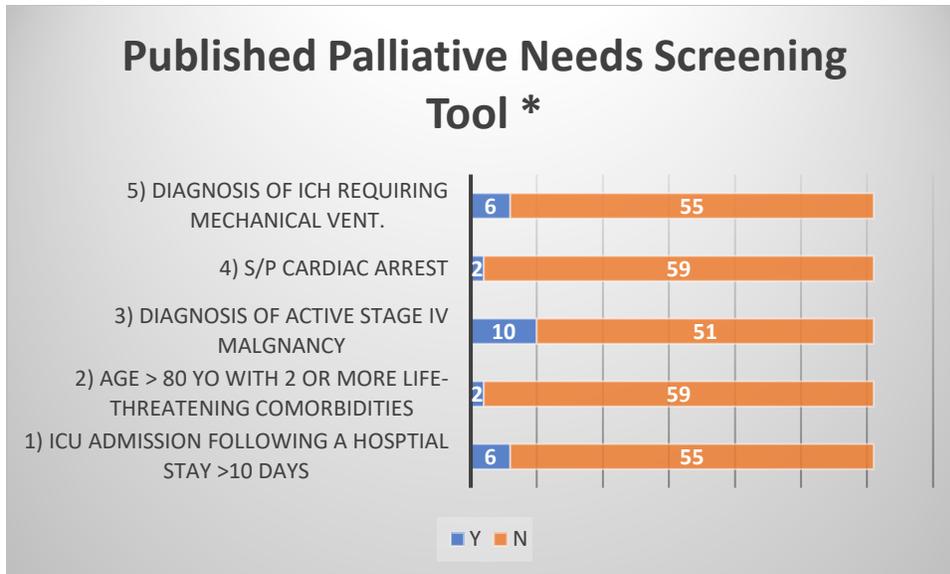
Figure 5 Published palliative needs screening tool. Bar chart showing a visualization of number of patients screened positive or negative for the five palliative needs screening tool criteria. Figure reflects number of patients identified, not percentage.

Appendices

Appendix A

MAP-IT

DNP Project Name: Palliative Needs Screening Tool in a Neurocritical Care Unit

DNP Project Purpose Statement: The purpose of this DNP project is to identify patients in a neuro-ICU who are at high risk for unmet palliative care needs using a palliative care needs screening tool, in the neuro-ICU.

Short-Term SMART Objective: The short-term goal of this Doctor of Nursing Practice (DNP) project is for NCCU providers to identify patients with unmet PC needs using a palliative needs screening tool (PNST), with 80% within 48 hours of admission to the NCCU.

Long-Term SMART Objective: The long-term goal is to identify unmet PC needs and have those needs addressed either by the NCCU providers or by referral and collaboration with the PC consultation service.

Population/Context: The target population is any patient admitted to the east side of the NCCU at a large urban academic medical center. The intent is that 80% of patients admitted during the implementation will be assessed for unmet palliative care needs using the palliative care needs screening tool (PNST) outlined in the research analysis from two different papers. My target stakeholders are the nurse practitioners and physician assistants (i.e. Advanced Practice Providers – APPs) who work in the NCCU.

Mobilize:
List of Core Team Members
       Abby Celotto DNP, CTNP, NCCU (Clinical Site Representative)
       Corey Lewis PA-C, NCCU
       Rebecca Horrell CRNP, NCCU
       Rachel Hausladen CRNP, NCCU

Others I will mobilize after the draft plans have been developed-
       Additional champions and providers will be identified as those working on the unit in which the project is being implemented. The champions and provider participants will be educated individually and in small groups at the beginning of the project. The identified champions will then be responsible for educating and encouraging other NP/PAs about the project and screening for unmet palliative care needs.

Assess: The American Heart Association/American Stroke Association has released a statement that palliative care needs of patients and families are enormous (Holloway et al., 2014). Identifying patients at high risk of having unmet palliative care needs is a challenge within the NCCU. Typically, these patients are healthy one moment and then the next they are admitted to the NCCU and their family members are not aware of their wishes. There is not a systematic assessment in identifying patients and families who have unmet palliative needs because of a sudden change in functional independence.

Identifying patients who have unmet palliative care needs is the first domain in the Clinical Practice Guidelines for Quality Palliative Care (National Consensus Project for Quality Palliative Care, 2013).

Identifying patients at risk for having unmet palliative care needs will be performed using a list of five validated characteristics of patients who have unmet palliative care needs. This list of characteristics will be provided for the APPs to screen each admission to the east side of the NCCU. This screening tool will include each of the triggers and a definition of the co-morbidities. There will be one sheet with all five characteristics for each patient (see Appendix B). No identifying patient information will be recorded on the screening sheets, only an explanation of which criteria the patient met, if any. The data will then be used to identify how many patients that are admitted to the NCCU currently have unmet palliative care needs. To measure the outcome of this screening tool after implementation, the "to be determined" will be completed. Compliance with the screening process will be determined by assessing how many screening tools have been completed and how many patients have been admitted. I will complete this compliance check twice a week.

Plan: Education of APPs prior to the implementation of the project will be vital to its success. During the education sessions, providers will be given sample admission patients to practice completion of the screening tool to increase their comfort and knowledge of the use of the screening tool. In addition, I will send out weekly reminder emails, with the assistance of my clinical site representative, to the providers regarding the screening sheets and the purpose of the DNP project.

Providing the APPs the screening tool prior to implementation to become familiar with the tool and develop the habit of completing the screening tool during admission is intended to also increase compliance. There will need to be one central location for NP/PAs to obtain blank screening tools and another central location to collect completed forms. Providing one central location in the APP office, that all providers can access will increase the success of this project. The evaluation tool will be completed midway and at the end of the project.

Plan Developed by (List all contributors): Kristina Herriott, Dr. Joseph Haymore, Dr. Abby Celotto
The Institute for Perinatal Quality Improvement (PQI) grants the University of Maryland School of Nursing permission to utilize and make modifications to PQI's MAP-IT worksheet to support the DNP students learning.
For permission to further modify or utilize PQI's MAP-IT worksheet in other settings contact:
info@perinatalQI.org.

Appendix B

Palliative Care Needs Screen Tool (PNST)

Date of Screening: _____   [ ] Checklist not needed

Sex (circle):   Male   Female

Age (circle): 20-29   30-39   40-49   50-59   60-69   70-78

                80-89   90-99

Admitting Diagnosis: _____

	Yes	No
1. ICU admission following a hospital stay greater than or equal to 10 days	◯	◯
2. Age greater than 80 years old with two or more life-threatening comorbidities (see below)	◯	◯
3. Diagnosis of active stage IV malignancy	◯	◯
4. Status post cardiac arrest	◯	◯
5. Diagnosis of intracerebral hemorrhage (ICH) requiring mechanical ventilation	◯	◯

"Definitions of 'severe organ system insufficiency' and 'immunocompromised'

- **Liver**: Biopsy-proven cirrhosis with portal hypertension; episodes of past upper GI bleeding attributed to portal hypertension; or prior episodes of hepatic failure, encephalopathy, or coma
- **Cardiovascular**: New York Heart Association (NYHA) class IV heart failure
- **Respiratory**: Chronic restrictive, obstructive, or vascular disease resulting in severe exercise restriction (i.e., unable to climb stairs or perform household duties); documented chronic hypoxia, hypercapnia, secondary polycythemia, severe pulmonary hypertension (>40 mmHg); or ventilator dependency
- **Renal**: Receiving chronic dialysis
- **Immunocompromised**: The patient has received therapy that suppresses resistance to infection (e.g. immunosuppression, chemotherapy, radiation, long-term or high-dose steroids, or advanced leukemia, lymphoma, or AIDS)"

Definition of "sever organ system insufficiency" and "immunocompromised" obtained from: APACHE II Calculator. (n.d.). Retrieved June 11, 2018, from http://clincalc.com/icumortality/apacheii.aspx

Appendix C

Unmet Palliative Care Needs Identified

Date of Screening: _____

Palliative Care Needs	Yes	No
Direct discharge to hospice or a palliative care unit?	⬭	⬭
Are there specific social/support needs for the patient and/or family?	⬭	⬭
Have goals of care been identified?	⬭	⬭
Are treatment options matched with patient-centered goals?	⬭	⬭
Distressing physical and/or psychological symptoms?	⬭	⬭
Disagreements within or between the providing teams and family?	⬭	⬭
Change to "do not resuscitate" (DNR)	⬭	⬭
Is your pain currently being managed?	⬭	⬭
Spiritual support needs met?	⬭	⬭
Patient has an advanced directive?	⬭	⬭
Other palliative care need:		

Appendix D

System Usability Score (SUS)

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
1. I would use this product frequently	☐	☐	☐	☐	☐
2. I found the PNST unnecessarily complex	☐	☐	☐	☐	☐
3. I thought the PNST was easy to use	☐	☐	☐	☐	☐
4. I think that I would need the support of a technical person to be able to use this product on a regular basis	☐	☐	☐	☐	☐
5. I found that the various functions in the PNST were well integrated	☐	☐	☐	☐	☐
6. I thought that there was too much inconsistency in the PNST	☐	☐	☐	☐	☐
7. I would imagine that most people would learn to use the PNST very quickly	☐	☐	☐	☐	☐
8. I found the PNST very awkward to use	☐	☐	☐	☐	☐
9. I felt very confident using the PNST.	☐	☐	☐	☐	☐
10. I needed to learn a lot of things before I could get going with the PNST.	☐	☐	☐	☐	☐

Note. Adapted from "An empirical evaluation of the System Usability Scale," by A. Bangor, P. T. Kortum, and J. T. Miller, 2008, Bangor, A., Kortum, P. T., & Miller, J. T. (2008). An empirical evaluation of the System Usability Scale. *International Journal of Human-Computer Interaction*, *24*(6), 574–594 and from "Item Benchmarks for the System Usability Scale" by J. R. Lewis & J. Sauro, 2018, *Journal of Usability Statistics, 13*(3), 158-167.

Open ended questions:

1. Please describe what you liked about the PNST.

2. Please describe what you would change about the PNST.

3. Please describe anything that facilitated implementation process for the PNST.

4. Please describe any barriers that you noticed about the implementation process for the PNST.

Appendix E

Scoring the System Usability Scale

1. For questions 1, 3, 5 7, and 9, subtract 1 from the item score for the item contribution total.

2. For questions 2, 4, 6, 8, and 10, subtract the item score from 5 for the item contribution total.

3. Add all the item contribution totals and multiply by 2.5.

4. Scores range from zero (very poor perceived usability) to 100 (excellent perceived usability).

Note. Adapted from "Item Benchmarks for the System Usability Scale" by J. R. Lewis & J. Sauro, 2018, *Journal of Usability Statistics, 13(3),* 158-167.

Appendix F

Lesson Plan for Project Implementation Educational In-Service

Learning Objective	Content Outline	Method of Instruction	Time Spent	Method of Evaluation
The APPs will verbalize the purpose of this project and the literature support for palliative needs screening tool (PNST).	1. Impact of PNST on hospitals and patients 2. Purpose of this project to implement a PNST.	Oral Presentation	5 minutes	Verbal confirmation at conclusion of presentation
The providers will be able to accurately apply the PNST and palliative needs identified to any patient admission.	1. Overview of the PNST. 2. Example application of the PNST to a patient. 3. Location of criteria forms and process for collection.	Oral presentation, demonstration, practical application	10 minutes	Demonstration of application on sample patient.
The providers will demonstrate the process for evaluating a new admission.	1. A patient is admitted to the neuro-critical care unit. 2. A PNST is completed on the new admission.	Oral presentation, demonstration, practical application	5 minutes	Verbal confirmation and demonstration

Appendix G

Project Proposal Summary

A significant problem for seriously ill hospitalized patients is that palliative care (PC) conversations are not happening early enough in their hospital stays. Earlier effective physician-patient end of life (EOL) discussions are associated with decreased length of stays (LOS), less aggressive care near death, earlier hospice referrals, and decreased use of nonbeneficial life sustaining therapies (Hua et al., 2014; Markin et al., 2015; Mohamed et al., 2016; Zalenski et al., 2017).

The purpose of this Doctor of Nursing Practice (DNP) project is to identify unmet palliative care needs using a PNST, in a NCCU. The short-term goal of this DNP project is for NCCU providers to identify patients with unmet PC needs using a palliative needs screening tool (PNST), with 80% compliance within 48 hours of admission to the NCCU with 80% compliance. The long-term goal is to identify unmet PC needs and have those needs addressed either by the NCCU providers or by referral and collaboration with the PC consult service.

Neurocritical illness often has a sudden and abrupt onset in patients who were in good health and are now, suddenly facing potentially severe physical and cognitive dysfunction or death (Frontera et al., 2015). There are many articles describing implementation of a PNST in hospital units such as the medical intensive care unit (MICU), surgical intensive care unit (SICU), step-down units, and long-term acute care (LTAC), and rehabilitation facilities (Finkelstein et al., 2016; Henderson et al., 2017; Hua et al., 2014; Jenko, Adams, Johnson, Thompson, & Bailey, 2015; Mosenthal et al., 2012; Trout, Kirsh, & Peppin, 2012).

The project will be implemented over an eleven-week period. In the first two weeks the project organizer (PO) will distribute the PNST and provide education for the APPs. This will also serve as a trial implementation period with continuing education by the PC. Weeks three-nine encompass the implantation phase. During this period weekly audits will be conducted with a goal of 80% compliance. Continuing education will be provided on an as needed basis and weekly emails will be initiated by the PC. Week ten and eleven will comprise the evaluation and data analysis period. The APPs will be invited to complete a System Usability Scale and four additional open-ended questions at the completion of the project implementation to assess usability of the PNST and examine facilitators/barriers associated with the project.

All patients admitted to the east side of the NCCU will be screened by the APPs for unmet PC needs using the PNST within 48-hours of admission. The PO will prepare a spreadsheet with all the data collected on a computer not connected to the central network with no identifiable information contained within the spreadsheet. These data will be converted to a table with descriptive analysis points containing the compliance rate, total unmet palliative needs identified, total PNST analysis, and a list of identified facilitators and barriers.

During data collection and analysis no patient data will be stored. Ages will be recorded in a range of 10-years, no admission date or discharge date will be recorded. A project description will be submitted in August to the University of Maryland Baltimore Institutional Review board for a non-human subject research determination.

Appendix H

Open Ended Question Answers

1. Please describe what you liked about the PNST.
   - I felt it was good tool for patients who do not have neurologic injuries specifically medical ICU, oncology, and transplant patients.
   - I like the idea of a screening tool for Palliative Care
   - Quick and relatively to use as a screening tool
   - It got us providers to think about palliative and patients who could benefit from palliative assessment. We tend to overlook this concept in the ICU.

2. Please describe what you would change about the PNST.
   - Needs to include patient who have pre-existing disability i.e. previous strokes or chord injuries. One of the questions should include does the patient have a new neurologic injury that may affect the quality of their life and independence. Questionnaire should also include previous functional independence.
   - The questions seemed too vague at times and it was hard to say yes/no if the patient fell in the gray zone.
   - I found it a little confusing as to when I needed to fill out the back and when only the front was needed (I believe this was changed partway through to just fill out both regardless). Additionally, some of the questions were a little confusing as to whether they were looking for a positive or negative response. Adjusting the wording may help.
   - More descriptors on intent of certain questions, qualification on questions.
   - It was very subjective and not all patients would match on the questionnaire. Also, some patients may match as palliative needs but were very high functioning.

3. Please describe anything that facilitated implementation process for the PNST.
   - Would not be an easy tool to use in the neuro ICU, unless it was used for patients with oncologic needs.
   - Reminders.
   - Its ease of use, low time to screen.
   - N/A

4. Please describe any barriers that you noticed about the implementation process for the PNST.
   - Please see question 2.
   - Time constraints
   - I found the tool to be very subjective.
   - As stated above, subjective data. Also since questionnaire was on admission, some patients come into the hospital very sick and improve therefore its hard to determine outcome.