2022

An Evaluation of a Palliative Care Consult Screening Tool for the Intensive Care Unit: A Quality Improvement Project

Justin Yoshimoto
Seattle University

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Justin Y Yoshimoto, BSN, RN

Seattle University

Doctor of Nursing Practice

2022

Author Note

This paper is submitted in partial fulfillment of the requirements for the Doctor of Nursing Practice degree. The author of this article has nothing to disclose.

DocuSigned by:
Anita Jablonski
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Approved by: _____ Date: 6/6/2022
DNP Faculty Mentor: Anita Jablonski, PhD, RN, CNE

Approved by: Diane K Fuller Switzer Date: June 5, 2022
DNP Project Reader: Diane Switzer, DNP, ARNP, FNP/ENP-C, ENP-BC FAEN FAANP

Abstract

Patients in the intensive care unit (ICU) are at risk for unmet palliative needs. A palliative care consult screening tool, designed by the Center to Advance Palliative Care (CAPC), was trialed in a 6-week retrospective chart review of patients admitted to a 30-bed ICU in Washington State. for a 6-week period in 2021. The screening tool included a collection of 8 unit-specific criteria, where if a patient met any of the criteria, that patient was flagged for a potential palliative care consult. The aim of this project was to evaluate the screening tool for its ability to identify and triage patients by comparing the 44 patients who had received palliative care consult orders and 48 patients identified by the screening tool from a total of 197 patients screened.

Patients met, at most, only two criteria so the number of criteria a patient met could not be used to triage patients. Each of the screening tool criteria identified four to 13 patients except for the "Admission from long term acute care facility," which identified zero patients. The screening tool had a sensitivity of 56.8% and did not identify 19 patients that had received consult orders. The screening tool is not yet ready to be used in the target ICU. Its failure is due to the selected criteria, which need to be adjusted before utilization.

Keywords: palliative care, screening tool, CAPC, ICU

Contents

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Modern medicine allows people to live longer with more severe illnesses, impacting a patient's quality of life (Center to Advance Palliative Care [CAPC], 2018). Palliative care is a subspecialty of medicine that focuses on improving patients' quality of life (CAPC, 2018). Patient quality of life can be improved through interventions like symptom management or reducing the stress of serious illness by matching patient goals with those of the provider team (CAPC, 2018).

Background

Patients in the Intensive Care Unit (ICU) benefit most from early identification and intervention of palliative needs due to their greater risk for life-threatening injury. Palliative care interventions have decreased ICU admissions, readmissions, and overall ICU length of stay (Cassel et al., 2018; Khandelwal et al., 2015). Clinicians often feel that palliative care consults are underutilized (Wysham et al., 2017). By reducing the intake of patients with unmet palliative needs from being added to the ICU, hospitals can minimize ICU care and prevent investment in more ICU beds. Patients who have their palliative needs addressed early will have improved quality of life, reduce suffering and avoid unwanted invasive treatments (CAPC, 2018).

Review of Literature

Intensive Care Units in the United States

Intensive care units admit patients with high acuity, high mortality rates, and risk for poor outcomes. ICUs have historically increased the number of available beds, their percent occupancy, and the cost of stay (Halpern et al., 2016). An analysis by Halpern et al. (2016) of the time from 2000 to 2010 reports that the number of critical care beds in the United States increased by 15.9% despite less invasive respiratory devices and palliative care discussions

outside of the critical care. The analysis also reports that the occupancy rate of critical care beds increased overall, with signs of decreasing after 2008.Unfortunately, the study does not differentiate neonatal and pediatric ICUs from adult ICUs (Halpern et al., 2016). During this period, the cost of critical care medicine increased by 92.2% (Halpern et al., 2016). While the subcategories, neonatal and pediatric ICU care, were the primary source of growth in usage and cost of critical care beds, adult ICU bed usage kept up with adult population growth (Halpern et al., 2016).

Center to Advance Palliative Care ICU Screening Tool

Palliative care is integrated into an ICU using two different methods. The consultive model of integration has palliative care specialists called in to consult, while the integrative model has palliative care principles taught to already established members of the ICU (Nelson et al., 2010). Most intensive care units integrate palliative care by combining the two methods (Nelson et al., 2010).

While there is no gold standard method to identify patients with unmet palliative needs, the Center to Advance Palliative Care has developed a method for intensive care units to create a unit-specific palliative care screening tool, which recommends patients for palliative care consults (Lapp & Iverson, 2015; Nelson et al., 2013). Development of the screening tool involves stakeholders who isolate the palliative care needs of patients specific to the unit. (Nelson et al., 2013). While this method does not provide users with a premade, ready-to-use validated screening tool, it does streamline a step-by-step process to creating a customized screening tool that reflects a process already done by other intensive care units (Lapp & Iverson, 2015; Venis & Dodek, 2020). The finalized screening tool is simple where a patient who meets any of the screened criteria is scored positive for needing a palliative care consult. The

customization allows for the identification of patients who may have historically been missed in the past and excludes criteria that may not be relevant to the unit. The tool should be quick and easy to use with specific inclusion criteria instead of a scoring system. If a patient screens positive for any of the eight screening criteria, the patient is recommended to the intensivists for a palliative care consult (Nelson et al., 2013).

Screening tools are beneficial epidemiological tools used instead of a diagnostic test that can be more expensive, invasive, or dangerous (Trevethan, R., 2017). On the other hand, screening tools are less accurate and more ambiguous than diagnostic tests. (Trevethan, R., 2017). The use of a screening tool to identify patients with unmet palliative would be easier and less time-intensive than interviewing each patient about their palliative needs.

Organizational Assessment

The target community hospital established a palliative care team approximately 5 years ago. While the palliative care team has been consulted for patients in the ICU, they have been underutilized, as noted by a palliative care team member (L. Smilde, personal communication, January 20, 2021). This underutilization has been observed in two ways. First, the palliative care team has been involved only after the decision to transition to hospice has been made. Second, they have been utilized only after the patient has been in the ICU for several weeks (L. Smilde, personal communication, January 20, 2021).

Problem Statement

This project aims to develop and test the feasibility of a screening tool designed by the Center to Advance Palliative Care (CAPC) that identifies patients admitted to a community hospital's ICU for palliative care needs. A secondary aim was to investigate how to use the screening tool to triage patients. These aims are aligned with Dame Cicely Saunder's conceptual

model of whole-person suffering, where physical, psychological, spiritual, and social aspects of care are affected by suffering (Sherman et al., 2014).

Methods

To investigate the effectiveness of a palliative care consult screening tool, a retrospective chart review was performed of patients admitted to the target ICU for a 6-week period in 2021. Patient charts were reviewed for information related to the screening tool criteria selected in collaboration with the palliative care team of the target hospital.

Outcome Setting

The setting for this project was a 30-bed Medical-Surgical ICU within a 341-bed non-profit community hospital serving South King County of Washington State. The target unit cares for critically ill patients with diagnoses such as post-cardiac arrest, acute cardiac ischemia, acute respiratory failure, acute stroke requiring fibrinolytic medication with and without thrombectomy, and sepsis.

Ethical Considerations

Seattle University Institutional Review Board has determined this project as "Not Human Participant Research." The project was also approved by the Research Committee at the target hospital.

Participants

Project participants were ICU patients admitted or transferred to the ICU from May 5th, 2021, to June 12th, 2021. Participants were included if they were admitted/transferred within the study period and discharged by December 31st, 2021. Patients who remained in ICU for more than 12 hours and were admitted/transferred to ICU as medical overflow were excluded from the

project. For this project, any patients readmitted to the hospital within the study period were given a new study ID.

If a patient met the inclusion criteria and did not meet exclusion criteria, their chart was audited using the data collection tool, which included the palliative care screening consult tool. The data collection tool (see Figure 1) contained demographic information such as age, gender, race, primary language, admit code status, transfer time in and out of the ICU, organ system involved with the primary reason for admission, and disposition. Information regarding actual palliative care consults placed was also collected.

Screening Tool

In consultation with the Palliative Care Team, the screening tool criteria were selected for this study using specified and modified criteria suggested by CAPC. These included: advanced dementia, anoxic brain injury, in-hospital pulseless electrical activity (PEA) arrest, multi-organ dysfunction syndrome, ICU length of stay greater than 14 days, more than one ICU admission this hospital stay, direct admission to ICU from a long-term acute care (LTAC) facility, and any conflict regarding goals of care. The CAPC screening tool was included in the data collection tool (see Figure 1).

Data Collection

The organization's Research Committee granted permission to access the electronic medical record (EMR). Data were collected on patients on a list that the Palliative Care Team provided. The list included all patients discharged from the hospital from May 1st, 2021, to December 31st, 2021. This patient list was prepopulated with demographic information of age, sex, admission date, discharge date, discharge disposition, admission diagnosis, arrival date to ICU, race, primary language, and if an interpreter was needed. This list was sorted by hospital

admission date, and a chart review was started with patients admitted on May 1st, 2021. Any patient transferred to the ICU on a later date was reviewed along with those directly admitted to the ICU.

A master key connected each patient's name, sex, medical record number, and admission date to a study identifier (see Figure 2). Demographic and screening tool information was linked to study participant identifiers in the data collection tool (see Figure 3).

From the initial summary page for the specified admission period, arrival and departure dates were determined for each visit to the ICU. The time spent in the ICU for each visit was calculated. If at least one of the visits to the ICU was for more than 12 hours, the chart review continued for that patient. The EMR search function was used to locate keywords including "conflict," "goals of care," "code status," and "palliative consult." As conflict regarding goals of care is a subjective term and transient, requiring the entire patient stay to be evaluated, "conflict" and "goals of care" were chosen to review care team notes quickly. "Conflict" was used to search for specific instances as it is used in the professional phrase "conflict regarding goals of care."

The phrase "goals of care" was used for a broader search to locate the subsection of notes that discussed the goals of care. The search terms "code status" and "palliative consult" were used to complete demographic information. "Code status" was used to find the order placed on admission by the admitting provider. The "palliative consult" search term was used to determine if a palliative consult had ever been ordered for the patient.

History & Physical and Discharge notes were reviewed for specific information regarding advanced dementia, anoxic brain injury, multiorgan dysfunction syndrome (MODS), in-hospital PEA arrest, and the body system most related to their reason for hospitalization. Advanced

dementia was defined as either a specific diagnosis of advanced dementia or dementia that affects activities of daily living. MODS was identified based on provider diagnosis in the discharge note or patient's problem list. An in-hospital PEA arrest was excluded from the screening tool if the patient expired less than 12 hours after the event. A palliative care consult is unlikely to occur in emergent situations. For this project, patients who left the hospital against medical advice were considered to have met the "conflict regarding goals of care" criteria.

The primary body system most related to the patient's reason for admission was selected based on their admitting diagnosis. Their discharge note was also utilized when diagnostic test results were not yet available. The body systems used were cardiovascular, pulmonary, neurological, sepsis, active COVID-19 infection, and other systems.

The cardiovascular category included diagnoses such as post-cardiac arrest and acute myocardial infarction. The pulmonary category included asthma exacerbation, chronic obstructive pulmonary disease (COPD) exacerbation, pulmonary embolism, and pneumonia. Neurological patients were those admitted for any acute neurological insult such as ischemic stroke, hemorrhagic stroke, subdural hematoma, and uncontrolled or new-onset seizures. This category included patients admitted for neurosurgical procedures such as cerebral biopsy, craniotomy, or cerebral aneurysm repair. The sepsis category included any patient with a systemic infection. Due to the COVID-19 pandemic affecting all aspects of healthcare, patients diagnosed with acute COVID-19 infection were kept in their category separate from the pulmonary or sepsis categories. All other reasons for hospitalizations were placed in the "other systems" category. These included vascular surgery, drug-related issues, myxedema coma, and diabetic ketoacidosis. All collected data were documented on the data collection tool.

Data Analysis

A total of 244 charts were reviewed. Of all of the charts reviewed, 16 charts were excluded because the patient was in the ICU for less than 12 hours during any transfer period. Subsequently, 31 charts were excluded for being outside of the study period. After removing all charts that met the exclusion criteria, 197 patient records were accepted for analysis. Four accepted charts were different hospitalizations for two individuals, but each hospitalization was considered a patient for this project.

Characteristics of the project population were described using frequencies and percentages. A chi-squared test for independence was used to compare the patients who triggered a palliative care consult from the screening tool to those who received a consult order. This test was permitted if at least 80% of the fields had a value greater than five and none of the actual consults (expected) values were zero. All analyses were conducted using Microsoft Excel software. An alpha level of .05 was used for all statistics.

Findings and Outcomes

Demographics

The demographics of the patients sampled are summarized in Table 1. Code status at the target hospital was defined as Full code, DNR Full, DNR Intermediate, and DNR Limited. The definition of each code status category and the frequency of patients in each is shown in Table 1. The total days in the ICU are the sum total of all of the time spent in the ICU. If the patient was at a procedure but expected to return to ICU for primary care, then their time at the procedure was counted as still being an ICU patient.

Comparing Actual vs. Screening Tool Consults

The actually-consulted group was not statistically significant for independence from the tool-identified group. The number of patients in the actually-consulted group was 44, while the number in the tool-identified group was 48. The x^2 test of independence was $x^2(1, N = 197) = .47$, $p = .49$.

The actually-consulted patients and tool-identified patients had a mix of similar and different patient demographics. In sex, race, and language, there were no statistical differences between the two groups. These categories did not show a statistical difference (see Table 2). The screening tool is a less subjective method, and the two groups had similar results, so explicit bias in consult selection based on these categories is less likely. If there was a bias for ordering a consult, the groups would show independence.

Differences between the groups were seen in age, body system related to the reason for admission, and discharge disposition. The distribution of the tool-identified group by age was a classic bell curve. In contrast, the distribution of actual consults weighed heavier in the oldest age range, which contributes to the $x^2(3, N = 197) = 12.36$, $p = .006$ (see Table 2 and Figure 4). This older patient preference may be due to the perception that older patients have a greater risk of mortality or adverse outcomes. Also, the tool-identified group had more patients in the 60 - 80 age range than the actually-consulted group, indicating a group of patients that ordering providers may not be considering for consults (see Figure 4).

When looking at body systems related to the primary reason for admission, there was a statistical difference between the actually-consulted group and the tool-identified group ($x^2(5, N = 197) = 12.73$, $p = .026$). The screening tool agreed closely with actually-consulted group in the Neurological, Sepsis, and COVID-19 categories (see Table 2). This similarity is likely due to

these categories' specific catastrophic nature, making these patients easier to identify for a palliative care consult. The screening tool recommended more patients for consults in the cardiovascular and pulmonary categories due to the wider variety of outcomes. For example, the cardiovascular category included stable, post-intervention acute myocardial infarction patients and unstable, post-cardiac arrest patients.

The tool-identified and actually-consulted groups showed a statistical difference when comparing their discharge disposition distribution ($x^2(2, N=197) = .90$, $p = .007$) (see Table 2). The largest difference was in in the “other disposition” category (see Table 2). Other dispositions included patients who left against medical advice. All five patients in the left against medical advice category, as seen in Table 1, were in the tool-identified group, while none were in the actually-consulted group. An explanation for why none of the patients in the actually-consulted group received palliative care consults might be attributed to their short stay in the unit. They left the hospital quickly with little warning making it difficult to assess the need for a palliative care consult before their departure. Because of this, the screening tool would likely not help identify these patients. These patients were likely to be identified by the screening tool due to the project’s retrospective nature.

Palliative Care Screening Tool Criteria

The majority of patients (76%) did not meet any of the criteria included in the screening tool. Over the 6-week period, the screening tool would have recommended consults for 24% of ICU patients averaging eight consults a week (see Table 3). Only 5% of patients met multiple criteria, and of those, no one met more than two criteria. As the number of criteria met was shallow, this version of the tool cannot be used as a sensitive method to triage limited palliative care team resources. Suppose the trigger to recommend a consult was limited to patients with

two or more criteria. In that case, consults could be reduced to one to two a week during periods of limited resources.

To look for patterns in the data, patients were separated into the number of criteria met compared with their demographics (see Table 4). While the proportions were difficult to compare due to the large differences in sample sizes, the ICU length of stay and discharge disposition categories had trends that differed from the population. The length of stay in the ICU for most patients was less than three days, whereas a more significant proportion of patients with 1 or 2 criteria tended to have longer lengths of stay (see Figure 5).

A similar trend can be observed by clustering disposition categories by severity (see Figure 6). A discharge to home was considered the least severe outcome. Considered the next severe outcomes, including discharge to short-term nursing facilities, in-patient rehabilitation, and hospital-to-hospital transfers were clustered together. Patient death, transferring to LTAC, admission to hospice, and leaving against medical advice were placed in the final group as the most severe outcomes. While the last grouping contains the most severe discharge outcomes, they should not be seen as the least desired outcomes. The discharge dispositions in the final group may fit within the patient's goals of care.

When examining the clustering of patients based on number of criteria met and discharge disposition, a greater proportion of patients with 1 or 2 criteria were seen in most severe group (see Figure 6). Patients who did not meet any criteria were more likely to be discharged home than other dispositions (see Figure 6). While patients with longer ICU lengths of stay and non-home discharge dispositions were not necessarily patients with unmet palliative needs, these kinds of patients had complex needs.

Despite the number of tool-identified patients matching closely to the number of the actually-consulted patients, the number of patients who received consults was less than the potential number of screening tool consults (see Table 5). This would likely be observed in active use of the screening tool as a positive result flags providers for consult consideration and not the automatic ordering of a consult. Of note, no patients were identified that met the "LTAC Admission" criterion, which questions its usefulness as a criterion.

The mismatch between screening tool criteria and actual consults was further investigated by comparing patients who did and did not receive consults with patients who were recommended to have consults by the screening tool (see Table 6). As there is no gold standard for identifying unmet palliative needs, the non-screening-tool baseline method used to identify actually-consulted patients can be used as an imperfect comparison to the performance of the screening tool. Based on a negative predictive value of 87.2%, the screening tool did well not triggering consults for patients without unmet palliative needs. Still, the positive predictive value of 52.1% shows a high number of patients the tool recommended did not receive a consult. Conversely, the screening tool did not identify almost the same number of patients as those missed by providers. Some of the patients that the screening tool did not identify could have been due to the weaknesses in the tool discussed above.

Discussion

The modified CAPC screening tool had a mixed performance. While some of the criteria, like anoxic brain injury or conflict regarding goals of care, were met by several patients, one criterion, admission from LTAC, was not triggered by any patients. Criteria that are not observed in the patient population are not useful and should be exchanged for a more common criterion.

While the 48 patients identified would have produced a similar workload as the 44 actually-consulted patients, the modified screening tool was not sensitive and missed 19 patients that received consults in reality. An ideal screening tool would have caught a larger proportion of these patients. On the other hand, the tool did identify 23 patients that did not receive a consult that may have benefited from one. In practice, not all patients screened for a consult would receive one as the criteria only indicate the possibility of unmet needs.

The screening tool was not valuable for triaging patients with unmet palliative needs. Patients only screened for two simultaneous criteria at most out of the eight possible criteria. With a pool this shallow, the current tool cannot be used for triage using the number of criteria met by the patient. For the screening tool to identify the same number of consults that were actually performed, the tool could not be adjusted by changing the number of criteria met to trigger a consult request. The only possible reduction would lead to an average of only one consult a week by increasing the threshold for consult recommendation to two criteria as opposed to any number of criteria.

Limitations

Several limitations of this project stem from it being retrospective. As a retrospective project, patient data can only be collected from the chart, which may not include all of the information that may trigger a palliative care consult. In particular, the “conflict regarding goals of care” criterion was challenging to determine retrospectively and would likely be more accurate in a prospective project.

As the project was retrospective, all screenings were evaluated after the patient was discharged, culminating in all of the patient’s information being available. This does not accurately simulate how the screening tool would be used in real life. Also, only screening the

patient after discharge makes it impossible to evaluate when a patient would be identified for a consult. The question of whether patients would receive consults earlier due to the screening tool could not be investigated.

Another limitation is that a positive screening does not necessarily result in a consult order. Because the project was not prospective and assessed for hypothetical consult orders, the consult order rate from positive screenings could not be evaluated.

Unexpected Findings

An interesting result was chi-squared tests for independence of demographics comparing the actually-consulted group and tool-identified group. There was no statistical difference between patients who would have received consults based on sex, race, or language. It is reassuring as a screening tool would be less likely to be biased than a person. On the other hand, the analysis may have identified that 60-79-year-old patients and patients leaving against medical advice (AMA) were missed for possible consultation.

Conclusions

The modified CAPC screening tool needs to be further adjusted before being used. A likely next step would be to investigate the nature of the patients that the screening tool missed and identify possible criteria that would capture those patients. An evaluation similar to the one performed by Lapp and Iverson (2015) should also be done, where the other criteria listed by CAPC can be investigated for frequency in the patient population. Changing the in-hospital PEA arrest criterion to any cardiac arrest in-hospital or as an admitting diagnosis and the multi-organ dysfunction syndrome criterion to prolonged multi-organ failure would likely capture more patients with complex medical needs.

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Tables

Table 1

Demographics of Sampled Population

Characteristic		Total	Percent
Sex	Female	106	(53.1)
	Male	91	(46.2)
Age	24-40	21	(10.7)
	41-60	52	(26.4)
	60-80	93	(47.2)
	81+	31	(15.7)
Race	White, Non-Hispanic	112	(56.9)
	Black or African American	33	(16.8)
	Asian	18	(9.4)
	Hispanic	11	(5.6)
	Other Race	34	(17.3)
Preferred Language	English	173	(87.8)
	Other Language	24	(12.2)
Interpreter Needed? (Patient indicated)	No	182	(92.4)
	Yes	15	(7.6)
Body system for primary reason for admission	Cardiovascular	41	(20.8)
	Pulmonary	34	(17.3)
	Neurological	32	(16.2)
	Sepsis	23	(11.7)
	COVID-19	16	(8.1)
	Other Systems	51	(25.8)
Code Status on Admission [a]	Full	175	(88.8)
	DNR Full	10	(5.1)
	DNR Intermediate	10	(5.1)
	DNR Limited	2	(1)
Total days in ICU	<=1 day	62	(31.5)
	1-2 days	55	(27.9)
	2-3 days	21	(10.7)
	3-7 days	30	(15.2)

Characteristic		Total	Percent
	1 week – 2 weeks	17	(8.6)
	>2 weeks	12	(6.1)
Disposition [b]	Home	114	(57.9)
	Expired	35	(17.8)
	Skilled Nursing Facility	22	(11.2)
	Hospital to Hospital Transfer	8	(4.1)
	Left AMA	5	(2.5)
	LTAC	4	(2)
	Transfer to Hospice Facility	3	(1.5)
	Home with Hospice	3	(1.5)
	Inpatient Rehab	3	(1.5)

Note. $N = 197$

[a] Code Status – DNR Full (No cardiopulmonary resuscitation, Yes to advanced respiratory life support). DNR Intermediate (No cardiopulmonary resuscitation, Yes to all respiratory support except intubation). DNR Limited (No cardiopulmonary resuscitation or advanced respiratory life support). [b] Disposition - Home includes home health and home hospice. AMA = Against Medical Advice (Despite provider explained rationale for hospitalization, patient wishes to leave hospital.). LTAC = Long Term Acute Care (Hospitals that specialize in patients with long term acute care needs.)

Table 2

Comparison of Demographics of Actually-Consulted and Tool-Identified Group

Characteristic		Patients with Consult Orders (n = 44)	Patients who Triggered Consults from Screening Tool (n = 48)	x^2 of Independence
Sex	Female	26	28	$x^2(1, N = 197) = .48, p = .488$
	Male	18	20	
Age	24-40	2	4	$x^2(3, N = 197) = 12.36, p = .006$
	41-60	20	11	
	60-80	13	27	
	81+	23	6	
Race	White	23	27	$x^2(4, N = 197) = 3.99, p = .408$
	Black or African American	9	7	
	Asian	5	5	
	Hispanic	2	4	
	Other Race	5	5	
Preferred Language	English	38	38	$x^2(1, N = 197) = 3.56, p = .059$
	Other Language	6	10	
Body system for primary reason for admission	Cardiovascular	11	16	$x^2(5, N = 197) = 12.73, p = .026$
	Pulmonary	6	11	
	Neurological	3	3	
	Sepsis	3	4	
	COVID-19	9	8	
	Other Systems	12	6	
Code Status on Admission[a]	Full	31	38	
	DNR Full	6	5	
	DNR Intermediate	5	4	
	DNR Limited	0	0	
Total days in ICU	<=1 day	7	8	$x^2(5, N = 197) = 9.75, p = .083$
	1-2 days	5	2	
	2-3 days	5	4	

Characteristic		Patients with Consult Orders (n = 44)	Patients who Triggered Consults from Screening Tool (n = 48)	x^2 of Independence
	3-7 days	10	13	
	1 week – 2 weeks	9	9	
	>2 weeks	8	12	
Disposition	Home	13	10	$x^2(2, N = 197) = .90, p = .007$
	Expired	22	21	
	Other Disposition	9	17	

Note. $N = 197$. An alpha of 0.05 was used for all statistics.

[a]Code Status – DNR Full (No cardiopulmonary resuscitation, Yes to advanced respiratory life support). DNR Intermediate (No cardiopulmonary resuscitation, Yes to all respiratory support except intubation). DNR Limited (No cardiopulmonary resuscitation or advanced respiratory life support).

Table 3

Distribution of Patients by Number of Screening Tool Criteria Met

Number of Criteria Met	All Patients	Percent
0	149	(75.6)
1	38	(19.3)
2	10	(5.1)

Note. $N = 197$

Table 4

Comparison of Demographics based on Number of Criteria Met

Characteristic		Patients with Two Criteria Met (%)*	Patients with One Criterion Met (%)**	Patient with No Criteria Met (%)***
Sex	Female	5 (50)	23 (60.5)	78 (52.3)
	Male	5 (50)	15 (39.5)	71 (47.7)
Age	24-40	1 (10)	3 (7.9)	17 (11.4)
	41-60	3 (30)	8 (20.1)	41 (27.5)
	60-80	6 (60)	21 (55.3)	66 (44.3)
	81+	0	6 (15.8)	25 (16.8)
Race	White	3 (30)	24 (63.2)	85 (55)
	Black or African American	4 (40)	3 (7.9)	26 (17.4)
	Asian	2 (20)	3 (7.9)	13 (8.7)
	Hispanic	1 (10)	3 (7.9)	6 (4)
	Other Race	0	5 (13.2)	18 (12.1)
Preferred Language	English	8 (80)	30 (78.9)	135 (90.1)
	Other Language	2 (20)	8 (21.1)	14 (9.9)
Body system for primary reason for admission	Cardiovascular	4 (40)	12 (31.6)	25 (16.8)
	Pulmonary	1 (10)	10 (26.3)	23 (15.4)
	Neurological	0 (0)	3 (7.9)	29 (19.5)
	Sepsis	0 (0)	4 (10.5)	19 (12.8)
	COVID-19	3 (30)	5 (13.2)	8 (5.3)
	Other Systems	2 (20)	4 (10.5)	45 (30.2)
Code Status on Admission[a]	Full	9 (90)	29 (76.3)	137 (91.9)
	DNR Full	1 (10)	4 (10.5)	5 (3.4)
	DNR Intermediate	0 (0)	4 (10.5)	6 (4)
	DNR Limited	0 (0)	1 (2.6)	1 (.7)
Total days in ICU	<=1 day	0 (0)	8 (21.1)	54 (36.2)
	1-2 days	0 (0)	2 (5.2)	53 (35.6)
	2-3 days	0 (0)	4 (10.5)	17 (11.4)

Characteristic		Patients with Two Criteria Met (%)*	Patients with One Criterion Met (%)**	Patient with No Criteria Met (%)***
	3-7 days	2 (20)	11 (28.9)	17 (11.4)
	1 week – 2 weeks	2 (20)	7 (18.4)	8 (5.3)
	>2 weeks	6 (60)	6 (15.8)	0 (0)
Disposition[b]	Home	2 (20)	7 (18.4)	105 (70.4)
	Skilled Nursing Facility	2 (20)	3 (7.9)	17 (11.4)
	Hospital to Hospital Transfer	0 (0)	0 (0)	8 (5.4)
	Left AMA	0 (0)	5 (13.2)	0 (0)
	Inpatient Rehab	1 (10)	0 (0)	2 (1.3)
	Expired	3 (30)	18 (47.4)	14 (9.4)
	LTAC	1 (10)	3 (7.9)	0 (0)
	Transfer to Hospice Facility	1 (10)	1 (2.6)	1 (.7)
	Home with Hospice	0 (0)	1 (2.6)	2 (1.3)

Note.

[a]Code Status – DNR Full (No cardiopulmonary resuscitation, Yes to advanced respiratory life support). DNR Intermediate (No cardiopulmonary resuscitation, Yes to all respiratory support except intubation). DNR Limited (No cardiopulmonary resuscitation or advanced respiratory life support). [b]Disposition - Home includes home health and home hospice. AMA = Against Medical Advice (Despite provider explained rationale for hospitalization, patient wishes to leave hospital.). LTAC = Long Term Acute Care (Hospitals that specialize in patients with long term acute care needs.)

*n = 10. **n = 38. ***n = 149

Table 5

Comparison of Screening Tool Criteria between Number of Times Criteria Met and Patients who Met Criteria in Actually-consulted group

Screening Tool Criteria	Number of Times Criteria Met	Actual Consults (% of criteria with consult)
In-hospital PEA [a]	6	3 (50)
Advanced Dementia	4	1 (25)
Anoxic Brain Injury [a]	8	3 (38)
MODS [a]	4	2 (50)
ICU Stay Greater than 14 days	12	8 (67)
More than One Arrival to ICU in One Hospital Stay	13	7 (54)
Direct Admission from LTAC [a]	0	0 (NA)
Conflict Regarding Goals of Care	11	6 (55)
Total	51	30

Note. Pulseless electrical activity (PEA). Multi-organ dysfunction syndrome (MODS). Long term acute care (LTAC).

[a] Modified from CAPC criteria.

Table 6

Distribution of Patients Based on Screening Tool Consult Recommendation and Actual Consult Order

Screening Tool Recommends Consult (48 total)	Palliative Consult Ordered (44 total)	Palliative Consult Not Ordered	
Yes	25	23	PPV = 52.1%
No	19	130	NPV = 87.3%
	Sensitivity 56.8%	Selectivity 85.0%	

Note. $N = 197$.

Figures

Figure 1

Palliative Care Screening Tool from CAPC-ICU Tool

Palliative Care Consult Screening Tool	
Screening criteria	YES?
Advanced dementia	
Anoxic brain injury	
In-hospital PEA arrest	
Multi-organ dysfunction syndrome	
ICU length of stay greater than 14 days	
More than one ICU admission this hospital stay	
Direct admission to ICU from LTAC	
Any conflict regarding goals of care	
If any screening criteria trigger YES, then request palliative care consult in AM rounds	

Note. Modified from the CAPC-ICU tool. Adapted from Nelson, J. E., Campbell, M. L., Cortez, T. B., Curtis, J. R., Frontera, J. A., Gabriel, M., Lustbader, D. R., Mosenthal, A. C., Mulkerin, C., Puntillo, K. A., Ray, D. E., Bassett, R., Boss, R. D., Brasel K. J., & Weissman, D. E. (2013). Implementing ICU Screening Criteria for Unmet Palliative Care Needs: A Guide for ICU and Palliative Care Staff. https://www.capc.org/documents/download/287/

Figure 2

Master Key

Study ID	MRN	Patient Name	Gender[a]	Date of Admission
IDXXX	XXXXXXXX	Doe, John	Male/Female	XX/XX/XX

Note. Medical record number (MRN).

[a] At this time the electronic medical record only allowed male or female entries.

Figure 3

Data Collection Tool

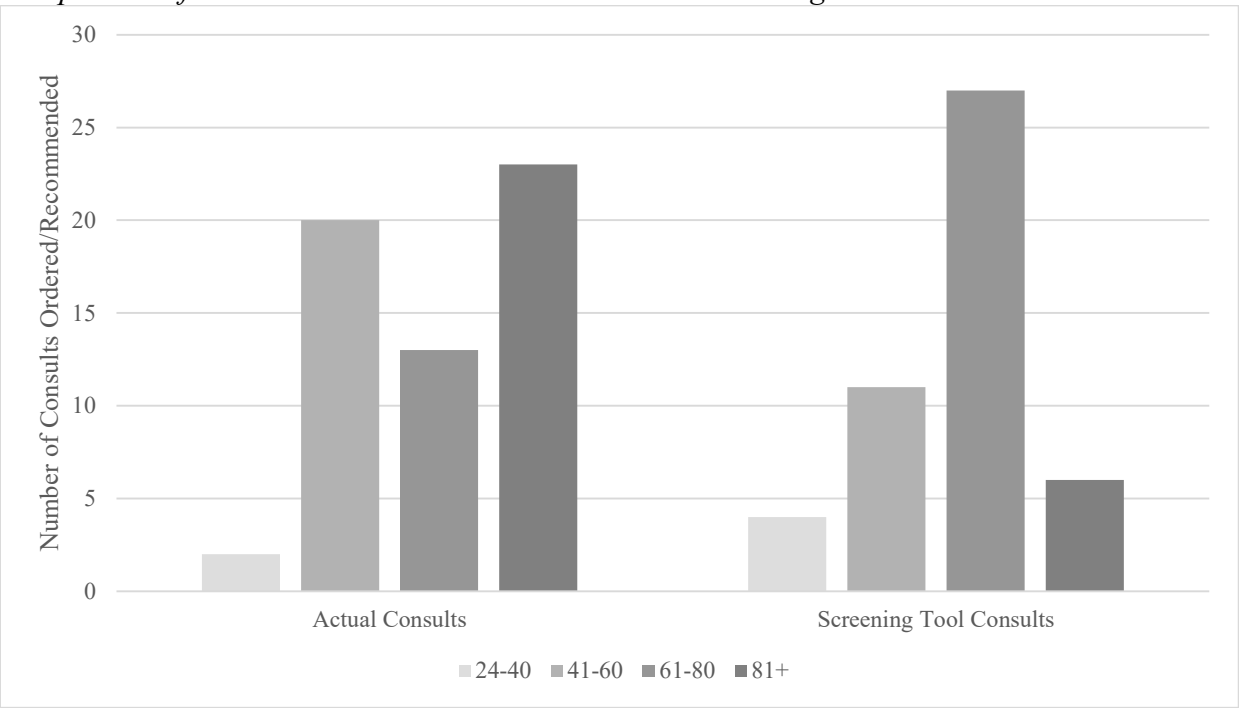
Study ID	Demographics														Screening tool criteria									Consult suggested?	
	Hospital admit date	Age at admit	Gender [a]	Ethnicity	Primary language	Interpreter needed?	Code status on admission	Primary Diagnosis	Primary Body System	Palliative care order placed	Date Palliative order placed	Admit/transfer date to ICU	Transfer from ICU date	If yes, date?	Discharge Disposition	Advanced dementia	Anoxic brain injury	In-Hospital PEA arrest greater than 12 hours	MODS	Days in ICU?	Greater than 14 days?	Number of admit/transfer to ICU >1?	Direct admission from LTAC?	Note about conflict in goals of care or Left	Number of Screening "Yes" answers?	Number of "Yes" answers >0?
IDXXXX	Date	Age	M/F/Intersex	Ethnicity	Language	Yes/No?	Code Status	Diagnosis	Body System	Yes/No?	Date	Date, Date…	Date, Date…	Date	Disposition	Yes/No	Yes/No	Yes/No	Yes/No	# Days	Yes/No	Yes/No	Yes/No	Yes/No	Number	Yes?

Note. Multi-organ dysfunction syndrome (MODS). Long term acute care (LTAC)

[a] At this time the electronic medical record only allowed male or female entries.

Figure 4

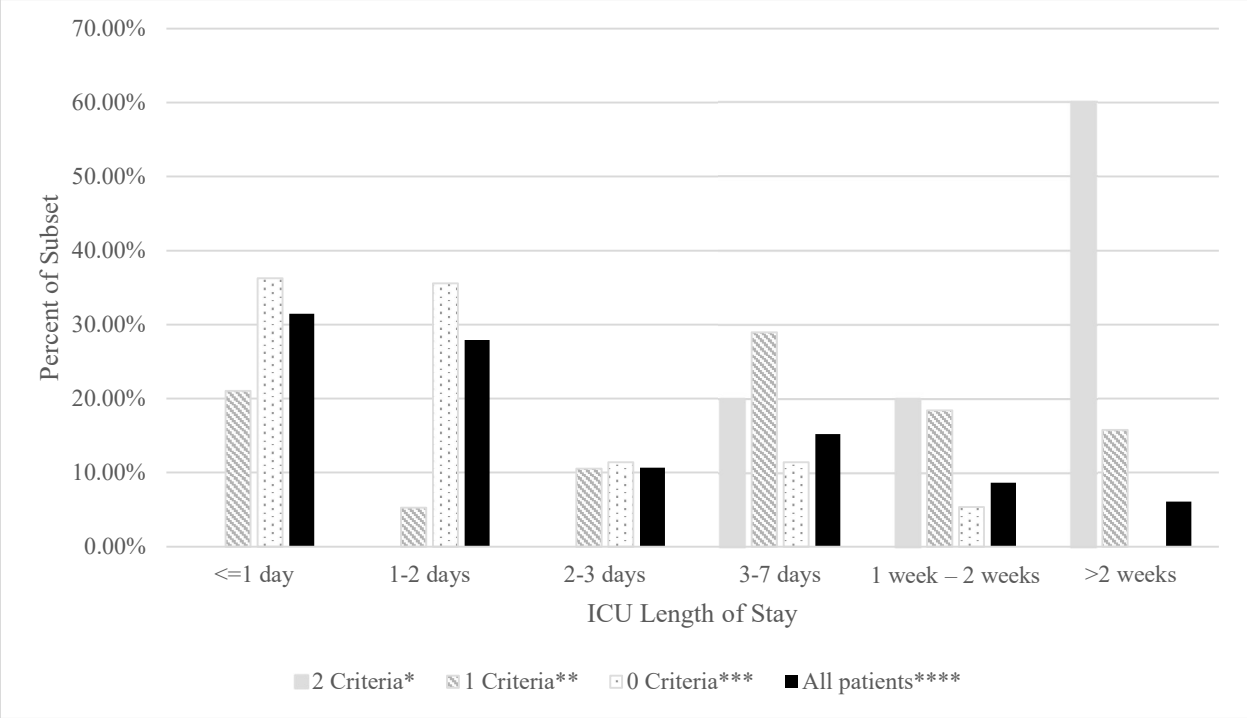
Comparison of Consults Ordered or Recommended Based on Age



Note. $N = 197$

Figure 5

Proportions of Patients Based on Number of Criteria Met and ICU Length of Stay

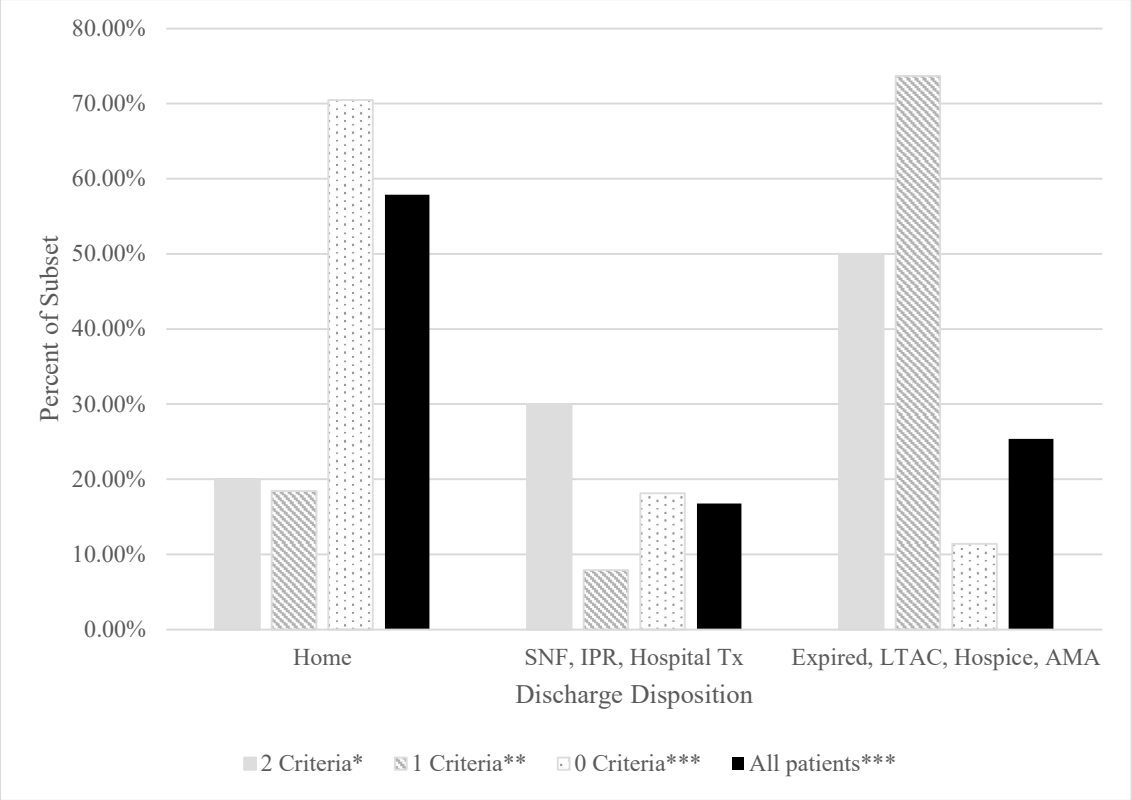


Note.

n* = 10. ***n* = 38. ****n* = 149. *** *N* = 197

Figure 6

Distribution of Proportion of Patients by Number of Criteria and Discharge Disposition



Note. Against Medical Advice (AMA). Long Term Acute Care (LTAC)

*n = 10. **n = 38. ***n = 149. **** N = 197

Acknowledgments

This project would not have been possible without the love, support, and encouragement I received from my parents, sister, and friends. I dedicate this project to the memory of my father who passed away March 2022, who taught me to be dedicated to my goals and persevere. His passing taught me the importance of palliative care and the power of medical knowledge to impact a patient's peace of mind.

I have benefited greatly from the guidance of Dr. Anita Jablonski, my advisor and Laura Smilde, my mentor. I would also like to thank my target facility for their assistance in facilitating this project.