Palliative Care Screening Implementation within the Medical Intensive Care Unit

by

Nicole Troiani

Under Supervision of

Rosemarie Satyshur PhD, RN

Second Reader

Debra Bingham DrPH, RN, FAAN

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Abstract

Problem & Purpose: There are over 5 million intensive care unit (ICU) admissions each year with a mortality rate up to 29% and $108 billion dollar cost of care (SCCM, 2018). Palliative care is an essential part of comprehensive care in the ICU, however, it is underutilized in the medical intensive care unit (MICU) of a large urban academic medical center despite the unit reporting the highest mortality rate in the hospital. The purpose of the quality improvement (QI) project is to increase palliative care utilization in the MICU through the integration of nurse driven screening criteria that, when met, suggests the need for a palliative care consult.

Methods: The QI project took place over a 13-week period. All patients admitted to the MICU during the implementation phase received a validated palliative care screening completed by the bedside nurse (George et al., 2015). Positive screenings were then discussed and plan of care documented by the interdisciplinary team on daily rounds. Completed screening tools were reviewed every other day to determine screening completion, documentation of family meeting notes, palliative care consults placed, and reason for not consulting palliative care despite positive screening.

Results: Compliance with palliative care screening ranged from 79-100% (average 92%). Percentage of positive screenings ranged 18-50% (average 29%). Percentage of positive screenings with a consult ranged 0-60% (average 20%). The most common reason for lack of palliative consult was a planned "family meeting" (42%), however, less than 50% of these patients had a family meeting note documented. Comparing data 8 months pre-implementation to 13 weeks of implementation: average length of stay (LOS) for patients with palliative care consult decreased from 68.61 to 11.75 days; admission to consult mean decreased from 22.69 to 9.16 days; Palliative care consultation rate decreased from 13.86% to 10.39%.

Conclusion: Despite utilization of a validated screening tool, palliative care consultation rates decreased. Physician preference greatly impacted consultation rates and highlighted the need to change knowledge and opinions related to palliative care. Finally, results support that screening leads to earlier palliative care consult, decreased LOS, and likely associated cost.

Introduction

There are over 5 million intensive care unit (ICU) admissions each year with a mortality rate up to 29% and $108 billion dollar cost of care (SCCM, 2018). Based on the high mortality rates, severity of illness, increasing chronic illness, and symptom burden, professional societies are stressing the importance of palliative care in the ICU (Weissman & Meier, 2011). Despite the research showing positive effects of palliative care consults, there is still extreme underutilization of the service (Aslakson et al., 2014). Palliative care has been shown to improve quality of life and decreased distress in adult ICU patients (Baker, Luce & Bosslet, 2015). Results of a literature review also clearly demonstrate significant cost savings related to palliative care services (Khandelwal, Benkeser, Coe, & Curtis, 2016). As the aging population with comorbid conditions continues to grow, aggressive medical and surgical treatment will further increase the cost on healthcare system, burnout hospital staff, and escalate patient suffering (Hua & Wunsch, 2014). Palliative care integration has the proven ability to mitigate these issues.

Palliative care was underutilized in the medical intensive care unit (MICU) of a large urban academic medical center despite the unit reporting the highest mortality rate in the hospital. On average, there were only 2 consults per month placed to the palliative care team in the MICU, while other ICUs in the institution averaged 5. Additionally, there were no extant guidelines for palliative care integration or consultation. The purpose of the quality improvement (QI) project was to increase palliative care utilization in the MICU through the integration of nurse driven screening criteria that, when met, suggested the need for a palliative care consult.

Literature Review

With the growth in palliative care specialists, use of screening criteria is a well-researched intervention to improve upon and standardize palliative care consultations. Screening criteria can also be used to trigger early integrative palliative care through family meetings with resultant consultation if additional palliative needs are found (Nelson et al., 2013). In order to fully examine screening criteria as a recommendation for practice, a systematic literature review was completed. Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, Medline, Embase, and Cochrane Library databases were searched to find relevant studies based on keywords such as "palliative care AND ICU" "nurse palliative care screen" and "palliative care screening." Results were reviewed and nine articles found were relevant to the practice problem. Level and quality of evidence based on the Johns Hopkins Evidence Based Practice Rating Scale ranged from II/A to V/C (Newhouse, Dearholt, Poe, Pugh, & White, 2007). For a detailed breakdown of the evidence see Appendix A.

All of the studies were conducted in the adult population with settings ranging from urban academic medical centers to community hospitals. Three studies were completed in a medical ICU, one in a surgical ICU, three in medical/surgical ICUs, and two in a mixed (cardiac, neuro, medical, and surgical) ICU, showing a wide variety of settings in which the criteria can be applied. Unfortunately, none of the studies were completed with random assignment of participants. Three studies used quasi-experimental design, one used an exploratory design, and five studies were QI projects. In terms of sample, only Hurst, Yessayan, Mendez, Hammad, & Jennings (2018) completed a formal power analysis. Even so, only two studies had a sample size less than two-hundred patients, representing a large sample as a whole. Overall, the samples were largely comparable to the practice setting in question, and demonstrated the generalizability of the results.

Seven of the nine studies had a primary outcome measure of palliative care consultations with a variety of secondary measures including hospital length of stay (LOS), ICU LOS, time from trigger to consultation, and mortality rates related to number of triggers met. None of the studies used the same screening criteria as adjustments were made to fit the individual ICU, making it possible that variations in success were based on criteria chosen.

In examining the results as a whole, five of nine studies found a significant increase in palliative care consults with the use of screening criteria (Hurst et al., 2018; McCarroll, 2018; Sirha, Harris, O'Reardon, 2011; Villareal et al., 2011; Walker et al., 2013). A limitation of the studies was that six interventions required physician consent to place palliative care consult after screening criteria were met; meaning not all patients who screened positive actually received a palliative care consult. This may have also accounted for variations in results, as both of the studies that did not find a significant increase in palliative care consults required physician approval for consult placement (Bradley, Weaver, & Brasel, 2010; Mun, Umbarger, Ceria-Ulep, & Nakatsuka, 2018). Despite the lack of significance in consult rates, Mun et al. (2018) did find an increase in integrative palliative care with the use of screening criteria through early family meetings. It is important to note, these designs were consistent with the QI design, as positive screenings in the project site required physician approval for palliative care consultation. Additionally, the current project allowed an option for integrative palliative care through family meetings prior to placing palliative care consult.

In the end all nine studies found at least one positive effect of the triggers in relation to palliative care integration in the ICU. The strength and quality of the evidence as well as the generalizability of the sample largely supported the implementation of palliative care screening criteria in order to improve palliative care integration in the ICU.

Theoretical Framework

Kolcaba's comfort theory provided the theoretical structure for this QI project (Figure 1). The comfort theory had several major concepts: healthcare needs, nursing interventions, intervening variables, enhanced comfort, and health seeking behaviors (Kolcaba, 2003). First health care needs were physical, psychospiritual, sociocultural, and environmental needs that occurred in the stressful healthcare environment. Next, nursing interventions were intentional care provided by nurses directed at meeting the comfort needs of patients. Intervening variables were anything that affected patient outcomes. The combination of these concepts created comfort; which was anything that strengthened patient experience in any of the four areas listed above. Finally, health seeking behaviors were patient actions that indicated improved health. These behaviors were categorized as internal, external, or a peaceful death (Kolcaba, 2001).

Operational definitions of the concepts are as follows: First, health care needs were defined as patients known comfort needs listed in the taxonomic structure of comfort developed by Kolcaba in 1991. Patient's needs were listed in the taxonimc structure as part of assessing palliative care needs. Nursing interventions were defined as assessment of patients need for palliative care through palliative care screening tool. Intervening variables included age, race and religion, and severity of illness gathered from chart data. All of the intervening variables contributed to overall patient care, treatment cost and necessity of palliative care intervention. These variables were considered in the creation of the screening tool. Enhanced comfort through palliative care was not directly measured due to the limited time frame for implementation. Instead, LOS, and mean time to consult were assessed as surrogate measures. Finally, health seeking behaviors were defined by acceptance or denial of referral for palliative care. For a visual representation of theory alignment with the project see Figure 2.

Methods

The QI project took place over a 13-week period in the MICU of a large urban academic medical center. The project site was a 24-bed unit in which there were approximately 95 patients admitted each month. The patient population was comprised predominantly of critically ill adults with multiple chronic comorbidities. Before the initiation of the project, physicians, nurse practitioners (NP), physician assistants (PA), and nurses were educated on the purpose of the project, services provided by the palliative care team, and the items in the screening tool that correlated with patients' palliative care needs. All MICU physicians, NP, PA and nurses attended inservice education sessions and completed a post-test to ensure understanding.

All patients admitted to the MICU during the implementation phase received a validated palliative care screening completed by the bedside nurse within 24 hours of admission (George et al., 2015) (Appendix C). Discussion of palliative care needs for positive screenings then took place with the interdisciplinary team on daily rounds. At this point, physician, NP, or PA indicated plan of care for all patients screening positive on the back of the screening tool. Plan of care options included: palliative care consult, family meeting in next 48 hours, patient/family decline consult, no unmet palliative care needs, or "other." Completed screening tools were then placed in a secure file cabinet in the charge nurse office. Tools were reviewed every other day to determine palliative care screening completion, documentation of family meetings notes in the electronic medical record, palliative care consults placed, reason for not consulting palliative care despite positive screening, and reason for positive screening. For data collection tools see Appendix D.

Weekly data was compiled into runcharts showing screening completion, number of patients screening positive, and patients screening positive with palliative care consult. Data was

then analyzed using descriptive statistics. Descriptive statistics were also utilized to understand

reason for lack of consult, reason for positive screening, and family meeting note documentation.

Finally, pre (January-August 209) and post implementation (September-November 2019) data

were compared regarding percentage of palliative care consults by patient volume, average LOS

in days, and admission to consult mean in days.

Results

With the process changes as described above, there were also several structural changes

required to ensure successful implementation. First, palliative care screening was added to the

nurse's list of admission required documentation. Unit clerks were also educated to place paper

palliative care screening in the chart for each newly admitted patient. Each shift, screening

completion was audited by the unit's resource nurse. Finally, palliative care screening was added

to the daily rounding template to prompt discussion of positive screenings.

Three hundred and seventy patients were admitted during the 13 weeks of

implementation. Compliance with palliative care screening ranged from 79-100% each week of

implementation with an average of 92% (goal 100%). Utilizing paper screening tools was a

major barrier to completion as all other admission documentation is completed electronically

making it easy for nurses to fail to remember the palliative care screening. It was also quickly

noted that nurses were forgetting to move completed screenings into the charge nurse file

cabinet, prompting a process change in week 6 where the resource nurse became responsible for

filing completed screenings.

Percentage of positive screenings ranged 18-50% with an average of 29%. Percentage of

positive screenings with a palliative care consult ranged 0-60% with an average of 20% (goal

95%). It is possible that subjectivity of the palliative care screening tool lead to inappropriate positive screenings, hence higher rates of positive screenings than consults placed. Feedback suggests, however, that provider attitudes and opinions toward palliative care remained the largest barrier to consultation. Continued education was provided throughout the 13 weeks of implementation as the medical team rotated through the ICU. At week 4, consultation orders were changed so that providers could indicate patient's long term palliative care needs for follow up outside of the ICU. This decision was made in conjunction with the ICU staff and palliative care teams to promote physician buy-in for palliative care consultation.

The most common reason for lack of palliative care consult was a "planned family meeting" at 42% followed by "no unment palliative care needs" at 34%. An unanticipated finding of the project showed that less than 50% of patients in which family meeting was indicated actually had a family meeting note placed in the chart. In discussion with nursing staff it was confirmed that these conversations with family were occurring, and many changes in code status were made, but there was no official documentation to refer to. Finally, reason for positive screening was evenly dispersed amongst all 13 categories validating the applicability of the chosen screening tool to the practice setting.

Lastly, data pre (January-August 209) and post implementation (September-November 2019) were compared showing average LOS for patients with palliative care consult decreased from 68.61 to 11.75 days and admission to consult mean decreased from 22.69 to 9.16 days. The most shocking and unexpected result was that palliative care consultation rate decreased from 13.86% to 10.39% during implementation. For complete display of results see Appendix E.

Discussion

In further analysis of results, it was determined that the majority of patients that did not receive a palliative care screening were in the ICU less than 24 hours; suggesting the patient had an acute reversible process unlikely to require palliative care follow-up. When looking at positive screenings and consults, the percentage of positive screenings does not appear to correlate with percentage of consults placed, strengthening previous assumptions that physician preference and potentially clinical scenario greatly impacted consultation rates. Similar to other studies, allowing the medical team to ultimately determine the need for consultation was a major limitation of this QI project (McCarroll, 2018; Mun et al., 2017; Sihra, Harris, & O'Reardon, 2011;Walker et al., 2013). Physician resistance to integration of palliative care is a well-documented phenomena that is again highlighted by this project (Gittlen, 2019).

Transplantation work up was frequently documented as "other" reason for lack of palliative care consult. This was an interesting finding as it is not a limitation to palliative care consultation. In fact, research shows the increased need for palliative care in patients undergoing transplant (Piotrowski & Imamura, 2019). This finding along with clear physician resistance to palliative consultation emphasize the need for continued education related to palliative care services. Since implementation, the project site began conducting monthly meetings between the MICU team and the palliative care team to develop a rapport, discuss continued barriers, and find areas for improvement. While this may appear to be a small step, it has provided the framework for continued collaboration and project sustainability.

Unfortunately, palliative care screenings did not increase consultation rates as expected. This is possibly due to the variations in time frames compared and variations in illness seen at different points in the year. Lack of documentation of family meetings, however, was a major limitation to understanding the reason behind lack of consult as well as the impact of integrative

palliative care. Similar to previous studies, while there may not have been an increase in consultation rate, results did demonstrate positive findings: decrease in length of stay and decrease in time to consult (Mun et al., 2018). These findings suggest higher quality consults as early palliative care in particular is shown to improve quality of life (Franciosi et al., 2019). While length of the QI project did not allow for assessment of quality of life outcomes, earlier discharge from the ICU suggest positive impacts on quality of life. Additionally, decreased LOS is directly related to cost of care which should decrease accordingly benefiting both the patient and institution.

Strengths and limitations must also be considered when evaluating results of QI projects. Use of paper screening in a predominantly electronic healthcare system remains a major limitation to project success and expansion. Integration in the electronic health record is essential to streamlining processes and allowing for reliable data collection. On the other hand, nursing support and advocacy for high quality patient care remain an important strength. Nursing satisfaction was not directly measured, however, verbal feedback related to palliative care screening and its ability to establish guidelines related to palliative care consultation resulted in extensive administrative support. This support not only allowed for continued screening use despite physician resistance but also prompted potential expansion. In order to increased palliative care screening success it is crucial to continue to support provider education related to palliative care and establish common goals between palliative care and ICU teams.

Conclusion

Results of the QI project were incredibly enlightening to the application of palliative care in the ICU. Despite the utilization of a validated screening tool, palliative care consultation rates decreased. Analysis of this finding demonstrated physician resistance to palliative care and the

need for continued education as well as relationship building. The project also unexpectedly highlighted the site's lack of documentation related to family meetings; sparking further investigation and QI project development regarding best practices for documentation of integrative palliative care. Screening implementation positively impacted nursing attitude and mental health regarding treatment of critically ill patients, which ultimately created administrative buy-in. As results have unfolded, continued positive effects related to decreased LOS and cost of care demonstrate the importance of both sustainability and spread of palliative care screening. Creating a standardized guideline for palliative care consultation throughout the institution has the ability to create lasting impacts beyond the individual patient. Continuing the conversation on the importance of palliative care will remain the ultimate definition of success of this QI project.

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Appendix A

Review of the Evidence

Study Citation: Hurst, E., Yessayan, L., Mendez, M., Hammad, A., & Jennings, J. (2018). Preliminary Analysis of a Modified Screening Tool to Increase the Frequency of Palliative Care Consults. *American Journal of Hospice and Palliative Medicine®*, *35*(3), 417-422.

Design, Method & Conceptual Framework	Sample & Setting	Major Variables Studied	Outcomes Measures	Data Analysis	Findings	Appraisal Level and Quality
						Level: II/A
Prospective quasi-experimental cohort design **Methods**: 2 separate MICU samples used with control group continuing current/standard care and intervention group administering palliative care tool. Patients screened on admission by primary team. Patients with one trigger lead to palliative care consultation within 24 hours of admission.	**Setting**: Urban tertiary care hospital in Detroit, Michigan **Sample**: Excluded any patients <19 years old 2 geographically separate MICUs from June 3-July 19, 2013 Control group N=156 Intervention group N=67	**Independent Variable**: Palliative care screening tool of 6 items utilized by affiliated MICUs **Dependent Variable**: Palliative care consultations	**Primary**: Difference in proportion of palliative care consults between the two groups **Secondary**: Differences between the two groups in frequency of each triggered item in the screening tool Comparison of median time to consultation Number of ventilator free days Days in the MICU after palliative care consult	Between group comparisons for categorical variables done with X^2 or Fisher Exact (when frequency <5). Continuous variables examined with 2 sided *t* test or Kruskal-Wallis (when normally distributed). Time to consultation calculated by Kaplan-Meier product limit estimator and survival curves compared with Wilcoxon. $P<.05$ considered significant. SAS software version 9.3 used	• No significant demographic or acuity differences between groups • Palliative care consults higher in intervention group ($p= .0011$) • Consult requests were earlier in intervention group ($p=<.0001$) • Median length of stay not significantly different between groups ($p=.44$) • Ventilator free days not significantly different between groups ($p=.8943$)	Limitations: • Nonrandomized sample • Screening criteria specific to MICU patients and not generalizable to all ICUs Strengths: • Power analysis completed • Between group analysis to determine comparison • Use of simultaneous control group **Conclusion:** Use of palliative care screening tool significantly decreases time to palliative care consult and increases palliative care consults.

				for statistical analysis.		

Study Citation: Bradley, C., Weaver, J., & Brasel, K. (2010). Addressing access to palliative care services in the surgical intensive care unit. *Surgery*, *147*(6), 871-877.

Design, Method & Conceptual Framework	Sample & Setting	Major Variables Studied	Outcomes Measures	Data Analysis	Findings	Appraisal Level and Quality
						Level: II/B
Retrospective pre and postintervention design **Methods**: Independent reviewer notified attending Monday-Friday when patient met 1 clinical trigger. Consult then made at physician/surgical team discretion.	**Setting**: 21 bed SICU of tertiary referral and Level 1 trauma center **Sample Characteristics**: Trauma and general surgery patients. Excluding neurosurgery and cardiothoracic surgery. Group 1 (preintervention January 2006-December 2006): 300 patients Group 2 (postintervetion June 2008-December 2008): 344 patients	**Independent Variable**: Consultation triggers created by local and national physicians with surgical palliative care expertise **Dependent Variable**: Number of palliative care consults	**Primary**: Palliative care consultation **Secondary**: Time from trigger to consultation and mortality after consultation	Student *t* test to compare patient age, SICU LOS, HLOS, SICU visits during 1 hospitalization, and time from trigger to consult between groups 1 and 2. Fisher exact test with 2 tailed *P* values to examine admitting service, trigger rates, palliative care consultation and mortality. *P*<.05 was considered statistically significant.	• Mean SICU LOS and HLOS greater in group 2 (*p*=.0029 & *p*=.0015) • Number of SICU visits and hospital mortality unchanged (*p*=.48 & *p*=.3565) • Increase in consults of patients meeting one trigger from 0-23.8% but not statistically significant (*p*=.138) • Rate of palliative care consults did not significantly increase (2.33-3.2% *p*=.2679) • Time from trigger to consultation did not decrease significantly (*p*=.59) • Inhospital mortality after consultations did not increase significantly (*p*=.4853)	Limitations: • Increase in trauma patients in group 2 (*p*=.0015) • Decrease in plastic and reconstructive surgery patients in group 2 (*p*=.015) • One new surgeon added and 2 surgeons left the practice during the time between groups. • Retrospective and could not control bias. • Intervention only suggested palliative care consultation. • Reviewer not present on nights or weekends. • No power analysis.

						Strengths: • Retrospective reviewer blinded to outcome measure. • Differences between samples assessed with subset analysis showing trauma patients did not account for changes in triggers. **Conclusion**: Implementation of triggers does not increase palliative care consultations in the SICU. Triggers occur in too few patients to effect overall access to palliative care, however, they do bring attention to palliative care needs.

Study Citation: Walker, K. A., Mayo, R. L., Camire, L. M., & Kearney, C. D. (2013). Effectiveness of integration of palliative medicine specialist services into the intensive care unit of a community teaching hospital. *Journal of palliative medicine*, *16*(10), 1237-1241.

Design, Method & Conceptual Framework	Sample & Setting	Major Variables Studied	Outcomes Measures	Data Analysis	Findings	Appraisal Level and Quality
						Level: II/C
Retrospective chart review **Methods**: Palliative medicine team member screened all medical patients based on	**Setting**: 254 bed community teaching hospital in a 24 bed mixed surgical and medical ICU	**Independent Variable**: Palliative medicine screening tool developed by palliative medicine team based on CAPC criteria.	**Primary**: Consult volume per month and time to consult (in days) **Secondary**:	Mann-Whitney (Wilcoxon) W test Calculation performed using R version 2.13.0	• Mean consult volume per month was significantly higher post implementation ($p=.04$) • Time to consult decreased nonsignficantly ($p=.46$)	Limitations: • Physicians choice ultimately to consult. • Unclear if palliative presence on rounds of screening tool was

screening tool and participated in rounds twice weekly. ICU physicians had final decision to make consult. One investigator trained two others on chart abstraction. Quality checked quarterly.	**Sample**: only included medical patients Preintervention group (October 2007- May 2008) Post intervention group (November 2008-October 2009)	**Dependent Variable**: Mean palliative care consult volume per month	ICU LOS, hospital mortality rate and disposition setting	*P*<.05 was considered statistically significant.	• 109 patients screened positive but were not referred (62%) • No significant difference in hospital mortality *(p=.09)* • Median ICU LOS significantly shorter in referred group (7 days versus 11 days *p*<.001) • Patients referred were more likely to enroll in hospice (*p*<.001)	more effective or if both were necessary. • No power analysis. • No interrater reliability completed. • Nonrandomized non-blinded method can lead to unmeasured differences between groups. • Design limits ability to account for confounding factors. • Demographic differences between groups and size of pre and post intervention samples not clear. Strengths: • Data quality monitored. • Screening criteria developed based on CAPC standards **Conclusion**: Palliative medicine consults increased significantly after integration and screening in the ICU. ICU LOS decreased significantly with consults while mortality

						between groups remained the same.

Study Citation: Lapp, E. A., & Iverson, L. (2015). Examination of a palliative care screening tool in intensive care unit patients. *Journal of Hospice & Palliative Nursing*, *17*(6), 566-574.

Design, Method & Conceptual Framework	Sample & Setting	Major Variables Studied	Outcomes Measures	Data Analysis	Findings	Appraisal Level and Quality
						Level: III/A
Retrospective, descriptive, exploratory study design

Methods: Patient's chart reviewed to see if they met one or more triggers based on narrative notes. Exact wording required in documentation in order to screen positive. | **Setting**: 341-bed Midwestern academic medical center

Randomized sample of 200 patients (of total of 1136) between January 1- December 31, 2013 in a 20-bed combined MICU and SICU

Excluded patients <19 years old or no class of CHF or stage of COPD documented. | **Independent Variable**: Adapted CAPC screening tool including 22 items

Dependent Variable: Palliative care consultation (determined by presence of palliative care consultation note) & mortality (defined by patient dying in the ICU) | Number of criteria met per patient

Mortality rate (as defined by patient dying in the ICU) in relation to number of criteria met

Most common triggers for referral in this setting | X^2 for independent proportions to compare mortality rates

Fisher exact to determine nonrandom association between 2 variables.

Logistic regression to compare mortality rates between 4 categories based on number of criteria met.

Analysis conducted using SAS 9.4 software. | • Patients meeting 1-3 criteria had a 3.5% chance of consult
• Patients meeting 4-6 criteria had a 27% chance of consult
• Patients meeting 7-10 criteria had a 61.5% chance of consult
• Number of screening criteria met was significant in predicting probability of being consulted ($p<.0001$)
• Odd of patient being consulted increased 1.74 time for each additional criteria met
• Patient had to meet on average 7.3 criteria to be consulted
• Number of screening criteria met was significant in predicting probability of dying in the ICU (p<.0001)
• Increasing mortality factor 1.5 for each additional criteria met | Limitations**:**
• Single center preventing generalization
• Unclear adequacy of sample size without power analysis
• Unknown quality of provider documentation and completeness of medical record
• No post implementation data

Strengths**:**
• CAPC criteria specifically created and tested for ICU
• Extensive data analysis
• Randomized sample with demographic data examined
• Single chart reviewer eliminating |

					Findings	Appraisal Level and Quality
					• Of 31 patients who died in the ICU only 14 (45%) had palliative care consults • Most frequent triggers met are "chronic renal disease +/- dialysis" "anticipated discharge to LTAC" and "frequent hospital or ICU admission (>1 admission for the same condition within 3 months)"	variations with clear wording for positive screen **Conclusions**: Number of criteria met significantly increases risk of mortality. Patients with more than one criteria met should be assessed for palliative care needs by the primary team or palliative care team. Patients with a score of 8 or higher should be adopted as definitive palliative care consult based on mortality risk. Proven need for trigger tool based on lack of palliative care consults placed compared to triggers met.

Study Citation: Sihra, L., Harris, M., & O'Reardon, C. (2011). Using the improving palliative care in the intensive care unit (IPAL-ICU) project to promote palliative care consultation. *Journal of pain and symptom management*, *42*(5), 672-675.

Design, Method & Conceptual Framework	Sample & Setting	Major Variables Studied	Outcomes Measures	Data Analysis	Findings	Appraisal Level and Quality
						Level: V/A
Quality Improvement **Methods**: Two MICU nurses screened MICU and SICU patients 2-3 times per week. Attending physician was notified of	**Setting**: Large urban medical center MICU and SICU. Sample excluded admissions <48 hour ICU stay	**Independent Variable**: Screening criteria for palliative care chosen from previously used criteria or areas of concern	**Primary**: Fraction of consults obtained from the total number of patients screened	Simple statistical analysis-methods not described	• Proportion of consults between MICU and SICU did not differ significantly (34.5 % v 37.4%) • MICU and SICU admissions decreased during the project from	Limitations**:** • Lack of description of statistical analysis • Differences in conversations between different palliative care physicians may

						Findings	Appraisal Level and Quality
patients who screened positive by phone from the palliative care service offering assistance and the physician could choose whether to make a formal consult.	Intervention group: MICU and SICU patients between April 2 and December 31 2010. N= 273 Preintervention group: MICU and SICU patients April 2 and December 31 2009	**Dependent Variable**: Palliative care consults				previous year 5.5% and 11.4% respectively • MICU consults increased 113% during intervention • SICU consults increased 51% during intervention • Combined 81.2% increase in palliative care consults	have altered consultation rates • Physician required to place consult. Strengths: • Increased consults despite decreased admissions • Large sample for single institution study • Clear, well defined, reproducible, interventions goals and measures **Conclusion**: Communication with attending physician based on palliative care screening criteria increases palliative care consults.

Study Citation: McCarroll, C. M. (2018). Increasing Access to Palliative Care Services in the Intensive Care Unit. *Dimensions of Critical Care Nursing*, *37*(3), 180-192.

Design, Method & Conceptual Framework	Sample & Setting	Major Variables Studied	Outcomes Measures	Data Analysis	Findings	Appraisal Level and Quality
						Level: V/B
QI project using Plan-Do-Study-Act framework **Methods**: Nursing staff screened patients on admission and daily. Nurse discussed with attending physician	**Setting**: 14 bed adult medical-surgical ICU in southeastern United States Preintervention (June-August 2016): 10 patients	**Independent Variable**: Palliative care trigger tool using site specific evidence based triggers selected by key stakeholders using IPAL-ICU	Proportion of palliative care consultations	Descriptive statistics and simple statistical analysis	• Preimplementation 1/10 patients consulted (10%) • Postimplementation 3/10 patients consulted (30%) • Increase in consults 200%	Limitations: • Administrative changes occurred during implementation that altered ICU population • Low patient acuity and low census

at rounds and physician placed consult if deemed necessary.	Postintervention (October-December 2016): 10 patients	**Dependent Variable**: palliative care consults				during implementation • Small sample and single center • Physician required to place consult. Strengths: • Support of charge nurse in daily screening • Interdisciplinary collaboration in developing screening tool. • Extensive literature review. **Conclusions**: Physician buy-in is crucial to success of palliative screening tools without automatic consult placement. Implementing screening tools for palliative care in the ICU both identify patients in need of input from palliative care specialists as well as educate physicians on how and when to use palliative care consults.
Study Citation: Villarreal, D., Restrepo, M. I., Healy, J., Howard, B., Tidwell, J., Ross, J., ... & Espinoza, S. E. (2011). A model for increasing palliative care in the intensive care unit: enhancing interprofessional consultation rates and communication. *Journal of pain and symptom management*, *42*(5), 676-679.						
Design, Method & Conceptual Framework	**Sample & Setting**	**Major Variables Studied**	**Outcomes Measures**	**Data Analysis**	**Findings**	**Appraisal Level and Quality** **Level**: V/B

Quality improvement **Methods**: Daily pre-rounds between palliative care and MICU teams to identify patients that would benefit from consult.	**Sample:** 10-bed MICU, 65% of patients >60 years old, >60% of patients belong to minority group **Setting**: South Texas Veterans Health Care System Audie L. Murphy Hospital 268-bed facility Preintervention group: July 2010 to September 2010 N=243 Intervention group: October 2010-April 2011 N=348	**Independent Variable**: Palliative care screening of 5 clinical conditions that are risk for poor outcome based on literature review of mortality risks **Dependent Variable**: palliative care consults, mortality and social work visits	Percentage of patient deaths for which there was a palliative care consult Total percentage of patients for which there was a palliative care consult Percentage of social work visits with and without palliative care consults for all patients	Simple statistical analysis- methods not described	• Similar patient characteristics between samples • Significant increase in patient deaths with palliative care consults (5% vs. 59%) during intervention • Significant increase in total percentage of patients for which there was a palliative care consult during intervention (5% vs. 21%) • Social work visits increased from 13% to 49% with palliative care consult	Limitations**:** • Lack of description of statistical analysis • Limited population of study (predominantly older males) • High MICU attending turn over • Lacked clear definition of if all patients meeting criteria received consult or if choice was made by MICU physician Strengths: • Large sample size • Education training provided before intervention to increase awareness • Biweekly meetings and data review **Conclusion**: Daily pre-round between palliative care and MICU teams using screening criteria increases palliative care consults.
Study Citation: Mun, E., Umbarger, L., Ceria-Ulep, C., & Nakatsuka, C. (2018). Palliative Care Processes Embedded in the ICU Workflow May Reserve Palliative Care Teams for Refractory Cases. *American Journal of Hospice and Palliative Medicine®*, *35*(1), 60-65.						
Design, Method & Conceptual Framework	**Sample & Setting**	**Major Variables Studied**	**Outcomes Measures**	**Data Analysis**	**Findings**	**Appraisal Level and Quality** **Level**: V/B

| Quality Improvement **Methods**: Patients screened daily. Patients meeting trigger require family meeting by Day 3. If additional needs found by ICU physician, multidisciplinary family meeting with palliative care initiated by Day 5. | **Setting**: 15-bed mixed medical, surgical, cardiac and neuro ICU at Kaiser Permanente Medical Center (318-bed tertiary care hospital in Honolulu Hawaii) **Sample**: Preintervention group November 1, 2013- January 30, 2014 N=194 Intervention group April 1- June 30, 2014 N=198 | **Independent Variable**: Palliative care team, ICU nurses and physician developed screening criteria based on literature review **Dependent Variable**: Palliative care consultations | Number of patients meeting screening criteria Number of ICU family meetings by Day 3 when criteria met Number of palliative care consults Changes in code status after ICU or palliative care family meeting | Pearson X^2 for comparison of frequencies Microsoft Excel and SPSS used for statistical calculations. | • Number of patients meeting screening criteria in pre and post intervention groups were not statistically different
• Increase in proactive family meetings by day 3 in intervention group (p=.01)
• Changes in code status after family meeting significantly increased in intervention group (p=.05)
• No significant increase in number of palliative care consults (p=.39) | Limitations:
• Single unit and facility
• Limited time of collection
• No power analysis
• Kaiser treats <20% of Hawaii population
• Facility undergoing joint commission review at the time of study leading to hospital wide focus on palliative care efforts

Strengths:
• Demographic comparison between groups
• Detailed statistical analysis
• Well supported conclusions

Conclusion: Screening criteria raise awareness for palliative care needs. Palliative care can be successfully incorporated by ICU team with consults reserved for specialized situations. |

Study Citation: Mun, E., Nakatsuka, C., Umbarger, L., Ruta, R., McCarty, T., Machado, C., & Ceria-Ulep, C. (2017). Use of Improving Palliative Care in the ICU (Intensive Care Unit) Guidelines for a Palliative Care Initiative in an ICU. *The Permanente journal*, 21.

Design, Method & Conceptual Framework	Sample & Setting	Major Variables Studied	Outcomes Measures	Data Analysis	Findings	Appraisal Level and Quality
						Level: V/C
Quality Improvement **Methods**: Patients screened on admission and daily. If criteria met social work, consult generated and guidelines were then followed. Palliative care consult placed by physician if needs found during Day 1-3 after meeting criteria.	"ICU" only description provided	**Independent Variable**: Guidelines of IPAL-ICU project including: model of integration, screening and trigger criteria and guideline formation. Screening criteria created by palliative care team and ICU team based on literature review. Guideline formation included: Code status documentation advance directive and surrogate name Day 1 (latest by Day 3), family meeting by Day 3 with ICU team, multidisciplinary meeting with palliative care by Day 5. **Dependent Variable**: palliative care integration in the ICU	Process measures: Number of patients meeting screening criteria Documentation of surrogate, advanced directive and code status by Day 3. Changes in code status after ICU or palliative care family meeting Clinical measures: Number of days of intubation Financial measures: ICU LOS and HLOS	No data analysis	• IPAL-ICU resources allowed for changes based on specific ICU needs customized to the environment	Limitations: • Lack of data analysis based on intervention to support effectiveness of change • Lack of setting/sample description Strengths: • Clear goals with extensive description of screening and guidelines formed • Flow chart for ease of understanding process • Extensive literature review **Conclusion:** IPAL-ICU provides effective tool for individualized integration of palliative care. Use of the IPAL-ICU guidelines increases integrative palliative care and creates a standard for basic palliative care principles as part of daily routine.

Note. SICU=Surgical Intensive Care Unit, LOS= Length of stay, HLOS= hospital length of stay, ICU= intensive care unit, CAPC= Center to Advance Palliative Care, QI= quality improvement, IPAL-ICU= Improving Palliative Care in the ICU, CHF= congestive heart failure, COPD= chronic obstructive pulmonary disease, LTAC= long term acute care
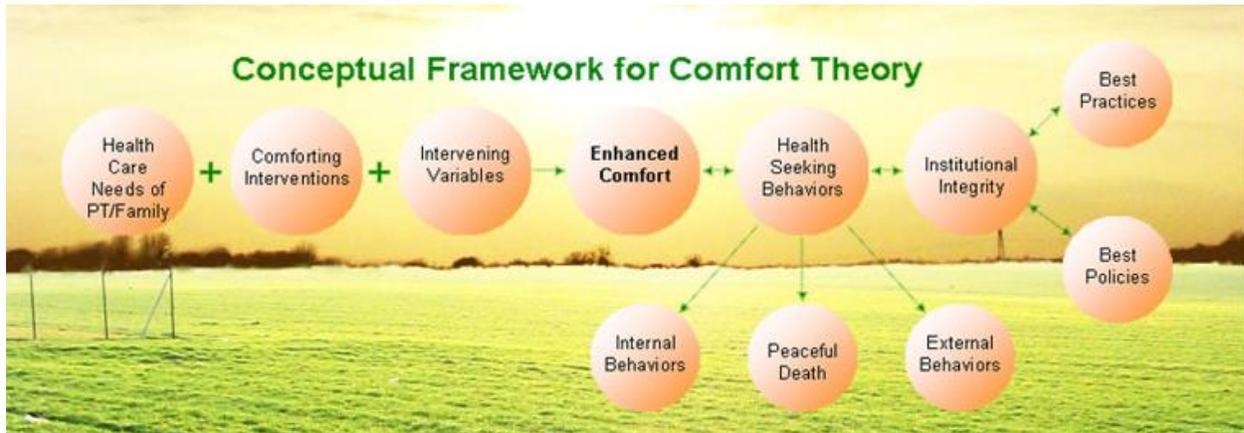
Appendix B

Theoretical Framework and Application

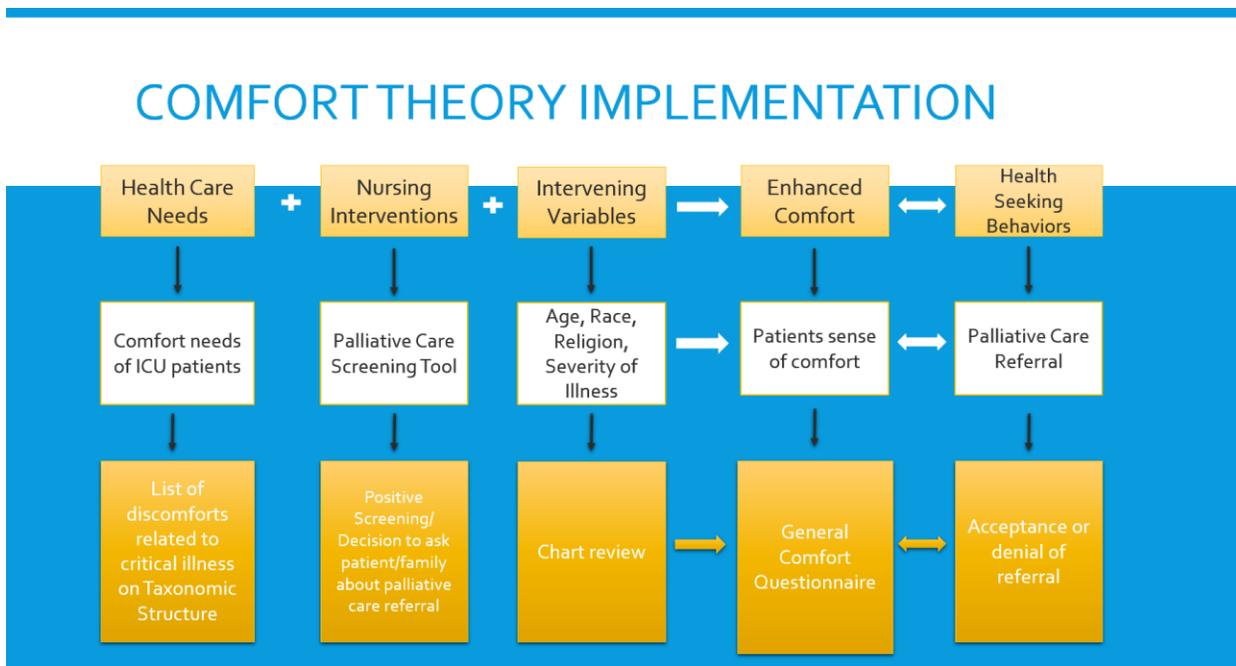*Figure 1*. Conceptual Framework for Comfort Theory taken from Kolcaba, K. (2010).

Introduction. Retrieved from http://www.thecomfortline.com/

Figure 2. Comfort theory implementation adapted from: Kolcaba, K. (2003). *Comfort theory and*

practice: a vision for holistic health care and research. Springer Publishing Company, p. 122.

Appendix C

Palliative Care Screening Paper Documentation

1. Does the Patient Have A Life-Limiting Illness?
(Check All Items that Apply)

☐ **Advanced Dementia or CNS Disease** (e.g. history of Stroke, ALS, Parkinson's): Assistance needed for most self-care (e.g. ambulation, toileting) and/or Minimally verbal.

☐ **Advanced Cancer:** Metastatic or locally aggressive disease.

☐ **End Stage Renal Disease:** On dialysis or Creatinine > 6.

☐ **Advanced COPD:** Continuous home O2 or chronic dyspnea at rest.

☐ **Advanced Heart Failure:** Chronic dyspnea, chest pain or fatigue with minimal activity or rest.

☐ **End Stage Liver Disease:** History of recurrent ascites, GI bleeding, or hepatic encephalopathy.

☐ **Septic Shock (i.e. signs of organ failure due to infection):** Requires ICU admission and has significant pre-existing comorbid illness.

☐ **Provider Discretion - High chance of Accelerated Death:** *Examples:* Hip fracture > age 80; Major trauma in the elderly (multiple rib fractures, intracranial bleed), Advanced AIDS, etc

No Checked Items? STOP! Screening is Complete	**ONE** or More Checked Items? CONTINUE screening!

⬇

2. Does the Patient Have TWO or More Unmet Palliative Care Needs?
(Check All the Apply)

☐ **Frequent Visits:** 2 or more ED visits or hospital admissions in the past 6 months.

☐ **Uncontrolled Symptoms:** Visit prompted by uncontrol symptom: e.g. pain, dyspnea, depression, fatigue, etc.

☐ **Functional Decline:** e.g. loss of mobility, frequent falls, decrease PO, skin breakdown, etc.

☐ **Uncertainty about Goals-of-Care and/or Caregiver Distress** Caregiver cannot meet long-term needs; Uncertainty/distress about goals-of-care.

☐ **Surprise Question:** You would not be surprised if this patient died within 12 months.

Less than TWO checked Items? STOP! Screening is Negative	**TWO** or more checked Items? PC Referral Recommended!

Nurse Signature: _____   Date:_____

CONTINUED ON BACK

Provider to Document: (Check one)
- ☐ Family meeting in the next 48 hours – note will be placed in chart
- ☐ Palliative care consult
- ☐ No family meeting or palliative care consult because:
  - Patient is expected to be discharged in next 24 hours
  - Family declined
  - No unmet palliative care needs at this time
  - Other: _____

Provider Signature:_____   Date: _____

Please return to Charge Nurse or Resource Nurse when complete

Appendix D

Audit Tools

Admission Date	De-identified Patient ID	Screening tool completed 1= Yes, 0= No

Admission Date	De-identified Patient ID	Screening outcome 1= Positive, 0= Negative

Admission Date	De-identified Patient ID	Reason for lack of consult 1= Anticipated discharge in 24 hours 2=Family declined 3=No unmet palliative care needs 4=Other

Admission Date	De-identified Patient ID	Palliative consult present when screen positive 1= Yes, 0= No

Admission Date	De-identified Patient ID	Palliative consult present when indicated by provider 1= Yes, 0= No

Admission Date	De-identified Patient ID	Family meeting note present when indicated on screening 1= Yes, 0= No

Admission Date	De-identified Patient ID	Family meeting note within three days of admission (for all patient) 1= Yes, 0= No

De-identified Patient ID for all Palliative Care consults placed

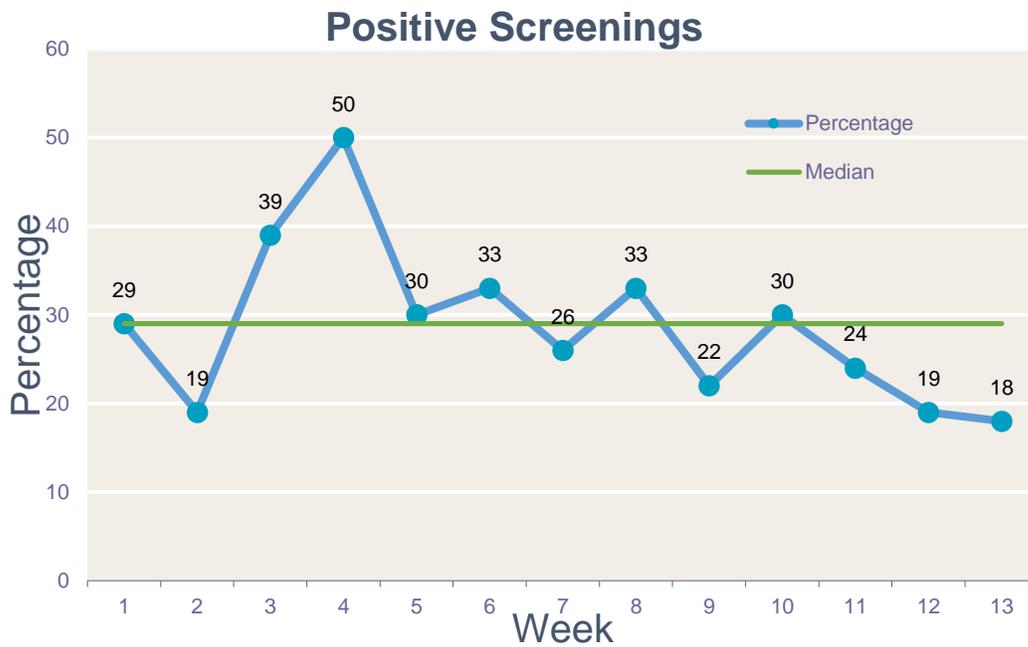Appendix E

Results
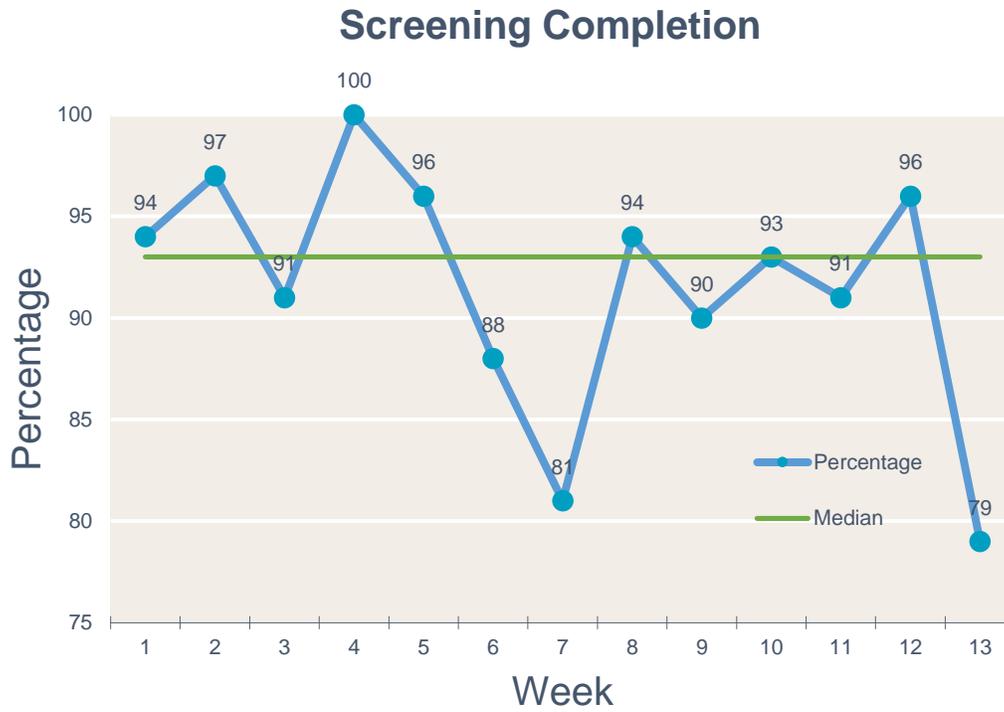
Figure 1. Palliative Care Screening Completion.
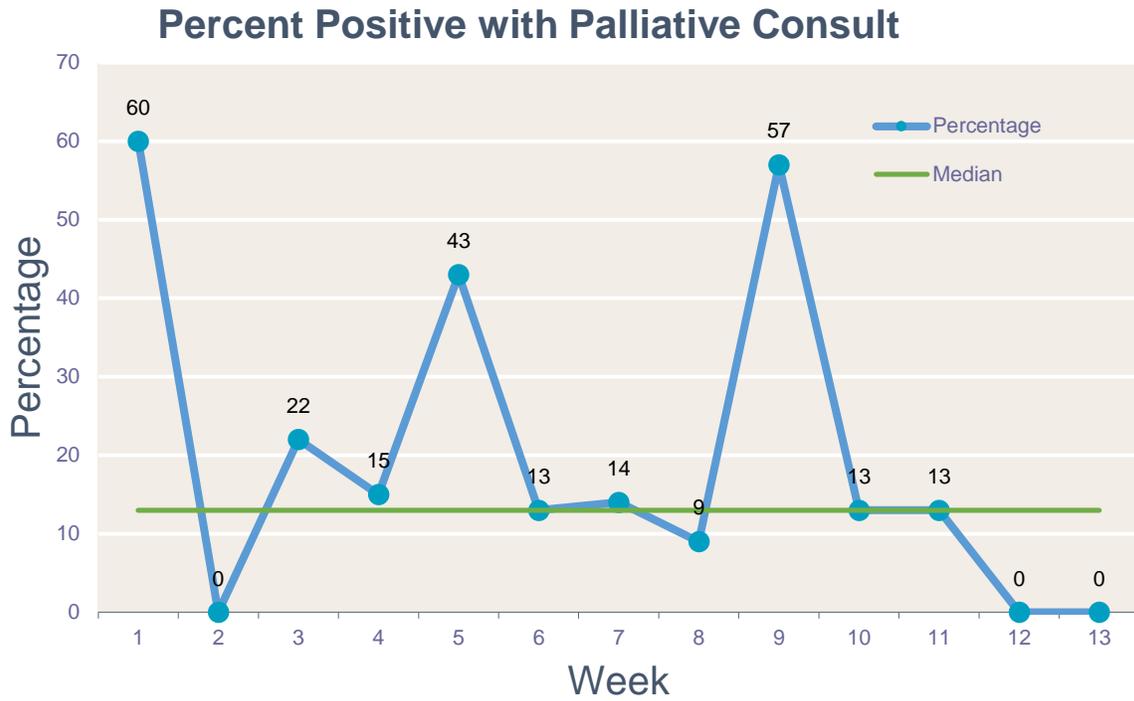
Figure 2. Positive Palliative Care Screenings.

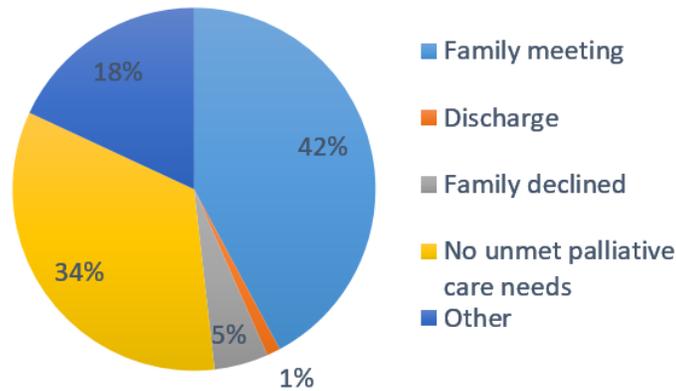*Figure 3.* Positive Screenings with Palliative Care Consult.

Figure 4. Reason for Lack of Palliative Care Consult.
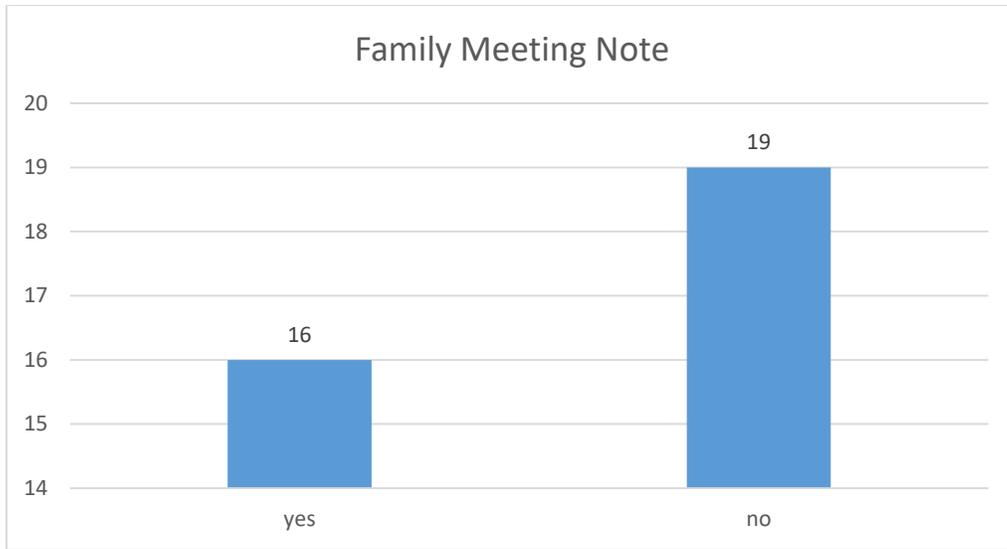
Figure 5. Family Meeting Documentation.
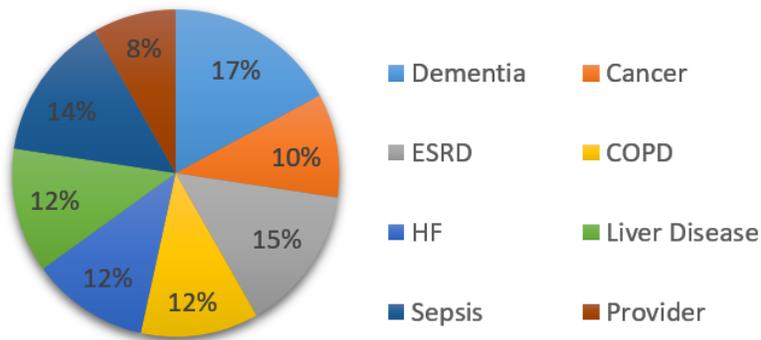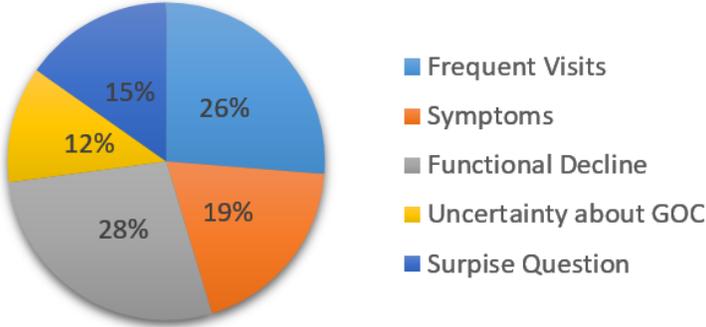

Figure 6. Reason for Positive Screening, Category One.

Figure 7. Reason for Positive Screening, Category Two.