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# Improving intensive care unit-based palliative care delivery: a multi-center, multidisciplinary survey of critical care clinician attitudes and beliefs

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## Abstract

**Objective—**Addressing the quality gap in intensive care unit (ICU)-based palliative care is limited by uncertainty about acceptable models of collaborative specialist and generalist care. Therefore, we characterized the attitudes of physicians and nurses about palliative care delivery in an ICU environment.

**Design—**Mixed-methods study.

**Setting—**Medical and surgical ICUs at three large academic hospitals.

**Participants—**303 nurses, intensivists, and advanced practice providers.

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**Measurements and main results—**Clinicians completed written surveys that assessed attitudes about specialist palliative care presence and integration into the ICU setting, as well as acceptability of 23 published palliative care prompts ('triggers') for specialist consultation. Most (n=225, 75%) reported that palliative care consultation was underutilized. Prompting consideration of eligibility for specialist consultation by electronic health record searches for triggers was most preferred (n=123, 41%); only 17 (6%) felt current processes were adequate. The most acceptable specialist triggers were metastatic malignancy, unrealistic goals of care, end of life decision making, and persistent organ failure. Advanced age, length of stay, and duration of life support were the least acceptable. Screening led by either specialists or ICU teams was equally preferred. Central themes derived from qualitative analysis of 65 written responses to open-ended items included concerns about the roles of physicians and nurses, implementation, and impact on ICU team-family relationships.

**Conclusions—**Integration of palliative care specialists in the ICU is broadly acceptable and desired. However, the most commonly used current triggers for prompting specialist consultation were among the least well accepted, while more favorable triggers are difficult to abstract from electronic health record systems. There is also disagreement about the role of ICU nurses in palliative care delivery. These findings provide important guidance to the development of collaborative care models for the ICU setting.

### Keywords

critical illness; palliative care; patient reported outcomes; patient-centeredness; electronic health record

## Introduction

Palliative care is patient- and family-centered care provided to optimize quality of life through addressing physical, emotional intellectual, and spiritual needs.(1) Providing palliative care is an essential component of patient- and family-centered care in intensive care units (ICUs).(2) However, there is evidence that the quality of ICU-based palliative care is suboptimal likely because of both structure and process variation in care delivery including staffing limitations, shortcomings in clinicians' skills, and infrequent and late palliative care specialist engagement.(3-12)

Addressing this quality gap at an individual clinician level is challenging, because it is difficult to broadly and expediently improve ICU providers' palliative care skills in areas such as communication and shared decision making due to cost, governance, and logistical challenges.(13, 14) Instead, health systems have progressively focused on increasing specialist involvement in ICU care through protocolized systems based on 'triggers.'(15) Palliative care triggers are clinical characteristics generally derived from past clinical trial inclusion criteria that typically signify poor prognosis, and by extension, appropriateness for specialist consultation.(9, 16)

Trigger-based palliative care has attractive attributes including a clear structure, applicability to both medical and surgical ICU populations, and linkage to improved outcomes in some past trials.(15) However, their widespread application could strain the already limited

capacity of the palliative care workforce.(17, 18) Also, few replicable care models exist that involve palliative care generalists (i.e., the ICU team), palliative care specialists, and sensible triggers—and little is known about ICU clinician preferences for such models.(10)

To address this gap, we surveyed a diverse group of ICU clinicians from institutions that do not currently employ protocolized palliative care systems. We aimed to explore attitudes about ICU-based palliative care delivery, preferred screening practices for finding appropriate recipients of specialist consultation, and triggers themselves.

## Materials and Methods

### Design, setting, and participants

We conducted a cross-sectional study between May and November 2015 at three large geographically diverse academic hospitals: a private urban hospital in the Northeast (Site 1), a public urban hospital in the Northwest (Site 2), and a private non-profit hospital in a mid-sized Southern city (Site 3). All sites' Institutional Review Boards approved the study protocol.

Clinical research coordinators prospectively enrolled board-certified ICU attending intensivists and fellow physicians, bedside ICU nurses, and advanced practice providers (APPs) from predominantly ‘closed’ model adult medical and surgical ICUs. Clinicians were approached in person in ICUs and at staff meetings. The only exclusion was resident or intern physician training level. After providing informed consent, participants completed a single written survey.

### Measures

The study survey was designed by the authors to assess clinicians' (a) attitudes about how best to integrate palliative care specialists into the ICU setting, (b) preferences for eligibility screening for specialist palliative care, (c) feedback about process of care factors that would enhance their acceptability of candidate ICU-based palliative care systems, and (d) level of agreement regarding each of 23 published palliative care trigger criteria derived from both literature searches and systematic reviews.(9, 15) Most items included 5-point Likert scales as responses. Surveys included open-ended items that allowed respondents to record their thoughts about ICU-based palliative care and its ideal delivery.

### Statistical analysis

The primary aim of this study was to provide descriptive information about clinician attitudes and beliefs. Categorical data are presented as numbers (percent) and continuous data as means (standard deviations [SDs]). To simplify data presentation, we created two dichotomous analytic variables by collapsing categories. First, we considered clinical ‘work area’ as either medical (cardiac, neurological, and medical ICUs) or surgical (general surgery, cardiothoracic surgery, trauma). ‘Job type’ was defined as either physician (attending and fellow) or nurse (nurse and APP). To more clearly display clinicians' prioritization of specific triggers, we created a variable defined as the ratio of respondents who agreed versus disagreed (agree:disagree ratio [ARD]) with each. We used Pearson chi-

square and Fisher exact tests to test differences in survey responses by clinician work area, job type, and study site. Content analysis of written responses to open-ended questions followed by theme generation was also conducted, with grouping by respondents' job type. We used Stata software, version 13 (StataCorp, College Station, Texas) for all analyses and considered a $p$ value <0.05 to be significant.

## Results

Among 338 clinicians approached for the study, 303 (88%) agreed to participate: 150 bedside nurses (50%), 114 (38%) intensivist physicians (64% of whom were attendings, 36% fellows), and 39 (12%) APPs (Table 1). Participants were distributed relatively evenly between medical (n=134, 44%) and surgical (169, 56%) ICUs. A total of 128 (42%) were from Site 1, 93 (31%) were from Site 2, and 82 (27%) were from Site 3. Most completed the survey in less than 10 minutes.

### Preferences for integrating palliative care specialists in an ICU setting

A total of 225 (75%) felt that palliative care specialist consultation was underutilized and 180 (63%) participants believed that protocolized specialist consultation was effective; there was no difference in responses by site (eTable 1). The majority (n=218, 73%) reported a high interest in developing novel systems of palliative care. Nurses and APPs were more likely than physicians to characterize palliative care as underutilized, to have greater interest in developing palliative care systems, and to report that such systems were effective (all p<0.001). Medical ICU staff more frequently reported that palliative care was underutilized while surgical staff more commonly reported that consultation was appropriate (p=0.008).

A total of 123 (41%) preferred palliative care specialist consultation prompted by automated EHR-based triggers (Figure 1). Seventy-one (24%) stated that they would favor the formal presence of palliative care specialists on ICU rounds and 66 (22%) preferred informal specialist interactions such as briefly checking in to discuss potential consultations. Only 17 (6%) were satisfied with current institutional practice. Preferences for specialist integration were associated with belief in palliative care effectiveness, perception of specialist underuse, desired clinician autonomy in decision making, and nurse job type (all p<0.001); no differences were seen by work area, site, or by attending vs. fellow status.

### Beliefs about criteria for specialist eligibility and operationalizing specialist palliative care

Clinicians reported no dominant preference for characteristics that could be used as the basis for triggering protocolized specialist palliative care consultation, endorsing with nearly equal frequency patient phenotype such as chronic critical illness or frailty (n=66, 22%), diagnosis (n=66, 22%), patient and family needs (n=65, 21%), and prognosis (n=50, 16%). Very few (n=9, 3%) preferred specialist consultation based on length of ICU stay or duration of life support. A similar proportion of nurses (n=114, 68%) and physicians (n=87, 77%) felt that a palliative care needs assessment should be a component of a candidate palliative care system (p=0.10). A total of 284 (95%) reported that screening for palliative care consultation should be based on processes other than the order of the attending ICU physician, most commonly by the palliative care service itself (Figure 2). There was no difference by job

type for each of five possible strategies (specialist screens, nurse screens, nurse and physician screen, physician orders consult, multiple) with the exception of nurse-led screening (31% vs. 16%, p=0.004).

### Factors that would enhance clinician interest in ICU-based palliative care systems

A total of 200 (67%) participants felt that the ICU teams should approve trigger lists before implementation to maximize their interest in new care systems (eFigure 1). The majority of clinicians reported that an automated, involuntary, system would be acceptable though nurses were more enthusiastic than physicians (p<0.001). Compared to physicians, nurses more frequently agreed that they should be able to initiate specialist referral (all p<0.01).

### Acceptability of specific screening triggers for specialist palliative care eligibility

The most favored categories of triggers for specialist consultation included family needs and conflict (average agree:disagree ratio [ADR] 6.9), pre-existing characteristics of patients (average ADR 5.7), and characteristics of the current critical illness (average ADR 3.6). The most acceptable individual triggers were metastatic malignancy (ADR 29), unrealistic goals of care or expectations for recovery by family members (ADR 22), help needed with goals of care decision making (ADR 17), and persistent multiple system organ failure (ADR 12) (Table 2). The lowest ADRs were observed with ICU admission after prolonged ward care (ADR 1.8), refractory psychological symptoms (ADR 2.0), advanced age (ADR 2.6), and decision making for tracheotomy or feeding tube (ADR 2.6).

### Themes identified from open-ended responses

Three key themes emerged through a content analysis of 78 written responses to open-ended survey items (eTable 2). First, respondents described conflict about provider roles in future collaborative palliative care systems. Ten respondents highlighted the tension between attending autonomy with systems approaches. “I don't want to be inundated with palliative care consults and meetings requested by other providers. I would rather approve the consult —not a nurse,” said one attending. Yet others, primarily nurses, noted that a requirement for an attending's approval would unfairly limit patients' access to palliative care. Stakeholder engagement, particularly among surgeons, was another common theme mentioned by eight participants.

A second theme involved usability concerns relevant to implementing a trigger-based system. “We already have trigger overload,” wrote one attending. An APP worried that progressive provider numbing from repeated EHR-based prompts due to “pop-up fatigue” could paradoxically reduce palliative care specialist presence. Ensuring triggers were specific for diverse ICU populations, especially neurological ICUs, was mentioned by some. Workforce shortages were also anticipated, as noted by one nurse: “I suspect an automated trigger system will show us just how much we underutilize this service. I think you are going to need more staff to be able to keep up.”

Last, several clinicians expressed concern that a protocolized palliative care system might negatively impact the ICU clinician-patient/family relationship. “Triggered consults could lead to conflicting information and confusing messages for families,” observed a fellow.

Another nurse noted that the inclusion of specialists could possibly even increase conflict unless “social situations like difficult family dynamics [were] somehow…incorporated.”

## Discussion

Palliative care is an important element of ICU care, (19) though there is evidence that the current quality of ICU-based palliative care in the post-SUPPORT era remains suboptimal. Many hospitals have difficult-to-change structural barriers related to resources and specialist availability that limit a response to this quality gap.(20) Therefore, focusing on easier to address process barriers such as optimizing collaboration between ICU teams and palliative care specialists, as was the focus of our research, could be of higher value. However, it is difficult to develop acceptable solutions without first understanding the perceptions of clinicians who are directly involved in patient care. In this multi-disciplinary and multi-institutional study of ICU clinicians, we found important and novel insights that directly address key knowledge gaps relevant to integrating specialists into ICU care, establishing acceptable screening standards for specialist care eligibility, and effectively leveraging technology-based systems to improve care quality.

### ICU clinicians value the assistance of palliative care specialists, though disagree about the role of the bedside nurse

Collaborative models of specialist and generalist (i.e., ICU team) palliative care are advocated,(10, 21, 22) though current practice is dominated by the consultative model in which attending physicians order specialist care at their judgment and timing. In this context, it is estimated that <5% of ICU patients receive specialist palliative care through a variety of difficult-to-scale systems.(7, 16, 22, 23) However, we found that ICU clinicians from sites with robust palliative care programs overwhelmingly believed that this status quo is unacceptable. Instead, they generally favored a more collaborative and structured relationship with specialists whose assistance was generally felt to be underutilized. Clinicians across job type, ICU work area, and study site also reported a surprising willingness to relinquish a substantial degree of autonomy for the promotion of protocolized palliative care.

However, we also discovered important nurse-physician variation in attitudes about the roles that ICU nurses should play in screening for and activating specialist consultation. Nurses reported a desire to be more active participants in palliative care delivery and to reduce ICU attending variability in palliative care consultation. Past research has shown that physicians perceive nurses to be more involved in end of life decision making than is actually the case.(24) Nurses' focus on symptom care and their enduring role at the bedside may allow greater opportunity for assessment of palliative care needs and benefits. but they may not consistently feel empowered or otherwise able to address these needs within their scope of practice and skillset.(25) This lack of empowerment is also reflected in our finding that physicians (48%) were less likely than nurses (73%) to endorse a system in which both could initiate referrals. Concern over the care implications of such tension has prompted others to suggest nursing staff perceptions should in fact be a quality indicator in ICUs.(26) Given the historical importance of palliative care competencies in nursing education, the

proven record of nurse-led interventions, and the limited physician-to-patient ratio, future investigations should consider this perception gap in the design of care models and nurse-led interventions.(27, 28)

### Balancing triggers with actual needs

The use of triggers to screen for specialist care eligibility are increasingly popular despite critiques regarding their anchoring to death as an outcome, unclear association with actual need, lack of patient-centeredness, and dependence on early application to impact resource-based outcomes.(17, 29) Most clinicians in our sample not only approved trigger-based screening, but appeared open to using a number of different trigger types. Considering a comprehensive list of over 20 published triggers, those that resonated most strongly reflected persisting organ dysfunction, incurable disease, unrealistic expectations, and clinician-family conflict. In contrast, the least acceptable triggers were based on characteristics without a clinical context such as length of stay, duration of ventilation, or age—the most popular in current clinical practice owing to their simplicity of implementation. These findings demonstrate the importance of involving clinicians in future care model development to ensure acceptability.

It is estimated that 14-35% of ICU patients meet at least one palliative care trigger—a number that dramatically exceeds the capacity of the 5,500 specialist palliative care clinicians in the US.(12, 18, 30) Systematically assessing unmet palliative care needs and then combining this knowledge with trigger status to inform triage and prioritize care delivery was widely agreeable to physicians and nurses alike.(17) This strategy could address concerns about misdirection of specialist care based on unclear trigger specificity (specialist resources for ‘false positives’) and sensitivity (generalist care for ‘false negatives’ with complex unmet needs).(29) Recognizing discordance in clinician-perceived versus family-voiced need in a timely fashion could possibly enhance therapeutic alliance as well.(31) More research is required on this topic because needs are currently not widely measured or documented in clinical ICU practice and there are few validated, usable metrics for this purpose in an inpatient setting.(32-34) Last, it is important to emphasize that triggers could also be used to heighten the ICU team's awareness of potentially unmet needs, rather than serving as an automatic specialist consult.

### Implications for the role of information technology in future care models

Use of triggers in prior clinical trials required manual chart abstraction, usually by a palliative care nurse, typically followed by additional in-person screening prior to initiating a full palliative care consult. To be feasible and scalable, future solutions must leverage EHR systems using interoperable programmatic architecture to efficiently ascertain those who are at highest risk of having unmet palliative care needs.(17) While diagnosis and prognosis were generally agreeable screening criteria, the most acceptable real-time screening triggers tended to be those that are difficult to efficiently abstract from EHRs. For example, determining the presence of ‘advanced malignancy’ is challenging since this information is often not codified until discharge in the form of ICD-10 codes and may not denote ‘active’ versus ‘resolved’ status in problem lists. Triggers reflecting clinicians' desire to detect the

presence of conflict and decisional needs will require complementary electronic systems that facilitate direct report from patients and family members outside the EHR's bounds.(17)

### Limitations

This study has notable limitations. Our cohort may not adequately reflect the experiences of lesser resourced and smaller ICUs.(35) Nonetheless, the generalizability of our findings is enhanced by the more than 300 participants, multi-center setting, high response rate, and mixed-methods approach. Although this is the first study to our knowledge that has characterized attitudes towards palliative care triggers from the perspective of the interdisciplinary ICU team, we did not include primary physicians such as cardiologists, surgeons, and oncologists.(36) Their unique perspectives on palliative care and patient ownership will be important to include in future research because the majority of 'trigger positive' ICU patients survive their acute critical illness but will remain at increased risk of readmission, physical and emotional symptoms, and death.(37, 38) It is possible that an as yet unstudied application of triggers can direct these patients to post-discharge palliative care or advanced care planning.

## Conclusions

ICU clinicians generally support the development of protocolized, collaborative palliative care systems and are willing to give up substantial autonomy to promote them. However, respondents reported disagreement about the role of ICU nurses in these systems. Additionally, some of the most commonly used palliative care triggers were among the least acceptable, while many of the most broadly agreeable triggers are currently difficult to automate within EHRs. Building a scalable, acceptable ICU-based palliative care delivery system will depend on enhancing capabilities of EHRs as well as seeking novel structured data inputs from clinicians, patients, and family members. Such a robust and comprehensive system has the best chance of successfully improving the quality of care by aligning clinical care processes with the actual needs of patients and their family members.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## Acknowledgments

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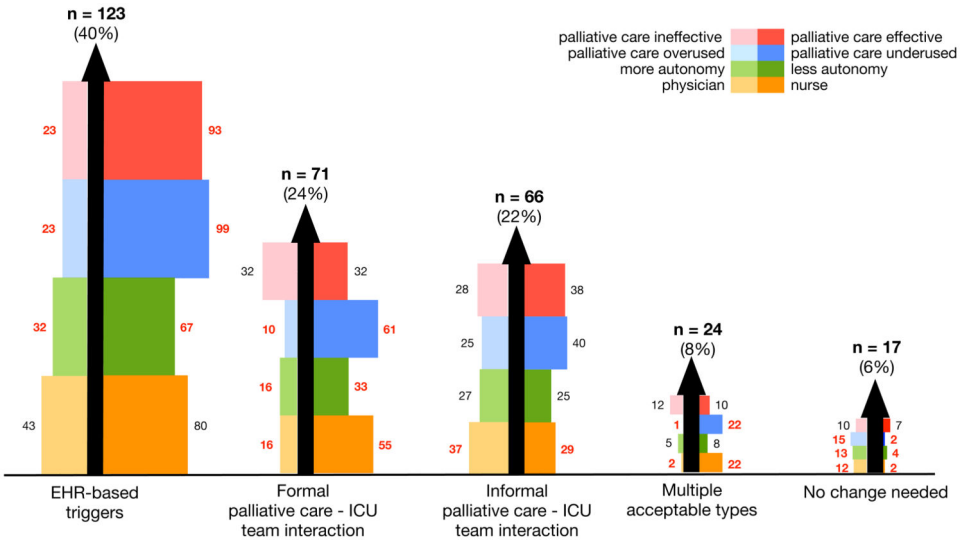


**Figure 1. Clinician preferences for integrating palliative care specialists into the ICU setting**

The height of each thick black bar is proportional to the number of clinicians who preferred one of five strategies for integrating palliative care specialists into the ICU setting. The width of colored boxes represents the number of clinicians within each preference categorized by four key characteristics shown in the key. Bolded red numbers represent statistically significant ($p$<0.05) comparisons using chi-square tests or Fisher's exact tests.

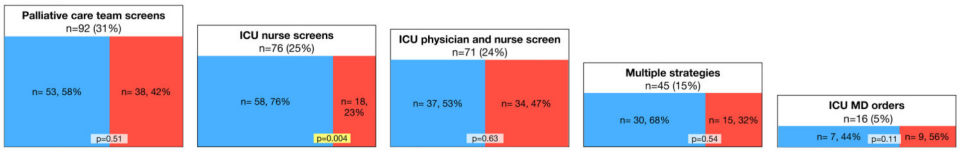


**Figure 2. Clinician attitudes about five possible methods to operationalize an ICU-based palliative care trigger system**

The height of bars represents clinician number for each method. The percentage of responses for each method is shown for nurses (blue) and physicians (red). *P* values represent comparisons between nurses and physicians within each preferred method.

## Table 1

### Participant characteristics

| Factor | n (%) |
|---|---|
| **Job type** | |
| Nurse | 150 (49) |
| Physician | 114 (38) |
| Attending physician | *73 (64)* |
| Fellow physician | *41 (36)* |
| Advanced practice provider | 39 (13) |
| **Clinicians' ICU work area** | |
| Medical | 90 (30) |
| General surgery / trauma | 65 (21) |
| Cardiothoracic surgery | 58 (19) |
| Multiple | 46 (15) |
| Neurology | 35 (12) |
| Cardiac | 9 (3) |
| **Site** | |
| Site 1 | 128 (42) |
| Site 2 | 93 (31) |
| Site 3 | 82 (27) |

## Table 2

**Clinician agreement with current published screening criteria for palliative care specialist consultation in intensive care units**

| | Agree n (%) | Disagree n (%) | Neutral n (%) | Agree / disagree ratio (ADR) |
|---|---|---|---|---|
| **Pre-existing characteristics of patients** | | | | |
| Active Stage 4 or metastatic malignancy | 288 (94) | 10 (3) | 7 (3) | 28.8 |
| Dementia or chronic neuromuscular disease | 264 (87) | 33 (11) | 8 (4) | 8.0 |
| Age >___ with ≥___ major comorbidities | 245 (80) | 35 (11) | 25 (8) | 7.0 |
| Baseline oxygen-dependent and now on ventilator | 240 (79) | 46 (15) | 19 (6) | 5.2 |
| Functional dependence at baseline | 242 (79) | 49 (16) | 14 (5) | 4.9 |
| Admitted from nursing home or long-term care | 237 (78) | 54 (18) | 14 (5) | 4.4 |
| Advanced age (>___ years old) | 203 (67) | 77 (25) | 25 (8) | 2.6 |
| **Average** | | | | **5.7** |
| **Family needs and conflict** | | | | |
| Unrealistic goals of care or expectations for recovery | 286 (94) | 13 (4) | 6 (2) | 22.0 |
| Need help with goals of care decision making | 281 (92) | 17 (6) | 7 (2) | 16.5 |
| Conflict within family or between patient/family and staff | 264 (87) | 27 (9) | 14 (5) | 9.8 |
| Non-physician staff believe patient/family could benefit | 264 (87) | 32 (11) | 9 (3) | 8.3 |
| Decision making for acute dialysis with mortality >___% | 227 (74) | 53 (17) | 25 (8) | 4.3 |
| Refractory physical symptoms | 198 (65) | 72 (24) | 35 (12) | 2.8 |
| Decision making for tracheostomy or surgically-placed feeding tube | 211 (69) | 80 (26) | 14 (5) | 2.6 |
| Refractory psychological symptoms | 180 (59) | 90 (30) | 35 (12) | 2.0 |
| **Average** | | | | **5.0** |
| **Current critical illness / ICU Course** | | | | |
| Multiple organ system failure for ___ days | 267 (88) | 22 (7) | 16 (5) | 12.1 |
| Cerebral ischemia __ days after arrest or stroke | 248 (81) | 32 (10) | 25 (8) | 7.8 |
| Intracerebral hemorrhage + ≥___ days ventilation | 244 (80) | 33 (11) | 28 (9) | 7.4 |
| Mortality ≥__% by ICU prediction model | 231 (76) | 47 (15) | 27 (3) | 4.9 |
| ≥___ ICU admissions in past ___ months | 223 (73) | 53 (17) | 29 (10) | 4.2 |
| Mechanical ventilation ≥____days | 205 (67) | 74 (24) | 26 (9) | 2.8 |
| ICU length of stay ≥__ days | 208 (68) | 78 (26) | 19 (6) | 2.7 |
| ICU admission after ≥__ hospital days | 185 (61) | 103 (34) | 17 (6) | 1.8 |
| **Average** | | | | **3.6** |

ICU = intensive care unit