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Brief Reports

Understanding Factors Contributing to Inappropriate Critical Care: A Mixed-Methods Analysis of Medical Record Documentation

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Abstract

Background: Factors leading to inappropriate critical care, that is treatment that should not be provided because it does not offer the patient meaningful benefit, have not been rigorously characterized.
Objective: We explored medical record documentation about patients who received inappropriate critical care and those who received appropriate critical care to examine factors associated with the provision of inappropriate treatment.
Design: Medical records were abstracted from 123 patients who were assessed as receiving inappropriate treatment and 66 patients who were assessed as receiving appropriate treatment but died within six months of intensive care unit (ICU) admission. We used mixed methods combining qualitative analysis of medical record documentation with multivariable analysis to examine the relationship between patient and communication factors and the receipt of inappropriate treatment, and present these within a conceptual model.
Setting: One academic health system.
Results: Medical records revealed 21 themes pertaining to prognosis and factors influencing treatment aggressiveness. Four themes were independently associated with patients receiving inappropriate treatment according to physicians. When decision making was not guided by physicians (odds ratio [OR] 3.76, confidence interval [95% CI] 1.21–11.70) or was delayed by patient/family (OR 4.52, 95% CI 1.69–12.04), patients were more likely to receive inappropriate treatment. Documented communication about goals of care (OR 0.29, 95% CI 0.10–0.84) and patient's preferences driving decision making (OR 0.02, 95% CI 0.00–0.27) were associated with lower odds of receiving inappropriate treatment.
Conclusions: Medical record documentation suggests that inappropriate treatment occurs in the setting of communication and decision-making patterns that may be amenable to intervention.

Keywords: decision making; end of life; futile treatment; intensive care unit

Introduction

When intensive interventions prolong life under circumstances wherein the patient will not appreciate the benefits of the treatment, critical care physicians often consider such treatment to be futile or medically inappropriate.[1–3] These patients could often be better served by palliative care.[4,5] Inappropriate treatment can prolong suffering, cause distress to the family and healthcare team, and transform death into an undignified process.[6] Since recent

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literature recommends reserving the term ''futile'' for interventions that cannot accomplish their *physiologic* goal,[7] we reflect this change in thinking by using the term ''inappropriate'' instead of ''futile'' treatment.

Although clinicians agree that treatments that are contrary to their clinical and professional judgment should be avoided,[8–12] there is incomplete understanding of how and why inappropriate treatment occurs.[13] Using a qualitative–quantitative mixed-methods approach, we aimed to understand the determinants of inappropriate treatment by performing an analysis of verbatim clinical documentation in the medical records of patients who were assessed as receiving inappropriate treatment.

Methods

Details of the definition of inappropriate treatment and the core data collection are described in detail elsewhere[14] and summarized here. This study was approved by the UCLA IRB (IRB No. 11-002942-CR-00004). For three months (December 15, 2011 through March 15, 2012), critical care attending physicians in five ICUs in one academic health system completed a daily questionnaire, asking whether their patients were receiving inappropriate treatment. After collapsing daily survey data, 1136 patients were categorized as patients for whom treatment was never perceived as inappropriate or as patients with at least one assessment of inappropriate treatment. Hospital mortality and six-month mortality were abstracted.

Medical record abstraction

Three nurses and one internal medicine resident abstracted the medical records of the 123 patients who were assessed as receiving inappropriate treatment and the 66 patients who were assessed as receiving appropriate treatment but died within six months of ICU admission. Statements from any member of the healthcare team regarding the aggressiveness of treatment such as descriptions of prognosis, expected outcomes, and documentation reflecting communication or decision making were abstracted verbatim.

Qualitative analysis

To perform a qualitative content analysis, ATLAS-TI 7.5.6 was used to manage and code the verbatim abstractions. Three physicians (T.H.N., D.M.T., N.S.W.) of different disciplines (critical care, family medicine, and general internal medicine) used an iterative review process[15–17] to develop themes and subthemes concerning prognosis and factors that influence aggressiveness of treatment. One investigator (T.H.N.) applied codes to abstractions from all 189 patients. To assess intercoder reliability, another investigator (D.M.T.) independently coded a 15% random sample of the abstractions with a kappa of 0.78. Discrepancies were resolved by consensus.

Themes were grouped into domains: predisposing characteristics, physician–patient/surrogate communication, intermediate outcomes, and decision making. These domains were adapted from the conceptual frameworks of Torke,[18] Street,[19] and Ashton,[20] and are presented in a newly constructed conceptual model of how communication and decision making lead to appropriate or inappropriate treatment.

Statistical analysis

For each patient, we transformed the qualitative findings into quantitative data by noting the presence or absence of each theme. We performed bivariate and multivariate analyses to determine the relationship of each theme with whether the patient received inappropriate treatment. For the multivariable logistic model, we retained themes that occurred in at least five patients and appeared in both inappropriate and appropriate treatment groups. Analyses were performed using STATA 12.1.

Results

Thirty-six critical care physicians in five ICUs assessed 123 patients (11% of the 1136 evaluated patients) as having received inappropriate treatment on at least one day in the ICU. Patients who were assessed as receiving appropriate treatment had lower in-hospital mortality (4.6% vs. 68%) and six-month mortality (7.3% vs. 85%) than those receiving inappropriate critical care.

Qualitative analysis revealed 21 themes and 74 associated subthemes; their definitions with negative and positive exemplars were collected in a codebook. Table 1 presents quotations representing each theme.

Conceptual model

Our conceptual model (Fig. 1) organizes the themes associated with decision making into four domains.

Predisposing factors. We found two themes that relate to the patient's clinical condition, one focused on the condition being poor (i.e., ''multiorgan failure'') and the other focused on the inability to improve (i.e., ''prognosis is dismal''). Other themes reflected the patient's/surrogate's attitudes and beliefs, for instance, the patient is a ''fighter'' (such that the notion of forgoing aggressive treatment equates to giving up).

Physician–patient/family communication. This domain consists of the content of the information exchanged as well as the negotiations and interactions that are associated with the information exchange[18,20] (i.e., whether the physician conveys that aggressive treatment is inappropriate or emphasizes it as a time-limited trial, whether the patient/family expresses preferences in terms of patient's goals, and whether the physician guides decision making). Documented goals include desires to go home, be free of disability, maintain cognitive function, and ''stay alive at all cost.'' Statements were marked as ''Physician not guiding decision making'' when there were *no recommendations made*, one way or the other for patients with a poor prognosis. Statements within this theme ranged from statements that simply presented options without a medical recommendation, such as ''Will need to discuss trach[eostomy] and PEG [feeding tube] vs end-of-life discussion'' to an acquiescence to the family's insistence on aggressive treatment despite a grave prognosis (''We placed a trach[eostomy] at the request of the family despite her terminal cancer'').

Intermediate outcomes. Physician–patient/family communication leads to intermediate outcomes, which include

Table 1. Domains and Themes Concerning Decision Making in Critical Care

Domains and themes	*Illustrative quote*
Predisposing characteristics domain	
Patient characteristics	
Patient's clinical condition is poor	*"Pt. remains very ill & requires significant support of ventilator & likely to be started on HD very soon."*
Patient will not improve	*"Given multiple organs that have failed or in process of failing, he has no chances of recovery."*
Lack of advance care planning	*"Husband states he & wife never discussed what she wanted."*
Belief system affecting decision making	*"Given pt's religion, unacceptable to remove any current 'life support machines'"*
Fighter	*"Pts son was adamant that the pt would want to live even if she had to endure pain, that she is a 'fighter'."*
Hope/guilt	*"Feel they need to do everything so they can have a clear conscience."*
Family believes they "own" the decision	*"Her son wanted me 'to let them worry about her quality of life.'"*
MD characteristics	
Interphysician friction	*"Family wants to cont. current level of care though all agree not what he would have wanted. Rationale: they feel he will survive because Dr. X feels he is doing better. I am simply preparing them for the inevitable."*
System characteristics	
System issues	*"Since Dr X is no longer the attending physician, the pending Ethics committee review requested by him has been cancelled."*
MD–patient/family communication domain	
Physician conveys aggressive treatment is inappropriate	*"Current level of care is futile & patient should be transitioned to comfort care only. D/w family repeatedly."*
Physician emphasizes ICU treatment is a trial	*"In the next 24 hours we will discuss the plan of care with the family again and possibly move towards comfort care if the patient does not show any signs of improvement."*
Statement of goals of treatment	*"Pt has clearly communicated to wife that he would not like to live w/disabilities."*
Physician not guiding decision making	*"Pt became more hypotensive & more pressors were initiated per son's request."*
	"Prognosis exceedingly poor…..Placing tracheostomy tube would be next step in full aggressive care."
Intermediate outcome domain	
Patient/family disagrees with medical team about patient's clinical situation or prognosis	*"It was felt she had an extremely poor overall prognosis felt to be on order of days to weeks to live. However, the family was adamant that the seizures would be able to be controlled and she would be able to wake up & be extubated."*
Patient/family agrees with medical team about patient's condition	*"Extensive discussion with pts sister & explained that his condition remains very critical. She expressed her concern that pt has been suffering & continuing treatments is not in his best interest."*
Patient/family disagrees with medical team about appropriateness of treatment	*"Family continue to wish further therapeutic intervention when patient's demise is imminent"*
Patient/family agrees with medical team about appropriateness of treatment	*"She would prefer that he not "suffer for nothing" & understands that there is very little to be gained by a code given his chronic condition."*
Distrust and dissatisfaction	*"He believes that to change the pts code status would almost certainly result in a general lessening of care."*
Doctor disagrees with patient's/family's preference for less aggressive care	*"We explained to him that pneumonia is an immediately treatable condition… does not seem to be in any immediate grave condition that would lead us to believe that she will expire soon."*
Decision-making domain	
Patient preference is reflected in decision making	*"The pt has expressed to us that he and family had already had the discussion about end of life issues and had elected to go for the tracheostomy & ventilator when & if his disease progressed to that point."*
Indecision, stalling, causes of delays in decision making	*"Daughter is undecided currently about goals of care."*
	"Family has not been available for meeting w/ethics, nor has the family been on daily rounds for discussion w/team."

ICU, intensive care unit; Pt, patient.

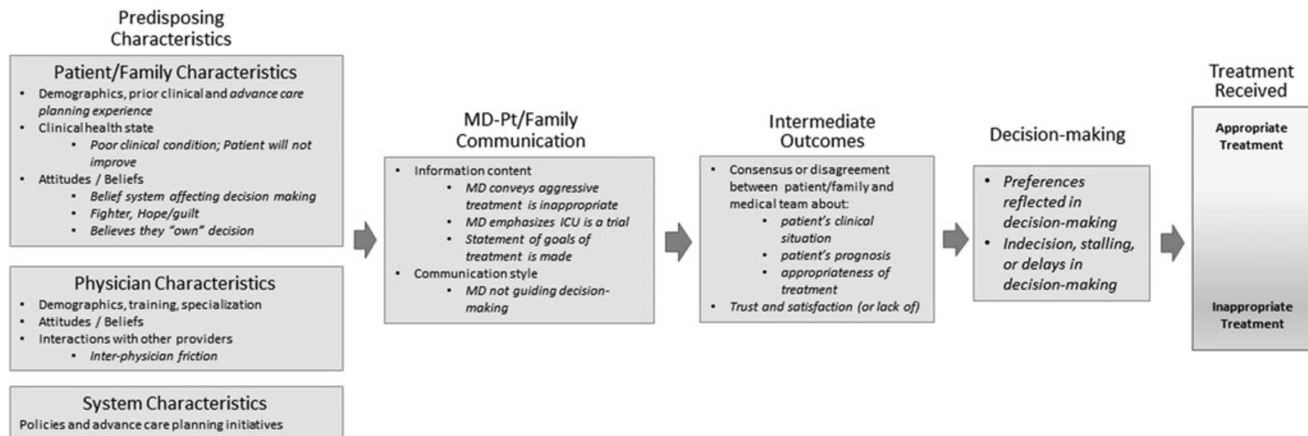

FIG. 1. Conceptual Model of Decision Making in the ICU. This conceptual model illustrates the factors associated with decision making in the ICU once a physician establishes a patient's clinical circumstances and prognosis. Factors identified in the qualitative analysis are italicized. Predisposing patient/family, physician, and systems characteristics influence the quality and quantity of physician–patient/family communication. In turn, whether and how physicians communicate about a patient's clinical situation and guide decision making can influence intermediate outcomes, such as patient/surrogate trust and the process of sharing an understanding of the situation and making joint decisions. These intermediate outcomes influence the decision making that results in inappropriate or appropriate treatment received. ICU, intensive care unit.

Table 2. Bivariate Analysis of Themes Found in Medical Record Documentation between Patients Who Received Appropriate and Inappropriate Treatment

Themes	*Patients who received appropriate treatment (n = 66)*	*Patients who received inappropriate treatment (n = 123)*	p
Predisposing characteristics domain			
Patient's clinical condition is poor	**39 (59%)**	**100 (81%)**	**0.001**
Patient will not improve	**31 (47%)**	**96 (78%)**	**<0.000**
Lack of advance care planning	9 (14%)	26 (21%)	0.206
Belief system affecting decision making	**1 (1.5%)**	**15 (12%)**	**0.012**
Hope/guilt	3 (4.5%)	16 (13%)	0.065
Fighter	1 (1.5%)	2 (1.6%)	0.954
Patient/family believe they ''own'' the decision	**1 (1.5%)**	**12 (9.8%)**	**0.033**
Interphysician friction	**2 (3.0%)**	**29 (24%)**	**<0.001**
Systems issues	0 (0%)	1 (0.81%)	0.463
MD–patient/family communication domain			
Physician conveys aggressive treatment is inappropriate	**30 (45%)**	**87 (71%)**	**0.001**
Statement of goals of treatment	19 (29%)	27 (22%)	0.296
Physician emphasizes ICU treatment is a trial	**3 (4.5%)**	**0 (0%)**	**0.017**
Physician not guiding decision making	**8 (12%)**	**44 (36%)**	**0.003**
Intermediate outcome domain			
Patient/family disagrees with medical team about clinical situation or prognosis	**3 (4.5%)**	**18 (15%)**	**0.035**
Patient/family agrees with medical team about patient's condition	4 (6.1%)	6 (4.9%)	0.729
Patient/family disagrees with medical team about appropriateness of treatment	**19 (2.9%)**	**61 (50%)**	**0.006**
Patient/family agrees with medical team about appropriateness of treatment	35 (53%)	65 (53%)	0.981
Distrust and dissatisfaction	0 (0%)	6 (4.9%)	0.068
Doctor disagrees with patient's/family's preference for less aggressive care	2 (3.0%)	1 (0.81%)	0.245
Decision-making domain			
Patient preference is reflected in decision making	**9 (14%)**	**2 (1.6%)**	**0.001**
Indecision, stalling, causes of delays in decision making	**14 (21%)**	**73 (59%)**	**<0.000**

Bold indicates $p < 0.05$.

patient decision making, and can result in consensus or disagreement.[18,19] This domain contains six themes, including themes regarding agreements/disagreements with the patient's condition, prognosis, and/or treatment (i.e., ''He does not believe that his wife is suffering''), and distrust and dissatisfaction (i.e., ''He felt his mother had been ignored for 6 weeks'').

Decision making. High-quality decision making is informed by clinical evidence, concordant with values, and mutually endorsed.[18] We identified two themes: when preferences were reflected in the decision and when there was indecision. The theme ''patient preference reflected in decision making'' was characterized by two subthemes: family acknowledging the need to focus on patient's preferences and the course of treatment being dictated by advance care planning. The theme ''indecision, stalling, or delaying decision making'' was found to be associated with inappropriate critical care. For some, decision making was delayed because of the desire to wait for family members to assemble. In other instances, the treatment plan was stalled by indecision or an unwillingness to specify preferences (i.e., ''Patient is unwilling to communicate desires on repeated attempts'').

Statistical analysis

Bivariate analyses showed several themes being associated with inappropriate treatment (Table 2). Sixteen themes were included in multivariable analysis, and four themes were found to be significantly associated with the receipt of inappropriate treatment (Table 3). When decision making was not guided by physicians (odds ratio [OR] 3.76, confidence interval [95% CI] 1.21–11.70) or was delayed by patient/family (OR 4.52, 95% CI 1.69–12.04), patients were more likely to receive inappropriate treatment. The likelihood of receiving inappropriate treatment decreased with documentation of communication about patient's goals (even if unrealistic) (OR 0.29, 95% CI 0.10–0.84) and patient's preferences driving decision making (OR 0.02, 95% CI 0.00–0.27). Table 4 contains quotations illustrating these four themes and their subthemes.

Discussion

By analyzing clinical documentation for patients perceived as receiving inappropriate critical care, our study offers a novel perspective on how communication and medical decision making contribute to inappropriate critical care. Although medical record documentation is an imperfect reflection of events,[21] it is a fundamental component of patient care, offers the perspective of the clinicians in real time, and serves to convey information to all stakeholders in the healthcare team.[22–24] Although nearly all of the factors identified in this study have been previously identified as obstacles to optimal decision making, this study directly links these factors to the provision of inappropriate treatment and identifies components that are independently associated with inappropriate ICU care. Importantly, many of these care processes are under at least partial control of the healthcare team and can be improved upon.

Since predisposing factors are often immutable at admission, it is encouraging that we found that they were not independently associated with inappropriate treatment. More important was whether the decision-making process incorporated the patient's goals and whether the physician guided decision making during patient/family–physician communication. The finding that ''indecision, stalling, and delays in decision making'' is related to inappropriate treatment underscores the importance of prompt family meetings and

Table 3. Multivariable Model Predicting Whether the Patient Was Assessed as Receiving Inappropriate Treatment

Theme	*Odds ratio*	*95% confidence interval*	p
Predisposing characteristics domain			
Patient's clinical condition is poor	1.03	0.37–2.88	0.948
Patient will not improve	2.01	0.77–5.24	0.155
Lack of advance care planning	0.59	0.18–1.96	0.385
Belief system affecting decision making	1.42	0.13–15.71	0.775
Hope/guilt	1.74	0.27–11.10	0.558
Patient/family believes they ''own'' the decision	11.43	0.66–196.68	0.093
Interphysician friction	5.07	0.89–28.75	0.067
MD–patient/family communication domain			
Physician conveys aggressive treatment is inappropriate	1.47	0.56–3.87	0.44
Statement of goals of treatment	**0.29**	**0.10–0.84**	**0.022**
Physician not guiding decision making	**3.76**	**1.21–11.70**	**0.022**
Intermediate outcome domain			
Patient/family disagrees with patient's situation/prognosis	2.62	0.36–18.98	0.339
Patient/family agrees with/recognizes patient condition	1.45	0.18–11.33	0.725
Patient/family disagrees with appropriateness of treatment	0.85	0.33–2.19	0.731
Patient/family agrees with treatment decision	0.66	0.26–1.68	0.381
Decision-making domain			
Patient preference is reflected in decision making	**0.02**	**0.00–0.27**	**0.003**
Indecision, stalling, causes of delays in decision making	**4.52**	**1.69–12.04**	**0.003**

Patient/family = patient and/or family.
Bold indicates p value < 0.05.

Table 4. Four Themes, Associated Subthemes, and Illustrative Quotations Significantly Associated with Patients Being Assessed as Receiving Inappropriate Critical Care

Themes and subthemes	*Illustrative quotation*
Theme: statement of goals of treatment	
Statement of goals of treatment	*''Pt has clearly communicated to wife that he would not like to live w/ disabilities.''*
	''Pts family repeatedly expressed the desire to do anything possible to keep her alive.''
	''The goal being to get the patient back home.''
	''The pt would NOT want to live a life without neurologic recovery.''
Theme: physician not guiding decision making	
Default is to do more	*''If family does not want feeding tube, the prognosis is poorer.''*
Doctor is hopeful/optimistic	*''We are continuing to be aggressive w/his care as we are hopeful we can address his severe sepsis.''*
No firm recommendation given	*''DW [discuss with] family regarding to make decision regarding continuing treatment trach, peg, SNF vs withdrawal of care.''*
Doctor suggesting next steps disregarding improbability of steps/or improbability of recovery	*''very poor prognosis…. he could be evaluated for an OLT [orthotopic liver transplant] in the future if he were to recover''*
Doctor thinks prognosis is not certain enough	*''Goal of care discussion with family next Monday when prognosis of patient becomes more obvious.''*
Doctors pursing aggressive care to achieve an intermediate goal	*''The family has been unwilling to set any limitations on aggressive therapy & thus we will proceed w/trach given that she is not weaning''*
Doctor doing the wrong thing and recognizing that it is the wrong	*"We placed a trach at the request of the family despite her terminal cancer.''*
Theme: indecision, stalling, causes of delays in decision making	
Family/patient undecided	*''Daughter is undecided currently about goals of care''*
Family/patient delaying decision making until time of crisis	*''He is prepared to make pt DNR [do not resuscitate] if & when coding is imminent''*
Family avoiding situation	*''Family has not been available for meeting w/ethics, nor has the family been on daily rounds for discussion w/team''*
Within family disagreement	*''Daughter & husband with very different views on how to proceed & how much longer to support patient. Family needs to come to mutual agreement amongst themselves''*
Awaiting family arrival	*''until at least their aunt arrives from Armenia and gets to spend some time with the patient, they would like to be as aggressive with code status and care as possible''*
Awaiting family meeting	*''Will attempt to re-contact DPOA to update on clinical status & poor prognosis & re-discuss goals of care.''*
Awaiting within-family discussions	*''Requested time to communicate with siblings who live on East Coast.''*
Family needs more time to make decision	*''He has not yet made this decision & wants to think about it longer & discuss it w/his family''*
Patient's preferences are elusive	*''Patient is unwilling to communicate desires re: g-tube placement on repeated attempts.''*
Family/patient needs more info	*''Patient's family aware of poor prognosis. They would like to evaluate brain activity prior to changing goals of care.''*
Family wants more time with the patient	*''(She) understands patient will die in ICU but would like to maximize her time with mother with continued aggressive support.''*
Theme: patient preference is reflected in decision making	
Family acknowledging the need to focus on patient's preferences	*''The son wants to seek palliative care given the pts advanced wishes to not live in a debilitated state.''*
Course of care dictated by advance care planning	*''…as his respiratory status continued to worsen and stridor newly developed, we discussed intubation with the family. At that point, the family decided to make him comfort care because they were clear with his advance directive that he would not have wanted intubation...''*

early palliative care involvement. The finding that the theme ''physician not guiding decision making'' is associated with inappropriate treatment demonstrates that the manner in which information is communicated is crucial. Indeed, the language used to frame treatment options has been shown to influence treatment decisions.[25] This finding is also consistent with a prior study that found that a high-intensity medical center, compared with a lower intensity facility, was more likely to offer open-ended trials of life-sustaining treatments without addressing long-term goals.[26]

Our study has several limitations. Although we worked from rich medical record documentation, our analysis is limited to what providers wrote in charts. The exact content of the information exchanged during family meetings is

unavailable. Also, physicians provided the majority of the analyzed documentation, indicating a dearth of documentation about decision making from other providers and yielding domains built on only physician communication. The sample size is small and all patients were from a single health system. The patients who died after receiving appropriate ICU treatment may not be completely comparable with those receiving inappropriate treatment because they may have had different prognoses. Finally, patient and family viewpoints are included only as documented by providers.

Conclusions

The provision of inappropriate critical care is associated with a complex set of coexisting patient/family and physician factors, communication, and decision-making domains, some of which may be targeted by interventions to reduce inappropriate treatment.

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Author Disclosure Statement

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