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Integrating Narrative Goals of Care in the Medical Intensive Care Unit

Impact on Educational and Clinical Outcomes

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ABSTRACT

Background: High-quality goals of care (GOC) communication is fundamental to providing excellent critical care.

Objective: Educate medical intensive care unit (MICU) clinicians, design and implement workflows relating to GOC communication, and measure the impact on communication proficiency and rate of GOC documentation.

Methods: Guided by Lean Six Sigma principles, an interprofessional team from palliative and critical care tailored a multicomponent intervention—the 3-Act Model communication training and workflow modification—to equip and empower the pulmonary and critical care medicine (PCCM) fellow as the clinical lead for GOC discussions. Fellows' education included in-person narrative reflection, asynchronous online didactic and demonstration videos of the 3-Act Model, online roleplays, and direct observation leading GOC discussions in the ICU. PCCM fellows were objectively evaluated for proficiency using the Goals of Care Assessment Tool. To evaluate the impact of our intervention on documented GOC conversations, we

performed a retrospective chart review over two 3-month periods (before and after intervention) when the MICU cared exclusively for critically ill patients with coronavirus disease (COVID-19).

Results: All PCCM fellows demonstrated proficiency in GOC communication via online simulated roleplays, as well as in observed bedside GOC communication. Per chart review of patients with a minimum of 7 consecutive days in the MICU, documented GOC conversations were found for 5.55% (2/36) of patients during the preintervention period and for 28.89% (13/45) of patients in the postintervention period. Palliative care consults increased in the pre- versus postintervention period: for all patients, 4.85% versus 14.52% ($P < 0.05$); for patients age $\geq$80 years, 3.54% versus 29.41% ($P < 0.05$); and for patients with MICU length of stay $\geq$7 days, 2.78% versus 24.44% ($P < 0.05$).

Conclusion: Combining 3-Act Model education for PCCM fellows with Lean Six Sigma quality improvement resulted in effective GOC communication training and improved palliative care integration in the ICU.

Keywords:
palliative care; serious illness; communication training; PCCM fellowship education

Goals-of-care (GOC) conversations explore what matters most to patients with serious illness, primarily to align therapeutic plans with their values. Many patients, including those admitted to the intensive care unit (ICU), receive medical care that is fundamentally misaligned with their values because GOC conversations are absent or inadequate (1, 2). The negative impact is momentous, including worse quality of life, burdensome healthcare use, and distress of patients and their families (3–5). GOC conversations may be challenging and uncomfortable for providers, who often lack the confidence, knowledge, and skills to conduct them effectively (1). We have developed a novel narrative approach to GOC conversations, the 3-Act Model, and demonstrated effectiveness in teaching it to healthcare professionals as measured by objective skills proficiency assessment (6–8). Although important, education on its own is not enough to change practice in the ICU; thoughtfully designing and implementing systems changes, such as

protocols and processes, are necessary (9). Attention to interprofessional team dynamics in the context of GOC conversations is also necessary (10–12). Strategies to improve GOC conversations in the ICU have included decision support tools, structured approaches to communication, multifaceted quality improvement, and targeted training of ICU clinicians (13). As multicenter studies failed to show reproducible effects, interventions may need to be adapted for specific institutional and unit-based cultures to be effective (14, 15).

The coronavirus disease (COVID-19) pandemic—with its acuity of illness, visitor restrictions, and stresses on hospital teams and capacity—highlighted the need for integrating GOC communication in the 12-bed medical ICU (MICU) at our hospital, Johns Hopkins Bayview Medical Center. Based on anecdotal experience and chart review, MICU and palliative care leadership shared concerns that GOC conversations were not done as often or as well as they could be and

lacked a structured approach to ensure quality. We hypothesized that a multicomponent intervention of 3-Act Model training coupled with high-yield workflow changes would equip trainees with the necessary communication skills and translate into an increased number of patients receiving quality GOC conversations in the MICU. Therefore, we conducted this study to determine: *1)* the objective post-training proficiency of pulmonary and critical care medicine (PCCM) fellows in leading GOC conversations in roleplay scenarios and at the bedside; and *2)* the impact of this intervention on the percentage of patients with documented high-quality GOC conversations.

METHODS

In a series of meetings guided by Lean Six Sigma principles, an interprofessional team of palliative care and MICU faculty and staff, including physicians, nurses, and social workers, discussed opportunities for GOC communication training and workflow improvements. Lean Six Sigma methodology relies on a collaborative team effort to improve performance by reducing waste and variation. Key steps include defining the problem and its root cause, engaging stakeholders, designing system interventions, evaluating outcomes, and making iterative adjustments to the model as needed (16). The team determined that targeting the PCCM clinical fellows for GOC communication skills training and empowering them as leaders on the MICU team of GOC communication would be a high-yield multicomponent intervention (Figure 1). We also proactively engaged PCCM fellowship program leadership, who recognized such training as a valuable and needed entrustable professional activity for the fellows (17).

Educational Component

The 3-Act Model, which has been previously described in detail, is a highly adaptive approach grounded on the patient's story (Figure 2) (6–8). We tailored the 3-Act Model teaching for PCCM fellows, and all eight clinical fellows completed it as part of their training (over a 2-week period from July–August 2020). A pretest survey captured the fellows' preferred approaches to GOC discussions: three of eight most often used the SPIKES (Setting, Perception, Invitation, Knowledge, Empathy, Summary) model, and the remainder most often "started with the patient's understanding" (18).

The initial instruction consisted of three sessions: in-person narrative reflection facilitated by a palliative care physician, including discussion of a poem by Raymond Carver, "What the Doctor Said" (1 h); asynchronous online didactic and demonstration videos of the 3-Act Model (1 h); and online roleplays (2.5 h) (19). For the roleplays, fellows paired up in online breakout rooms and took turns playing patient and physician, with observation and immediate 360-degree feedback facilitated by a palliative care trainer (three physicians and one nurse). Two trainers had participated in the original 3-hour train-the-trainer workshop that included didactic, reflection, and developing shared frames of reference for assessment and feedback by watching and rating six roleplay videos, coming to consensus about grading after each one (described previously). Each of the other two trainers received training and development of shared frames of reference via one-on-one sessions with the physician who facilitated the original train-the-trainer workshop (D.S.W.). A team of collaborators, including a PCCM fellow and attending, internal medicine resident, and palliative care physician and nurse,
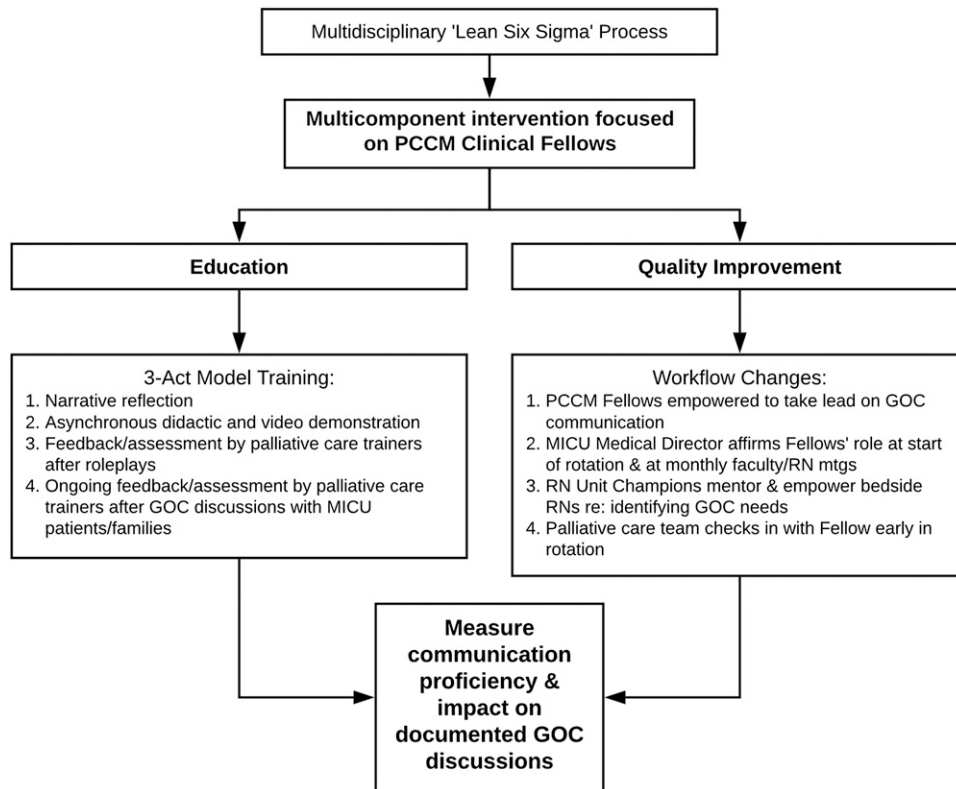
Figure 1. Multicomponent intervention process diagram. GOC = goals of care; MICU = medical intensive care unit; PCCM = pulmonary and critical care medicine; RN = registered nurse.

developed the roleplay scenarios to reflect commonly encountered situations in the Hopkins Bayview MICU. Each fellow did three roleplays in the physician role and three in the patient role. Immediate feedback consisted of self-reflection by the fellow in the physician role (one challenging aspect of communication), observations from the fellow in the patient role (one missed opportunity for connection), and several minutes of detailed feedback from the trainer. Trainers evaluated the fellow in the physician role based on the rubric we designed as congruent with the 3-Act Model, the Goals of Care Assessment Tool (GCAT), with a standard of proficiency to lead basic GOC discussion determined by an expert panel as previously described (6).

Each fellow who went through 3-Act Model training rotated through the Johns Hopkins Bayview Medical Center MICU for a total of 6 weeks during the academic year (July 2020–June 2021). As part of this initiative, fellows who conducted GOC conversations with support of a palliative care consultant physician (one of the trainers mentioned above) during their rotations were given immediate formative feedback and assessment on their performance, including an objective score on the GCAT.

Quality Improvement Component

Before each 4-week PCCM fellow Hopkins Bayview MICU rotation, the MICU Medical Director (S.C.) discussed the goals and objectives of the ICU rotation, emphasizing leading GOC conversations and engaging the multidisciplinary team in support of the MICU holistic care model. Nurse rounding templates were also updated during the intervention
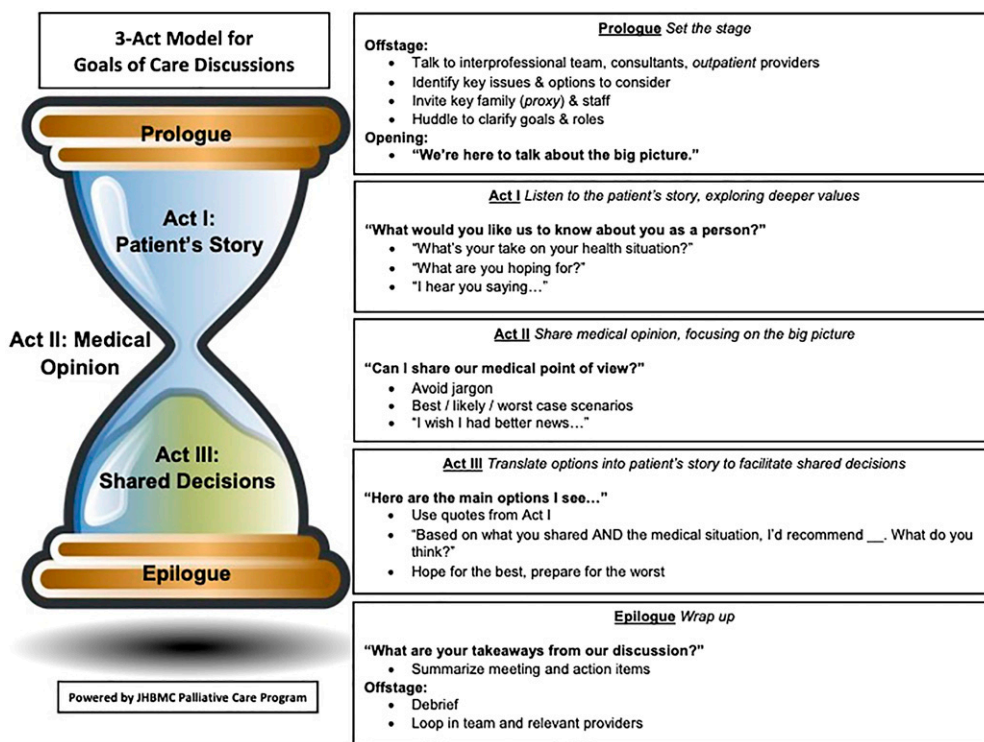
Figure 2. Pocket card given to pulmonary and critical care medicine fellows, highlighting key elements of the 3–Act Model. JHBMC = Johns Hopkins Bayview Medical Center.

period and included a prompt for code status, last update to family, family issues, and social work needs. In addition, during monthly ICU faculty and nursing staff meetings during the intervention, the MICU Director explained that the PCCM fellows should serve as clinical lead for GOC communication and directed nurse staff to freely communicate perceived palliative care needs to the team, including during bedside rounds. Palliative care team members connected with PCCM fellows early in their rotations to give support and encourage collaboration. As positive reinforcement, palliative care consult physicians also celebrated PCCM fellows who demonstrated excellence in leading a GOC conversation via email communication with the MICU Medical Director and the PCCM Program Director.

MICU nursing leadership identified several experienced and motivated nurses to serve as unit champions, with whom palliative care 3-Act Model leadership met serially to identify barriers and facilitators to effective GOC discussions. Through case study–style discussions rooted in real-time patient cases, palliative care provided guidance to the champions in identifying misalignment between the patient's values and the approach to care. In turn, through multidisciplinary rounds and bedside mentorship, the champions encouraged and empowered nurses and other members of the multidisciplinary team to pass on GOC insights about specific patients to the fellow.

Assessment

To evaluate the impact of our intervention on documented GOC conversations, we decided *a priori* to

perform retrospective chart reviews on two 3-month periods when the MICU was in all-COVID bio-mode: preintervention (April 2020 through June 2020) and postintervention (November 2020 through January 2021). The COVID bio-mode was created for the safety of patients and staff in the unit during the pandemic. This required transforming the unit into a fully negative-pressure area (patient rooms, hallways, physician and nursing work areas) using a combination of high-efficiency air particulate filters, closed doors, shuttered windows, added ventilation, and a highly restricted visitation policy. Also, staff were required to wear N95 masks or powered air purifying respirators at all times when in the ICU, and they could not eat or drink when in the unit.

Chart reviews were performed on all patients who had been admitted to the MICU for at least 7 consecutive days in each period; we evaluated for the presence of at least one documented GOC conversation during the MICU stay by a physician or advanced practice provider (on either the MICU or Palliative Care team, respectively); there are no advanced practice providers on the MICU team. We selected a cut-off of 7 consecutive days, rather than a shorter period, because of the observed significantly longer ICU stay for patients with COVID-19 relative to the non-COVID ICU population.

The chart review standard for GOC conversation was based on existing literature, adapted for congruence to the 3-Act Model (20). In contrast to the previously cited study, which required only one of four domains to be present to qualify, we decided *a priori* that documented GOC conversations would need to include all three components for credit: *1*) patient's story: description of patient values and goals; *2*) medical opinion: details shared about condition or prognosis; and *3*) shared decision making: end-of-life care planning or preference regarding life-sustaining treatments or procedures, including code status. This rigorous definition aligned with our training aims and reflected our emphasis on thoroughness of GOC communication and documentation. Two team members independently performed all the chart reviews. A third reviewer independently performed reviews of 10% of charts from each of the pre- and postintervention periods, using a random number generator. Initially, all reviewers reached consensus on 86% of preintervention and 100% of postintervention charts. The three reviewers reached consensus on conflicts through discussion. Each reviewer shared the reasoning behind their rating, citing the presence or absence of key sentences indicating the documentation reached the rigorous standard described above. Of the five conflicts, the initial reviewers resolved four through reassessment of an initial position in light of overlooked evidence; the remaining conflict required the third reviewer to serve as a tiebreaker. Ultimately, the reviewers reached 100% agreement for all preintervention charts.

Secondary clinical metrics relevant to the intervention, including number of unique patients admitted to the MICU and palliative care consults completed, were secured from the electronic medical record. χ^2 tests of independence were performed to assess for statistical significance of categorical clinical outcomes (Table 1). This study was approved by our institutional review board (IRB00176085, IRB00284163).

Table 1. Comparison of clinical outcomes between pre- and postintervention periods

	Preintervention	Postintervention	P Value
Documented goals of care conversations			
Length of stay ≥ 7 d	5.55% (2/36)	28.89% (13/45)	0.007
Palliative care consults			
All patients	4.85% (10/206)	14.52% (27/186)	0.001
Age ≥ 80 yr	3.45% (1/29)	29.41% (10/34)	0.007
Length of stay ≥ 7 d	2.78% (1/36)	24.44% (11/45)	0.006
Length of stay ≥ 7 d and age ≥ 80 yr	0% (0/2)	50% (4/8)	0.197

RESULTS

Educational Outcomes

All PCCM fellows in our study cohort ($N=8$, 50% female) participated in the 3-Act Model training. They were all assessed using the GCAT in both online (roleplay) and clinical (real patient) settings.

Trainers assessed three roleplays per fellow, for a total of 24 unique GCAT ratings. All fellows (8/8) achieved proficiency leading GOC conversation in at least one roleplay by the end of the training. Seventy-five percent (6/8) were proficient after one roleplay; the remaining 25% were rated proficient by their second roleplay. In total, 71% (17/24) of all roleplay attempts were rated proficient by the trainers.

In the clinical setting, trainers collected 14 unique GCAT ratings via observation of all fellows (8/8) leading GOC conversations with MICU patients. Given the restrictive visitor policies in place, most of these GOC conversations were conducted via a Health Insurance Portability and Accountability Act–compliant video platform. Typically, the medical team members (PCCM fellow, palliative care physician, and occasionally other MICU or palliative care clinicians) would huddle on video before admitting the family from the virtual waiting room. Then, the fellow would take the lead facilitating the conversation. Every fellow achieved proficiency in leading at least one GOC conversation. All observed GOC discussions (14/14) were rated as proficient. Half of the fellows (4/8) received ratings on two GOC discussions; the remainder received ratings on either one (3/8) or three (1/8). Of fellows with at least two observed discussions (5/8), 40% improved in at least one domain of the GCAT between discussions.

In written comments, all trainees expressed appreciation for the education and coaching. For example, one learner described the training as "very smooth, well organized, and filled with relevant scenarios." Another commented: "Should be provided early in medical training to all trainees."

Clinical Outcomes

Per chart review of patients with a minimum of 7 consecutive days in the MICU, documented GOC conversations were found for 5.55% (2/36) of patients during the preintervention period, and for 28.89% (13/45) of patients in the

postintervention period, representing a significant increase in documented GOC conversations, χ^2 (1, $N = 81$) = 7.22; $P = 0.007$ (Table 1). Although both GOC conversations reviewed in the preintervention period were documented by a palliative care physician, almost half (46%, or 6/13) of postintervention GOC conversations were documented by a physician on the MICU team. In addition, there was a threefold increase in total palliative care consults from pre- to postintervention period, χ^2 (1, $N = 392$) = 10.68; $P = 0.001$ (Table 1).

DISCUSSION

Our multicomponent intervention included targeted education to PCCM fellows, workflow changes to empower fellows to lead GOC and to bring GOC issues to the forefront of the multidisciplinary team, and the development of close partnerships to align principles of care between the palliative care and MICU teams. All fellows who underwent the 3-Act Model training were found by objective assessment to be proficient in GOC conversation (both in role-play and with real patients), and patients with a week-long MICU stay had a five-fold increase in the likelihood of having documented high-quality GOC conversations. These outcomes demonstrate that effective training of PCCM fellows, as measured by all levels of the Kirkpatrick model and the behavioral apex of Miller's pyramid, occurs with 3-Act Model education and Lean Six Sigma–driven quality improvement (21, 22). Furthermore, our results are striking given they occurred amid the pandemic—and specifically without the use of triggers, protocols, or automated decision tools.

Prior ICU studies report improvement in fellows' skills and comfort in family meetings using a variety of educational tools: roleplays/simulation, behavioral checklist, and didactics (23, 24). The 3-Act Model similarly uses didactics and role-plays but, instead of relying on checklists, focuses on a highly adaptive and memorable approach grounded in narrative medicine principles. To our knowledge, this study is the first to demonstrate objective skills proficiency in PCCM physicians resulting from a narrative approach to GOC communication training. Although varied attempts to improve family support and GOC communication have led to mixed clinical outcomes, a recent multi-component family support intervention led by critical care nurses resulted in improved quality of communication and patient/family-centered care (14, 15, 25–27). As in the latter study, our intervention used targeted education, as well as leveraging already existing interprofessional ICU roles. However, our intervention centered on education and empowerment of the clinical team leader, the PCCM fellow, rather than a specially trained ICU nurse, and did not add a structured family-support pathway.

Our study provides evidence that merging of 3-Act Model training with quality improvement methods tailored to the local setting was a high-ease/high-effectiveness solution to a problem made even more challenging by the pressures of the pandemic (28). Rather than reliance on check-lists and triggers, our intervention hinged on relationship building between clinicians and patients and their families, as well as between the palliative care and MICU teams. The 3-Act Model primed the PCCM fellows to engage in more GOC conversations, discovering the narratives of their patients and highlighting the

human stories too often lost in the ICU. Our interteam collaboration, guided by Lean Six Sigma principles, was intentionally interprofessional, leveraging preexisting ICU culture and resources. Through the educational sessions and collaborations in the hospital, the palliative care trainers formed strong rapport with the PCCM fellows. The culminative result was a close partnership, as exemplified by the dramatic increase in palliative care consults postintervention.

Limitations

Several limitations of this study should be considered. First, our study was limited to a single academic medical ICU. Although we believe our framework, targeted education, and high-yield workflow changes can be implemented successfully in a variety of settings, generalizability of the result may be questioned until this work is replicated elsewhere, as is true of most pilot studies. Second, our approach relied on the targeted training of a single class of PCCM fellows. Other institutions may not have PCCM fellows in their ICUs. However, the 3-Act Model is a flexible framework and has proven efficacy for other trainees, including internal medicine residents, and we believe it could be well adapted to advanced practice providers. Our intervention also required palliative care trainers with experience in the 3-Act Model to lead didactic, roleplay, and bedside education, limiting generalizability. Finally, confounding effects are possible in this pre-/postintervention study, including hospital and societal changes occurring in the setting of the pandemic.

Conclusions

Our north star was the principle that excellent palliative care, whether provided by the primary or specialty team, is integral to excellent ICU care. Although the results of this study suggest that 3-Act Model training and high-yield workflow changes may help an ICU move toward palliative care communication excellence, more work is required, as only 29% of patients in the postintervention period met our rigorous criteria for documented GOC discussions. Future studies should measure more patient- and system-level outcomes, including provider and family emotional distress and length of stay, and include multiple institutions by using a train-the-trainer approach for 3-Act Model dissemination. Through this work, our team successfully integrated narrative-based GOC communication in the MICU, resulting in a culture shift in both the MICU and PCCM fellowship that has remained palpably present many months after the study's conclusion. We believe an ICU culture that prioritizes narrative and personhood is worth systematic pursuit. After all, excellent care of the critically ill patient requires that we keep sight of the humanism of our patients and families—and ourselves.

Acknowledgment

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