

Putting Prognosis First: Impact of an Intensive Care Unit Team Premeeting Curriculum

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ABSTRACT

Background: The paradigm of care has shifted in the pediatric intensive care unit (ICU) such that patients are frequently cared for by teams of specialists rather than the ICU attending physician solely managing care. An unintended consequence of care managed by multiple specialists is that families often receive conflicting messages from different team members, with little focus on disclosing prognosis.

Objective: To address this gap, we developed and pilot-tested a team communication skills training (CST) program focused on the healthcare team premeeting in which roles, purpose, and prognosis are clarified before meeting with the family. Our aim was to assess whether the team CST program was associated with increased discussion of prognosis during the team premeeting.

Methods: We conducted a single-center, observational pilot study to develop and test a team CST program using a before/after design. Pediatric ICU physicians and specialists from pediatric neurology and pediatric oncology who co-led family conferences in the pediatric ICU participated in a 1-day team CST program. Team premeetings were audio-recorded and transcribed.

(Received in original form April 28, 2020; accepted in final form April 7, 2021)

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Supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (award number K23HD080902).

Author Contributions: Conception and design: T.O. and R.A. Analysis and interpretation: T.O., A.W., and R.A. Drafting the manuscript for important intellectual content: T.O., A.W., and R.A.

*T.W.O is Associate Editor of *ATS Scholar*. Her participation complies with American Thoracic Society requirements for recusal from review and decisions for authored works.

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This article has a data supplement, which is accessible from this issue's table of contents at www.atsjournals.org.

ATS Scholar Vol 2, Iss 3, pp 386–396, 2021
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DOI: 10.34197/ats-scholar.2020-0063OC

Results: We analyzed seven pre- and 10 post-CST program audio-recorded team premeetings, which each compromised a median of eight healthcare team members. Prognosis was more likely to be discussed in post-CST team premeetings (10/10 vs. 3/7; $P=0.0147$). Agreement on prognosis was achieved more frequently in post-CST teams compared with pre-CST teams, although the percentage of agreement did not reach significance (9/10 vs. 3/7; $P=0.1007$).

Conclusions: A CST program with a structured approach to conducting a team premeeting was associated with an increased discussion of prognosis among team members before convening with the family in the pediatric ICU.

Keywords:

interdisciplinary health team; prognosis; communication; medical decision-making; critical illnesses

Healthcare team communication with families during critical illness is a key component to providing high-quality care (1). As critical care becomes more complex, with increasing use of technology and increased survival, patients are more likely to be cared for by teams of specialists rather than the ICU attending solely managing care (2). The intensive care unit (ICU) family conference is the most common format for healthcare team communication of serious news and critical decision-making with families (3–5). In these conferences, families value a multidisciplinary approach with consistent communication from all team members and need to know the patient's prognosis to make these critical decisions (6, 7). Unfortunately, when care is managed by multiple specialists, families often receive conflicting messages from different team members, and discussion of prognosis is rare (8).

Honest prognostic information can help families plan for the future and improve a family's sense of peace (9). Parents report that not knowing prognostic information is more upsetting than learning that the prognosis is poor. An inability to convey realistic prognostic information can threaten the physician–family relationship

(10). Unfortunately, physicians often report feeling ill equipped to communicate prognostic information with families (11). Lack of training and comfort in these life-altering conversations results in avoidance of prognostication discussions, with only one-third of adult ICU family meetings discussing limitations of interventions, including prognostic information (12).

In times when prognosis is discussed, many parents report disappointment with how that communication occurred, making the need for clear, consistent communication even more critical. Getting a multidisciplinary team together to plan a prognostic discussion is a potential strategy to build toward delivering a shared prognosis. The ICU premeeting, a healthcare team meeting immediately preceding the family conference, is suggested in the literature as a strategy for healthcare team members to align and share prognostic expectations, but specific guidance on how to structure the premeeting is not provided (5, 13). In this pilot study we developed and tested a framework that incorporated communication skills training (CST) for premeetings to evaluate the impact of a structured premeeting on increased

discussion of prognosis and agreement on prognosis between specialists.

METHODS

We developed a team CST program and pilot-tested the relationship between the CST program and the discussion of prognosis during the team premeeting using a before-and-after design.

Development of a Team CST Program

To determine the major gaps in team communication during the ICU premeeting, we invited ICU physicians and specialty physicians who commonly co-lead family conferences in the pediatric ICU (PICU) to participate in one of four focus groups. Each focus group included 6–10 participants who convened for 1 hour. Focus group discussions were recorded and transcribed verbatim. In real time, field notes were taken, which were subsequently analyzed, and common themes were

isolated from this assessment. As an additional measure of validity, member checks were performed with the focus groups to ensure theme accuracy (14).

Informed by data from the focus groups and the literature, two communication experts (R.A. and T.O.) identified the following two core competencies as targets for training: 1) establishment of leadership roles and 2) determination of the family conference purpose and discussion of the patient's prognosis. Establishment of leadership roles was defined as the clarification of the team member roles and responsibilities. Determination of the family conference purpose and discussion of the patient's prognosis was defined as the formation of a shared mental model of the purpose of the family conference and agreement within the healthcare team on the patient's prognosis. Through an iterative process, the research team developed and incorporated this team

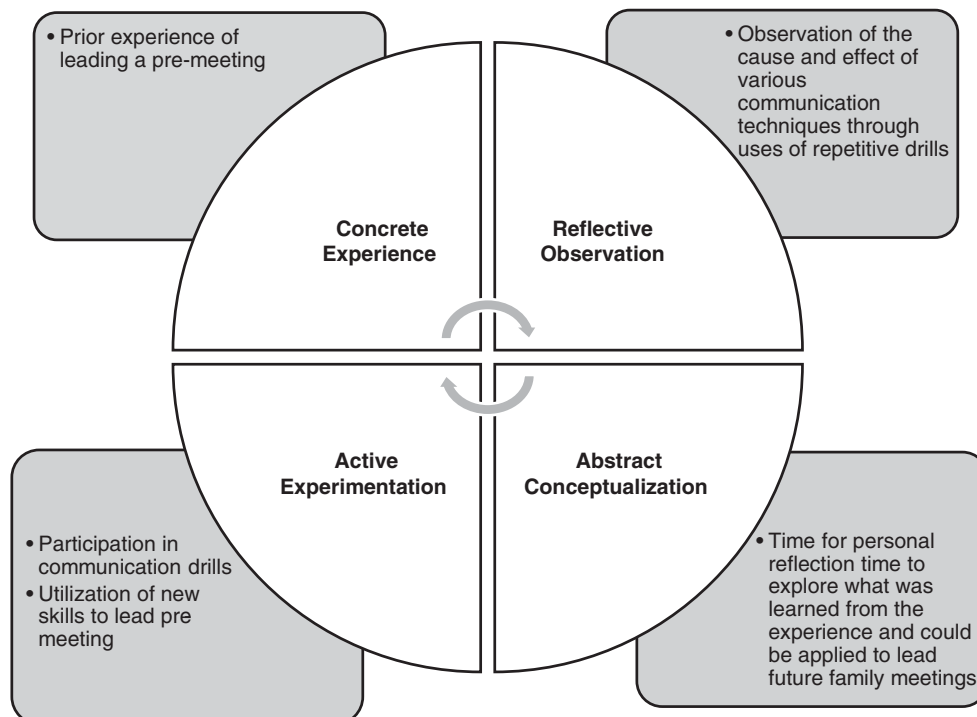


Figure 1. Adaptation of Kolb learning model for team training approach.

premeeting roadmap into a 1-day CST program based on Kolb's experiential learning model (Figure 1) (15).

The andragogical approach of the team CST program, adapted from an evidence-based method for teaching physicians skills to communicate with families (8), included didactic lecture, small group discussions, self-reflection, role play, and simulated experiences (16). The didactic session builds knowledge on each of the subject areas, followed by small group learning to develop skills through practice with actors, and ending with an individual reflective exercise to promote positive attitudes toward using these behaviors in the future. This multifaceted approach incorporates the ideals of Kolb's experiential learning model, emphasizing the importance of the experience as a central component to adult learning theory (17). The specific component of premeeting skills comprised a half-

day training workshop of deliberate practice that incorporated drills and subsequent simulated case presentations with a trained actor. The session was led by faculty trained in advanced communication skills using the VitalTalk methodology (18). This experience was followed by a time for personal reflection. The importance of each of these activities and how they relate to Kolb's experiential learning model is outlined in Figure 1.

We developed the following three drills to guide teams to communicate with each other: the team negotiation, best/worst case, and time-limited drills (19). The team negotiation drill fosters team member's clarification of the roles they will serve during the family meeting, whereas the best/worst case and time-limited tools promote team members to reach agreement on the purpose of the family conference and prognosis of the patient. An example of the

Table 1. Example of best/worst team agreement drill

ICU Physicians	Consultant Physicians
"Before we talk to the family, can we make sure we're on the same page regarding prognosis?"	"Things are bad, but we don't know the timeline."
"It is hard to predict the future. It would help me if we can reach agreement about the best and the worst outcomes."	"The best case, she is fully cured, worst case she needs a trach and dialysis."
"My worst case is that she dies in the ICU."	"Of course that is. I'm more optimistic."
"We hope for a full recovery too. I wonder if there are things we can watch for in the next 2 wk that will tell us if she's getting better."	"If she can get off the ventilator, that would be good."
"So, can we tell the family we are not sure how she is going to do? The best case is that she gets better, can get more chemo and is cured; the worst case is that she will need a trach and dialysis and we are not sure if she will survive. And over the next 2 wk we are looking for her ability to get off the ventilator to tell us if she is getting better."	"Yeah, that sounds accurate."

Definition of abbreviation: ICU = intensive care unit.

Bold text indicates key phrases that were rehearsed by the physicians in role play scenarios "drills."

best/worst case drill is listed in Table 1. The two cases were selected on the basis of the physicians who were receiving the training, with one case related to traumatic brain injury and the second related to an oncologic patient who had important goals of care that needed to be addressed.

Pilot Testing of the Team CST Program

We developed two cases to pilot-test the team CST program and invited PICU physicians and specialists from pediatric neurology ($n = 4$) and pediatric oncology ($n = 6$) to participate in the 1-day team CST program (8). Recruitment was based on convenience sampling. Faculty were approached if they had not received prior communication training, with 100% of invited physicians agreeing to participate in the training. To test the impact of the team CST program, we compared audio-recordings of team premeetings before and after the team CST program. The audio-recorded premeetings were data collected from a larger study designed to evaluate the impact of the team CST program on family outcomes (8, 18). This larger institutional intervention was a CST program for leading a goals-of-care family conference modeled from Vital Talk's Mastering Tough Conversations course (20, 21). In this larger study, all ICU physicians leading the family conference participated in the training, which focused on 1) delivering serious news, 2) responding to family emotion, and 3) conducting a values assessment. Importantly, this course did not include training on how to conduct premeetings. Transcripts were collected from January 2017 to May 2018 from an urban, quaternary medical center with a 44-bed mixed medical and surgical PICU. The postintervention team meetings specifically were collected over a 3-month period after the team CST program. This study was approved by our institutional review board,

and written informed consent was obtained from all participants in the premeeting.

Eligible premeetings included meetings between the PICU attending and at least one specialist physician to plan a pending family conference in which the team anticipated discussing a medical decision such as to initiate, escalate, or withdraw medical interventions. The primary outcome was to assess whether the team CST program was associated with increased discussion of prognosis during the team premeeting. Secondary outcome measures included impact of the team CST program on the team's discussion of the purpose of the family conference and roles during the team premeeting.

Statistical Analysis

For our primary aim, comparing team discussion of prognosis before and after the team CST program, the Fisher's exact test was used. Descriptive statistics were used to analyze the percentage of agreement on prognosis and purpose between physicians. To determine agreement, we first identified statements of prognosis, purpose, and roles. One researcher (T.O.) identified physician statements as prognostic statements using Merriam Webster's definition of prognosis (19) ("The prospect of recovery as anticipated from the usual course of disease or peculiarities of the case") and noted whether there was agreement in prognosis statements between physicians.

Qualitative analysis was employed to extract the intended meaning of the physicians' agreement on prognosis and purpose, which was defined as the physician verbally validating the statement of the other physician (22).

An example of physician agreement:

Physician 1: "Listen, after the arrest, she hasn't done anything. She's likely gonna be in a vegetative state. I don't think she's brain dead."

Physician 2: “Yeah, the MRI looks terrible. It’s pretty flat.”

An example of physician nonagreement:

Physician 1: “I don’t see [patient] surviving without a trach.”

Physician 2: “He wasn’t optimized the last time he went home on bipap. We don’t know how he’ll do with this extubation.”

Role agreement was based on the presence or absence of a designated “team leader” who would be the point person throughout the meeting. To assess internal validity, investigator triangulation was performed via a second researcher, who noted whether agreement existed between physicians (23). Interrater reliability of agreement on the

Table 2. Demographics of the team participants and premeeting characteristics

Team Demographics	Pre-Training Program Team Meetings (N = 7)	Post-Training Program Team Meetings (N = 10)
ICU attending physician, n (%)	7 (100)	10 (100)
Social worker, n (%)	7 (100)	10 (100)
Case manager, n (%)	3 (43)	1 (10)
Attending specialist, n (%)		
Oncology	5 (71)	7 (70)
Neurology	3 (43)	5 (50)
Palliative care	3 (43)	2 (20)
Pulmonary	2 (29)	0 (0)
Genetics	2 (29)	0 (0)
Surgical	2 (29)	2 (20)
Nephrology	1 (8)	3 (30)
Trainees (fellows, residents, medical students, nursing student, social work student), n	15 (averaged 2 trainees/meeting)	17 (averaged 1.9 trainees/meeting)
Number of participants/premeeting, median (IQR)	7 (5–9.25)	7 (4.3–8)
Premeeting Characteristics		
Purpose of family conference, n (%)		
Tracheostomy placement	4 (57)	6 (60)
Resuscitation limitations	3 (43)	3 (30)
Surgical procedure	0	1 (10)
Length of premeeting, mean (standard deviation), min	15.43 (3.5)	12.20 (4.3)

Definition of abbreviation: IQR = interquartile range.

definition and agreement of prognosis, determined by Cohen's κ , was 100% between researchers. Qualitative analysis was also employed to extract meaning from the opening structure and content discussed in the pre- and post-CST cohorts (22).

RESULTS

Demographics of the Premeeting

We analyzed seven pre- and 10 post-CST program audio-recorded team premeetings (Table 2). The stated purpose of the family conference was similar in both groups and most frequently included discussion of tracheostomy placement or limitations of interventions. Demographics of healthcare teams were similar between the two groups, with a median of eight healthcare team members present in each premeeting. The post-CST program team premeetings were slightly shorter in length of time compared with the pre-CST program team

premeetings (12.2 min vs. 15.43 min). All (100%) premeetings included a social worker and at least two physicians.

Content of the Premeeting

All premeetings opened with introductions of all members present, most frequently led by the ICU attending physician in pre-CST teams (6/7) and in the post-CST teams (10/10) (Table 3). Pre-CST teams were more likely to start the team premeeting with a synopsis of the current medical care (7/7; 100%) compared with post-CST teams (4/10; $P=0.0345$). Post-CST teams opened the medical discussion with prognosis 6/10 (60%) times.

An example of opening discussion in pre-CST team meeting:

“I wanted to summarize how X is doing since he came down to the ICU. As you know, he came down in shock and now has multi-system organ failure including the lungs, kidneys and DIC. He remains hypoxic on APRV and nitric. We've been on CRRT for two weeks now and he continues to be anuric ...”

Table 3: Comparison of content of the team premeeting between before communication skills training and after communication skills training

Content Presence	Pre-Team Training Program Premeetings (N = 7)	Post-Team Training Program Premeetings (N = 10)	P Value
Introductions	7 (100)	10 (100)	1
Medical update	7 (100)	4 (40)	0.0345
Discussion of prognosis	3 (43)	10 (100)	0.0147
Agreement on prognosis	3 (43)	9 (90)	0.1007
Discussion of purpose	4 (57)	10 (100)	0.0515
Agreement on purpose	3 (43)	8 (80)	0.1618
Discussion of roles	3 (43)	8 (80)	0.1618
Agreement on roles	3 (43)	8 (80)	0.1618

Data are given as n (%). P values in bold indicate statistical significance.

An example of opening discussion in post-CST team meeting:

“We are meeting today to discuss X’s likelihood of recovery. His neurologic injury is severe and I did a quick apnea test, which shows he takes some occasional breaths, so he’s not brain dead, but if he survives, he’ll need a trach and a g-tube. What are your thoughts?”

Prognosis was more likely to be discussed in post-CST team premeetings (10/10 vs. 3/7; $P=0.0147$). Although agreement on prognosis was achieved more frequently in post-CST teams compared with pre-CST teams, the percentage of agreement did not reach significance (9/10 vs. 3/7; $P=0.1007$).

Discussion of meeting purpose in post-CST team premeetings compared with pre-CST (10/10 vs. 4/7; $P=0.0515$) or agreement of meeting purpose (8/10 vs. 3/7; $P=0.1618$) were not statistically different between the pre-CST and post-CST groups. Likewise, a nonstatistically significant increase in discussion (8/10 vs. 3/7; $P=0.1618$) and agreement of roles (8/10 vs. 3/7; $P=0.1618$) was noted in the post-CST team premeetings among the health-care team.

DISCUSSION

The literature supports several tools to guide physicians on leading a family conference (17, 24–27), yet there is little guidance on how to co-lead an effective premeeting in the ICU. Setting the stage for the family conference by ensuring the team shares a mental model is an important step toward delivering a unified message to families. We have shown that an ICU team CST program focused on structuring the team premeeting led to an increased team discussion of prognosis. Although we did not find a statistically significant difference in team agreement on prognosis, there was a noted increase in team agreement from 43% to 90%. If this difference is maintained

in a larger sample and attains statistical significance, we believe it would be clinically important. In addition, our team training program resulted in less summarizing of the medical condition of the patient during the premeeting, possibly improving efficiency of the premeeting.

The ICU premeeting is often convened for the most complicated patients and when viewpoints among various team members diverge. Families need to hear clear prognostic statements that present a unified message from the clinical team (23) to make tough decisions. The stakes are high in these discussions, as we are preparing to ask families to consider initiation or withdrawal of technological support. It is because of this potential conflict and the significance of the decision that a structured guide is necessary. Reaching agreement when the chasm of prognostication is wide is a learned skill. Our training program guided physicians on how to narrow the range of prognostic probabilities by focusing on the best- and worst-case scenarios and using time-limited trials to define a successful outcome in the ICU.

Although we were not powered to find a statistically significant difference in discussion and agreement on the purpose of the family conference or on clarifying team member roles, likely because of the small sample size, we did note an increase in these variables in the post-CST premeeting groups. Adding the content of increased discussion of prognosis, team member roles, and purpose of the conference did not result in longer team premeetings. In fact, the structured premeetings were, on average, 3 minutes shorter than the pre-CST team meetings. These results suggest that the process of having a structured premeeting may have resulted in streamlining the premeeting while simultaneously prioritizing important aspects, such as prognosis

discussion. The impact of clarifying roles may be better reflected in premeeting efficiency rather than role agreement.

The resuscitation literature informs us that top-performing teams have similar features, including consistent team design, dedicated role assignments, effective leadership and communication, and a focus on education and training (29). These essential team components allow for faster time to defibrillation and ultimately improved mortality (24). In this study, we found improvement in efficiency of the premeeting (12 min vs. 15 min), which could be a better marker of team dynamics than what we investigated. The value of reducing the length of time physicians spend on any task in a busy ICU while improving discussion of prognosis cannot be overstated.

Our study has limitations. First, as a pilot study, it is inherently restricted by a small sample size. Although the study was powered to detect a difference in the discussion of prognosis among the team members, we were not powered to assess many other important variables, such as prognostic agreement between team members. We were also not able to evaluate the accuracy of the prognostic statements in predicting the outcome for the critically ill child. To capture the team members involved in real-time family meetings, some meetings were evaluated up to three months after the intervention. It is possible

that factors other than the educational intervention contributed to this finding. As a single site, we are not able to generalize our level of agreement between physicians to other centers. A multicentered clinical trial is necessary to determine the impact of the team CST program on the quality of the ICU premeeting and its relationship with the family–team ICU meeting. Additional next steps would be to explore whether this intervention was meaningful for families and whether the prognostic information was more clearly conveyed to families in the post-CST family conferences compared with the pre-CST conferences. Given the interdependence of multidisciplinary teams in the ICU, it is also essential to study the impact of extending this training to other team members.

Conclusion

A team CST program with a structured approach to discussing patient prognosis in a team premeeting led to an increased discussion of prognosis among team members before convening with the family in the PICU. Creating structure to the premeeting may also improve the efficiency of the premeeting while fostering the team's ability to deliver a unified message to families.

Author disclosures are available with the text of this article at www.atsjournals.org.

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