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Parent Satisfaction with Communication is associated with Physician Patient-centered Communication Patterns during Family Conferences

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Abstract

Objective—To evaluate the association between physician's patient-centered communication patterns and parental satisfaction during decision-making family conferences in the pediatric intensive care unit.

Design—Single-site, cross-sectional study.

Setting—Forty-four bed pediatric intensive care unit in a free-standing children's hospital.

Participants—Sixty-seven English-speaking parents of 39 children who participated in an audio-recorded family conference with 11 critical care attending physicians.

Measurements and Main Results—Thirty-nine family conferences were audio-recorded. Sixty-seven of 77 (92%) eligible parents enrolled. The conference recordings were coded using the Roter Interaction Analysis System (RIAS) and a RIAS-based patient-centeredness score, which quantitatively evaluates the conversations for physician verbal dominance and discussion of psychosocial elements such as a family's goals and preferences. Higher patient-centeredness scores reflect higher proportionate dialogue focused on psychosocial, lifestyle and socio-emotional topics relative to medically-focused talk. Parents completed satisfaction surveys within 24-hours of the conference. Conferences averaged 45 minutes in length (SD 19 min), during which the medical team contributed 73% of the dialogue compared to parental contribution of 27%.

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Physicians dominated the medical team, contributing 89% of the team contribution to the dialogue. The majority of physician speech was medically-focused (79%). A patient-centeredness score 0.75 predicted parental satisfaction ($\beta=12.05$, $p<0.0001$), controlling for length of conference, child severity of illness, parent race and socioeconomic status. Parent satisfaction was negatively influenced by severity of illness of the patient ($\beta= -4.34$, $p=0.0003$), controlling for previously mentioned factors in the model.

Conclusion—Parent-physician interactions with more patient-centered elements, such as increased proportions of empathetic statements, question-asking and emotional talk, positively influence parent satisfaction despite the child’s severity of illness.

Keywords

pediatric; decision making; critical care; communication barriers; patient centered care; clinical conference

INTRODUCTION

Family satisfaction is a national quality indicator for determining excellence of care⁽¹⁾ and communication is a key determinant of satisfaction. Families rate communication as one of the most important skills of physicians, especially during critical illness⁽²⁻⁴⁾. High quality communication in the intensive care unit has been associated with decreased conflict between the medical team and families and increased family trust and satisfaction with care^(5, 6). The Institute of Medicine and American College of Critical Care Medicine task force^(7, 8) have charged physicians to develop a more patient-centered approach when communicating with families in an effort to mitigate conflict and improve the quality of care. Elements of patient-centered communication have been described to include shared decision-making, partnership building, empathy, and consideration of a family’s goals and care preferences⁽⁹⁻¹¹⁾. Some studies have demonstrated specific communication patterns or physician behaviors that are patient-centered and their association with family outcomes⁽¹²⁻¹⁴⁾.

A growing number of investigators have used a quantitative approach to study these elements based on the Roter Interaction Analysis System (RIAS), a commonly used standardized coding system. A RIAS-based patient-centeredness score with established predictive validity for a variety of outcomes is increasingly used as a summary measure in these studies to investigate racial and ethnic disparities in communication^(15, 16), in evaluation of communication training programs⁽¹⁷⁻²⁰⁾ and in establishing patient-centered correlates of respect⁽²¹⁾; non-verbal sensitivity⁽²²⁾; and mindfulness⁽²³⁾.

Most of these studies have been conducted in the care of adult patients, but several notable studies have been conducted within the context of neonatology, including 2 using simulated family conferences^(14, 24). Only one study has applied this approach to actual neonatal intensive care unit family conferences⁽²⁵⁾ and none has applied this approach to pediatric critical care.

One of the main settings for communication during critical illness is the pediatric intensive care unit (PICU) family conference, (26) an opportunity to discuss a patient's condition, share in decision-making, and develop care plans (27). Studies in adult critical care regarding end-of-life family conferences have shown a positive association between family satisfaction and increased proportion of family speech (28). In the PICU family conference, we do not know the relationship between satisfaction and parent participation or patient-centered communication patterns. However, we do know parents value specific physician behaviors, such as emotional speech, empathetic statements, and question asking (29). Presence of these physician behaviors and their relationship with parent satisfaction during the parent-physician conference has not been explored in the PICU. In this study, we evaluated the influence of patient-centered communication on parent satisfaction with the PICU family conference. We hypothesized parental satisfaction would be associated with increased patient-centered communication patterns.

MATERIALS AND METHODS

Setting, Design and Participants

This prospective cross-sectional study was conducted in the PICU of a single urban, tertiary medical center from April 2012 to August 2014. Our PICU includes medical and surgical patients, excluding children with primary cardiac disease. English-speaking parents of children in the PICU making a critical treatment decision for their child were eligible for enrollment. Eligible parents were defined as adults with primary decision-making responsibilities for the critically ill child, including the biological parent, adopted or foster parent, or member of the extended family. Both parents, if available, were approached for enrollment if they anticipated attendance at the family conference, were willing to have the conference audio-recorded, and agreed to complete a post-conference questionnaire.

A critical treatment decision was defined as a decision to initiate, escalate, or withdraw medical interventions, and included management decisions, such as invasive tube placement, extracorporeal membrane oxygenation, continuous renal replacement therapy, surgical procedures, attempted resuscitation, or discharge planning to hospice. The attending physician directly responsible for the care of the patient and anticipated leading a family conference in which a critical treatment decision would be made was eligible to participate. Written consent was obtained from all participants. The study was approved by the hospital's Institutional Review Board.

Recruitment Procedures

Each weekday, the PICU attending physician on service was approached by a study team member to determine whether he/she anticipated conducting a family conference to discuss a critical treatment decision with any of the parents of children in the PICU. Conferences convened to deliver bad news, provide a medical update or discuss discharge planning were excluded. Enrollment was restricted to weekdays when most decision-making family conferences occur and consultants and support staff are most available to parents. Given the sensitive nature of the study, the PICU attending, social worker and bedside nurse were

consulted as to the emotional state of any potentially eligible parents, to avoid approaching those considered too distressed for recruitment.

Sources of Data

Data collected from the patient's electronic medical records included demographics, length of stay, and Pediatric Risk of Mortality (PRISM) III Score (³⁰).

Parental Measures—Parents completed a demographic survey and the modified Family Satisfaction with decision-making (FS-ICU II, decision-making subscale) survey (^{31, 32}) within 24 hours of the family conference. The FS-ICU II survey is a 10-question survey regarding satisfaction with communication during a decision-making process (in this study, the family conference, survey available in appendix). Parents from the same family completed the surveys independently. When 2 parents completed the FS-ICU II survey, the parent score reported was an average of the two scores.

Physician Measures—Physicians completed a brief demographic survey, including items such as prior communication skills training and years of practice.

Analysis of Family Conference Recordings

Thirty-nine family conferences were audio recorded and coded with the Roter Interaction Analysis System (RIAS). The RIAS is a valid and reliable quantitative tool for assessing medical communication in a variety of settings with high levels of reliability and predictive validity (³³). The unit of analysis is a statement conveying a complete thought communicated as a single word, simple sentence, or a clause in a complex sentence. Statements are coded directly from recordings without transcription and assigned to mutually exclusive and exhaustive code categories, identified by speaker. In pediatric studies, a total of 45 code categories are used; the majority of codes are applied in a parallel manner to clinician and parent statements and a handful are clinician-only codes.

The codes reflect content and form of the medical dialogue; form distinguishes statements which are primarily informative (information giving), persuasive (counseling), interrogative (closed and open-ended questions), affective (social, positive, negative, and emotional), and process-oriented (facilitation, orientations, and transitions). In addition to form, content areas are specified for exchanges about medical condition and history, therapeutic recommendations, life-style behaviors, and psychosocial topics relating to social relations, feelings, and emotions. As an example, a physician statement, "What you need to think about is if she is attached to a ventilator, if she is attached to a feeding tube, if she is stiff, is this the right life that you want her to have." would be coded as counseling within the life-style and psychosocial category. A physician statement, "Decreased blood goes to the brain, and injury occurs from that." would be categorized as medical information. Table 1 lists dialogue examples for the primary RIAS codes.

As in other RIAS-based studies, a **patient-centeredness score** was operationalized as a ratio reflecting the psychosocial and socio-emotional relative to the biomedical focus of the conference dialogue (Table 1). Specifically, the numerator consists of certain parent codes

(all questions, psychosocial and lifestyle information and emotional talk) *plus* medical team codes (psychosocial and lifestyle questions, psychosocial and lifestyle information and counselling, emotionally responsive statements, partnering and activation statements). The denominator includes certain parent codes (medical information and questions) *plus* medical team codes (medical and therapeutic regimen information and counselling; medical questions; instructions and orientation)^(34, 35).

Structural measures of conference communication include conference duration (minutes), the sum of all parent and physician statements as an indication of total dialogue, and a measure of physician verbal dominance, constructed as the ratio of all physician-to-parent statements.

One RIAS coder with over 20 years of experience and established levels of high coding reliability coded the conference recordings. Only one coder was used, as is standard for RIAS analyses of a small number of recordings. Intra-coder reliability was high; Pearson's correlation coefficients averaged 0.97 for both physician and parent codes calculated on 4 randomly selected, double-coded recordings.

Statistical Analysis and Approach

The primary outcome measure was parent decision-making satisfaction and the predictor was the patient-centeredness score, as operationalized above. In the current study, we conceive of the score as *patient and family-centered*; however, we used the term patient-centeredness score as it is a well-recognized score in the literature. Descriptive statistics were used to summarize the sample characteristics. Means and standard deviations or medians were reported for continuous measures. To avoid the strong assumption of a linear relationship between the continuous patient-centeredness score and the outcome measure, we applied a cut-off point of 0.75 to categorize the variable, with a score >0.75 indicating a more patient-centered encounter. A value of 0.75 was chosen as the cut-off as it was above the mean and within $1+SD$. Exact median test was used to compare median parent satisfaction scores between parents with patient-centeredness score >0.75 vs. ≤ 0.75 . Chi-square tests with Fisher's exact p-values were applied to test the association between more patient-centered encounters and parent satisfaction.

Multivariate analysis was conducted to examine the effect of the patient-centeredness score on parent satisfaction, controlling for length of conference, severity of illness, race, and socioeconomic status of the parent. Because 11 physicians participated in conferences with 39 families, the data are hierarchically structured, in which parents are nested within the analysis for each physician's performance. As a result, the observations in the data are non-independent. The generalized estimated equation (GEE) model^(36, 37) was applied to avoid erroneous conclusions that would have arisen in an analytic method ere used that assumed independent data. The length of the conference was categorized as either short (<30 minutes), medium (30–60 minutes), and long (≥ 60 minutes). The long category was used as the reference group.

RESULTS

Sixty-seven parents and 11 critical care attending physicians participated in 39 audio-recorded critical care conferences. Of 77 eligible parents, 6 (8%) declined to participate because of the critical status of the patient, 4 (5%) were declined by the clinical team due to the emotional state of the parent (3 by both the social worker and bedside nurse and 1 by the physician), and 3 (4%) consented and participated in the audio-recorded family conference, but did not complete follow up surveys due to rapid clinical deterioration and death of the child. Reasons the clinical team declined enrollment on behalf of the parents included “she is crying inconsolably” or “mom can barely think right now. She’s having a hard time processing anything I tell her.” All 11 eligible attending physicians participated.

Demographic and clinical characteristics of the patients are shown in Table 2; demographic characteristics of the parents and physicians are shown in Table 3. Nine conferences included the mother only, one was attended by the father only and 29 (74%) included both parents.

The most frequent decisions being discussed were tracheostomy placement (41%) and limitations of interventions (21%), which included withholding and withdrawal of ICU-sustaining therapies, followed by surgical procedures other than tracheostomy placement (15%). Medical decisions discussed (10%) included high risk procedures such as repeat bone marrow transplantation, chemotherapy, and extracorporeal membrane oxygenation.

The average length of the family conference was 45 minutes (SD 19; range 14 – 95 minutes), during which the medical team contributed 73% of the dialogue compared to parental contribution of 27% (Table 3). Physicians verbally dominated the interaction, encompassing 89% of medical team talk compared to contributions from other members such as the social worker (7%), case manager (2%), and bedside nurse (2%). The content of the conference was mostly medical information (79%) compared to psychosocial talk (21%). There were no associations between parental race, age, or religion and parent satisfaction. Likewise, there were no associations between physician characteristics, such as gender or years of experience and parent satisfaction.

The exact median test shows the median parent satisfaction score was significantly higher (82.5) when the patient-centeredness score was ≥ 0.75 , compared to a median satisfaction score of 70.0 when the patient-centeredness score was <0.75 ($p=0.0455$).

By multivariable analysis using GEE model, we found when controlling for length of conference, severity of illness, parental race, and socioeconomic status, the patient-centeredness score remained a significant positive predictor of parent satisfaction ($\beta=12.05$, $p<0.0001$, Table 4). When comparing satisfaction modeled for mothers and fathers separately, the patient-centeredness score remained significantly associated with satisfaction of both mothers ($\beta=8.4$, $p=0.015$) and fathers ($\beta=22.7$, $p<0.0001$). Factors negatively associated with parent satisfaction included severity of illness ($\beta= -0.34$, $p=0.0074$) and level of parent education ($\beta= -4.34$, $p=0.0003$).

DISCUSSION

Our study is the first to characterize pediatric critical care family conferences in terms of patient-centered components based on analysis of conference recordings and to use this measure to predict parent satisfaction with communication around decision-making. Our work shows physicians dominate the parent-physician conference, speaking 73% of the time. A recent study conducted in 2 Dutch pediatric ICUs showed similar rates of physician verbal dominance during the family conference (67% physician talk) (38). Other studies conducted with family members of patients in an adult medical ICU facing end-of-life decisions found a negative association between family satisfaction and physician verbal dominance during decision making (28).

We have demonstrated the patient-centeredness score can be used to characterize the parent-physician interaction during critical care family conferences and to predict parent decision-making satisfaction. We have delved deeper into the content of the family conference to evaluate specific physician speech patterns associated with increased satisfaction. Elements of patient-centered speech, such as positive speech, including empathetic statements, asking open-ended questions, building partnership through shared experiences, and including discussion about the parent's goals and preferences around decision-making are important to parents. When controlling for length of conference, severity of illness, and socioeconomic factors, the patient-centeredness score remains an important factor in parent satisfaction.

The literature supports physicians balancing discussion of goals and preferences with providing medical information (39, 40). We found the family conference was dominated by physician medical talk as compared to discussion of goals and preferences. We do not know the optimal balance of discussing psychosocial elements compared to medical talk, but our results reveal that the amount of psychosocial elements does impact degree of parent satisfaction with communication. It is clear parents want their fears and concerns to be understood and addressed, and they want to feel cared for and about. Making our interactions with parents more patient-centered can likely improve the communication experience for parents and may also improve the grieving process should their child not survive their illness (41). Until critical care providers understand this need, continued parental anxiety and dissatisfaction will dominate the experience of family conferences in critical care settings.

We also must be aware that parents of critically ill children have variability in their communication preferences (42). Although the literature suggests most parents of critically ill children want to actively participate in the decision-making process, how they want to receive information may differ. Parents who use more cognitive processing may prefer a more biomedical approach while those parents who rely on affective or psychomotor processing may prefer a more patient-centered approach (43). We did not evaluate parental processing preferences in this study, which limits our ability to match a parent's communication style with the style of the physician.

A particular strength of this study is the representation of fathers, who may have a different experience during a family conference, yet their voices are rarely heard. The relationship

between the patient-centeredness score and satisfaction appears stronger for fathers as compared to mothers; specifically, fathers prefer conferences with more positive talk and emotional talk. This association challenges current gender stereotypes, which suggest men prefer facts and figures while women emote. We would argue that when faced with a critically ill child, all parents emote. Societal gender stereotypes may limit fathers' exposure to emotive conversations. Our work suggests fathers appreciate relationship-building and more personal dialogue with physicians.

Prior studies of adult patients have shown a negative association between patient severity of illness and patient satisfaction (44, 45), but we believe our finding of relating parent decision-making satisfaction and child severity of illness is a new finding to the literature. One theory intimates poor health negatively influences satisfaction because of its general relationship to pain, frustrations, and unhappiness. A second theory suggests physicians change their behavior when interacting with sicker patients and families, which then leads to poorer satisfaction scores. In adult ambulatory care, it appears clinicians are less likely to attend to socio-emotional aspects of care when faced with medical complexity, and this may diminish patient satisfaction (39). While we know the fragile health status of the child was associated with parent decision-making satisfaction in the current study, we did not explore the mechanisms.

Lastly, we found a negative association between level of parent education and parent satisfaction scores. Prior studies have demonstrated an association between higher educational attainment of parents and higher stress levels (46, 47). It is possible parental education mediates the relationship between parental stress and satisfaction. We also suspect parents with higher educational attainment may have increased conflict with the medical team or perceive they are being talked *at* rather than talked *to* during family conferences. Another study in the neonatal ICU positively linked parental satisfaction to educational attainment (48). However, similar to our study, they found that parent education was a distinguishing factor, but not the strongest predictor of parent satisfaction. The stronger predictor of satisfaction was the parent's perception of the child's health status at the time of the survey. Parent education is part of the overall parent profile and we benefit from being aware of its function, but it is not the driving force of care or parent satisfaction. These data remind us of the complexity in providing high quality parent-physician communication during critical illness. For clinicians to change the way we communicate with parents and improve the parental experience, we need to consider how we deliver our messages.

There are several limitations to this study. We chose to include only English-speaking parents because the FS-ICU II survey was previously validated in English-speakers only. In our PICU, 11% of our patients are non-English speaking, of which 8% are Spanish-speaking, 2% Chinese and 1% other languages. Since these children represent an important percentage of our general PICU population, our study fails to represent the experience of all of our patients. Our study population was quite diverse in terms of parent demographics such as race, marital status, presence of both mothers and fathers, but we are limited in our ability to generalize these results by conducting this study at a single site and with a small cohort of physicians. We did attempt to account for the clustering effect of the small cohort of physicians using GEE modeling and did not find any associations between physician

characteristics and our outcomes of interest. Responses to the FS-ICU II survey may not specifically reflect the parent's experience during the family conference, but may represent an overall communication experience with the medical team. We attempted to focus parent responses by conducting the FS-ICU survey within 24-hours of the family conference. We recognize there are many complexities to parent-physician communication in the PICU, such as communication that occurs at the bedside or during family-centered rounds, or a parent's prior experiences with the medical team or racial/ethnic or gender concordance between the physician and parent. We were not able to control for these factors that may influence this interaction. Lastly, when subjects know their behavior is being recorded, the Hawthorne effect may occur. We believe this impact was small in that the percent of physician talk compared to parent talk is similar to data reported in the literature.

CONCLUSION

This is the first study to use the RIAS to dissect the parent-physician family conference during the critical illness of a child. We have shown specific physician behaviors, such as an increased proportion of empathetic statements, question-asking and emotional talk, positively influence parent satisfaction. Incorporating patient-centered communication patterns into discussions with families may not only increase their satisfaction with care, but may also lead to better care during the critical illness of the child.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Coding Examples using Roter Interaction Analysis System (RIAS)

Functional grouping	Communication Codes	Example Text
Data Gathering	Medical Questions about: <ul style="list-style-type: none"> ▪ Medical history/condition ▪ therapeutic regimen ▪ lifestyle and self-care ▪ psychosocial topics 	<p>DAD: So do you guys know what could have caused this?</p> <p>DAD: will she go home on a ventilator also?</p> <p>SW^a: What are you doing to keep yourself healthy?</p> <p>Dr^b: Do you feel like, is he suffering?</p>
	Biomedical information <ul style="list-style-type: none"> ▪ about medical condition ▪ therapeutic regimen 	<p>Dr: The blood inside of the brain builds up pressure. And that pressure can harm the brain.</p> <p>MOM: She looks pale to me.</p> <p>Dr: She has to go downstairs for the CT.</p>
Patient education and Counselling Skills	Psychosocial exchange about problems of daily living, issues about social relations, feelings, emotions	<p>MOM: I love my son regardless. Whatever the future is, I just want to know if he'll be able to open his eyes and smile.</p> <p>Dr: I think it's almost a guarantee that he's gonna open his eyes and smile. Just may take some time to get there.</p>
	Lifestyle information/counselling	<p>Dr: You would have nurses at home. Not 24 hours a day, but a good chunk of the day.</p>
Relationship Skills	Positive talk <ul style="list-style-type: none"> ▪ agreements ▪ jokes and laughter ▪ approvals /compliments 	<p>Dr: Yes, I agree that is the way to go.</p> <p>SW: Yep, you will be home. You will not have to see my face every day. You'll be so happy.</p> <p>Dr: She looks good, you are doing a great job.</p>
	Negative talk <ul style="list-style-type: none"> ▪ disagreements ▪ disapproval and criticisms 	<p>MOM: No, I don't think that would work for me.</p> <p>Dr: No, no, no. The study is for a slightly different disease.</p>
	Emotional talk <ul style="list-style-type: none"> ▪ concerns ▪ reassurance ▪ legitimate ▪ empathy ▪ partnership 	<p>Dad: as my heart has said before, if we knock on the door of death so many times, eventually it's going to answer.</p> <p>Dr: I'm sure the swelling will improve in the next few days.</p> <p>SW: And almost every parent whose child we care for has these same kinds of feelings.</p> <p>MOM: I am afraid for her. (concern)</p> <p>Dr: I can see that you are. (empathy)</p> <p>Dr: We – all of us will fight hard for her.</p>
Partnering Skills	Partnering and Activation	

Functional grouping	Communication Codes	Example Text
	<ul style="list-style-type: none"> ▪ asking for patient opinion ▪ asking for understanding ▪ paraphrase and interpretation ▪ cues of interest (back-channel) 	<p>Dr: What do you think would help?</p> <p>Dr: Do you follow me?</p> <p>Dr: Let me make sure I've got what you meant. Your preference would be to place the trach if we can't get the breathing tube out on this 3rd try?</p> <p>Dr: right, go on, I see</p>
Structuring the visit	<ul style="list-style-type: none"> ▪ Orientations to what is going to happen, including agenda setting ▪ Giving directions and instructions 	<p>Dr: I wanted to talk to you guys about where we are, where we go from here, what are we worried about?</p> <p>NURSE: He will go to MRI, you can meet us down there</p>
Patient-centeredness score	<p>Numerator = parent codes (all questions, psychosocial and lifestyle information and emotional talk) + medical team codes (psychosocial and lifestyle questions, psychosocial and lifestyle information and counselling, emotionally responsive statements, partnering and activation statements)</p> <p>Denominator = parent codes (medical information and questions) + medical team codes (medical and therapeutic regimen information and counselling; medical questions; instructions and orientations).</p>	

^aSW – social worker;

^bDr - doctor

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Table 2

Patient demographic and clinical characteristics

Patient Characteristics	N=39 (%)
Sex male	24 (62)
Age (median, IQR)	23 months (23)
CCC ^a present	26 (67)
Length of stay (median, IQR)	41 days (SD 40)
Diagnostic Category	
Respiratory	11 (28)
Oncology	13 (33)
Neurologic	3 (8)
Trauma	8 (21)
Other	4 (10)
Treatment Decision Discussed	
Tracheostomy	16 (41)
Limitations of Interventions	8 (21)
Surgical procedure	6 (15)
Medical treatment	4 (10)
Discharge to hospice	3 (8)
Overall goals of care	2 (5)
Disposition upon discharge	
Home	16 (41)
Subacute facility	11 (28)
Death	11 (28)
Hospice	1 (3)

^aCCC – complex chronic condition

Table 3

Parent and physician demographic characteristics

Parent Characteristics	N=67 (%)
Relationship to patient	
Mother	38 (57)
Father	29 (43)
Age in years (mean, SD)	37 (10.7)
Race	
Non-Hispanic white	16 (24)
African-American or Black	43 (64)
Asian	4 (6)
Hispanic	3 (4)
Other	1 (2)
Marital Status	
Married	36 (54)
Unmarried	28 (42)
Unknown	3 (4)
Household Income	
<30,000	12 (18)
30,000–50,000	11 (16)
>50,0000	25 (37)
Would rather not say	16 (24)
Unknown	3 (5)
Religion ^a	
Christian/Catholic/Baptist	29 (44)
Jewish	2 (3)
Muslim	2 (3)
None indicated	25 (37)
Other	9 (13)
Education	
Some or no high school	8 (12)
Some college	27 (40)
College graduate	16 (24)
Master's degree or higher	13 (19)
Unknown	3 (5)
Physician Characteristics	N=11 (%)
Sex male	30 (77)
Years of experience <5	16 (41)
Number of conferences/physician	

Parent Characteristics	N=67 (%)
1	4 (36)
2	2 (18)
3	3 (27)
>3	2 (18)
Prior communication skills training	0 (0%)

^aSource of information is medical record, not from parent interviews

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Table 4

Descriptive statistics for outcome measures

Variable	Mean	Standard Deviation	Range
Patient-centeredness score	0.54	0.44	0.23–2.9
Conference Length (min)	44.7	19.9	14–95
Verbal Contribution Physician (min)	32	16	7–77
Verbal Contribution Parent (min)	12	8	2–38
Pediatric Risk of Mortality Score	6.6	7.4	0–29
Satisfaction Score			
Mother	75.9	14.3	55–100
Father	73.4	18.4	42–100
Family (average of above scores)	76.0	14.8	49–100

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Table 5

Multivariable analysis of variables associated with family satisfaction using a generalized estimated equation model

Variable	Estimated Effect (β)	95% Confidence Interval	P value
Patient centeredness score >0.75	12.05	7.17, 16.93	<0.0001
Conference Length <30 minutes	2.72	-4.22, 9.66	0.4420
Pediatric Risk of Mortality Score	-0.34	-0.59, -0.09	0.0074
Black race	-3.69	-9.91, 2.53	0.25
Parent education	-4.34	-6.67, -2.02	0.0003

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