



Provision of Parent Feedback via the Communication Assessment Tool: Does It Improve Resident Communication Skills?

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The authors have no conflicts of interest to disclose.

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Received for publication January 10, 2018; accepted June 30, 2018.

ABSTRACT

OBJECTIVE: To determine the impact of a curriculum that included parent feedback, via the Communication Assessment Tool (CAT), on resident communication skills.

METHODS: In a prospective, controlled study, categorical pediatric residents in continuity clinic were divided into control and intervention groups based on clinic day. Parent feedback was obtained for all residents at the beginning and end of the year using the CAT, a validated survey to assess physician communication. Intervention residents participated in learning conferences that reviewed communication best practices and received parental feedback via individual and group CAT scores. Scores were dichotomized as 5 (excellent) versus 1 to 4 (less than excellent) and reported as percentage of items rated excellent. Curriculum impact was assessed by comparing score changes between groups. Residents' scores in both arms were combined to assess changes from the beginning of the year to the end. Statistical testing was performed using generalized linear mixed-effects models.

RESULTS: All residents (N = 68) participated. Intervention (n = 38) and control (n = 30) residents received at least 10 CATs at the beginning and end of the year. The percentage of parents rating all items as excellent increased by similar percentages in intervention and control groups (60.9%–73.8% vs 61.1%–69.8; $P = .38$). When scores of residents in both arms were combined, improvement was found from the beginning to the end of the year for all CAT items ($P < .001$).

CONCLUSIONS: A curriculum including parent feedback from CATs did not significantly impact communication skills. However, communication skills improved over the year in intervention and control groups, suggesting that communication training occurs in multiple settings.

KEYWORDS: communication skills; continuity clinic; parent feedback; pediatric resident

ACADEMIC PEDIATRICS 2019;19:152–156

WHAT'S NEW

We examined the impact of a continuity clinic curriculum that included parent feedback using a validated tool on the residents' communication skills. Although this curriculum did not demonstrate a differential impact, resident communication skills did improve over the academic year.

EFFECTIVE COMMUNICATION IS a crucial component of medical practice and has been linked to patient satisfaction, adherence, and health outcomes.^{1–4} Nearly 30% of parents report dissatisfaction with communication from their child's physician.¹ Families commonly cite poor listening, lack of respect, or ineffective explanations as reasons for dissatisfaction.¹ Given the impact of communication on health outcomes, it is critical for residents

to develop effective communication skills to prepare for practice.^{1–4}

The Accreditation Council of Graduate Medical Education (ACGME) includes interpersonal and communication skills as a core competency of residency training.^{1–7} To assess communication competence, the ACGME recommends multisource evaluations, as they have resulted in positive changes in communication skills.⁸ Historically, this feedback has been generated by faculty, peer, and self-assessment; however, recently there has been increased emphasis on feedback from patients and families.^{2,5,9} One study demonstrated that physicians-in-training who received patient feedback via the validated Doctors' Interpersonal Skills Questionnaire tool had significant communication skill improvement.¹⁰

The ACGME suggests the Communication Assessment Tool (CAT) as one potential instrument for parents and patients to assess resident communication skills.¹¹

Medical educators have established content, internal consistency, and construct validity evidence using this tool among family medicine, emergency medicine, and general surgery residents.^{3–5,12–14} The CAT has not previously been used to evaluate communication skills among pediatric residents in continuity clinic (CC).

The CC emphasizes longitudinal relationships between residents and families.¹⁵ Effective communication is strongly associated with parent satisfaction in CC,¹⁶ making CC a logical setting to obtain parent feedback on residents' communication skills.

The purpose of this study was to evaluate the impact of a curriculum that included parent feedback, measured via the CAT, on resident communication skills. We hypothesized that those residents who received the curriculum with parent feedback would subsequently have improved parent-assessed communication skills (ie, higher CAT scores) than residents who did not receive the curriculum.

METHODS

SETTING AND STUDY POPULATION

This study was conducted at Cincinnati Children's Hospital Medical Center's Pediatric Primary Care Center (PPCC), an academic primary care center that serves as the medical home for approximately 19,000 children (~35,000 visits annually) from predominantly underserved backgrounds (~90% Medicaid) and as the CC site for approximately 80 residents annually. All categorical pediatric residents with CC at the PPCC were eligible for participation. Residents were assigned to the intervention or control group based on previous randomly assigned CC day to create similar-sized groups. This study was approved by Cincinnati Children's Hospital Medical Center's institutional review board. Residents consented to participate prior to study initiation.

STUDY DESIGN

All residents had parent CATs collected at the beginning (July–September 2016) and end (May–July 2017) of the academic year. Surveys were collected by a research coordinator, research team member (DD, FR, MK), or clinical staff member. Each resident had a minimum of 10 CATs collected from different patient encounters during each collection period (minimum of 20 surveys total). Only 1 CAT was completed per visit, regardless of the number of parents present. Parents were informed that survey completion was voluntary and anonymous and would not affect the care provided. Owing to anonymity, we were unable to determine if any parents completed the survey during both pre- and postintervention phases.

EDUCATIONAL INTERVENTION

Intervention group residents received the curriculum during 2 interactive, faculty-facilitated conferences in February and March 2017. The first conference focused on

best practices in communication and included opportunities to critique communication skills through role play and video vignettes. Materials for this conference were developed de novo based on a literature review and consultation with educators from outside institutions. During the second conference, residents received their preintervention CAT scores along with the average scores for all residents, divided by training year. Residents reviewed and reflected on feedback and engaged in small group discussions on the implications and lessons learned. The control group did not receive feedback or participate in educational conferences.

SURVEY TOOL

The CAT is a 14-item validated survey used to obtain patient perception of physician communication skills utilizing a 5-point scale (1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent).¹² Questions relate to residents' abilities to engage, listen, and discuss issues in a respectful, effective way. The CAT was chosen given its recommendation by the ACGME to assess communication skills¹¹ and successful use in other residency programs.^{3–5,12–14} Initial CAT studies recommended obtaining 20 to 30 surveys,¹² and previous studies obtained between 1 and 61 resident surveys.^{3–5} Where applicable, survey questions were modified to read "my child's" instead of "my" to make questions applicable to parents. Parents and residents also completed a demographic information survey. All survey data were de-identified and entered by a research assistant into Research Electronic Data Capture,¹⁷ a secure web-based application.

STATISTICAL ANALYSIS

Resident and parent demographic characteristics were described using means and standard deviations or frequencies and percentages. Differences in demographic characteristics between study arms and time points were tested by 2-sample *t* tests and Fisher exact tests. Generalized linear mixed-effects models (GLMMs) with a logistic link function and a random intercept for resident were used to test for differences in the probability of receiving an excellent score on the CAT between intervention and control residents from the beginning of the year to the end. Time, group, and their interaction were included as fixed effects, with the time-by-treatment interaction representing the treatment effect. Shared patient and provider race and gender were examined as model covariates but were not retained in the final models because they did not improve model fit. The CAT responses were dichotomized to excellent versus very good/good/fair/poor because a previous psychometric analysis found that scoring the CAT based on the proportion of items rated excellent was more meaningful than summarizing the results using means.¹² Analyses were conducted for individual CAT items and the proportion of all items scored as excellent. The differences in the probability of receiving an excellent CAT score from the beginning of the year to the end among all participants were tested by a GLMM that included time as a fixed effect and a random intercept for resident. Independent and

paired-sample *t* tests performed on the proportion of excellent responses for each resident were used to test for differences in the response to intervention and change over time, respectively. All analyses were conducted using R 3.4.0 (R foundation for Statistical Computing, Vienna, Austria; <http://www.r-project.org/>).¹⁸ GLMMs were fit using the lme4 package¹⁹ version 1.1.13 with the Satterthwaite approximation for degrees of freedom obtained via lmerTest²⁰ package version 2.0.33.

RESULTS

DEMOGRAPHICS

All residents (N = 68) agreed to participate. All intervention group residents (n = 38) completed both educational conferences. There were no material differences in demographic characteristics between the intervention and control (n = 30) groups, with most residents identifying as Caucasian, female, and 25 to 29 years of age (Table 1). The parent demographics from both time frames were similar; most parents were African American and female with a mean age of 30 years (Table 1).

PARENT CATs

All residents in the intervention and control groups had 10 to 14 surveys collected during both the pre- and postintervention time frames, resulting in 705 preintervention and 697 postintervention surveys.

The percentage of parents who rated all CAT items as excellent (score = 5) increased by a similar percentage from the pre- to postintervention time frame in both groups (intervention, 60.9%–73.8%; control, 61.1%–69.8%; *P* = .38). When each CAT item was analyzed individually during the pre- to postintervention time frame, there was no significant difference (*P* ≥ .10 for all items) between groups (Table 2).

When CAT scores for all resident surveys were combined, there was improvement between the beginning of the year and the end for all items (*P* < .001) (Table 3). When further subdivided by residency year, the degree of improvement was similar across all years (data not shown).

DISCUSSION

Our study found that a CC-based educational intervention that included parent feedback via the CAT did not significantly improve resident communication skills when compared with residents who did not receive the curriculum. Limited scope of intervention and high baseline CAT scores likely impacted our ability to differentiate between groups. However, we did demonstrate that parent assessment of pediatric resident communication skills, at all training levels, improved over the year.

Resident communication skill development is likely multifactorial, developing longitudinally from a variety of informal clinical and interpersonal experiences.²¹ However, without parent feedback and a formal communication curriculum integrated into a residency program, the quality and quantity of feedback are uncertain. With

constant exposure to new situations, it is challenging to isolate 1 intervention or experience as the cause of communication skill improvement. Our study was unable to link our curriculum, which included parent feedback, to enhanced communication skills. Therefore, we hypothesize that it was 1 component in communication training but not substantial enough to produce meaningful differences between groups. However, we did observe an overall improvement in communication skills for both intervention and control residents over the year. A previous study demonstrated that the most significant gains in interpersonal skills occur early in training,¹⁰ but our study found that residents in all years of training experienced similar improvements over the year. This previous study did not focus on pediatric residents and utilized a different communication assessment tool (Doctors' Interpersonal Skills Questionnaire), which may explain this difference.

The ACGME recognizes the importance of developing effective communication skills and recommends evaluation via multisource feedback.^{2,7,9} However, the ceiling effect

Table 1. Provider and Parent Demographics

Provider Characteristics According to Study Arm			
	Intervention (n = 38)	Control (n = 30)	<i>P</i> Value*
Age			.11
20–24 y	1 (2.6)	0 (0.0)	
25–29 y	35 (92.1)	24 (80.0)	
30–34 y	1 (2.6)	5 (16.7)	
35–39 y	1 (2.6)	1 (3.3)	
≥40 y	0 (0.0)	0 (0.0)	
Year of residency			.95
1	11 (28.9)	9 (30.0)	
2	16 (42.1)	11 (36.7)	
3	11 (28.9)	10 (33.3)	
Gender			.99
Male	12 (31.6)	9 (30.0)	
Female	26 (68.4)	21 (70.0)	
Race			.41
Hispanic	0 (0.0)	1 (3.3)	
Asian	6 (15.8)	3 (10.0)	
African American	2 (5.3)	0 (0.0)	
Caucasian	27 (71.1)	21 (70.0)	
Other	3 (7.9)	5 (16.7)	
Parent Characteristics According to Study Period			
	Pre (n = 705)	Post (n = 697)	<i>P</i> Value*
Age, y, mean (SD)	29.9 (8.2)	30.8 (8.8)	.08
Gender			.37
Male	69 (9.8)	72 (10.3)	
Female	628 (89.1)	552 (79.2)	
Missing	8 (1.1)	73 (10.5)	
Race			.10
Hispanic	12 (1.7)	7 (1.0)	
Asian	8 (1.1)	5 (0.7)	
African American	539 (76.5)	470 (67.4)	
Caucasian	112 (15.9)	111 (15.9)	
Other	16 (2.3)	30 (4.3)	
Missing	18 (2.6)	74 (10.6)	

Values reflect column percentage. Numbers may not sum to 100 owing to rounding.

**P* value for the 2-sample *t* test for continuous variables and the Fisher exact test for categorical variables.

Table 2. Proportion of Parents Providing a Rating of “Excellent” According to Study Arm

	Intervention		Control		P Value*	P Value†
	Pre n (%)	Post n (%)	Pre n (%)	Post n (%)		
All CAT items rated “excellent”	235 (60.9)	285 (73.8)	182 (61.1)	213 (69.8)	.45	.38
Individual CAT items						
Greeted me in a way that made me feel comfortable	266 (67.5)	314 (81.1)	219 (70.6)	248 (80.0)	.40	.40
Treated me with respect	273 (69.1)	330 (85.3)	233 (75.4)	255 (82.3)	.11	.10
Showed interest in my ideas about my child’s health	281 (71.1)	324 (83.7)	228 (73.5)	255 (82.3)	.54	.51
Understood my child’s main health concerns	275 (69.8)	327 (84.5)	221 (71.5)	254 (81.9)	.41	.33
Paid attention to me	275 (69.8)	333 (86.0)	226 (73.4)	257 (82.9)	.18	.15
Let me talk without interruptions	277 (70.1)	333 (86.0)	224 (73.2)	258 (83.5)	.26	.22
Gave me as much information as I wanted	286 (72.4)	325 (84.0)	225 (72.6)	248 (80.0)	.40	.31
Talked in terms I could understand	285 (72.3)	335 (86.6)	221 (71.5)	256 (82.6)	.54	.35
Checked to be sure I understood everything	281 (71.3)	323 (83.5)	222 (71.6)	243 (78.4)	.30	.23
Encouraged me to ask questions	268 (68.0)	314 (81.3)	208 (67.5)	236 (76.1)	.40	.28
Involved me in decisions as much as I wanted	272 (68.9)	317 (81.9)	215 (69.4)	251 (81.0)	.80	.76
Discussed next steps	276 (70.2)	320 (82.7)	221 (71.5)	248 (80.3)	.49	.44
Showed care and concern	290 (73.4)	327 (84.5)	227 (73.5)	252 (81.6)	.58	.48
Spent the right amount of time with me	287 (73.0)	325 (84.0)	226 (73.1)	252 (81.3)	.61	.50

CAT indicates Communication Assessment Tool.

*P value for the independent samples *t* test performed on the proportion of “excellent” responses for each provider.

†P value from the generalized linear mixed-effects model for the time-by-treatment interaction.

may make it challenging to obtain meaningful parent feedback.^{4,5,12} We saw high baseline CAT scores among all levels of residents, including those in their first months of training. Our high baseline scores likely resulted from several factors. Our patient population is largely underserved, which can influence the patient’s perspective on physician communication skills.^{22,23} Patients of lower socioeconomic status have exhibited less questioning behaviors, increased trust in physicians’ recommendations,²² and more positive impressions of physicians’ communication skills.²³ Although there is evidence of medical system distrust among African Americans,²⁴ we theorize that parents of PPCC patients may have a higher level of trust and confidence in physicians²⁵ considering that PPCC has been a medical entity within the community for decades, caring for multiple generations of the same family. This factor may make our population less likely to rate residents’

communication skills poorly. In addition, parents did not receive any training on providing feedback or utilizing the tool, which may have impacted results. In a study that used the CAT to assess surgical residents’ communication skills via trained standardized patients, the average percentage of excellent ratings was 5%,³ a sharp contrast to our results, which suggests that survey completion by a trained parent may decrease the ceiling effect and lead to more meaningful results.

Several lessons were learned during our study. First, survey collection was more time intensive and challenging to execute in a busy primary care center than anticipated. We believe that assigning an individual dedicated time for survey collection would be useful. Second, although the CAT was chosen owing to its ability to detect communication changes in other residency specialties, we found it less useful owing to parents’ high baseline ratings. Third, given

Table 3. Proportion of Parents Providing a Rating of Excellent (Combined Across Study Arms)

	Pre n (%)	Post n (%)	P Value*	P Value†
All CAT items rated “excellent”	417 (61.0%)	498 (72.1)	<.001	<.001
Individual CAT items				
Greeted me in a way that made me feel comfortable	485 (68.9)	562 (80.6)	<.001	<.001
Treated me with respect	506 (71.9)	585 (83.9)	<.001	<.001
Showed interest in my ideas about my child’s health	509 (72.2)	579 (83.3)	<.001	<.001
Understood my child’s main health concerns	496 (70.6)	581 (83.4)	<.001	<.001
Paid attention to me	501 (71.4)	590 (84.6)	<.001	<.001
Let me talk without interruptions	501 (71.5)	591 (84.9)	<.001	<.001
Gave me as much information as I wanted	511 (72.5)	573 (82.2)	<.001	<.001
Talked in terms I could understand	506 (72)	591 (84.8)	<.001	<.001
Checked to be sure I understood everything	503 (71.4)	566 (81.2)	<.001	<.001
Encouraged me to ask questions	476 (67.8)	550 (79)	<.001	<.001
Involved me in decisions as much as I wanted	487 (69.1)	568 (81.5)	<.001	<.001
Discussed next steps	497 (70.8)	568 (81.6)	<.001	<.001
Showed care and concern	517 (73.4)	579 (83.2)	<.001	<.001
Spent the right amount of time with me	513 (73.1)	577 (82.8)	<.001	<.001

CAT indicates Communication Assessment Tool.

*P value for the independent samples *t* test performed on the proportion of “excellent” responses for each provider.

†P value for the generalized linear mixed-effects model (binomial with logit link function).

baseline scores, emphasis should have been placed on obtaining parental comments to understand parent perspectives better. Fourth, residents' reflections via qualitative comments on the utility of the feedback and intended changes could inform future curricular design.

Our study has several limitations. It included a convenience sample of residents assigned to one CC serving a predominantly underserved population, perhaps limiting generalizability of our findings to other populations. Furthermore, social desirability bias²⁶ may have resulted in parents scoring residents higher based on wanting to answer in a positive manner and underreporting poor performance. Finally, given that our intervention consisted of 2 learning conferences, it would have been challenging to determine which part of the intervention was responsible had changes been detected.

Despite our findings, we still believe that parent feedback is important for communication skill development in pediatric residents. To determine more effective ways to provide meaningful parent feedback, future studies should use different assessment tools and methodologies, including qualitative, to evaluate the impact of parent feedback on communication skills in multiple clinical settings and at different institutions.

CONCLUSIONS

A CC-based communication skills curriculum that included parent feedback, collected via the CAT, did not significantly impact communication skills; however, overall resident communication skills improved over the year, suggesting that communication training occurs in multiple settings.

ACKNOWLEDGMENTS

The authors thank Jeanne Spaulding, MAIS, for her help with creation of our database, survey collection, and data entry; Becki Barga for help with data entry; and Michelle Harrison, Amy Haering, RN, DNP, and the PPCC team for help with survey collection.

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