

# Parent-Provider Miscommunications in Hospitalized Children

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## ABSTRACT

**BACKGROUND:** Miscommunications lead to medical errors and suboptimal hospital experience. Parent-provider miscommunications are understudied.

**OBJECTIVES:** (1) Examine characteristics of parent-provider miscommunications about hospitalized children, (2) describe associations among parent-provider miscommunications, parent-reported errors, and hospital experience, and (3) compare parent and attending physician reports of parent-provider miscommunications.

**METHODS:** Prospective cohort study of 471 parents of 0- to 17-year-old medical inpatients in a pediatric hospital between May 1, 2013 and October 1, 2014. At discharge, parents reported parent-provider miscommunication and type (selecting all applicable responses), overall experience, and errors during hospitalization. During discharge billing, the attending physicians ( $n = 52$ ) of a subset of patients ( $n = 217$ ) also reported miscommunications, enabling comparison of parent and attending physician reports. We used logistic regression to examine characteristics of parent-reported miscommunications; McNemar's test to examine associations between miscommunications, errors, and top-box (eg, "excellent") experience; and generalized estimating equations to compare parent- and attending physician-reported miscommunication rates.

**RESULTS:** Parents completed 406 surveys (86.2% response rate). 15.3% of parents ( $n = 62$ ) reported miscommunications. Parents of patients with nonpublic insurance (odds ratio: 1.99; 95% confidence interval: 1.03–3.85) and longer lengths of stay (odds ratio: 1.12; 95% confidence interval: 1.02–1.23) more commonly reported miscommunications. Parents reporting miscommunications were 5.3 times more likely to report errors and 78.6% less likely to report top-box overall experience ( $P < .001$  for both). Among patients with both parent and attending physician surveys, 16.1% ( $n = 35$ ) of parents and 3.7% ( $n = 8$ ) of attending physicians reported miscommunications ( $P < .001$ ). Both parents and attending physicians attributed miscommunications most often to family receipt of conflicting information.

**CONCLUSIONS:** Parent-provider miscommunications were associated with parent-reported errors and suboptimal hospital experience. Parents reported parent-provider miscommunications more often than attending physicians did.

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Miscommunications among health care team members are a leading cause of sentinel events<sup>1</sup>—the most serious adverse events (AEs) occurring in hospitals. Although there is much research on communication between providers (physicians and nurses),<sup>2–6</sup> less is known about the quality of communication between parents and providers during hospitalization.<sup>7–9</sup>

Previous research suggests that parent-provider communication affects parents' hospital experience,<sup>10–15</sup> which has implications for patient outcomes,<sup>16,17</sup> hospital reimbursements,<sup>18</sup> and hospital performance.<sup>19</sup> Parent-provider communication also affects patient safety<sup>20–22</sup> and malpractice risk.<sup>23,24</sup>

We previously found that parent-provider communication breakdowns evidenced by lack of shared understanding about inpatient care plans occurred in 45.1% of parent-resident dyads.<sup>25</sup> We also found that quality of parent-provider nighttime communication was associated with overall hospital experience.<sup>10</sup> We additionally found that parents provided unique information about hospital safety events, particularly communication-related ones.<sup>22</sup>

However, little is known about types and predictors of parent-provider miscommunications. Therefore, in this study, we examined rates and types of parent-provider miscommunications and their associations with parent-reported errors and top-box experience in a cohort of hospitalized children. We also compared parent and attending physician reports of parent-provider miscommunications.

## METHODS

### Setting and Study Population

On a nightly basis, we surveyed parents of 4 randomly selected 0- to 17-year-old children within 1 day of anticipated discharge from 2 medical (nonsurgical, nonintensive care) inpatient units at a children's hospital from May 2013 to October 2014. We collected data as part of a multifaceted nighttime communication study.<sup>26</sup> We included patients from general pediatric, short-stay (straightforward patients with often, but not always, shorter

stays), and subspecialty (eg, hematology) services. We obtained parent verbal consent using a study information sheet. We administered parent written surveys on weekday (Monday to Thursday) evenings, collecting surveys that same evening or the following morning. We obtained patient sociodemographic and clinical characteristics via hospital administrative data. The hospital institutional review board approved the study.

### Exclusions

Because of limited nighttime interpreter services, we excluded non-English speaking parents. We also excluded the parents of: patients spending <2 nights in the unit, patients boarding on the pediatric inpatient unit awaiting psychiatric placement, patients in state custody, and patients  $\geq 18$  years of age.

### Parent Surveys

We collected data from a parent discharge experience survey<sup>10</sup> developed with parent and survey methodologist input after piloting and cognitively testing the survey in our study units. Our survey included questions about (1) overall miscommunications, (2) overall parent-reported errors, and (3) overall (daytime and nighttime) hospital experience.

For miscommunications, parents responded to a closed (yes or no) item asking whether there were any communication problems between them and their child's care team (doctors and nurses) during hospitalization. Parents answering affirmatively further characterized communication problem(s) by selecting all applicable responses from 8 categories (conflicting information, delayed information, being upset by the manner of communication, not speaking directly with physician team, incorrect information, key information not provided, failing to understand the medical plan, and language barrier) and one write-in "other" option.

For errors, parents reported whether their child experienced any mistakes or any negative effects from mistakes during their overall hospitalization (2 items). Two physicians reviewed responses, classifying

them as errors, quality issues, or exclusions (Cohen's weighted  $\kappa = 0.64$ , agreement = 78%), and came to consensus to resolve discrepancies.<sup>22</sup>

For hospital experience, parents rated the following constructs using a 5-point Likert scale: understanding of plan, quality of nighttime parent-provider communication, quality of nighttime physician-nurse communication, and overall (day and night) hospital experience (29 items, Cronbach  $\alpha > 0.80$ ).

We previously published further details about the development and results of these parent-reported errors<sup>22</sup> and overall experience<sup>10</sup> items.

### Attending Physician Surveys

We simultaneously surveyed attending physicians about miscommunications through an electronic quality improvement questionnaire incorporated into general pediatric and short-stay unit attending physician discharge billing (typically completed within 24 hours of discharge). Attending physicians reported miscommunications between each patient's parents and the care team (defined as nurses and physicians), using the same questions and categories as parents. Subspecialty and private (eg, outpatient pediatricians caring for their hospitalized patients) attending physicians did not answer these quality questions at discharge billing and, thus, did not provide miscommunication data.

### Outcome Measures

Our primary outcome was parent-reported miscommunications. Secondary outcomes included parent-reported errors, top-box experience (described below), and attending physician-reported miscommunications.

### Parent-Reported Errors and Top-Box Experience

We analyzed associations between parent responses to miscommunication items and their responses to error and experience items, respectively. After parent-reported errors were validated through 2-physician review,<sup>22</sup> we dichotomized responses into those who reported an

error versus those who did not. We defined top-box experience as selecting the topmost score (eg, “excellent”) for all items comprising the survey’s overall experience construct. We dichotomized responses into those who did versus those who did not report top-box overall experience.

### Sample Characteristics

We evaluated self-reported parent (age, sex, relationship to patient, race, ethnicity, education, income, and primary language spoken) and administrative-data–derived patient characteristics (age, sex, race, ethnicity, insurance, length of stay, and complex chronic condition [CCC] count). CCC’s use *International Classification of Diseases, Ninth Revision, Clinical Modification* codes to identify medically complex children.<sup>27</sup>

### Statistical Analyses

We presented proportions of parent-reported miscommunications by using descriptive statistics. We compared patient and parent characteristics between parents who did and did not report miscommunications through  $\chi^2$  and Fisher’s exact tests for categorical variables. We used Wilcoxon-Mann-Whitney tests for medians and analysis of variance to compare means across groups. We analyzed parent- and patient-level predictors of miscommunications through multivariable logistic regression. A priori covariates of clinical significance with  $P$  values  $\leq .20$  in bivariate analyses were considered for inclusion in the multivariable model. We used McNemar’s exact test to evaluate for associations between parent responses to the miscommunication items and their responses to the overall experience construct and error items. We compared parent and attending physician reporting of miscommunications by using a generalized estimating equation model to account for parent-provider clusters. A  $P$  value  $< .05$  was considered statistically significant. We used REDCap (Vanderbilt University, Nashville, TN)<sup>28</sup> to manage study data and SAS 9.4 (SAS Institute, Cary, NC) for analyses.

## RESULTS

### Sample Characteristics

Overall, 98.9% ( $n = 471$ ) of eligible parents consented for the study (Fig 1). Of these, 406 parents responded to the miscommunication item (86.2% response rate). Miscommunication survey data were available from attending physicians ( $n = 52$ ) for a subset of these patients ( $n = 217$ ), as described in the Methods section.

Patients were, on average, 6.1 (SD: 5.7) years old, predominantly non-Hispanic (69.5%) and nonpublicly insured (61.8%), with no CCCs (69.7%) and a median length of stay of 2.6 days (interquartile range [IQR]: 1.9–4.1) (Table 1). Parents were, on average, 36.8 years old (SD: 8.9) and predominantly female (67.7%), non-Hispanic (66.5%), primarily English-speaking (83.5%), and college-educated (65.5%), with 43.2% reporting an annual household income  $\geq$ \$50 000.

### Parent-Reported Miscommunications

In the overall cohort of 406 parent respondents, 15.3% of parents ( $n = 62$ ) reported miscommunications. Parents most commonly characterized miscommunications as receipt of conflicting (42%) or delayed (27%) information (Fig 2). See Table 2 for examples of parent-reported miscommunications from optional parent narrative comments.

In bivariate analysis, parents of patients with longer median lengths of stay (4.0 days [IQR 2.2–7.0] vs 2.3 days [IQR 1.9–3.9];  $P < .001$ ) and nonpublic insurance (74.2% vs 59.5%;  $P = .03$ ) were more likely to report miscommunications. Miscommunications also significantly differed by parent ethnicity and income. Although Hispanic and low-income ( $\leq$ \$29 999/year) parents made up 15.8% and 21.4% of our overall study population respectively, Hispanic and low-income parents made up only 8.1% and 9.7% of those reporting miscommunications (Table 1).

In multivariable analysis, when controlling for patient ethnicity, CCC presence, and parent education, parents of nonpublicly insured patients (odds ratio [OR]: 1.99; 95% confidence interval [CI]: 1.03–3.85;  $P = .04$ )

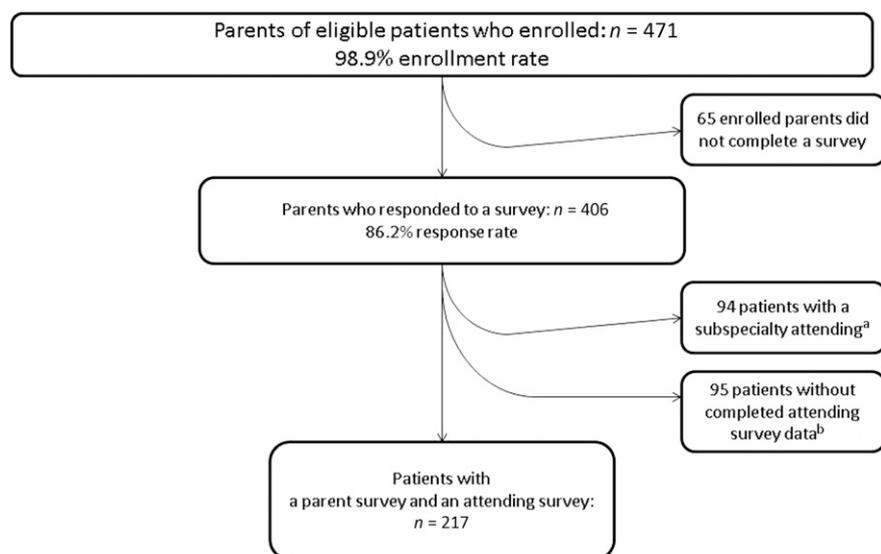
and patients with longer lengths of stay (OR: 1.12; 95% CI: 1.02–1.23;  $P = .02$ ) were more likely to report miscommunications (Table 3).

### Parent-Reported Miscommunications Versus Errors and Top-Box Experience

We previously reported that 8.9% of parents reported safety incidents, of which 62.2% were determined to be errors,<sup>22</sup> and that 42.5% of parents reported top-box overall experience.<sup>10</sup> Parent-reported errors related to miscommunication included an operative procedure mistakenly discussed with a family after being filed in the wrong patient’s chart and an incorrect insulin pump rate corrected by a parent after day and night teams failed to communicate dose change during handoff. Parents reporting miscommunications were significantly more likely to report medical errors than parents not reporting miscommunications (OR: 5.32; 95% CI: 2.19–12.94;  $P < .001$ ). Parents reporting miscommunications were also significantly less likely to report top-box overall experience than parents not reporting miscommunications (OR: 0.21; 95% CI: 0.11–0.44;  $P < .001$ ).

### Parent-Reported Versus Attending Physician-Reported Miscommunications

In the subset of 217 patients for whom paired parent and attending physician data were available, parents reported miscommunications significantly more often than attending physicians. Among this subset of patients, 16.1% of parents reported miscommunications, compared with only 3.7% of attending physicians ( $P < .001$ ). After accounting for dyad clusters, parents were more likely to report miscommunications than attending physicians (OR: 5.02; 95% CI: 2.36–10.70;  $P < .001$ ). Top categories of miscommunications among both parents and attending physicians included conflicting information provided to family (40% [ $n = 14$ ] of parents; 37.5% [ $n = 3$ ] of attending physicians), delayed provision of key information to family (34% [ $n = 12$ ] of parents; 12% [ $n = 1$ ] of attending physicians), and family being upset with communication (29% [ $n = 10$ ] of parents;



**FIGURE 1** Cohort diagram. General pediatric and short-stay attending physicians reported communication problems as part of a series of quality questions completed at the time of discharge billing.<sup>a</sup> Subspecialty attending physicians were not asked these questions and thus did not contribute data for the paired parent-attending physician analysis.<sup>b</sup> Patients with attending physician survey data (linked to billing codes) missing. For example, because of incorrect billing code or coverage by private attending physician.

25% [ $n = 2$ ] of attending physicians) (Fig 2). Categories of miscommunications reported by parents but not identified by attending physicians included physician team not speaking directly with family (20% [ $n = 7$ ]) and key information not provided to family (6% [ $n = 2$ ]).

Among parent-attending physician dyads, 18.4% ( $n = 40$ ) had a miscommunication reported by their parent and/or attending physician. Among these, 80% ( $n = 32$ ) were reported only by the parent, 12% ( $n = 5$ ) were reported only by the attending physician, and 8% ( $n = 3$ ) were reported by both the parent and attending physician. Cases in which both the attending physician and the parent reported a miscommunication included provision of conflicting information to family and family being upset with communication.

## DISCUSSION

We found that, in a cohort of children hospitalized at a pediatric hospital, more than 1 in 7 parents, but only 1 in 27 attending physicians, reported miscommunications between the family and the child's care team. Both parents and attending physicians most commonly

categorized miscommunications as due to conflicting information. Parents of children who were nonpublicly insured and had longer lengths of stay were more likely to report miscommunications. Parents reporting miscommunications were 5.3 times more likely to report errors and 78.6% less likely to report top-box overall experience scores than parents who did not report miscommunications.

Although multiple studies have shown that communication failures between providers are key contributors to patient safety events,<sup>2,29</sup> less is known about the relationship between parent-provider miscommunications and patient safety. In our previous study of parent safety-reporting, parents were valid reporters, with nearly two-thirds of parent-reported events representing errors.<sup>22</sup> Parents identified communication problems, including those occurring between parents and providers, as contributing factors in a number of these errors. Our finding in the current study that parents who reported miscommunications were 5.3 times more likely to report errors further substantiates the relationship between parent-provider

miscommunications and errors. Our results are also similar to those of a study revealing that adult patients with communication problems (eg, language barriers or disabilities) were 3 times more likely to experience preventable AEs than patients without communication problems.<sup>30</sup> In sum, our results suggest that poor communication between providers and patients and/or families may contribute to errors and AEs.

Beyond safety, suboptimal communication between providers and families can affect quality of care, including parent experience. Our group and others have previously found that parent-provider communication predicts parents' overall hospital experience.<sup>10-12</sup> Our previous study focused on the quality of parent-provider communication at night as a predictor of overall experience.<sup>10</sup> The current study examines parent-provider miscommunications throughout hospitalization (day or night) as a predictor of overall experience, thereby reinforcing the link between parent-provider communication and overall experience. Like other studies, our study also identifies conflicting information as a common cause of parent-provider miscommunication.<sup>31,32</sup> In addition to their effects on safety and hospital experience, miscommunications can lead to poor care transitions,<sup>11,33,34</sup> postdischarge complications,<sup>35-37</sup> readmissions,<sup>38</sup> and malpractice suits.<sup>24,39-41</sup> In a recent study, for example, 7149 malpractice cases (leading to \$1.7 billion in losses) involved communication, with 55% of cases involving provider-patient communication failures.<sup>23</sup>

Reasons for parent-provider hospital miscommunications may include parent/provider stress and sleep deprivation, which can impair comprehension and communication.<sup>42-45</sup> Providers may lack time to adequately communicate with families,<sup>46,47</sup> solicit questions,<sup>48</sup> or confirm understanding,<sup>49</sup> and fail to recognize the extent to which parents have questions or need clarification.<sup>50,51</sup> Additionally, providers may use unfamiliar medical jargon<sup>52</sup> and fail to actively engage

**TABLE 1** Parent-Reported Miscommunications by Patient and Parent Characteristics

Characteristics	Overall, <i>n</i> = 406 (%)	≥1 Parent-Reported Miscommunication, <i>n</i> = 62 (%)	No Parent-Reported Miscommunication, <i>n</i> = 344 (%)	<i>P</i>
<b>Patient</b>				
Age, mean (SD), y	6.1 (5.7)	5.6 (5.9)	6.2 (5.7)	.42
<b>Sex</b>				
Female	203 (50.0)	32 (51.6)	171 (49.7)	.78
Male	203 (50.0)	30 (48.4)	173 (50.3)	
<b>Race</b>				
White	214 (52.7)	34 (54.8)	180 (52.3)	.91
African American	55 (13.5)	8 (12.9)	47 (13.7)	
Asian	6 (1.5)	1 (1.6)	5 (1.5)	
Other	82 (20.2)	10 (16.1)	72 (20.9)	
Multiracial	12 (3.0)	2 (3.2)	10 (2.9)	
Missing or unknown	37 (9.1)	7 (11.3)	30 (8.7)	
<b>Ethnicity</b>				
Hispanic	62 (15.3)	6 (9.7)	56 (16.3)	.20
Non-Hispanic	282 (69.5)	49 (79.0)	233 (67.7)	
Missing or unknown	62 (15.3)	7 (11.3)	55 (16.0)	
<b>CCC<sup>a</sup> presence</b>				
No	301 (74.1)	42 (67.7)	259 (75.3)	.21
Yes	105 (25.9)	20 (32.3)	85 (24.7)	
Length of stay, median (IQR), d	2.6 (1.9–4.1)	4.0 (2.2–7.0)	2.3 (1.9–3.9)	<.001 <sup>c</sup>
<b>Insurance</b>				
Nonpublic	249 (61.8)	46 (74.2)	203 (59.5)	.03 <sup>e</sup>
Public	154 (38.2)	16 (25.8)	138 (40.5)	
<b>Parent</b>				
Age, mean (SD), y <sup>b</sup>	36.8 (8.9)	35.1 (9.2)	37.0 (8.9)	.17
<b>Sex</b>				
Female	275 (67.7)	38 (61.3)	237 (68.9)	.26
Male	62 (15.3)	9 (14.5)	53 (15.4)	
Missing	69 (17.0)	15 (24.2)	54 (15.7)	
<b>Relationship to patient</b>				
Parent	328 (80.8)	45 (72.6)	283 (82.3)	.15
Other	12 (3.0)	2 (3.2)	10 (2.9)	
Missing	66 (16.3)	15 (24.2)	51 (14.8)	
<b>Race</b>				
White	229 (56.4)	35 (56.5)	194 (56.4)	.37
African American	34 (8.4)	5 (8.1)	29 (8.4)	
Asian	14 (3.4)	2 (3.2)	12 (3.5)	
Other	34 (8.4)	3 (4.8)	31 (9.0)	
Multiracial	14 (3.4)	0 (0)	14 (4.1)	
Missing or unknown	81 (20.0)	17 (27.4)	64 (18.6)	
<b>Ethnicity</b>				
Hispanic	64 (15.8)	5 (8.1)	59 (17.2)	.04 <sup>e</sup>
Non-Hispanic	270 (66.5)	40 (64.5)	230 (66.9)	
Missing or unknown	72 (17.7)	17 (27.4)	55 (16.0)	
<b>Parent primary language</b>				
English	339 (83.5)	54 (87.1)	285 (82.8)	.41

**TABLE 1** Continued

Characteristics	Overall, <i>n</i> = 406 (%)	≥1 Parent-Reported Miscommunication, <i>n</i> = 62 (%)	No Parent-Reported Miscommunication, <i>n</i> = 344 (%)	<i>P</i>
Other	67 (16.5)	8 (12.9)	59 (17.2)	
Education				
High school or less	68 (16.7)	6 (9.7)	62 (18.0)	.14
Any college	266 (65.5)	41 (66.1)	225 (65.4)	
Missing	72 (17.7)	15 (24.2)	57 (16.6)	
Annual household income				
≤\$29 999	87 (21.4)	6 (9.7)	81 (23.5)	.001 <sup>c</sup>
\$30 000–\$49 999	37 (9.1)	5 (8.1)	32 (9.3)	
\$50 000–\$74 999	27 (6.7)	12 (19.4)	15 (4.4)	
\$75 000–\$99 999	28 (6.9)	3 (4.8)	25 (7.3)	
≥\$100 000	120 (29.6)	18 (29.0)	102 (29.7)	
Missing	107 (26.4)	18 (29.0)	89 (25.9)	

<sup>a</sup> The CCC system uses *International Classification of Diseases, Ninth Revision, Clinical Modification* codes to categorize medically complex children. It uses these codes to identify “any medical condition that can be reasonably expected to last at least 12 months (unless death intervenes) and to involve either several different organ systems or 1 organ system severely enough to require specialty pediatric care and probably some period of hospitalization in a tertiary care center.”<sup>27</sup>

<sup>b</sup> 18.7% of respondents did not report parent age.

<sup>c</sup> Values are statistically significant.

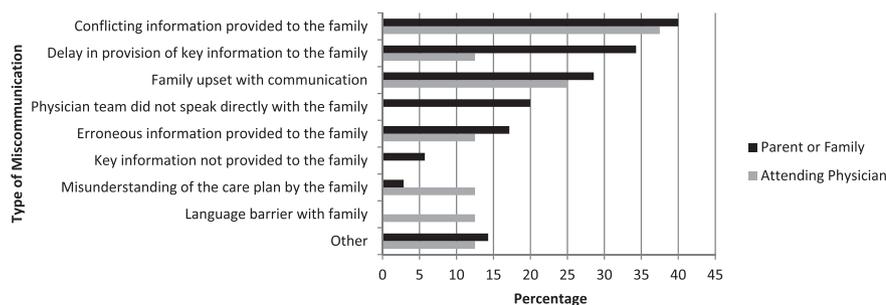
families in care, including on family-centered rounds.<sup>53,54</sup> Physicians may not explicitly share diagnostic or therapeutic uncertainty with families or explain that plans may be revised as clinical status evolves or consultants make recommendations. Parents may feel uncomfortable asking questions,<sup>48,55–57</sup> particularly if there are perceived or actual gaps in language, power, or health literacy. Communication breakdowns between interprofessional team members (eg, physicians and nurses<sup>10,58</sup> or primary and consulting services<sup>59,60</sup>) may occur as the day progresses and be transmitted to parents.<sup>52,61,62</sup>

Our finding that parents of patients with longer lengths of stay were more likely to report parent-provider miscommunications may reflect increased opportunities for communication breakdowns to occur with time (eg, due to more time for reporting and/or increased number of parent-provider interactions), increased illness complexity, or a combination of these factors. Additionally, providers may communicate less precisely or regularly with parents who are in the hospital longer if providers overestimate parents’ understanding of care plans and clinical trajectories.

Our finding that publicly insured patients have fewer miscommunications may reflect

underreporting by parents with fewer resources. Public insurance is a proxy for low socioeconomic status, which may also be associated with limited health literacy.<sup>63</sup> Limited health literacy is prevalent<sup>64,65</sup> and associated with lower quality of physician-patient communication.<sup>66</sup> Although we did not directly measure health literacy in this study (education being an imperfect proxy<sup>63</sup>), parents with limited health literacy may be less able to recognize miscommunications or feel less empowered to report them, leading to underreporting. We believe that, in reality, parents with lower health literacy are likely more susceptible to miscommunications because of limited comprehension of medical information and ability to ask appropriate clarifying questions. Further study of the relationship between health literacy and miscommunications is needed and is a topic we plan to explore in a future study.

Discrepancies between parent- and attending physician-reported miscommunication rates may relate to different definitions of, or thresholds for, reporting miscommunications among parents and attending physicians. For instance, attending physicians may overlook certain miscommunications that parents recognize. Additionally, attending physicians, who may be less involved in the day-to-day



**FIGURE 2** Parent- and attending physician-reported miscommunications by type. Proportions and types of miscommunications reported by parents (*n* = 35) and by attending physicians (*n* = 8) among a subset of patients (*n* = 217) with paired parent and attending physician data are represented.

**TABLE 2** Examples of Parent-Reported Miscommunications

Theme	Parent Narrative Comment
Delay in providing key information	"Sometimes things happen slower than they should."
Conflicting information	"Different info from different people." "Was told I no longer needed to [keep] wet diapers but later told I should keep for weighing (minor but inconsistent)."
The physician team did not speak directly to you	"[Doctor] never came to do exam." "I didn't know who my nighttime doctors were."
The way communication happened upset you	"[Felt] the doctors didn't value any input on my child's progress/care." "Nurses occasionally were not informed of changes in plans."
Other	"Treatment was discussed with attending during the day. Change in treatment by the attending not communicated (later by nurse)."

Representative quotations about miscommunications from parents taken from optional parent narrative responses.

more likely to respond and also hold higher expectations for optimal communication. Our ability to detect disparities by race and ethnicity and income was limited because there was a fair amount of missing data in these categories, although it does appear that there were some interesting trends worthy of further study.

Additionally, we did not collect attending physician demographic data. We also did not have access to perceptions of parent-provider miscommunications by subspecialty attending physicians, residents, or nurses, team members who might have additional important insights about miscommunications and who should be included in future studies. Furthermore, only the discharging attending physician

care of patients than residents and nurses, may not be privy to all miscommunications that occur with families. However, attending physicians are ultimately responsible for patient care and any safety, quality, or malpractice-related repercussions that may result from miscommunications on their care team. Therefore, it behooves them to be aware of miscommunications occurring between parents and the care team.

Discrepancies may also result from providers failing to recognize limited health literacy in families,<sup>49,67–69</sup> providers (or parents) overestimating parent English comprehension, and providers overestimating the quality of communication with families. In a previous study in the same units, we found that 73.1% of providers reported they shared an understanding with parents about the care plan; however, when objectively rated, only 54.9% of provider-parent dyads were rated as having a shared understanding.<sup>25</sup> Additionally, multiple caregivers who do not communicate fully with one another may be present during the hospitalization.

Interventions to decrease hospital parent-provider miscommunications may include engaging patients and families in care through family-centered rounds<sup>53,54</sup> and multifaceted,<sup>20</sup> multimodal communication techniques (eg, verbal and written); improving provider training in communication skills,<sup>70,71</sup> cultural competency,<sup>72–74</sup> and health literacy<sup>75,76</sup>; enhancing interpreter use<sup>77</sup>; and ensuring closed-loop communication through

strategies such as "teachback."<sup>49,78</sup> Empowering parents (particularly those from disadvantaged backgrounds because of language, socioeconomic status, or health literacy barriers) to speak up when they have a question or need clarification may also reduce miscommunications.

Although interventions to empower patients to speak up may lead to increased reports of miscommunications and errors, they will hopefully reduce their actual occurrence.

Given that both parents and attending physicians recognized conflicting information as a primary source of miscommunication, this may be a particular area of focus. Better engaging families in discussions, acknowledging uncertainty, being transparent that plans may change, and enhancing team communication (eg, between nurses and physicians, between day and night physicians, and between primary and consulting services)<sup>10</sup> may help reduce the frequency at which parents receive conflicting information.

Limitations of our study include that it was conducted at a single-center institution among predominantly English-speaking, well-educated mothers of patients admitted for  $\geq 2$  nights. This limits generalizability as experiences of patients admitted for less time, from different backgrounds, or in other contexts may vary. For instance, it is likely that non-English speaking parents may experience more miscommunications.<sup>77</sup> Additionally, reporting bias may have affected our results if, for example, parents with higher socioeconomic status were

**TABLE 3** Patient and Parent Factors Associated With Parent-Reported Miscommunications

	OR	95% CI	P
Patient			
Ethnicity			
Hispanic	0.67	0.29–1.82	.41
Missing or unknown	0.61	0.25–1.45	
Non-Hispanic	1.00	—	
CCC <sup>a</sup> presence			
Yes	1.20	0.65–2.23	.57
No	1.00	—	
Insurance			
Nonpublic	1.99	1.03–3.85	.04 <sup>b</sup>
Public	1.00	—	
Length of stay			
Per 2 d increase	1.12	1.02–1.23	.02 <sup>b</sup>
Parent			
Education			
Any college	1.32	0.51–3.42	.44
Missing	1.88	0.65–5.39	
High school or less	1.00	—	

—, not applicable.

<sup>a</sup> The CCC system uses *International Classification of Diseases, Ninth Revision, Clinical Modification* codes to categorize medically complex children. It uses these codes to identify "any medical condition that can be reasonably expected to last at least 12 months (unless death intervenes) and to involve either several different organ systems or 1 organ system severely enough to require specialty pediatric care and probably some period of hospitalization in a tertiary care center."<sup>27</sup>

<sup>b</sup> Values are statistically significant.

was surveyed, not any previous attending physicians. Other limitations include our method and timing of recruitment: parent surveys were completed on weekdays only, which prevented us from detecting different, possibly higher, weekend miscommunication rates. Also, we recruited parents who were physically present at the bedside, who may have lower miscommunication rates than parents not present.

Future research should address the impact of parent-provider and provider-provider communication interventions on parent-provider miscommunications, as well as the relationship between parent-provider miscommunications and directly measured rates of errors and AEs. The roles of health literacy, socioeconomic, and language

barriers in parent-provider miscommunications also merit further study.

## CONCLUSIONS

Miscommunications between parents and providers were common and underrecognized by attending physicians, although both parents and attending physicians recognized family receipt of conflicting information as a primary source of miscommunication. Parent-reported miscommunications were associated with parent-reported errors and suboptimal hospital experience. Improving communication between parents and providers has the potential to improve patient safety, patient and family experience, and malpractice risk.

Further research is needed to evaluate the effectiveness of interventions to improve parent-provider communication.

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The views in this article are solely those of the authors and do not necessarily represent the views of the Agency for Healthcare Research and Quality or of Boston Children's Hospital.

Dr Khan conceptualized and designed the study, obtained funding, acquired data, performed statistical analyses, analyzed and interpreted data, and drafted the initial manuscript; Ms Furtak participated in study design, tabulated articles, helped perform the literature review, and provided administrative support; Ms Melvin performed statistical analyses, and analyzed and interpreted data; Ms Rogers provided intellectual advice and guidance for the study and obtained funding; Dr Schuster provided intellectual advice and methodological guidance for the study; Dr Landrigan supervised the study, obtained funding, conceptualized and designed the study, and analyzed and interpreted data; and all authors critically reviewed and revised the manuscript for important intellectual content and approved the final manuscript as submitted.

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