

# Communication With Limited English-Proficient Families in the PICU

Adrian D. Zurca, MD,<sup>a</sup> Kiondra R. Fisher, BS,<sup>a</sup> Remigio J. Flor, MD,<sup>b</sup> Catalina D. Gonzalez-Marques, MD,<sup>b</sup> Jichuan Wang, PhD,<sup>c</sup> Yao I. Cheng, MS,<sup>c</sup> Tessie W. October, MD, MPH<sup>a,b</sup>

## ABSTRACT

**OBJECTIVE:** Health care disparities have been described for children of limited English-proficient (LEP) families compared with children of English-proficient (EP) families. Poor communication with the medical team may contribute to these worse health outcomes. Previous studies exploring communication in the PICU have excluded LEP families. We aimed to understand communication experiences and preferences in the 3 primary communication settings in the PICU. We also explored LEP families' views on interpreter use in the PICU.

**PATIENTS AND METHODS:** EP and Spanish-speaking LEP families of children admitted to the PICU of a large tertiary pediatric hospital completed surveys between 24 hours and 7 days of admission.

**RESULTS:** A total of 161 of 184 families were surveyed (88% response rate); 52 were LEP and 109 EP. LEP families were less likely to understand the material discussed on rounds (odds ratio [OR] 0.32, 95% confidence interval [CI] 0.11–0.90), to report that PICU nurses spent enough time speaking with them (OR 0.15, 95% CI 0.05–0.41), and to report they could rely on their nurses for medical updates (OR 0.07, 95% CI 0.02–0.25) controlling for covariates, such as education, insurance type, presence of a chronic condition, PICU length of stay, and mortality index. LEP families reported 53% of physicians and 41% of nurses used an interpreter “often.”

**CONCLUSIONS:** Physician and nurse communication with LEP families is suboptimal. Communication with LEP families may be improved with regular use of interpreters and an increased awareness of the added barrier of language proficiency.

www.hospitalpediatrics.org

DOI:10.1542/hpeds.2016-0071

Copyright © 2017 by the American Academy of Pediatrics

Address correspondence to Adrian Zurca, MD, Penn State-Hershey Children's Hospital, 500 University Dr, PO Box 850, Hershey, PA 17033.

E-mail: azurca@hmc.psu.edu

HOSPITAL PEDIATRICS (ISSN Numbers: Print, 2154-1663; Online, 2154-1671).

**FINANCIAL DISCLOSURE:** The authors have indicated they have no financial relationships relevant to this article to disclose.

**FUNDING:** Dr October received support from the National Institutes of Health, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development under award 5K12HD047349. Consultation with an expert in Latino health was supported by the National Institute of Minority Health and Health Disparities of the National Institutes of Health under award P20MD000198. These sponsors had no involvement in study design, data collection/analysis/interpretation, manuscript preparation, or the decision to submit this article for publication. Funded by the National Institutes of Health (NIH).

**POTENTIAL CONFLICT OF INTEREST:** The authors have indicated they have no potential conflicts of interest to disclose.

Dr Zurca conceptualized and designed the study, helped design the data collection instruments, and drafted the initial manuscript; Ms Fisher and Drs Flor and Gonzalez-Marques helped design the data collection instruments, coordinated and helped perform data collection, and reviewed the manuscript; Dr Wang and Ms Cheng performed the statistical analysis, and reviewed and revised the manuscript; Dr October helped design the study, helped design the data collection instruments, carried out the initial analyses, and reviewed and revised the manuscript; and all authors approved the final manuscript as submitted.



<sup>a</sup>Division of Pediatric Critical Care Medicine, and <sup>c</sup>Center for Translational Research, Children's National Health System, Washington, DC; and <sup>b</sup>The George Washington University School of Medicine and Health Sciences, Washington, DC

Effective communication between families and providers is essential for establishing trust, reducing conflict, decreasing family stress levels, and improving satisfaction with care.<sup>1-5</sup> The added barrier of limited English proficiency (LEP) makes health care communication more challenging. Health care disparities have been described for hospitalized children of LEP families, including decreased health care quality, poorer health status, and increased risk of serious medical events during hospitalization.<sup>6-9</sup> It is suspected that inadequate communication plays a role in these worse health outcomes. Unfortunately, little is known about the communication experiences of LEP families with PICU providers.

The 3 primary settings for communication in the PICU are planned family conferences, family-centered rounds, and unplanned bedside conferences. Family conferences are the most frequently studied communication setting<sup>10-12</sup>; however, the perspectives of LEP families of communication during these conferences remain unknown. The English-proficient (EP) parent perspective has been explored during PICU rounds, indicating that family members were more satisfied when they participate<sup>13-17</sup>; however, LEP families were excluded from these studies. Bedside conferences, defined as communication at the bedside during times other than rounds or planned family meetings, have rarely been studied.<sup>10</sup> We aimed to understand communication experiences and preferences in the 3 primary communication settings in the PICU. We hypothesized that LEP families would be less likely to report feeling knowledgeable about their child's plan of care after communication with the medical team after rounds. We further hypothesized that LEP families would be less satisfied with the amount of time spent communicating with the physician and nursing teams during unplanned bedside conferences. Second, we aimed to explore the experiences of LEP families with interpreter use in our PICU.

## METHODS

### Design/Setting/Participants

We conducted a cross-sectional study at an urban tertiary care PICU. Our study subjects

were all English- or Spanish-speaking families of a child admitted between October 1, 2013, and December 31, 2014, to either the general medical-surgical PICU or the cardiac PICU (combination referred to as PICU throughout the remainder of this article) for a period between 24 hours and 7 days. EP was defined as families that self-reported English as a preferred language, indicated understanding at least "most" English, and chose to answer the survey in English. LEP was defined as families that did not self-report English as a preferred language, indicated understanding less than "most" English, and chose to answer the survey in Spanish. Spanish was the only other language chosen because the demographics of our PICU revealed that 20% of families are Spanish-speaking, 70% English-speaking, and <10% speak another language.

In our institution, rounds are conducted at the bedside twice daily. Families are able to participate, and receive a flyer explaining the purpose of rounds. The flyer is available in both English and Spanish. Families also are invited to view a video available on our intranet explaining family-centered rounds, which is currently available only in English. Our institution uses both in-person and phone interpreters; however, between 11 PM and 7 AM only phone interpreters are available. Among our group of attending intensivists, none were bilingual. Only one of the PICU fellows (A.Z.) was bilingual. Families were approached for enrollment Tuesdays through Fridays. This period was chosen to allow families time to experience morning and evening rounds and have opportunities for interactions with providers in all 3 settings. Mondays were avoided because a new team of physicians began on Mondays, which limited the potential for interaction with families during family conferences. Previous work in our group also revealed family conferences occurred infrequently on weekends because of the lack of availability of supportive staff.<sup>10</sup> All eligible patients with family members available at the bedside were approached. Up to 2 parents/guardians per patient were asked to participate in the survey; however, individuals could participate in the survey only once per

hospitalization and families were not reapproached on any subsequent hospitalizations. Study team members were bilingual and read the consent and survey materials to family members in their preferred language. Written consent was obtained from family members before survey administration. The study was approved by our institutional review board.

### Survey

We developed new survey tools in both English and Spanish because of the lack of survey tools designed to explore communication between the intensive care medical team and LEP families. Surveys were pretested and reviewed for language, tone, length, content, and consistency by bilingual study team members. Content validity was obtained by reviewing surveys with focus groups of 5 EP and 5 LEP families, resulting in revisions in the language and order of survey items. The final surveys were then reviewed by bilingual study team members and finalized after translation and back translation, and validated by using face validity.

The complete surveys are available as supplemental material in the online edition of *Hospital Pediatrics* (Supplemental Fig 1). They include items asking families about their experiences during rounds, family conferences, and bedside conferences. A 5-point Likert-scale (from "Strongly Disagree" to "Strongly Agree") was used to explore families' opinions with each of these aspects of communication. For example, "Please indicate how much you agree with the following statement: 'After rounds were completed, I understood the plan of care.'" Patient data included patient demographics, diagnostic category of complex chronic condition,<sup>18</sup> PICU length of stay, and the Pediatric Index of Mortality (PIM2)<sup>19</sup> score gathered from both the electronic medical record and Virtual PICU Systems, LLC.<sup>20</sup> Self-reported family demographic data were obtained from the survey tool. Study data were collected and managed by using Research Electronic Data Capture.<sup>21</sup>

### Statistical Analyses

Descriptive statistics were used to summarize demographic and clinical

characteristics of the sample. The primary outcome measures were (1) families' reported understanding of their child's care plan, (2) satisfaction with the amount of time spent communicating with the physician and nursing teams, and (3) reliance on nurses for information. The outcomes were originally measured on a 5-point Likert-scale. For analysis, we chose to compare Strongly Agree with all other response categories because of the highly skewed distribution of the measures. There were relatively few responses at the lower categories (eg, Strongly Disagree, Disagree, Neither Agree nor Disagree) in the outcome measures; therefore, we did not model the original 5-point outcome measures. Instead, we generated dichotomous outcome measures for modeling by using the Strongly Agree category as the cutoff point. The association between each of the 3 primary outcome measures and primary language spoken by the family (1: LEP; and 0: EP) was first tested by using  $\chi^2$  statistics. Then, we used logistic regression to further test this relationship, controlling for covariates (eg, education, insurance, presence of complex chronic conditions, PICU length of stay, and PIM2 score). Model fit was assessed by using the C-statistic, which is the area under the receiver operating characteristic curve. A model is considered reasonable when the C-statistic is  $>0.7$  and strong when  $C >0.8$ .<sup>22</sup> Analyses were conducted by using SAS version 9.4 (SAS Institute, Inc, Cary, NC).

## RESULTS

We approached 184 families and received 161 (88% response rate) surveys, of which 109 were defined as EP families and 52 were LEP families. Among those who declined participation, 15 were EP and 8 LEP ( $P = .81$ ). Demographic features of the patients revealed that children of LEP families were more likely to have Medicaid insurance ( $P < .001$ , Table 1). Demographic features of the families are presented in Table 2. LEP family members were less likely to be born in the United States ( $P < .001$ ), and less likely to have graduated from high school ( $P < .001$ ). There were no differences in preferred communication setting between EP and LEP families. Of the 3 communication

**TABLE 1** Patient Characteristics

Patient Characteristics	EP, <i>n</i> = 109 (%)	LEP, <i>n</i> = 52 (%)
Girls	42 (39)	25 (48)
Age, y, mean (SD)	6 (8.2)	5 (5.2)
Type of PICU		
Medical-surgical	79 (72)	43 (83)
Cardiac	30 (28)	9 (17)
Primary diagnosis		
Respiratory	48 (44)	22 (42)
Cardiac	28 (26)	9 (17)
Trauma/Surgery	11 (10)	6 (12)
Neurologic	5 (5)	6 (12)
Hematology/Oncology	5 (5)	2 (4)
Other	12 (11)	7 (13)
Chronic complex condition present	84 (77)	36 (69)
Medicaid insurance <sup>a</sup>	48 (44)	46 (88)
$\geq 2$ previous hospitalizations	65 (60)	34 (65)
Previous PICU admission	93 (85)	42 (81)
PICU length of stay, d, median (IQR)	5.2 (6.5)	4.6 (6.0)
PIM2 risk of mortality, mean (SD)	2.5 (4.1)	2.4 (3.1)

IQR, interquartile range.

<sup>a</sup>  $P < .001$ , all other  $P$  values  $> .05$ .

settings studied, both EP (50%) and LEP (58%) families indicated they would prefer communication at the bedside compared with other settings. Family-centered rounds was the second most commonly preferred communication setting (EP 39%, LEP 31%), and family conferences was the least preferred (EP 5%, LEP 8%). Ten families reported no specific preference in communication setting (EP = 8, LEP = 2) and 8 were unable to choose only 1 setting as their preferred setting.

Most families reported having participated in rounds (Table 3; EP 94%, LEP 92%;  $P = .75$ ). LEP families were less likely to report being invited to participate on rounds ( $P = .004$ ) or to feel they understood the plan after rounds ( $P < .001$ ) (Table 3). Relatively few families reported having participated in a family conference (Table 3; EP 26%, LEP 37%;  $P = .2$ ). There were no differences in LEP families' reported understanding of the plan after family conferences (EP 69%, LEP 42%;  $P = .06$ ) compared with EP families. After controlling for educational attainment, insurance status, presence of a chronic condition, PICU length of stay, and PIM2 score in the logistic regression model (Table 4), the effect of LEP on families'

understanding of rounds persisted (odds ratio [OR] 0.32, 95% confidence interval [CI] 0.11–0.90). That is, LEP families had only ~32% of the odds of understanding the plan of care discussed during rounds compared with EP families, controlling for covariates.

LEP families were less likely to report having been present at the bedside when their child was being evaluated by a medical provider (Table 3; EP 99% vs LEP 93%;  $P = .02$ ). There was no significant difference in satisfaction with the amount of time physicians spent with LEP families compared with EP families. However, once covariates were controlled in multivariate analysis, LEP families were less satisfied with the amount of time their bedside nurse spent speaking with them (OR 0.15, 95% CI 0.05–0.41) and were less likely to rely on their nurse to explain key aspects of their child's care (OR 0.07, 95% CI 0.02–0.25). We also found that families with Medicaid insurance were less satisfied with the amount of time the nurse spent with them (OR 0.29, 95% CI 0.11–0.75) (Table 4).

## Interpreter Use

Of LEP families, 73% reported an interpreter was used on admission to the PICU. Of these

**TABLE 2** Family Characteristics

Family Characteristics	EP, <i>n</i> = 109 (%)	LEP, <i>n</i> = 52 (%)
Relationship to child		
Mother	71 (65)	38 (73)
Father	30 (28)	14 (27)
Other family	8 (7)	0 (0)
Age, y, mean (SD)	35.9 (10.8)	33.9 (8)
Race/Ethnicity		
Non-Hispanic white	47 (43)	
Latino	18 (17)	52 (100)
Black	39 (36)	
Other	5 (5)	
Married	65 (60)	27 (52)
Born in United States <sup>a</sup>	87 (90)	4 (8)
High school graduate <sup>a</sup>	104 (95)	22 (42)
Hours after admission at enrollment, mean (SD)	74.8 (39.4)	70.6 (39.1)

<sup>a</sup> *P* < .001, all other *P* values > .05.

families, 49% reported use of an in-person interpreter, 44% a phone interpreter, and 7% relied on a family member or friend to interpret. For communication during their PICU stay, 53% of families reported the medical team used any type of professional interpreter at least "Most of the time," 33% "Sometimes," and 14% "Rarely" or "Never." Most (82%) LEP families indicated having an interpreter on rounds would have helped them better understand the material discussed. All 19 LEP families who participated in a family conference and desired an interpreter had one provided. Forty-one percent of families reported that their aggregate group of nurses used an

interpreter "Often," 30% Sometimes, and 28% Rarely or Never during their PICU admission.

## DISCUSSION

In our cohort, LEP families reported less than ideal communication with the medical and nursing teams as compared with EP families. Although both EP and LEP families prefer to interact with the medical team at the bedside, compared with other settings, LEP families appear undersupported at the bedside. Although we found a statistically significant difference in presence at the bedside between EP and LEP families, we do not think this difference (99% EP vs 93% LEP)

is clinically significant. This finding in fact highlights that LEP families are very often available at the bedside to receive communication, yet they are less satisfied with the amount of time nurses spent with them at the bedside. To be truly family-centered and meet families where they are more likely to hear the information delivered, we need to improve our communication at the bedside. Given that families reported only 40% of nurses used an interpreter Often for communication, there is clear opportunity for improvement. PICU nurses are generally present at the bedside more frequently than physicians and are important resources for families, often acting as advocates for patients and their families. Achieving consistent interpreter use by all members of the medical team is an important first step to improving health care communication with LEP families.

There also appears to be room for improvement in communication with EP families. Only 59% of EP families Strongly Agreed with the statement "they understood the plan after being present for rounds." This finding suggests that rounds should not function as the sole venue for communication with families, regardless of the language they speak. Medical rounds are fast paced and often infused with complex medical jargon, which can be overwhelming and interfere with families' comprehension of the plan. In many ways, these findings are a call to the medical community to ensure we supplement rounds with future discussions with the family in a calmer, more patient-centered environment.

We were concerned to find only 42% of LEP families Strongly Agreed with the statement "they understood the plan after a family conference," even though all LEP families had been provided an interpreter for the meeting. The presence of an interpreter may not completely overcome communication barriers with LEP families. Errors in medical interpretation may interfere with effective communication,<sup>23</sup> or providers may offer less information or communicate differently when faced with a language barrier.<sup>24,25</sup> Cultural competency

**TABLE 3** Communication Experiences of EP and LEP Families During Rounds, at the Bedside, and During Family Conferences

	EP, <i>n</i> = 109 (%)	LEP, <i>n</i> = 52 (%)	<i>P</i>
Family-centered rounds			
Present during rounds	102 (94)	48 (92)	.75
Invited to participate on rounds	90 (88)	32 (67)	.004
Understood plan after rounds	64 (59)	10 (20)	<.001
Bedside communication			
Present during medical team evaluation of child	108 (99)	48 (93)	.02
Received medical updates	46 (42)	19 (37)	.37
Medical team spends enough time with family	65 (60)	16 (30)	.001
Nurses spend enough time with family	81 (74)	16 (30)	<.001
Rely on nurses to explain key aspects of care	68 (62)	8 (15)	<.001
Formal family conferences	<i>n</i> = 29 (%)	<i>n</i> = 19 (%)	.20
Understood plan after conference	20 (69)	8 (42)	.06

**TABLE 4** Logistic Regression Model Comparing Communication Experiences of LEP Families With EP Families

Variable	Understood Plan After Rounds		Satisfaction With the Amount of Time Dedicated by Nursing Staff		Rely on Nurses to Explain Key Aspects of Care	
	OR	95% CI	OR	95% CI	OR	95% CI
Primary language						
EP	—	—	—	—	—	—
LEP	0.32	0.11–0.90	0.15	0.05–0.41	0.07	0.02–0.25
Education						
<High school	—	—	—	—	—	—
High school	2.81	0.71–11.1	0.6	0.19–1.94	0.46	0.11–1.88
College	4.44	0.91–21.8	0.41	0.09–1.93	0.37	0.07–1.94
Medicaid						
No	—	—	—	—	—	—
Yes	0.72	0.30–1.74	0.29	0.11–0.75	1.01	0.42–2.44
Chronic condition						
No	—	—	—	—	—	—
Yes	0.49	0.20–1.18	1.23	0.52–2.92	1.32	0.57–3.06
PICU length of stay	1.01	0.98–1.04	0.99	0.96–1.02	0.99	0.96–1.02
PIM2 Risk of Mortality Score	1.14	1.00–1.31	1.02	0.92–1.13	1.07	0.96–1.19
Model fit C-statistic		0.77		0.77		0.74

—, reference group.

the presence of an interpreter.<sup>39</sup> Additionally, similar to LEP families in other inpatient pediatric settings,<sup>40</sup> PICU families may not feel empowered to ask for an interpreter. In our cohort, we were disappointed to find insufficient utilization of interpreters and the use of family members and friends to serve as interpreters. Although most LEP families in our study reported interpreter use on arrival to the PICU, overall interpreter use throughout the PICU stay was not ideal. The underutilization of interpreters likely contributes to the suboptimal communication experience of LEP families during rounds. LEP families were less likely to understand the medical plan after rounds, even when controlling for patient severity of illness and other covariates. Although language barriers may present additional time constraints that delay the ability of busy physicians and nurses to deliver information and answer questions, ensuring all families understand the plan of care is essential to our practice. If we invite families to rounds, we need to support them for these families to benefit from the experience. If they do not understand the plan of care after rounds, how can they make informed decisions and partner with the medical team? As one family told us, “It [lack of English fluency] affects me a lot because I don’t know how to ask questions. At least if they had an interpreter or that someone from the medical team was able to speak Spanish. Being uncertain scares me.” This sentiment is a call for health care organizations to ensure that their health care providers have immediate and reliable access to medical interpreters, and for the medical and nursing professions to standardize the regular use of interpreters. Instead of relying on families to self-identify, institutions should consider setting protocols for identifying LEP families on admission to the hospital, and institute an opt-out policy for interpreter use. Video remote interpreting and other innovative solutions are underused and should be used to fill in-person interpreter gaps. Eliminating language barriers is an essential first step in improving communication experiences for LEP families during their child’s acute illness.

has been associated with quality of care in other settings,<sup>26</sup> indicating cultural differences also may factor into our findings. Culturally, many Latino families often do not speak up and express their concerns unless directly asked. Despite not understanding the medical plan of care, many Latino families may not ask for further clarification or demand the use of an interpreter. Increasing cultural awareness in PICU providers could have a beneficial effect not only on how we communicate with LEP families, but potentially also on patient outcomes. In one recent study, the implementation of multilevel interventions aimed at increasing cultural competence and language support appeared to preferentially decrease mortality rates for Latino patients admitted to the PICU.<sup>27</sup> Given that LEP families often may not speak up for themselves, it is important for PICU providers to have heightened awareness of potential cultural differences to ultimately improve a family’s understanding of the information delivered. Although perhaps not a comprehensive solution, interpreters are an indispensable

component of communication with LEP families. No previous study has investigated families’ perspectives on interpreter use in the PICU. The use of trained professional interpreters is associated with increased family satisfaction,<sup>28</sup> and decreased issues with confidentiality, accuracy of translation, and disparate agendas of family interpreters.<sup>29</sup> Previous studies have shown LEP families have increased satisfaction with care when receiving information by using trained, in-person interpreters.<sup>28,30–33</sup> A recent study found only 68.8% of hospitals in the United States offered language services, including only 74.7% of hospitals characterized as having a high level of need for language services.<sup>34</sup> The cost of hiring interpreters may be considered prohibitive by some health care organizations; however, studies indicate that the estimated cost of providing interpreter services is relatively modest compared with the overall cost of health care and potential benefits, ranging from \$4 to \$279 per person per year.<sup>35–38</sup> Unfortunately, even when interpreters are readily available, they are underused. Pediatric trainees may simply underestimate how much LEP families value

## Limitations

Given the large Latino population in the United States, this study provides insight into a very important language group. However, we did not explore communication experiences for LEP families who speak languages other than Spanish, and our sample was recruited from a single medical center by using a convenience sampling approach. As such, our findings may not be generalizable to all LEP families. In addition, our primary survey tool had not been previously validated. We did, however, rigorously evaluate our survey tool with focus groups of bilingual medical providers and families to mitigate threats to validity. Finally, because we surveyed families about their communication experiences in aggregate, we were unable to account for differences between individual communication experiences.

## CONCLUSIONS

Physician and nurse communication with LEP families is less than ideal in the PICU, resulting in lower satisfaction and less understanding of the medical care plan. The immediate availability and regular use of interpreters is an essential first step in improving communication experiences for LEP families during their child's acute illness.

## Acknowledgments

The authors thank the team of Spanish-speaking volunteers who participated in survey administration, without whom the voices of LEP families would continue to go unheard. We also thank Dr Fernando Mendoza for providing his expertise in working with the Latino population.

## REFERENCES

1. Levetown M; American Academy of Pediatrics Committee on Bioethics. Communicating with children and families: from everyday interactions to skill in conveying distressing information. *Pediatrics*. 2008;121(5). Available at: [www.pediatrics.org/cgi/content/full/121/5/e1441](http://www.pediatrics.org/cgi/content/full/121/5/e1441)
2. Studdert DM, Burns JP, Mello MM, Puopolo AL, Truog RD, Brennan TA. Nature of conflict in the care of pediatric intensive care patients with prolonged stay. *Pediatrics*. 2003;112(3 pt 1): 553–558
3. Azoulay E, Pochard F, Kentish-Barnes N, et al; FAMIREA Study Group. Risk of post-traumatic stress symptoms in family members of intensive care unit patients. *Am J Respir Crit Care Med*. 2005;171(9): 987–994
4. Lipstein EA, Brinkman WB, Britto MT. What is known about parents' treatment decisions? A narrative review of pediatric decision making. *Med Decis Making*. 2012;32(2):246–258
5. Madrigal VN, Carroll KW, Hexem KR, Faerber JA, Morrison WE, Feudtner C. Parental decision-making preferences in the pediatric intensive care unit. *Crit Care Med*. 2012;40(10):2876–2882
6. Flores G, Abreu M, Tomany-Korman SC. Limited English proficiency, primary language at home, and disparities in children's health care: how language barriers are measured matters. *Public Health Rep*. 2005;120(4):418–430
7. Eneriz-Wiemer M, Sanders LM, Barr DA, Mendoza FS. Parental limited English proficiency and health outcomes for children with special health care needs: a systematic review. *Acad Pediatr*. 2014; 14(2):128–136
8. Cohen AL, Rivara F, Marcuse EK, McPhillips H, Davis R. Are language barriers associated with serious medical events in hospitalized pediatric patients? *Pediatrics*. 2005;116(3): 575–579
9. LeSon S, Gershwin ME. Risk factors for asthmatic patients requiring intubation. I. Observations in children. *J Asthma*. 1995;32(4):285–294
10. October TW, Watson AC, Hinds PS. Characteristics of family conferences at the bedside versus the conference room in pediatric critical care. *Pediatr Crit Care Med*. 2013;14(3):e135–e142
11. Michelson KN, Clayman ML, Haber-Barker N, et al. The use of family conferences in the pediatric intensive care unit. *J Palliat Med*. 2013;16(12): 1595–1601
12. Michelson KN, Emanuel L, Carter A, Brinkman P, Clayman ML, Frader J. Pediatric intensive care unit family conferences: one mode of communication for discussing end-of-life care decisions. *Pediatr Crit Care Med*. 2011;12(6):e336–e343
13. Aronson PL, Yau J, Helfaer MA, Morrison W. Impact of family presence during pediatric intensive care unit rounds on the family and medical team. *Pediatrics*. 2009;124(4):1119–1125
14. Landry M-A, Lafrenaye S, Roy M-C, Cyr C. A randomized, controlled trial of bedside versus conference-room case presentation in a pediatric intensive care unit. *Pediatrics*. 2007;120(2):275–280
15. McPherson G, Jefferson R, Kisson N, Kwong L, Rasmussen K. Toward the inclusion of parents on pediatric critical care unit rounds. *Pediatr Crit Care Med*. 2011;12(6):e255–e261
16. Phipps LM, Bartke CN, Spear DA, et al. Assessment of parental presence during bedside pediatric intensive care unit rounds: effect on duration, teaching, and privacy. *Pediatr Crit Care Med*. 2007;8(3): 220–224
17. Drago MJ, Aronson PL, Madrigal V, Yau J, Morrison W. Are family characteristics associated with attendance at family centered rounds in the PICU? *Pediatr Crit Care Med*. 2013;14(2):e93–e97
18. Feudtner C, Christakis DA, Connell FA. Pediatric deaths attributable to complex chronic conditions: a population-based study of Washington State, 1980–1997. *Pediatrics*. 2000;106(1 pt 2):205–209
19. Slater A, Shann F, Pearson G; Paediatric Index of Mortality (PIM) Study Group. PIM2: a revised version of the Paediatric Index of Mortality. *Intensive Care Med*. 2003;29(2):278–285
20. Virtual PICU Systems, LLC. Available at: <https://portal.myvps.org/>. Accessed February 17, 2015
21. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing

- translational research informatics support. *J Biomed Inform.* 2009;42(2):377–381
22. Hosmer DW, Lemeshow S. *Applied Logistic Regression*. 2nd Ed. Vol. 23. New York, NY: John Wiley & Sons; 2000
  23. Pham K, Thornton JD, Engelberg RA, Jackson JC, Curtis JR. Alterations during medical interpretation of ICU family conferences that interfere with or enhance communication. *Chest.* 2008; 134(1):109–116
  24. Thornton JD, Pham K, Engelberg RA, Jackson JC, Curtis JR. Families with limited English proficiency receive less information and support in interpreted intensive care unit family conferences. *Crit Care Med.* 2009;37(1):89–95
  25. Van Cleave AC, Roosen-Runge MU, Miller AB, Milner LC, Karkazis KA, Magnus DC. Quality of communication in interpreted versus noninterpreted PICU family meetings. *Crit Care Med.* 2014;42(6):1507–1517
  26. Arauz Boudreau AD, Fluet CF, Reuland CP, Delahaye J, Perrin JM, Kuhlthau K. Associations of providers' language and cultural skills with Latino parents' perceptions of well-child care. *Acad Pediatr.* 2010;10(3):172–178
  27. Anand KJS, Sepanski RJ, Giles K, Shah SH, Juarez PD. Pediatric intensive care unit mortality among Latino children before and after a multilevel health care delivery intervention. *JAMA Pediatr.* 2015;169(4):383–390
  28. Garcia EA, Roy LC, Okada PJ, Perkins SD, Wiebe RA. A comparison of the influence of hospital-trained, ad hoc, and telephone interpreters on perceived satisfaction of limited English-proficient parents presenting to a pediatric emergency department. *Pediatr Emerg Care.* 2004;20(6):373–378
  29. Rosenberg E, Seller R, Leanza Y. Through interpreters' eyes: comparing roles of professional and family interpreters. *Patient Educ Couns.* 2008; 70(1):87–93
  30. Wu AC, Leventhal JM, Ortiz J, Gonzalez EE, Forsyth B. The interpreter as cultural educator of residents: improving communication for Latino parents. *Arch Pediatr Adolesc Med.* 2006;160(11):1145–1150
  31. Morales LS, Elliott M, Weech-Maldonado R, Hays RD. The impact of interpreters on parents' experiences with ambulatory care for their children. *Med Care Res Rev.* 2006;63(1):110–128
  32. Karliner LS, Jacobs EA, Chen AH, Mutha S. Do professional interpreters improve clinical care for patients with limited English proficiency? A systematic review of the literature. *Health Serv Res.* 2007; 42(2):727–754
  33. Flores G. The impact of medical interpreter services on the quality of health care: a systematic review. *Med Care Res Rev.* 2005;62(3):255–299
  34. Schiaffino MK, Nara A, Mao L. Language services in hospitals vary by ownership and location. *Health Aff (Millwood).* 2016; 35(8):1399–1403
  35. Jacobs EA, Shepard DS, Suaya JA, Stone E-L. Overcoming language barriers in health care: costs and benefits of interpreter services. *Am J Public Health.* 2004;94(5):866–869
  36. Jacobs EA, Leos GS, Rathouz PJ, Fu P Jr. Shared networks of interpreter services, at relatively low cost, can help providers serve patients with limited English skills. *Health Aff (Millwood).* 2011;30(10):1930–1938
  37. Ku L, Flores G. Pay now or pay later: providing interpreter services in health care. *Health Aff (Millwood).* 2005;24(2):435–444
  38. Office of Management and Budget. Report to Congress, Assessment of the Total Benefits and Costs of Implementing Executive Order No. 13166: Improving Access to Services for Persons with Limited English Proficiency. Available at: <https://www.justice.gov/sites/default/files/crt/legacy/2010/12/14/omb-lepreport.pdf>. Accessed August 16, 2016
  39. Cunningham H, Cushman LF, Akuete-Penn C, Meyer DD. Satisfaction with telephonic interpreters in pediatric care. *J Natl Med Assoc.* 2008;100(4):429–434
  40. Seltz LB, Zimmer L, Ochoa-Nunez L, Rustici M, Bryant L, Fox D. Latino families' experiences with family-centered rounds at an academic children's hospital. *Acad Pediatr.* 2011; 11(5):432–438

**Communication With Limited English-Proficient Families in the PICU**  
Adrian D. Zurca, Kiondra R. Fisher, Remigio J. Flor, Catalina D. Gonzalez-Marques,  
Jichuan Wang, Yao I. Cheng and Tessie W. October  
*Hospital Pediatrics* 2017;7;9  
DOI: 10.1542/hpeds.2016-0071 originally published online December 15, 2016;

<b>Updated Information &amp; Services</b>	including high resolution figures, can be found at: <a href="http://hosppeds.aappublications.org/content/7/1/9">http://hosppeds.aappublications.org/content/7/1/9</a>
<b>Supplementary Material</b>	Supplementary material can be found at: <a href="http://hosppeds.aappublications.org/content/suppl/2016/12/13/hpeds.2016-0071.DCSupplemental">http://hosppeds.aappublications.org/content/suppl/2016/12/13/hpeds.2016-0071.DCSupplemental</a>
<b>References</b>	This article cites 36 articles, 8 of which you can access for free at: <a href="http://hosppeds.aappublications.org/content/7/1/9.full#ref-list-1">http://hosppeds.aappublications.org/content/7/1/9.full#ref-list-1</a>
<b>Subspecialty Collections</b>	This article, along with others on similar topics, appears in the following collection(s): <b>Critical Care</b> <a href="http://classic.hosppeds.aappublications.org/cgi/collection/critical_care_sub">http://classic.hosppeds.aappublications.org/cgi/collection/critical_care_sub</a> <b>Hospital Medicine</b> <a href="http://classic.hosppeds.aappublications.org/cgi/collection/hospital_medicine_sub">http://classic.hosppeds.aappublications.org/cgi/collection/hospital_medicine_sub</a> <b>Patient Education/Patient Safety/Public Education</b> <a href="http://classic.hosppeds.aappublications.org/cgi/collection/patient_education:patient_safety:public_education_sub">http://classic.hosppeds.aappublications.org/cgi/collection/patient_education:patient_safety:public_education_sub</a>
<b>Permissions &amp; Licensing</b>	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: <a href="https://shop.aap.org/licensing-permissions/">https://shop.aap.org/licensing-permissions/</a>
<b>Reprints</b>	Information about ordering reprints can be found online: <a href="http://classic.hosppeds.aappublications.org/content/reprints">http://classic.hosppeds.aappublications.org/content/reprints</a>

**Communication With Limited English-Proficient Families in the PICU**  
Adrian D. Zurca, Kiondra R. Fisher, Remigio J. Flor, Catalina D. Gonzalez-Marques,  
Jichuan Wang, Yao I. Cheng and Tessie W. October  
*Hospital Pediatrics* 2017;7;9  
DOI: 10.1542/hpeds.2016-0071 originally published online December 15, 2016;

The online version of this article, along with updated information and services, is  
located on the World Wide Web at:  
<http://hosppeds.aappublications.org/content/7/1/9>

Hospital Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 2012. Hospital Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 345 Park Avenue, Itasca, Illinois, 60143. Copyright © 2017 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 2154-1663.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

