Factors affecting interpreter use in a pediatric emergency department

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Abstract

Factors affecting interpreter use in a pediatric emergency department

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Approximately 9% of the US population has limited English proficiency (LEP) and this group experiences significant inequities in health care including access to care, diagnostic work ups, missed diagnoses, adverse events, difficulties with communication and education, and differential treatment of pain. Professional interpretation can improve these disparities, but its use varies in clinical settings. The objective of this study was to describe patterns of interpreter use in an academic pediatric emergency department and determine factors associated with use of an interpreter as well as differences in patient outcomes between LEP and English proficient (EP) populations. A retrospective cohort study was completed for over 51,000 ED encounters between October 2015 and December 2016. Overall interpreter use for families with LEP was 45.4%. Interpretation was less likely to be utilized during high volume times of the day (OR 0.85, 95% CI 0.78-0.93) and with lower acuity ESI (OR 0.66, 95% CI 0.62-0.70). The odds of receiving interpretation also decreased by 3% (OR 0.97, 95% CI 0.96-0.98) with each increasing year of patient age. In a comparison of LEP and EP patients, those with LEP were more likely to be assigned a lower acuity ESI level of 4 or 5 ($p<0.001$), less likely to be admitted than EP patients (OR 0.69, 0.62-0.78); those who did not receive interpretation were less likely to be admitted than those who did (OR 0.62, 0.53-0.71). However, LEP patients were more likely to

be admitted to the ICU within 24 hours of admission (OR 1.43, 1.03-2). Professional interpretation is currently underutilized in this ED for patients with LEP. We identified important differences in patient outcomes between EP and LEP families and multiple factors where improvement efforts may be focused.

Introduction

There are an estimated 26 million individuals in the US who have limited English proficiency (LEP) as defined by speaking English less than "very well" when asked during a census. This represents 8.6% of the US population; the most common spoken language is Spanish.[1]

Disparities in medical care provided for families with LEP have been well described in the literature. LEP is an independent risk factor for poor health outcomes among children with chronic health care needs; LEP children are more likely to be uninsured, have no usual source of care or medical home, and less likely to be satisfied with their care.[2] Higher overall health care utilization and use of urgent care services has been reported for these families, perhaps as a result of difficulty in accessing primary care.[3]

In the Emergency Department (ED) setting, differences have been observed in tests ordered by providers, disposition, triage levels, and treatment interventions for LEP patients. [4,5] LEP families are at higher risk for having a return visit to the ED within 72 hours,[6] and they are more likely to experience complications.[7] Spanish-speaking LEP families report difficulty with access to care, health information, and education.[8] Families with LEP have also reported lower trust of their physicians.[9]

Spanish-speaking patients with LEP are more likely to be involved in serious adverse events when hospitalized.[10] Compared to those who are English proficient, documentation of informed consent, [11] and post-operative pain assessments and treatment are less likely for patients with LEP.[12]

Interpretation for patients with LEP can reduce or eliminate disparities in care.[13] Professional interpretation can occur with in person interpreters, dual handset phones, or video units. When compared to each other, differences in length of stay, comprehension of discharge diagnosis and reported lapses in communication have been shown to depend on the type of interpretation used.[14] [15] [16] However, any professional interpretation improves outcomes and is superior to no interpretation or *ad hoc* interpretation by staff, family or friends.[17]

Although pediatrician use of professional interpretation is increasing, significant gaps still exist. In the ED and the office, only approximately half of patients with LEP receive language interpretation.[18] [19]

The objective of this study was to describe patterns of interpreter use in an academic pediatric emergency department and determine factors associated with use of an interpreter as well as differences in patient outcomes between LEP and EP populations.

Methods

This was a retrospective cohort study of patients seen in the Seattle Children's Hospital Emergency Department from October 2015 to December 2016. All patient records from this time frame were included in the study. This stand alone, academic pediatric ED is staffed by residents, fellows, and nurse practitioners with supervision provided by pediatric emergency medicine (PEM) trained faculty. When a patient is registered in the ED, the following question is asked to screen for LEP: "What is your preferred language for care?" Registration can occur at any time during an ED visit, but usually occurs near the beginning of the visit. All ED rooms are equipped with dual handset telephones with 1-touch dialing to interpretation, 4 mobile units are available for video interpretation, and in person Spanish interpretation is available during peak hours (2p-12a). Hospital policy permits bilingual providers to conduct care in a foreign language only if they have passed the Clinician Cultural and Linguistic Assessment, a telephonic language certification test for medical providers.[20]

Patients who reported preferring a language other than English were designated as having LEP. Vendor billing data for video and phone interpretation time and duration were matched to patient encounter information. In-person interpreter use was determined by electronic orders, so timing and duration for these were not available. For phone and video encounters, interpretation within the first 60 minutes of the visit was considered as having been used for the initial assessment, within the last 30 minutes was considered as being for discharge, and any other timing as mid-visit.

Demographic information and data related to interpretation encounters, modalities, and timing were evaluated by language. Patient Emergency Severity Index (ESI) triage acuity level, which ranges from 1 (life-threatening emergency) to 5 (anticipated need for limited to no intervention) was captured. The Patient Medical Complexity Algorithm[21] (PMCA) category, which classifies children as having no chronic illness, non-complex chronic illness, or complex chronic illness, was used to determine medical complexity. A sensitivity analysis was performed excluding

Spanish-speakers, given that some of these patients receive care from certified bilingual ED providers that we were unable to quantify.

Patient characteristics were summarized using means, standard deviations, medians, and interquartile ranges, for continuous variables, and frequencies and percentages for categorical variables.

The cohorts were defined as English proficient (EP) and LEP; the latter was divided into those with record of any interpretation during the visit (phone, video, or in person) and those without. A linear-mixed effect model with a compound symmetry covariance structure, which assumes correlated measures within subjects assumed to be the same for each pair of measures, was used to assess differences in the length of ED stay between LEP patients with and without interpreters and EP patients. Mean length of stay was estimated from the model.

Generalized estimating equations (GEE), were used to assess differences in admission, readmission to the ED within 72 hours, and admission to the ICU within 24 hours between LEP patients with an interpreter, LEP patients without an interpreter, and EP patients. The GEE models accounted for correlation within subject measures. Another GEE analysis was used to assess predictors for interpreter use among LEP patients exclusively.

Significance testing was completed at $\alpha = .05$ level. All analyses were carried out using SAS statistical software version 9.4 (SAS Institute Inc., Cary, NC, USA).

Results

A total of 51,826 patient encounters were evaluated from October 1, 2015 through December 15, 2016. Demographic data, the assigned ESI level, the PMCA categories, and disposition are summarized in table 1. A total of 19.8% of patients were admitted, and 79.8% of patients were discharged. ICU admissions occurred in 2% of encounters. The overall proportion of patients with a repeat ED visit within 72 hours was 3.3%.

The most common ethnicities reported were White (41.2%), Hispanic (22.2%), African American (11.4%), and Asian (8.4%). A total of 16.2% reported a language preference other than English. The most common languages requested were Spanish (63%), Somali (8.9%), Cantonese or Mandarin (5.4%), Vietnamese (4.9%), Amharic (3.1%), Arabic (2.2%), Oromo (1.8%), Tigrinya (1.6%), and Russian (1.4%).

A total of 45.4% of patient encounters where families preferred care in another language had evidence of having received any interpretation during their ED visit (figure 1). Of those who received interpretation, 51.6% of the time it was by video, 15.3% in person, and 9.7% by phone; 23.4% received multiple modalities of interpretation (figure 2). For those who received remote (video or phone) interpretation, 64.8% had interpretation for their initial assessment, 41.2% had interpretation at the time of discharge, and 34.8% had any interpretation during the middle of their visit (figure 3). When using remote interpretation, a median of 13.3% of the ED length of stay (LOS) was interpreted.

Factors associated with interpreter use are summarized in figure 4. Interpretation was less likely to be utilized during high volume times of the day (OR 0.85, 95% CI 0.78-0.93) and with lower acuity ESI (OR 0.66, 95% CI 0.62-0.70). 65.9% of ESI level 1 patients received interpretation; patients with ESI levels 2-5 had interpretation 60.3%, 48.3%, 40.5%, and 32.7% of the time respectively. The odds of receiving interpretation also decreased by 3% (OR 0.97, 95% CI 0.96-0.98) with each increasing year of patient age.

There were differences in the odds of interpreter use during a visit based on language type. Using Spanish as a reference, the difference in odds of interpreter use was greatest for African languages: Somali (OR 0.26, 0.22-0.32), Amharic (OR 0.15, 0.1-0.2), and Tigrinya (OR 0.34, 0.22-0.52). Russian and Arabic-speaking families were also less likely to receive interpretation compared to Spanish-speakers (Russian OR 0.42, 95% CI 0.3-0.6; Arabic OR 0.58, 95% CI 0.4-0.8). Interpretation for Cantonese was more likely than for Spanish (OR 1.4, 1.1-1.9).

In a comparison of LEP and EP patients, those with LEP were more likely to be assigned a lower acuity ESI level of 4 or 5 ($p<0.001$).

When controlling for ESI and PMCA category, LEP patients were less likely to be admitted than EP patients (OR 0.69, 0.62-0.78); those who did not receive interpretation were less likely to be admitted than those who did (OR 0.62, 0.53-0.71). However, LEP patients were more likely to be admitted to the ICU within 24 hours of admission (OR 1.43, 1.03-2); there was no difference in ICU admission between LEP patients who did or did not receive interpretation.

There was no difference in the proportion of patients with return visits to this ED when comparing EP, LEP with and without interpretation; information about return visits to other facilities was not available.

The ED LOS was longer for LEP patients who received interpretation when compared to those who did not ($p < 0.001$). The mean estimated ED LOS for EP patients was 194.5 minutes (193.3-196.7), 208.4 minutes (204.6-212.3) for LEP patients with interpretation, and 184 minutes (180.5-187.6) for LEP patients without interpretation. The mean and median LOS for the ED encounters overall during this timeframe were 193.3 and 164 minutes, respectively.

Discussion

Interpretation was provided in the ED for less than half (45.4%) of patients who preferred a language other than English for their care in this retrospective analysis. There were several factors which affected the likelihood of receiving interpretation. The lower likelihood during times of high ED volumes likely reflects the challenges of using interpretation given the clinical demands on providers. The lower likelihood of interpreter use for each year of increasing age has not previously been reported and is likely related to the older patient's ability to communicate independently. Although we value the autonomy of our young patients, the standard of care is to obtain a history from both the patient and the caregivers in a language they understand. In cases where the child is bilingual and EP, it still may be difficult for them to adequately relay information to their family members regarding a diagnosis and care recommendations. In unpublished video recording data also collected in this ED, patients of LEP parents who spoke English routinely translated the conversation which had occurred to their parents once a provider left the room (need reference).

Interpretation being less likely to occur for lower acuity patients with an ESI level of 4 or 5 may reflect a provider bias about the importance of communication for lower acuity patients. Previous studies have found that providers base decision-making around interpreter use on the anticipated complexity of the discussion, which does not take into account the family's needs or goals for care.[22] Given families with LEP have poorer access to primary care and are less likely to have a medical home[23], they are likely to have questions in the ED setting that will not be addressed by

another provider in a timely manner. We also found that LEP patients are more likely to be triaged as a level 4 or 5 when compared to EP patients. It may be that these families are using the ED for lower acuity complaints or that they are not given the opportunity to fully explain the details of their child's symptoms. Under-triage of LEP patients has also been described elsewhere[24] and the combination of under-triage and subsequent lower use of interpretation by triage level compounds the risk of missing important information during their visit.

Patients with LEP had significant differences related to hospital admission when compared to EP patients. They were less likely to be admitted overall, and those without interpretation were less likely to be admitted than those who received it. This, in combination with the likelihood for lower ESI level, suggests our LEP population presents with lower acuity. However, given we controlled for both ESI and PMCA in our analysis of admission, this does not explain the admission differences seen with interpretation. We also found that our LEP population is more likely to be transferred to the ICU within 24 hours of admission than the EP population, suggesting that signs of severity or impending deterioration may have been missed in the ED. This is a crucially important safety measure, and introduces the possibility that there is a component of language barrier to the clinical assessment in the ED that might affect appropriate disposition.

When compared to Spanish, patients who spoke languages such as Amharic, Oromo, Somali, and Russian were less likely to receive interpretation. Although only in person Spanish interpretation is available during high volume hours of the day, availability of remote interpretation, which is our most commonly used modality, does not differ significantly among these languages. There may be differences in language ability within a family where two parents have a discordant ability to speak and understand English. Some families also present with relatives who are fluent in English to help with communication. More research is needed to determine the different factors involved in use of interpretation and its association with language type.

Defining which LEP patients benefit from interpretation can also be challenging. The question that we use in our setting, "What language do you prefer for care?" does not necessarily correlate with language comprehension[25] and there is likely a subset of patients who may not have benefited from interpretation or did not actually want it. Some families state they prefer another language for care when asked, but then either refuse interpretation during the visit or prefer to

"get by" without it. Further research is needed to determine exactly when interpretation is desired and additive to the patient experience.

Finally, the LOS for LEP patients was estimated to be 14 minutes longer than EP patients, representing a 7% difference. Among the LEP patients, the difference for those receiving interpretation was 24 minutes longer than for LEP families not receiving interpretation. The shortest LOS among the three groups (EP, LEP with and without interpretation) was for the LEP patients who did not receive interpretation, but does not take into account what may have been missed during the visit. Interpretation does take some time, but it is a small proportion of the overall visit and overall LOS is similar to that of EP patients.

Conclusion

We found that fewer than half of patient encounters for families with LEP had received interpretation in a large academic pediatric emergency department. There were factors associated with likelihood of interpreter use as well as important differences in patient outcomes that serve as a basis for ongoing improvement efforts. Current interventions include education for providers and nurses, increasing availability of remote interpretation units, and identifying LEP patients earlier in their visit as well as making that preference more visible for the ED care team.

Table 1: Patient characteristics

	Limited English Proficient (N = 5,670) N (%)	English Proficient (N = 31,321) N (%)	All Patients (N = 36,992)* N (%)
Age, Median (IQR)	5.9 (8.5)	5.7 (9.8)	5.8 (9.6)
Sex			
Male	3,014 (53.2)	16,710 (53.4)	19,725 (53.3)
Female	2,656 (46.8)	14,611 (46.7)	17,267 (46.7)
Race and Ethnicity[1]			
Non-Hispanic White	190 (3.4)	15,767 (50.4)	15,957 (43.1)
Hispanic	3,444 (60.7)	4,238 (13.5)	7,682 (20.8)
Black or African American	790 (13.9)	3,071 (9.8)	3,861 (10.4)
Asian	790 (13.9)	2,461 (7.9)	3,251 (8.8)
Native Hawaiian or Other Pacific	14 (0.3)	387 (1.2)	401 (1.1)
Islander	5 (0.1)	266 (0.9)	271 (0.7)
American Indian and Alaska Native	59 (1.0)	1,940 (6.2)	1,999 (5.4)
2 or More	249 (4.4)	1,610 (5.1)	1,859 (5.0)
Other	129 (7.6)	1,576 (5.0)	1,705 (4.6)
Patient Refused			

*The total number of encounters was 51,826; the number of distinct patients was 36,992.

Figure 1: Interpreter use by language

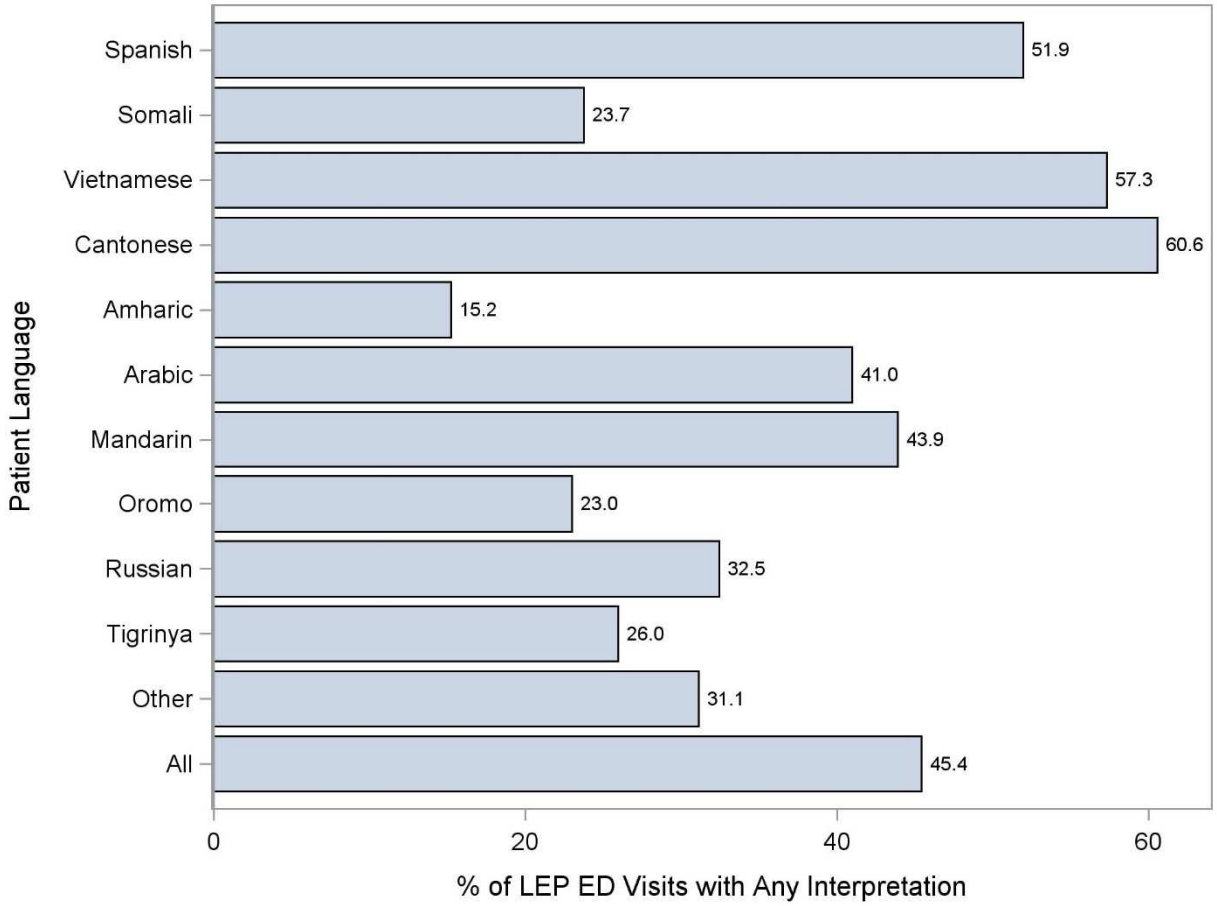


Figure 2 Interpretation modality

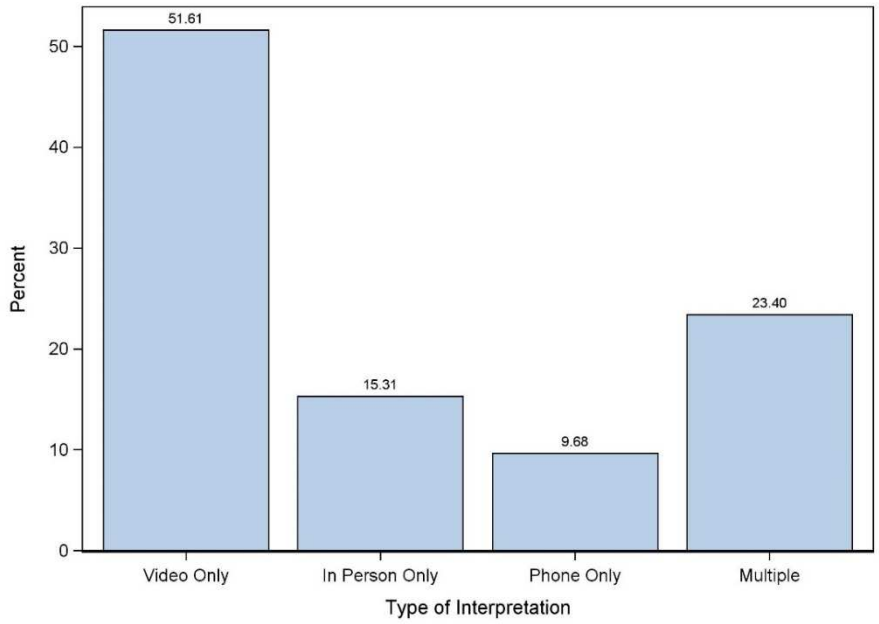
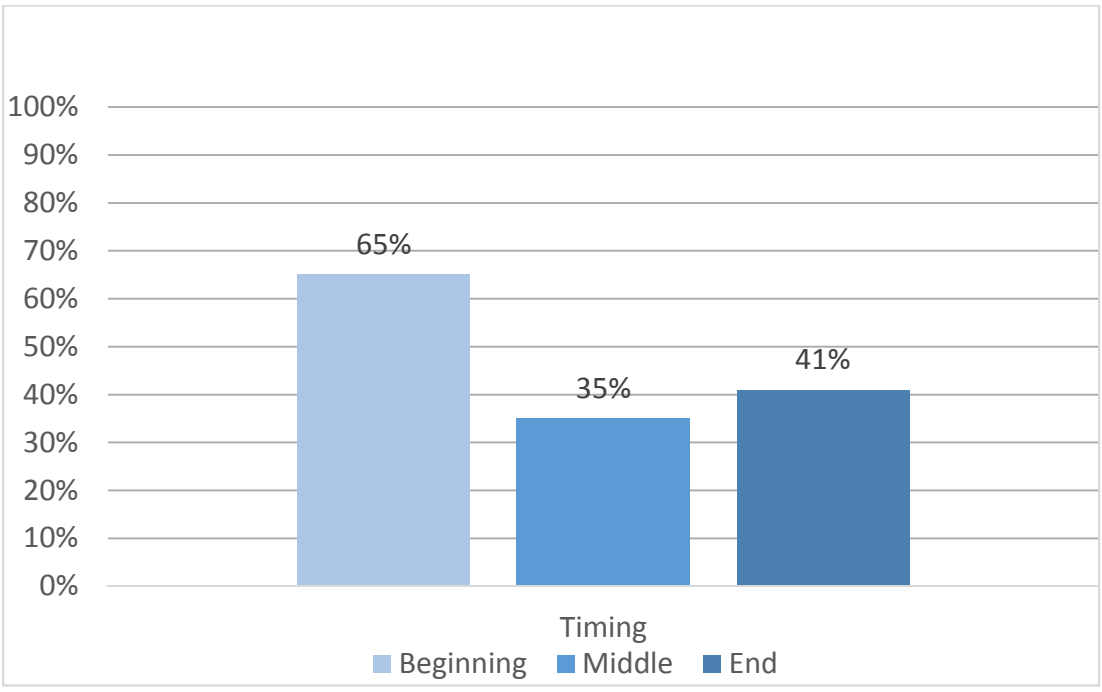
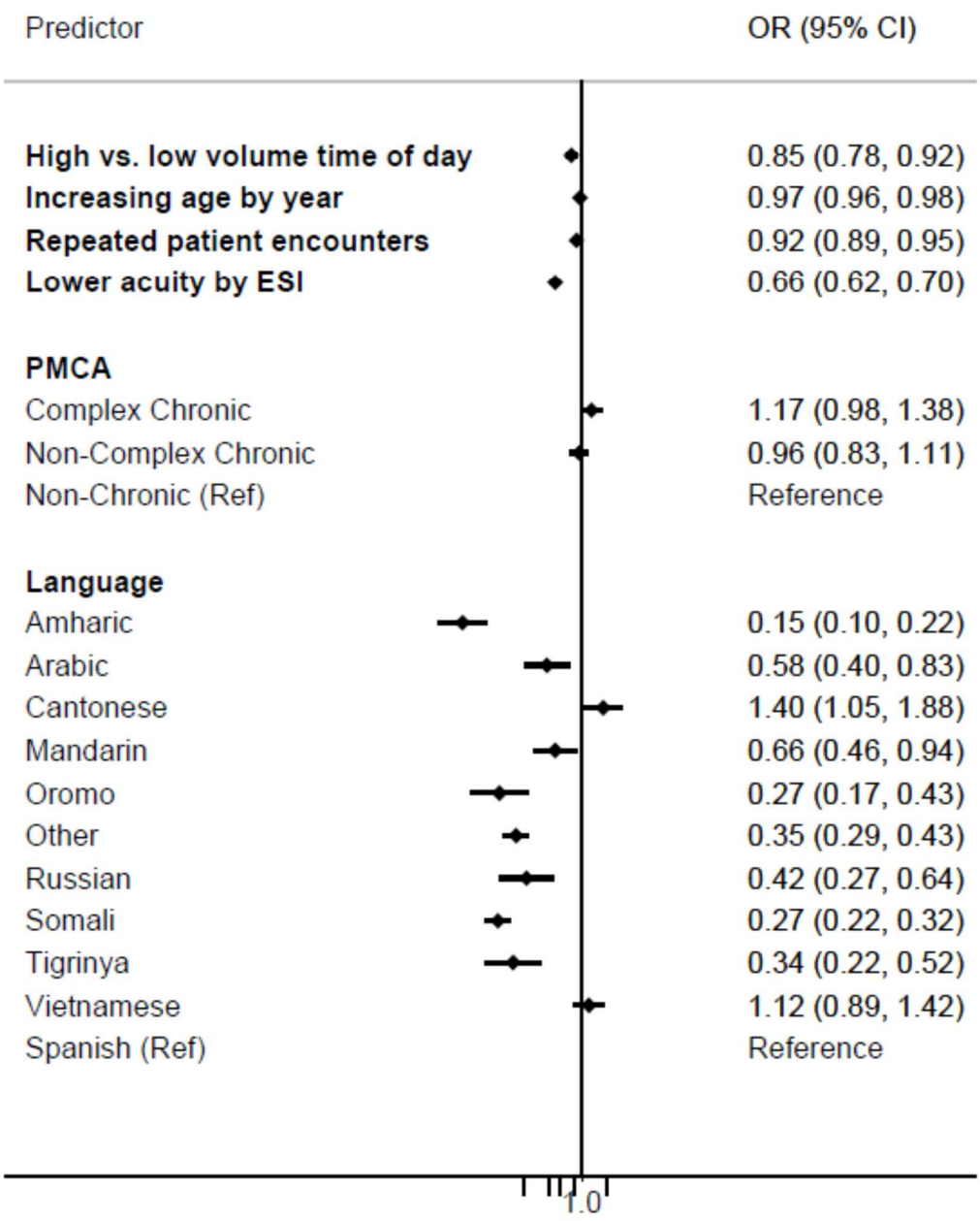


Figure 3: Visit timing for interpretation *



* Beginning is first 60 minutes; end is the last 30 minutes; middle is all remaining visit time.

Figure 4: Factors associated with interpreter usage



N = 8,375
High volume 2p-2a, Low volume 2a-2p
ESI: Emergency Severity Index
PMCA: Pediatric Medical Complexity Algorithm

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