Factors Impacting Pre-Hospital Response for Patients with Limited English Proficiency: A Qualitative Study with Emergency Medical Services Providers

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Abstract

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Objective: Patients with limited-English proficiency (LEP) experience disparities in pre-hospital care, including time to dispatch, time to cardiopulmonary resuscitation (CPR), and quality of CPR. On-scene interactions between patients with LEP and providers of emergency medical services (EMS) are critical to optimal response and have been minimally explored. We aimed to identify EMS-perceived barriers and facilitators to providing optimal pre-hospital response for patients with LEP.

Methods: Eight semi-structured focus groups with 26 firefighters and 13 paramedics were conducted, recorded, and transcribed verbatim. Data were analyzed independently by two researchers using thematic content analysis.

Results: EMS providers identified ineffective interpretation, cultural differences, and perceived delay in patients activating EMS due to distrust and cost as barriers to optimal response for patients with LEP. Strategies to facilitate optimal response included using an on-scene interpreter, relying on objective clinical findings, remaining adaptable in different situations, and conservative medical decision-making. Providers reported transporting most patients with LEP to hospitals regardless of illness severity due to concern for miscommunication or unrecognized problems. Education for communities and EMS

providers, better speed/technology for interpretation, and community-EMS interactions outside of emergent situations were commonly cited as potential strategies for improvement.

Conclusions: EMS providers describe many challenges during pre-hospital emergency response for patients with LEP, including ineffective interpretation and cultural differences which may contribute to overutilization of resources through high rates of hospital transport. Future work should focus on development of targeted interventions to improve modifiable barriers to care such as distrust and interpretation.

INTRODUCTION

Background

Limited English proficiency (LEP) can impede prompt involvement of and effective communication with Emergency Medical Services (EMS) during pre-hospital emergency response and contribute to disparities in outcomes.[1–7] Prior research highlights these issues, demonstrating inequities in time to dispatch of EMS,[1,8] time to initiating cardiopulmonary resuscitation (CPR),[5] rates and quality of bystander CPR,[5,9] and survival after cardiac arrest for individuals with LEP.[5,9] While most available information on outcomes is related to 911 dispatch and cardiac events, the inequities identified are also relevant to other emergencies and aspects of pre-hospital response, including initial access to the EMS system, communication and interpersonal interactions on scene, provision of care, and medical decision-making.

Most prior studies also focus specifically on language barriers, but given that patients with LEP are often also from cultural and/or racial minority groups, other factors such as cultural differences, bias, and discrimination may also impact pre-hospital response and outcomes.[10–13] In 2013, approximately 9% of the U.S. population spoke English less than "very well" and more than 20% spoke a language other than English at home.[14] In King County, Washington, approximately 11% of the residents have LEP and 26% speak a language other than English at home.[14] A few studies have examined access to EMS from the perspective of individuals with LEP, finding some of the primary barriers to access include language barriers, financial concerns, fear and distrust of law enforcement and/or litigation, negative perceptions of EMS, immigration status, and confusion with or lack of awareness of the EMS system.[7,15,16]

Importance

Despite the large proportion of the population affected, known poorer outcomes and the importance of EMS providers (firefighter/EMTs and paramedics) in emergency response, there is currently limited information on pre-hospital response for patients with LEP from the perspective of EMS providers. One prior study evaluated strategies used by EMS providers to overcome language barriers (bystander or co-worker interpretation, simplifying speech, non-verbal communication, and remote telephonic interpreting),[17] but acknowledged that other aspects, such as cultural contexts, are likely also important. EMS providers responding to emergencies involving patients with LEP may give important insight into the challenges they face, strategies they use, and areas for targeted interventions to improve pre-hospital response and outcomes for patients with LEP.

Goals of this Investigation

We aimed to qualitatively explore factors impacting pre-hospital response for patients with LEP from the perspective of EMS providers in King County, Washington.

METHODS

Study Design

We used qualitative methods to explore EMS provider experiences and perspectives on pre-hospital response for patients with LEP and identify areas for potential improvements. We conducted focus groups rather than individual interviews so that providers with diverse roles (firefighter/EMTs and paramedics) within the system could build off one another's experiences as well as provide contrasting views for discussion. Stakeholders in EMS leadership roles believed that most EMS providers would be more forthcoming in groups of their peers than in one-on-one interviews with a researcher. This study was approved by the University of Washington Human Subjects Division Institutional Review Board.

Setting

King County in Washington State has an estimated population of over 2 million people speaking >150 languages, and of those greater than five years old, 11% of residents (~200,000 people) were identified as having LEP in 2013.[14] King County EMS is a tiered system that uses criteria based dispatch.[18] Basic life support (BLS, consisting of firefighter/EMTs) is dispatched immediately for all medical calls, and advanced life support (ALS, consisting of paramedics) is dispatched to high-acuity incidents. Firefighter/EMTs often arrive on-scene first and can add or cancel ALS dispatch.

Selection of Participants

In partnership with EMS leadership, participants were purposively sampled via word of mouth from medic units and fire stations in King County where calls with patients with LEP are common. Firefighter/EMTs and paramedics with all levels of EMS experience were included. Law enforcement personnel and EMS personnel with out-of-date certifications were excluded. Recruitment continued until thematic saturation was reached.

Data Collection: Semi-Structured Focus Groups

Eight semi-structured focus groups were conducted from July to September 2018 at fire stations while EMS providers were on shift to maximize participation. An interview guide was developed to address four domains of interest: 1) overall impressions of interactions with communities and patients with LEP; 2) barriers and facilitators to communication; 3) barriers and facilitators to providing care; and 4) ideas for improving prehospital care for patients with LEP. The interview guide was approved by all study team members. A researcher trained in qualitative methods and thematic content analysis (KMC) trained and closely supervised a research assistant with prior EMT training (DS) to moderate focus groups. All focus groups were recorded, transcribed verbatim by a research assistant, and reviewed for accuracy by a second researcher.

Analysis

Two researchers independently analyzed data with Dedoose[19] software using iterative inductive thematic content analysis (KS and DS). After completion of six focus groups, a codebook was developed by consensus. All data were re-analyzed using consensus codes and two additional focus groups were conducted and analyzed to reach thematic saturation. Overriding themes were identified and re-grouped into major themes and sub-themes. To help identify areas for targeted interventions to improve pre-hospital response, the factors identified by EMS providers as barriers, facilitators, and strategies were integrated into a conceptual model based on Social Cognitive Theory.[20]According to this theory, expected outcomes (pre-hospital response) are dependent on dynamic, reciprocal interactions between people, environments, and behaviors.[20] We found reciprocal relationships between many different factors identified by EMS provider and thus believe this theory was appropriate for this study. This theory has not been applied to prior qualitative studies regarding pre-hospital care for patients with LEP.

RESULTS

Participant Characteristics

A total of 39 EMS providers participated in eight focus groups: N = 26 (66%) firefighter/EMTs and N = 13 (33%) paramedics. Based upon availability, two focus groups were conducted with only firefighter/EMTs, one focus group was conducted with only paramedics, and five focus groups were conducted with a mix of providers. Participants had a median age of 46 (23-63), 90% were male, 92% identified as white, median EMS experience was 18 years (0-43), and 15% spoke Spanish in addition to English. Participant characteristics are shown in Table 1.

Primary Findings: Barriers and Facilitators to Optimal Pre-Hospital Response

Common themes identified as barriers and facilitators to optimal pre-hospital response are described below and listed in Table 2 and Table 3 with representative quotes from participants. A conceptual model integrating these findings with the SCT can be found in the Appendix.

Environmental Factors: Physical

The most common barrier identified across all focus groups was ineffective interpretation in the presence of a language barrier, including inefficient, unreliable, or complete lack of interpretation. Conversely, the availability of an on-scene interpreter (a bilingual friend or family member, often a bilingual child) was universally cited as an important facilitator for providing care. Remote telephonic interpreting (also known as language line) is an available option, but providers universally described it as inefficient and generally used it only as a last resort in low-acuity cases where detailed history was important to determine if transport is needed. If an on-scene interpreter was not available, several participants preferred to use a phone-based app (such as Google Translate) for translation/interpretation over remote telephonic interpreting. Barriers and facilitators to effective interpretation are described further in Table 4.

Acknowledging that communication barriers were more influential in some situations than others, EMS providers universally agreed that obvious high-acuity or unstable conditions were a facilitator to providing care because, in these scenarios, they relied on objective clinical findings (i.e., massive external hemorrhage, hypotension, labored breathing, pulselessness) to provide immediate interventions and quickly transport the patient to the hospital. Two frequently cited examples of this included identifying cardiac arrest and performing CPR or trauma protocols for severely injured trauma patients. In contrast, conditions of moderate or unclear severity (i.e., abdominal pain of unknown etiology) were described as a barrier to optimal response because these cases required a detailed history and understanding patient expectations and preferences for appropriate decision-making, all of which depended the effectiveness and fidelity of interpretation.

EMS providers additionally identified violent events (e.g., shootings, stabbings, or physical assaults) as barriers to optimal pre-hospital response, describing increased community/bystander tensions and fewer bystanders willing to be forthcoming about the event. Regardless of the nature of the event, providers noted frequent crowding of the scene as a barrier during calls with patients with LEP, as many friends/family/community members arrived prior to EMS arrival or throughout the course of the call. Specific examples of these situations demonstrated difficulty physically providing care to the patient as well as confusion in identifying one consistent interpreter.

Environmental Factors: Social

Cultural differences were the second most-commonly cited barrier to optimal response. Examples of this frequently included specific challenges for male providers caring for female Muslim patients while maintaining appropriate cultural modesty and boundaries (Table 2). Female providers preferentially cared for female patients in these scenarios, but frequently no female providers were available. Another commonly described scenario involved providers being asked to remove their shoes, which was described as a conflict due to concerns for safety and delays in care:

> *"…we walk into a mosque…and we're received as…the infidels...like, 'you need to take your shoes off to walk in here.' 'No, no we don't. We're fire.'"*

Police may also respond to emergency calls, and in some cases patients were described as less forthcoming around police, creating a barrier to care. Conversely, EMS providers described police presence as a facilitator when crowd control was needed. Another factor that could hinder interpersonal interactions was poor prior experiences with corrupt EMS in other countries, described by providers as leading to distrust and wariness. However, prior interactions with local EMS leading to increased familiarity between EMS and cultural minority communities was described as a facilitator to optimal response.

Personal Factors

Pre-hospital response is often time-sensitive, and one common perception amongst EMS providers was that patients with limited-English proficiency frequently delayed activating EMS. They cited many potential reasons for this based on their observations, including general distrust of EMS and law enforcement, trying traditional responses/treatments for illnesses first, and calling friends/family before 911. These perceived contributing factors and three others are detailed in Table 5. As a result of delays, providers perceived that patients with LEP were often more severely ill when they arrived on scene than most patients who were English proficient. While increased illness severity in any individual patient could make their initial on-scene evaluation more straightforward (as noted above), they described this overall trend as a barrier to optimal care for patients with LEP. A few EMS providers acknowledged another barrier of feeling uncomfortable or wary on-scene due to a perceived cultural/ethnic background of violence (Table 2). Others recalled that they felt most patients and bystanders welcomed them upon arrival regardless of language or ethnicity.

Behavioral Factors

EMS providers have developed several behavioral strategies to facilitate communication, care and positive interactions with patients with LEP. The only behavior reported as a barrier was the use of an overly authoritative attitude with patients, such as commanding bystanders with a raised voice. They expressed that this was detrimental to the patient-provider interaction, and that "it just doesn't work." Most commonly, providers stated that they relied on objective clinical findings (e.g., vital signs, physical exam, EKG) anytime there was a language barrier with patients. In particular, when it was obvious patients had a high-acuity problem that would require transport to the hospital, they would forego or obtain only essential history from the patient to avoid any delays on-scene. They noted that there are more resources at the hospital to obtain the patient's history, and their primary concern is getting sick patients to the hospital as quickly as possible. In contrast, they described spending extra time and resources on scene with patients who had low-acuity concerns or problems of unclear severity. This typically involved spending time calling "language line" (telephonic interpreting) to obtain a detailed history (e.g., characteristics of abdominal pain) and/or to provide reassurance and instructions for patients who did not need to go to the hospital. Non-verbal communication was also extremely common, both as an adjunct to interpretation and independently when interpretation was not available. In the presence of an interpreter (friend/family or telephonic), or if the patient themselves spoke some English, providers frequently rephrased questions or simplified their speech to use short, common words for easier interpretation. This strategy was often described when young children were acting as interpreters (a very common occurrence).

Providers also noted that creating a patient—provider (or community—provider) alliance on scene was an important facilitator for interpersonal interactions and providing optimal care. This was frequently described as simply treating people with respect, but also involved expressing empathy, respecting cultural practices as much possible, and involving family members in the care of the patient. These strategies required EMS adaptability, another important facilitator for optimal response. They state

there is no one strategy or "best" way to care for patients with LEP, and they must be ready to adapt and do the best they can whatever the situation. An important part of this particular strategy was described as finding a balance between providing care and respecting culture. For example:

> *"We had a [monk] […] having an MI and VF'd [cardiac arrest] […] while we were resuscitating him, we were surrounded, literally right, right in our space […] a group of monks that were chanting something […] this was very important to them, and that we had to just let them […] 'cause it would not have been beneficial to try to force them to get out of our way."*

While they stated performing CPR would have been easier without the chanting and physical crowding, it was a very culturally important practice that they worked around. In other situations, they describe that cultural practices such as removing shoes or wanting gender-concordant providers are not as important to patients in true medical emergencies. Lastly, providers universally reported conservative clinical decision-making for patients with LEP; if they had any thoughts that the patient might need to go to the hospital, they transported them.

The Impact of Limited English Proficiency on EMS Decision-Making

As described above, EMS providers in this study believed that their decision-making regarding the care and disposition of unstable, critically ill patients was unaffected by LEP because decisions for these patients were much more dependent on objective exam findings than on history. Providers acknowledged that they frequently transported patients with LEP to hospitals regardless of perceived illness severity due to concern for miscommunication of symptoms, unrecognized problems, and perceived patient expectations of transport. A conceptual model outlining the EMS decision-making process and the areas where this process can be impacted by LEP and cultural differences is shown in Figure 1.

Recommendations for Improvement

Improved speed and technology for language interpretation was the most prominent idea for improving pre-hospital response for patients with LEP. Education for communities and EMS providers and community—EMS interactions outside of emergent situations to build trust and relationships were also commonly cited as potential strategies for improvement. (Table 5) Providers perceived that education on the role of EMS within the healthcare system, as well as the role of firefighter/EMTs versus paramedics, might be particularly helpful for patients with LEP. Focused education for EMS providers on prevalent cultural norms/practices would also be appreciated.

> *"…the Somali community, which is very prevalent in this area, it would be interesting to hear about […] immigration, and challenges that they face […] I think that information would, you know, make this job a little easier, maybe?"*

Importantly, most providers also felt that general trainings on the details of every culture would not be helpful and would only add to their already extensive training requirements. Additionally, a few providers mentioned that learning a very limited number of key words in different languages such as hello, goodbye, and pain might be helpful toward building relationships and improving interpersonal interactions. Many specifically commented that they once had flip charts with pictures and phrases in a few different languages, but that they were not very helpful due to the high number of languages they see. All providers were clear that any intervention would need to be streamlined into their daily work flow to be successful and sustainable.

LIMITATIONS

The experiences of firefighter/EMTs and paramedics in King County, Washington may not be generalizable to all geographic areas or other EMS systems. King County has a tiered EMS system in which firefighter/EMTs respond to every call while paramedics respond only to select calls, and thus themes like patient confusion with the EMS system may be different in other systems. Additionally, the experiences described in this study may not represent patients from every language/culture in King County. There is also the potential for social desirability bias in our results due to potentially sensitive topics of conflict or discomfort with other cultures and sub-optimal patient care. We attempted to mitigate this bias by choosing a moderator with similar demographics (age, sex, and race) to the majority of participants, and who had professional credibility (EMT trained) with minimal researcher—participant power differential. Lastly, there may have been some bias due to power imbalance among participants of different ranks. Our moderator only noted one particular example where a junior participant was cut off by a senior participant, and in general perceived that the groups spoke openly. Still, it is possible that some participants withheld experiences or opinions they did not want to share with colleagues of different ranks. We believe that the benefits of participants being among their colleagues to discuss and build off one another's experiences outweighed the potential bias.

DISCUSSION

In this qualitative study, firefighter/EMTs and paramedics in King County, Washington reported their experiences responding to emergency calls for patients with LEP. While providers believe they provide the same quality of care regardless of the patient's primary language, they described many personal, environmental, and behavioral factors that differ between pre-hospital emergency response for patients with LEP and those who are English proficient. The most commonly identified barriers to optimal response were ineffective interpretation (e.g., inefficiencies, concerns about fidelity, loss of details and nuances), cultural differences, and perceived delay in patients accessing EMS. Participants also described several facilitators and strategies to optimize care, including reliance on objective clinical findings, remaining adaptable in different situations and conservative decision-making regarding treatment and transport.

Our results regarding strategies for communication echo those from a prior study by Tate et al[17] conducted with pre-hospital providers in New Mexico and South Africa. They similarly identified strategies of using bystanders or co-workers as interpreters, phone apps, simplified speech and non-verbal cues to facilitate communication.[17] They also found that many providers avoided using remote telephonic interpreters due to inefficiencies.[17] Tate et. al did not describe any barriers or strategies beyond those related to language barriers, and to our knowledge no other studies have specifically evaluated EMS provider experiences with pre-hospital response for patients with LEP. Similar to EMS providers, 911 dispatchers in a previous study in King County noted using strategies of simplifying speech, rephrasing, and asking for a different speaker (interpreter) to improve communication.[1] Dispatchers cited language line as the most common strategy for communicating with callers with LEP, though call data showed that it was used in <30% of all medical calls.[1,8] The use of language line during 911 dispatch calls with language barriers led to increased time to dispatch of paramedics[1,8] and increased time to initiation of bystander CPR,[5] congruent with findings in our study that connecting to language line is inefficient and can delay care. EMS perceptions that there are otherwise minimal to no delays in on-scene care are also corroborated by studies in Albuquerque, New Mexico and Minnesota that found similar or decreased on-scene times for patients with LEP.[21,22] Decreased on-scene time may be due to the EMS strategy to obtain only essential history on-scene for patients with LEP. While this strategy is helpful for patients with high-acuity disease, our results also suggest EMS providers may

transport more patients with LEP than medically necessary, similar to prior findings that communication barriers lead to over-triage by dispatchers.[8] This may result in significant costs to the system and to patients, as well as potentially subjecting patients to unnecessary procedures and families to emotional distress.[23]

Prior studies evaluating pre-hospital response from the perspective of individuals with LEP validate EMS perceptions that patients with LEP may delay or avoid activating EMS.[7,15,16] Specifically, in a qualitative study with Chinese-speaking individuals in King County, Washington, participants described negative perceptions of EMS, confusion with the EMS system, concerns about cost, and calling family first as barriers to calling 911.[15] Latino individuals in Denver, Colorado reported fear of getting involved with the law or litigation, fear of retaliation after reporting a violent event, immigration status, and concerns about cost as reasons to avoid calling EMS.[16] A survey of Spanish-, Arabic-, and English-speaking caregivers of pediatric patients in an urban ED in Michigan showed that only 16% of caregivers with LEP compared to 58% of native English speakers utilized EMS to get to the hospital.[7] Concerns about cost, impact on immigration status, inability to communicate with 911 dispatchers and lack of knowledge of EMS were cited as reasons for not accessing pre-hospital care.[7] The concerns about cost of care and inability to communicate highlight the need to improve usability of interpretation services, as improved use of interpretation may lead to fewer unnecessary hospital transports.

Evidence supports that trained, professional interpreters improve care for patients with LEP.[23] However, availability of trained interpreters is limited in the pre-hospital setting, and the time it takes to connect to language line is currently a major barrier for EMS providers. The time from placing the call to time of connecting with the correct interpreter was described as the major delay, and strategies to eliminate this step (e.g., direct connection via dispatch) may be particularly useful. While automated translation via a phone app (e.g., Google Translate) was cited by providers as faster and easier to use than language line, this has unfortunately been found to be a less effective forms of interpretation (at least in its current iteration).[24] Providers also described loss of important non-verbal communication with the use of telephonic interpreting, and options for video-interpreting on-scene may also be useful. While improving options for trained interpreters may increase costs initially, it could lead to an overall decrease in costs by decreasing unnecessary hospital transport.

An important finding from our study is that EMS providers perceived that many patients with LEP and minority communities distrust both EMS and police. This can have a negative impact on pre-hospital response through delay in activation of EMS and poor interpersonal interactions on scene. As discussed above, EMS perceptions of distrust are supported by prior studies conducted in a Chinese population[15] and Latino population.[16] Some providers also acknowledged feeling uncomfortable themselves during interactions with cultural minority patients. It is not possible to discern the underlying reasons for that discomfort from this study. Importantly, however, these findings demonstrate bi-directional interpersonal barriers to optimal pre-hospital response, and suggest biases exist that may be modifiable. Our findings also explicitly demonstrate for the first time that cultural differences can be a barrier to optimal pre-hospital response for EMS providers. Some providers noted improved interactions and care simply by engaging bystanders and respecting cultural practices. They also suggested EMS-community interactions outside of emergency situations to build trust, cultural familiarity and relationships. Additionally, diversification of the EMS workforce may improve pre-hospital response in these communities through improved communication, trust, and interpersonal interactions.[25]

Our exploratory study highlights that EMS providers face many challenges during pre-hospital emergency response for patients with LEP that may lead to suboptimal response and overutilization of

resources through high rates of hospital transport. It not only reinforces prior findings that improved speed and technology for interpretation are needed, but also suggests that cultural differences and patient delays in activating EMS are important barriers. Future work should focus on development and implementation of targeted interventions to improve modifiable barriers to optimal response such as ineffective interpretation and poor interpersonal interactions (e.g., cultural differences, bi-directional distrust and discomfort). Community education on the roles of EMS providers and law enforcement during pre-hospital response, targeted cultural education for EMS, and interactions outside of emergency situations may be of particular importance.

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Table 1. Participant Characteristics

	Firefighter/EMT N = 26	**Paramedic N = 13**	**All N = 39**
Male (N, %)	26 (100%)	9 (69%)	35 (90%)
Age (median, range)	41.5 (28-63)	49 (23-62)	46 (23-63)
Years of EMS experience (median, range)	14 (0-39)	25 (12-43)	18 (0-43)
Race* (N, %)			
White*	23 (88%)	13 (100%)	36 (92%)
Black/African American	1 (4%)	0 (0%)	1 (3%)
American Indian/Alaska Native*	1 (4%)	0 (0%)	1 (3%)
Asian*	1 (4%)	0 (0%)	1 (3%)
Native Hawaiian/Pacific Islander	0 (0%)	0 (0%)	0 (0%)
Other	2 (8%)	0 (0%)	2 (5%)
Languages Spoken in addition to English (N, %)			
Spanish	4 (15%)	2 (15%)	6 (15%)
German	2 (8%)	0 (0%)	2 (5%)
French	1 (4%)	0 (0%)	0 (0%)

***Those that identified as American Indian/Alaska Native and Asian also identified as White**

Table 2. ***Barriers to Optimal Pre-Hospital Response***

BARRIERS	**QUOTES**
ENVIRONMENTAL FACTORS ***Physical Environment***	
Ineffective interpretation*+	*"…it depends on the interpreter you get, sometimes. […] sometimes you just get this long lag, and you're really not sure, really have very little confidence […] so it really kinda depends on who's the other end of the line."*
Violent event	*"…we go to calls where there's been some violence, and nobody's communicating to us, because, either, they don't, they don't want the downstream effect by talking to us, or, they're fearful of reprisal, or […] I don't know."*

Unclear acuity of patient's condition on exam*	*"…presented as abdominal pain. […] I distinctly remember trying to use language line, it didn't really work out so well […] we shipped him off […] BLS, there was no ALS indicators from anything we could gather. He had a, he arrested on the ramp at [hospital], had a massive MI. […] I literally did everything I coulda done in that scenario […] I did everything I could do, I tried to provide the best care I could provide."*
Crowding of the Scene	*"…like the car accident I had, they called up their friends before they called 911, and 30 of their friends showed up and started screaming at me in the middle of an intersection[…]her friend was just trying to translate what was wrong with her[…]I was glad she was there, but oh, everyone else…it's the reverse of helpful"*
Social Environment	
Less forthcoming around Police*	*"…we get called for the eval part, the medical part, but sometimes we have to say, 'yeah, I'm here to make sure you're okay. We're not with them [the police]' and then they tell us."*
Prior interactions between EMS and community*	*"…The firefighters […] yeah, they have a huge interaction. […] They kinda know what's going on in their communities and are way more tied in."*
PERSONAL FACTORS ***EMS Perceptions of Patients with LEP***	
Delay in patients activating EMS[+]	*"…I think your Laotian and your Burmese […] Southeast Asia communities, Vietnam, stuff like that, they tend to wait 'til the last minute to call 911, or not even call it at all."*
Patients are severely ill when EMS arrives[+]	*"…the sickest babies that I usually get are from non-English speakers, […] they've been sick, they've been septic, they didn't realize that their infant was sick and by the time I get there it's a critically, critically ill child, or it's congenital defects or its issues from premature birth because they have had no health care."*
Patients have heightened emotions	*"I hate to stereotype or anything, but, you see trends. […] Some cultures are very kind of, overreactant, or some are more stoic and don't react, you know, so it's this big spectrum, but this particular instance was the overreact, and "oh my goodness" and everything's crazy."*
EMS Emotions	
EMS feels uncomfortable on scene	*"…typical kind of call is going into a Somali residence, where always, I'm always a little bit on edge with Somalis […] I don't know how they're gonna act. [...] I may be profiling them a little bit, but, but, they come from places of violence. […] I sometimes have a sense of maybe they don't trust us, and I think, if you're in somebody's house that doesn't trust you, you always have to be on guard."*
BEHAVIORAL FACTORS	
Authoritative Attitude	*"Some guys you work with try to be the very authoritative, and that never goes well. And somehow they think that big 'You're gonna answer my questions' and it just, doesn't go well."*

***Corollary Facilitator in Table 3**

[+]Expansion of theme in additional table

Table 3. ***Facilitators for Optimal Pre-Hospital Response***

FACILITATORS	QUOTES
ENVIRONMENTAL FACTORS ***Physical Environment***	
Interpretation on-scene*[+]	*"…there's a time component, too, language line seems a little clunky […] I will be quicker and get a better result finding somebody [on-scene]."*

Severe or unstable patient condition*	*"You get somebody stabbed in the gut or stabbed in the chest and they don't speak English, you treat 'em the same way you do any one of us […] you do what you need to do, you know? Get some lines, flutter valve 'em, tube 'em, what, you know, all that stuff, it doesn't matter what language they speak."*
Social Environment	
Police Presence*	*"…there have been occasions where we've called for police. You know, for sort of crowd control on cardiac arrests. Because, you know, walk in, and there's a very- there's a cardiac arrest that we need to work, and there's family members that are, you know, losing their minds in hysteria, to the point of, you know, needing them to be separated from the scene for us to be able to do our job."*
Communities with bad prior experiences with EMS*	*"Eastern bloc countries, when they called the fire department, the fire department robbed them. And so, there's just that, mistrust of us from what they know from their home countries and we, I don't know […] if they each may have some little underlying, what they experienced in their home country is different than what they experience here."*
Cultural Differences	*"…can't really separate the language, limited English, from the cultural aspect…like asking a woman to remove her hijab because she hit her head on the wall, and you need to be able to do, examine it, and you got a lot of family members around that maybe aren't real comfortable with you doing that, or her removing it in front of you"*
PERSONAL FACTORS ***EMS Emotions***	
EMS feels welcome on-scene*	*"…most people realize that like, we're doing the best we can, we're trying to help them […] I've never had a problem where I've had like an immigrant or somebody who doesn't speak English be mad at us […] I've had like a very positive—they get it, they don't speak English, we don't speak [other languages]. They're, you know, trying to get the message to us and we're trying to get them to the hospital."*
BEHAVIORAL FACTORS ***EMS Strategies***	
Rely on objective clinical findings	*"…apparently told the dispatch that he's got chest pain. And you can't communicate really. Maybe there's a family member that can help, but essentially you can't do your comprehensive, thorough, cardiac chest pain, you know, history […] So in those cases, we rely, sort of, on our tools, we take vital signs, we do twelve lead EKG, we look at those[…] We sort of rely on our exam."*
Non-verbal communication	*"…try to reassure them, with body language. Empathy. You know, being able to convey to them, not necessarily speaking, but conveying to them that everything's going to be okay, or that you're doing everything you can to help their loved one."*
Rephrasing or simplifying speech	*"I ask simple . . . simple questions. Direct, yes or no's, as simple as I can make it, yeah."*
Provider-patient alliance	*"…family members […] they all want to be active and doing something […]So it's actually been really helpful if my driver goes over, talks to mom. My captain goes over, talks to the dad. […] that helps with a lot of these cultures […] they absolutely will fall in love with us, and treat us completely differently as soon as we engage all of them, instead of just staring at them because they can't speak our language."*

EMS adaptability	*"…generally speaking, as much as we can, you try to respect what you can respect and still treat around it. Cuz they were like 'Oh my god they have a big deal, like you're not supposed to touch their head,' and I used to not know that […] if someone's there to tell you that, and you can work around those things that's fine."*
Obtain only essential patient history on-scene for those with high-acuity disease	*"sometimes [EMS providers] use a language line…but by the time they call 'em, get the right language, that patient could be in an ambulance to the hospital"*
Extra time and resources for interpretation on-scene for low-acuity/unclear disease presentations	*M2: All comers get the same level of care, period. I can't, I can't think of anyone I know that would, that would be less compassionate, or demonstrate less empathy with anyone that couldn't speak English. In fact, I would say we're probably more attentive to those individuals, because we're having such a harder time getting-* *M1: To make sure we aren't missing something!* *M2: Yeah, exactly!* *M1: Yeah, we probably spend more time than we would [otherwise]*
Conservative treatment and transport decisions	*"I'm a bit more conservative when it comes to [patients with LEP] because I can't rule things out, and that's kinda how I practice my medicine anyway […] if I can't rule it out, then, you know…then they're going [to the hospital] with medics"*

***Corollary Barrier in Table 2**

[+]Expansion of theme in additional table

Table 4. Barriers and Facilitators to Effective Interpretation

Barriers	**Quote**
Inefficient interpretation	*"I used language line a lot at my last department […] but it's not practical for a lot of what we do […] it takes a while to get connected, sometimes you don't get the language that you need because the one person who speaks it is already busy"*
Loss of detail and nuance	*"sometimes we're using 5-year-olds that speak good English, but the word base is so limited for them you have to be, talk in a lot simpler terms"*
Fidelity of Interpretation	*"lotta our words don't cross over […] so they take, creatively, come up with the right word, and is it truly what we're trying to ask? Because, you know, they're taking their license […] we say a word and there's no translation, and then, do they understand our word, and does it get translated right, and does the patient understand it, then, does it get translated back properly."*
Facilitators	
Family/friend interpreter available	*"what ends up happening, is, if there's school age children there, they're bilingual. They, they, they know how to speak English. And so we'll often times use the children as an interpreter, and I think that's, I would say that's usually how we kinda figure out"*
Phone-based app translation (Google Translate)	*"…you can say 'English to Spanish, record voice' and so I just sort of gave a little report […] Boop! [mimes pressing button] and then [the phone] speaks Spanish to the mom, and then mom was like [mimes sigh of relief][…] it's very easy, as long as I have cell service, and it does a pretty darn good job at translating."*
Either barrier or facilitator	
Remote Interpreter (language line)	*"…very few times, we actually have to call the language line and try and, and track down an interpreter. That's very cumbersome and not real user friendly […] but, you know, it's better than nothing"*

Table 5. EMS-perceived causes for delay in patients activating EMS

Perceived Cause	Quote
Traditional response to illness first	*"by the time we get there, they're really sick. Not always, but, we've been on some really sick, cuz they tried to treat 'em with cupping for a couple days."*
Distrust and fear of law enforcement Distrust of 911/EMS	*"one of the things is that the African-American community will shut down around us a lot. I've had one [call] on the freeway where she would just not talk to anyone, and I looked around, and there were 3 police officers. She literally stopped in the middle of the freeway and just would not listen to anyone […] when I looked around we had 8 white males and it was just her…she was resisting and trying to run out into traffic…for the most part, they see us just as badly as police"*
Call family/community first	*"They'll ask someone in their community before they call 911. Because somebody may have been some kind of healer where they came from. You know, and they'll call them before they call us."*
Non-citizen status	*"…if there's people here illegally in the country, undocumented aliens, for sure, they're gonna be, probably a little bit resistant to calling, for fear of deportation. Especially in the current political climate."*
Financial concerns of seeking care	*"…they wanna keep gramma home as long as possible, cuz, number one, they might not have the financial means to send them out…"*
Lack of recognition of seriousness of event	*"…mom is gonna stay with us, because that's what you do in those cultures, you take care of your family, and then you didn't realize they're breathing 60 times a minute for the last two days."*

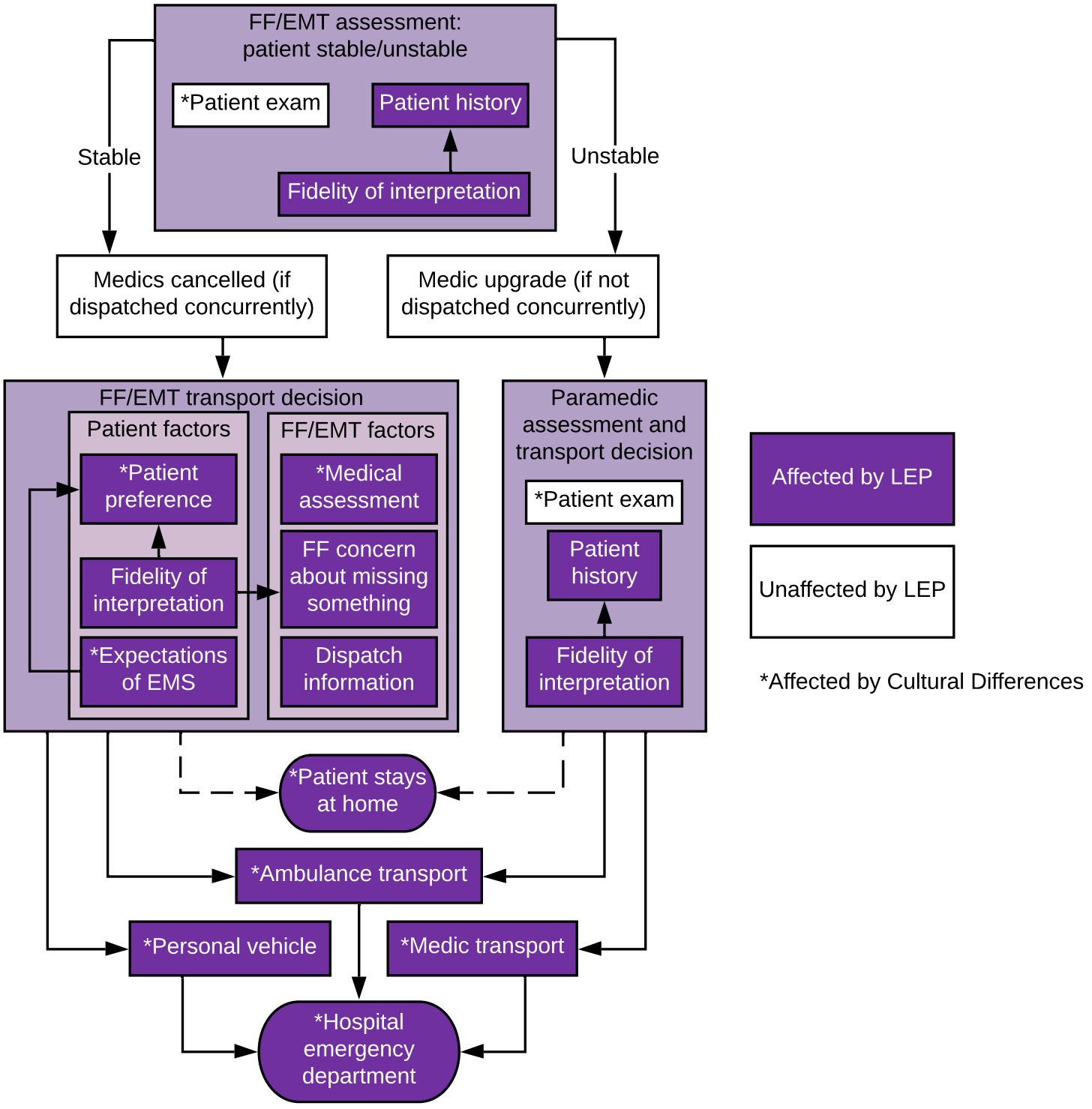
Table 6. Recommendations for Improvement

Recommendations	Quote
Focused cultural/community education for EMS	*FF4: a list of [cultural] do's and do not's would be helpful I think* *FF4: I would also caveat on that, or jump on that as well, a couple, I think, hellos and goodbyes in their native languages* *FF5: basic, yeah* *FF4: you know, I try to pick up on those, it goes a long way for first impression, and calming them down […]and also be very beneficial I think to have some kind of cultural awareness of what's going on*
Education about EMS system for individuals with LEP	*"…one of the components that would be great is to have an outreach to the communities, so they understand what they can expect from the first responders that come to them. And I think that crosses over between fire, police, and medic, it doesn't matter, all of us, of what services we bring, what information they need to have available to us."*
Community-EMS Interactions Outside of Emergency Situations	*"I think [Touch-a-Truck° community outreach events] are useful for showing the public we're here, you know. Making a presence known, and then, obviously the interactions that we have, I would say ninety-nine point nine percent of the time are positive, between the firefighter, and the mom and her kid, and "Oh, that was fun" […] so it's a very positive experience for them, and the firefighters."*
Community Integration into the Workforce	*"…in time, our workforces will become more representative of the communities we serve […] eventually they'll integrate into our workforces and be represented in our workforces, and hopefully, they'll maintain their native tongues."*
Improved Speed and Technology for Interpretation	*FF1: […] if dispatch pulled up the appropriate dialect […] and then assigned a translator, and then that translator called me?* *FF2: That'd be awesome. Yeah.* *FF1: That would be—I would be more inclined to use it*

	<u>FF4:</u> [live video interpreter] would need to be like, bring up the tablet, it goes to that select language screen every time, I push the language that they're speaking and a few rings and someone pops up, you know, 'Hola!' 'Hey man, we got someone that speaks Spanish, we need you to talk' and it starts right there. And then that's, and it's going, and it's seamless. *<u>Interviewer:</u> but anything less than that?* *<u>FF4:</u> It would be in the, in the rig* *"I'm optimistic in the next five or ten years, technology, you know, is gonna make it much easier. You'll have a device that, like, speaks every language, and you just whip out the device, and, you know, you tell it "Somalia" you know, whatever, and then, immediately it will listen for your voice and translate. Listen, translate. I see that, you know, that technology exists today, and someone needs to make it."*

°Touch-a-Truck is an event where firefighters take a fire truck to a public place, such as schools, to interact with the community

Figure 1. Impact of Limited-English Proficiency on EMS Provider Decision-Making.



Appendix A. Personal, Environmental and Behavioral Factors Impacting Pre-Hospital Response for Patients with LEP