

Commentary

Infection prevention requires attention to patient and caregiver language: Removing language barriers from infection prevention education

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Successful infection prevention is often a collaboration between healthcare providers, patients, and caregivers. Patient and caregiver education are vital to the dissemination and implementation of infection prevention efforts;¹ however, research is limited regarding the contribution of language of care to healthcare-associated infection (HAI) risk or infection prevention implementation. As the infection prevention community addresses inequities within HAI,² barriers to care associated with patient language must be overcome to protect patients from preventable harm. Here, we detail examples of how language discordance between the healthcare system and patients and caregivers may increase HAI risk and then present strategies to overcome these challenges.

The United States is a multilingual nation. In 2019, the US Census reported that 22.0% of all households spoke a language other than English and 8% endorse limited English proficiency or emerging English proficiency (EEP).³ The US Census defines limited English-proficient individuals as those aged ≥ 5 years who self-identify as speaking English less than “very well.”⁴ Due to concern that limited English proficiency does not represent English language proficiency accurately, this commentary will use EEP to describe patients and families with a language of care other than English. Individuals with EEP have worse health outcomes compared to patients with English proficiency.^{5–8} Patients with EEP have longer lengths of stay (LOS) for hospital admissions⁹ and higher rates of unplanned readmissions,⁸ and they are more likely to experience physical harm when adverse events occur during hospitalization.⁶ The impact of patient language on HAI risk remains largely unknown; however, growing evidence indicates that rates of HAI vary by race and ethnicity.¹⁰ For example, an analysis of Medicare Patient Safety Monitoring System data found that Asian and Hispanic–Latino patients admitted for cardiovascular disease, pneumonia, and surgery had higher rates of HAI than white, non-Hispanic–Latino patients admitted

for the same indications.¹¹ The healthcare epidemiology community recognizes the importance of health equity in furthering HAI prevention efforts;² multilingual patient communication, education and infection prevention interventions are crucial considerations in reducing disparities in preventable infections.

Written and verbal patient education is essential to HAI prevention, but materials and interventions have not been widely studied in languages other than English. Commonly, patients are given educational materials about infection prevention topics, such as invasive device care, the importance of removing unnecessary devices, and empowering patients to remind staff to use standard infection prevention practices.¹² Patient-centered education interventions have improved staff hand hygiene adherence¹³ and have decreased outpatient central-line-associated bloodstream infections (CLABSIs).¹⁴ In a recent qualitative study of perceptions of infection prevention education of healthcare leaders and staff, widely reported education resources included booklets, handouts, signs, posters, and electronic medical record (EMR) tools.¹² However, this study did not include language-specific resource questions. Spanish language resources to promote infection prevention and antibiotic stewardship are available from the Centers for Disease Control and Prevention (CDC)^{15,16} and the Agency for Healthcare Research and Quality (AHRQ);¹⁷ however, the number of Spanish language resources is limited in comparison to English materials. To our knowledge, no studies have evaluated the efficacy of non-English infection prevention resources nor are data available regarding their use. Evaluating the implementation and efficacy of non-English resources is essential to identifying areas for improvement in infection prevention communication. Expanding the content of resources as well as the number of languages in which such materials are available is also vital to improving healthcare education for all patients.

To develop interventions that improve infection prevention for patients with EEP, it is important to address communication barriers and errors throughout preadmission, inpatient, and outpatient care. Communication barriers include lack of access to an interpreter and lack of language congruent healthcare workers. Communication errors include using a family member as an interpreter, not providing written materials in the patient or caregiver’s

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Table 1. Examples of How Barriers to Communication and Communication Errors Can Impair Infection Prevention Implementation Before, During and After Hospital Admission

Before Admission	During Admission	After Discharge
Lack of pre-operative language congruent education	Lack of language congruent infection prevention education	Difficulty calling provider's office to make an appointment or ask questions about symptoms
Not being prescribed or challenges filling prescription for <i>Staphylococcus aureus</i> decolonization	Communication barriers to remind staff to use hand hygiene or to alert staff of infectious symptoms	Lack of language congruent home healthcare providers or lack of referral to home healthcare
Delayed presentation to care due to challenges accessing outpatient care	Communication barriers to asking about device use or necessity	Difficulty filling postdischarge prescriptions

language of care, and not identifying patients with EEP.¹⁸ Within infection prevention, communication barriers and errors could affect HAI risk prior to hospitalization, during hospitalization, and after discharge (Table 1). Language incongruent communication between providers and patients may lead to inadequate infection prevention practices, such as not receiving instructions for at-home chlorhexidine bathing or intranasal mupirocin for methicillin-resistant *Staphylococcus aureus* (MRSA) nasal decolonization. A prior study demonstrated low adherence (62%) to preoperative *S. aureus* decolonization,¹⁹ but whether patient language was associated with low decolonization adherence was not assessed. Further research inclusive of multilingual research participants is needed to identify potential barriers to preoperative infection prevention practices.

During admission to the hospital, patients and families with EEP may be unable to self-advocate (eg, remind a healthcare worker to wash their hands). English language instructions may not effectively prepare patients with EEP for discharge, which could affect self-care for an indwelling device or surgical wound. In a multihospital qualitative study, Latino parents with EEP reported feelings of being underprepared and overwhelmed prior to their child's neonatal intensive care unit (NICU) discharge.²⁰ Similarly, a multihospital study found that adults with EEP were less likely to report comprehension of discharge follow-up and medication class and purpose than English-proficient patients.²¹ In qualitative studies, Spanish-speaking patients frequently cited lack of outpatient language services as a barrier to healthcare.^{22,23} The lack of outpatient language support may make it difficult for individuals with EEP to schedule an outpatient follow-up or contact a clinician with questions about a medical device or surgical site issue. Pharmacies frequently cannot provide verbal or written non-English instructions,²⁴ potentially impeding access to postoperative antibiotics or preoperative mupirocin for *S. aureus* decolonization, for example. These obstacles to patient education, communication, and care create a cumulative risk for HAI.

The role of language and infection prevention education has received limited attention; however, in small, mostly single-centered studies, patients with EEP have worse infection-related outcomes. Jacobs et al²⁵ found that non-white and non-Black patients with EEP had an increased risk of mortality from sepsis, after adjusting for demographics, clinical characteristics, and disease severity. In a study of children admitted to the hospital who

required intravenous antibiotics, patients with EEP had a longer length of stay and were less likely to have a home healthcare referral.²⁶ In a recent case-controlled study of CLABSIs in critically ill children, Woods-Hill²⁷ et al found that non-English language approached significance as an independent risk factor for CLABSI. Kalluri et al²⁸ performed a retrospective cohort study of premature infants admitted to 9 NICUs and found that infants of mothers speaking a language other than English or Spanish had increased risk of late-onset sepsis, after adjusting for hospital, comorbidities, race, and ethnicity. Assuming that multilingual patient education, tools, and interventions were not optimized in these studies, these findings suggest that without supports, individuals with EEP may be at disproportionately higher risk for both infection and morbidity from infection.

Identifying and quantifying the impact of language on HAI is an important first step, but creating solutions to communication barriers is critical. Expanding language services improves quality of care and outcomes for patients with EEP. Access to professional interpreters or bilingual staff improves provider communication,^{29,30} patient satisfaction with communication,³¹ and patient understanding of their diagnosis and treatment.^{29,32} Professional interpreter use is not only mandated for healthcare systems receiving federal aid^{33,34} but also reduces communication errors³⁵ and decreases unplanned readmissions.³⁶ Despite being aware of the benefits of professional interpreters, providers report frequent use of ad hoc interpreters.^{37,38} In 2013, only 68% of hospitals in the United States provided interpreter services.³⁹ Barriers and solutions to multilingual infection prevention education have not been studied; however, lessons can be learned from prior research. Table 2 cites examples of existing research on language congruent care with examples of how such strategies may reduce HAI risk. Potential interventions include multilingual patient resources, expanded interpreter services, and recruiting multilingual healthcare workers in the inpatient and outpatient environments. These interventions can be accomplished through utilizing existing patient education materials, such as those available through AHRQ¹⁷ and the CDC,¹⁵ as well as AHRQ guidance for improving interpreter services.⁴⁰ In addition, patient education tools should be produced in a wide range of languages and there needs to be increased research on the utilization, acceptability, and effectiveness of non-English infection prevention education. Patient- and family-centered teaching methods, such as a question-prompt lists, have been shown to have acceptability and feasibility among Spanish-speaking families²⁰ and should be evaluated as tools for infection prevention education. Clinicians should partner with patients and families with EEP in developing infection prevention resources and interventions to ensure that these tools are practical and acceptable prior to implementation. To improve care for patients at a diverse range of hospitals, national organizations and government agencies should continue to expand non-English infection prevention resources. Healthcare providers and epidemiologists can also advocate for improved interpreter services, for reimbursement for interpreter services, and for including EEP resources in HAI bundles.

We acknowledge that many factors that we have not addressed in this study contribute to health inequities and infection risk. A growing body of work indicates that antibiotic stewardship is also a critical area of health equity research and intervention. In a retrospective analysis of a single health system's urgent-care antibiotic prescribing patterns, nonwhite, Hispanic-Latino, and non-English-speaking patients were less likely to receive a prescription for antibiotics compared with white, non-Hispanic/Latino,

Table 2. Existing Research on Language Congruent Care Outcomes, Quality Improvement and Implementation, With Examples of Similar Strategies to Improve Healthcare-Associated Infection Outcomes

Study	Intervention/Observation	Outcome	Potential Application
Parker et al ⁴⁴	Latino patients with EEP changed from language incongruent provider to language congruent provider.	10% improvement in glycemic control	Improving diversity, equity, and inclusion initiatives to recruit and support bilingual providers and healthcare workers
Rajbhandari et al ⁴⁵	Improved identification of families with EEP and standardize interpreter services and documentation	Improvement in interpreter use from 64% to 97% of inpatient admissions	Include language preference in admission documentation and standardize interpreter use during hospitalization
Karliner et al ³⁶	Provided bedside dual-handset interpreter phones to all patients with EEP	Decrease in readmissions among patients with EEP during intervention period	Provide interpreter phones to all patients with EEP on contact/airborne/respiratory precautions
Johnston et al ⁴⁶	In-office interpreters for visits and interpreters contacting patients prior to appointments	Decrease in no-show rate and decrease in office visit length when in person interpreter was used	Interpreters call patients with EEP who are high risk for HAI (surgical site or device) after discharge and utilize interpreters in follow-up appointments
Jang et al ⁴⁷ , Lion et al ⁴⁸	Families with EEP randomized to either English or language congruent written (Jang) or recorded (Lion) instructions in addition to language congruent verbal instructions	High satisfaction, acceptability, and feasibility of language congruent written or audio instructions	Providing multilingual templates for postoperative or device care instructions

Note. EEP, emerging English proficiency; HAI, healthcare-acquired infection.

English-speaking patients.⁴¹ Additional research is needed to identify the impact of patient language on antibiotic prescribing and counselling. There are many barriers to qualified language interpreter use, including financial. Despite the improved healthcare outcomes associated with language congruent care, providers frequently cite cost as a barrier to interpreter use.⁴² Insurance payments for interpreter services has been a proposed health policy for almost 20 years; nevertheless, very few insurance plans pay for interpreter staff or services.^{42,43} Policy changes are required to support provider use of interpreters. Although our proposed strategies may improve patient infection prevention education, a multidisciplinary approach is required to address the many drivers of inequitable care for patients with EEP.

Conducting rigorous research among communities with EEP requires specific skills and experience. As the healthcare epidemiology and infection prevention community begins to examine the impact of language on HAIs, we should engage our colleagues with expertise in health equity and language. Partnering with researchers from a wide range of disciplines, providers, patients and families with EEP is crucial for developing interventions that successfully address any found inequities contributing to HAI risk. Language is an integral component of infection prevention. Providing language congruent care, through educational resources, strengthened interpreter services, and multilingual healthcare workers, is essential to protect all patients from preventable harm.

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