

# National Survey of Medical Spanish Curriculum in U.S. Medical Schools

Raymond Morales, MD, PhD<sup>1</sup>, Lauren Rodriguez, MD<sup>2</sup>, Angad Singh, MPH, MD<sup>3</sup>, Erin Stratta, MD<sup>4</sup>, Lydia Mendoza, MD<sup>5</sup>, Melissa A Valerio, PhD<sup>6</sup>, and Monica Vela, MD<sup>7,8</sup>

<sup>1</sup>Department of Pediatrics, Kaiser Permanente, Oakland, CA, USA; <sup>2</sup>Department of Emergency Medicine, Emergency Medicine at Henry Ford Hospital, Detroit, MI, USA; <sup>3</sup>Department of Family Medicine, University of Washington, Seattle, WA, USA; <sup>4</sup>Contra Costa Regional Medical Center, Martinez, CA, USA; <sup>5</sup>University of California, Davis, Sacramento, CA, USA; <sup>6</sup>Health Promotion and Behavioral Science, School of Public Health, The University of Texas Health Science Center at Houston, San Antonio, TX, USA; <sup>7</sup>Department of Medicine, University Of Chicago Pritzker School Of Medicine, Chicago, IL, USA; <sup>8</sup>Biological Sciences Learning Center, Chicago, IL, USA.

**BACKGROUND:** Patients with limited English proficiency (LEP) may be at risk for medical errors and worse health outcomes. Language concordance between patient and provider has been shown to improve health outcomes for Spanish-speaking patients. Nearly 40 % of Hispanics, a growing population in the United States, are categorized as having limited English proficiency. Many medical schools have incorporated a medical Spanish curriculum to prepare students for clinical encounters with LEP patients.

**OBJECTIVE:** To describe the current state of medical Spanish curricula at United States medical schools.

**METHODS:** The Latino Medical Student Association distributed an e-mail survey comprising 39 items to deans from each U.S. medical school from July 2012 through July 2014. This study was IRB-exempt.

**RESULTS:** Eighty-three percent (110/132) of the U.S. medical schools completed the survey. Sixty-six percent (73/110) of these schools reported offering a medical Spanish curriculum. In addition, of schools with no curriculum, 32 % (12/37) planned to incorporate the curriculum within the next two years. Most existing curricula were elective, not eligible for course credit, and taught by faculty or students. Teaching modalities included didactic instruction, role play, and immersion activities. Schools with the curriculum reported that the diverse patient populations in their respective service areas and/or student interest drove course development. Barriers to implementing the curriculum included lack of time in students' schedules, overly heterogeneous student language skill levels, and a lack of financial resources. Few schools reported the use of validated instruments to measure language proficiency after completion of the curriculum.

**CONCLUSIONS:** Growing LEP patient populations and medical student interest have driven the implementation of medical Spanish curricula at U.S. medical schools, and more schools have plans to incorporate this curriculum in the near future. Studies are needed to reveal best practices for developing and evaluating the curriculum.

---

*Drs. Raymond Morales and Lauren Rodriguez contributed equally to this study and paper and should both be considered first authors.*

---

Received July 28, 2014

Revised January 30, 2015

Accepted March 13, 2015

Published online April 11, 2015

**KEYWORDS:** Medical Spanish curriculum; Limited English proficiency; Medical interpreters; Hispanic health; Disparities.

J Gen Intern Med 30(10):1434-9

DOI: 10.1007/s11606-015-3309-3

© Society of General Internal Medicine 2015

---

## INTRODUCTION

Individuals with limited English proficiency (LEP) are not able to speak, read, write, or understand the English language at a level that permits them to interact effectively with health care providers.<sup>1</sup> These language-based limitations place patients with LEP at increased risk of health and health care disparities. Language concordance between patient and provider has been shown to improve health outcomes for LEP patients.<sup>2</sup> Language concordance between clinician and patient improves patient satisfaction and overall hospital experience, reduces emergency department visits, and reduces cost per patient.<sup>3</sup> Importantly, it also reduces rates of physical harm from adverse medical events.<sup>4</sup>

In the United States, the preponderance of LEP individuals (over 60 %) are Spanish-speaking.<sup>5</sup> In addition, the current Hispanic population, estimated at 14.8 %, <sup>6</sup> is expected to grow to 24 % of the United States population by 2050.<sup>7</sup> Some experts have recommended increasing the number of Spanish-speaking physicians through a medical Spanish curriculum for residents and medical students.<sup>8</sup> Spanish language training programs already exist within undergraduate medical education. Unfortunately, existing programs are not widely reported or well described in the medical education literature. The only information that exists regarding the prevalence of medical Spanish curricula in undergraduate medical education is from a study conducted by Maben et al in 2005,<sup>9</sup> in which the authors searched medical school websites and found that 48 % of schools advertised the availability of medical Spanish experience for students.<sup>9</sup> The most recent descriptive study, published by Reuland and colleagues<sup>10</sup> in 2008, was a detailed review of the medical Spanish curriculum offered at the University of North Carolina's medical school. The authors established six principles that should be core components of a medical Spanish curriculum.<sup>10</sup> While these principles could

serve as the foundation for standardizing curricula, however, little has been published in this field since this landmark study.

Given the growing demographic of Spanish-speaking patients and the preponderance of evidence in favor of language-concordant care, it is critical to establish the current state of medical Spanish curricula at U.S. medical schools. The objective of this study was to describe the availability, characteristics of, and obstacles to establishing a medical Spanish curriculum among U.S. medical schools. The purpose of this paper is to highlight findings from a national survey of medical school deans that may serve as a platform on which to inform the evolution of medical Spanish curricula in the future.

## METHODS

In 2011, the Latino Medical Student Association<sup>11</sup> (LMSA) convened a committee to study the issue of medical Spanish curricula. LMSA is a nonprofit organization with over 4000 medical student and premedical student members. One of LMSA's primary missions is to advocate for the rights of Latinos in health care. The committee pursued a national study after it was able to find only the above-mentioned studies on medical Spanish courses in undergraduate medical education published in the literature. Our study utilized a survey instrument delivered via e-mail to deans of medical schools in the United States. The study was reviewed and exempted by the University of Michigan Medical School Institutional Review Board (IRB HUM00054858).

## Survey Development

The authors held several one-hour focus group discussions with medical student leadership of the national Latino Medical Student Association. After each focus group, the authors met to review and summarize major themes. The three major themes that emerged from these discussions noted that 1) the medical Spanish curriculum at each institution varied greatly in its delivery, 2) the course assessment was minimal, and 3) the course delivery was student-initiated and student-driven. The authors also conducted a literature search of medical Spanish curriculum studies. Of particular importance was the study published by Reuland et al.,<sup>10</sup> which established six principles as core components of a medical Spanish curriculum. Survey development involved incorporating five of the six principles addressed in Reuland's study as survey content areas and added three additional areas.

Additional content areas were included in the survey to highlight potential practical challenges to implementing the curriculum, as follows: 1) obstacles to delivering a medical language curriculum, 2) student roles in interpreting during clinical encounters, and 3) factors prompting curriculum development. This information may be helpful to educators and researchers interested in designing medical Spanish curricula and setting standards for evaluation of such a curriculum. Questions from these eight content areas included items on modes of instruction, levels of education, and course credits (Table 1). The survey included 30 quantitative and 9 open-ended short-answer components with computed descriptive characteristics.

Table 1. Survey Content Areas and Sample Survey Items

Survey content area	Sample survey items
Principle 1. The program should be longitudinal and provide multiple learning modalities.*	What modes of instruction are utilized in the course?
Principle 2. The program should focus resources on medical students entering with intermediate or advanced-level Spanish proficiency to safely provide language-concordant care.*	How many years has the course existed at your school?
Principle 3. The program should have official status within the medical school, and students should receive academic credit.*	Can students with no Spanish language ability enroll in one of the medical Spanish levels offered at your institution?
Principle 4. When feasible, the program should be integrated with existing medical school curricula.*	Are multiple levels of instruction available to students?
Principle 5. The primary focus should be on language and communication skills, with cultural issues an important but secondary focus.*	Please describe the course credit that students receive:
Principle 6. Validated, reliable measurements of language proficiency should be used for assessment of students and for program evaluation.*	Is the medical Spanish course required for completion of a scholarly concentration?
	Who is primarily responsible for instruction of each level?
	Not addressed by survey
	How are students evaluated at the end of the course? <i>Please select all that apply.</i>
	• Written Exam
	• Oral Exam
	• OSCE/standardized patient evaluation
	• Other (Please list any other modes of evaluation.)
7.† Factors prompting course development	What prompted the development of the course at your medical school?
8.‡ Obstacles to delivering medical language curricula	Has your medical school ever had a medical Spanish course?
9.‡ Student roles and competency in interpreting during clinical encounters	Are students at your medical school allowed to conduct patient interviews in Spanish?
	Are students allowed to serve as interpreters in university-affiliated hospitals?
	What prompted the development of the course at your medical school?

\*These principles adapted from Reuland et al. A longitudinal medical Spanish program at one US medical school. *J Gen Intern Med.* 2008;23(7):1033-7.

†These principles were added through our survey development process.

Reuland et al.<sup>10</sup> recommend that cultural issues should be an important but secondary focus of the medical Spanish curriculum. We did not pursue the cultural component of the curriculum in this survey. The topic of medical education on cultural competency or sensitivity has already been well explored in the literature.<sup>12–14</sup> In addition, Spanish is the official language in 21 countries on four different continents, each with vastly different cultures. Thus, addressing cultural competency or sensitivity education was beyond the scope of our survey.

## Survey Participants

Medical schools listed as institutional members of the Association of American Colleges (AAMC)'s Group on Education Affairs (GEA) were considered for the study.<sup>15</sup> Schools located in Canada were excluded because of the low number of documented Spanish-speaking LEP residents in the country. Thus, while the GEA lists 148 schools, we included only 132 schools in the analysis for this study. The equivalent of the dean of medical education at each school was identified by the Council of Deans (COD) of the Association of American Medical Colleges (AAMC).

## Survey Distribution

Surveys were distributed via e-mail. The e-mail encouraged the dean of medical education to complete the study or forward the e-mail to a designee at their institution for completion. No incentive was offered. From June through August 2012, participants were contacted by e-mail exchange and provided with the link to a self-administered Qualtrics<sup>16</sup> survey that was anticipated to take approximately 20–40 minutes to complete. However, participants were allowed to start, save, and continue the survey at any point during the study period. Follow-up e-mail reminders were distributed to non-completers on three occasions over 8 months until January 2013. A final set of e-mails to non-responders was sent in June 2014. The survey response rate reached our goal of over 80 %.

## Data Analysis

The Qualtrics raw data was exported to an Excel<sup>17</sup> spreadsheet. Descriptive statistics used means, standard deviations, and proportions. Chi-square tests were used to determine whether school demographics were associated with the existence of a medical Spanish curriculum. Logistic regression was performed to assess the association between the outcome (existence of medical Spanish curriculum) and the dependent variables (private school, LEP state, and AAMC region).

## RESULTS

Of the 132 medical school campuses included in the study, 83 % (110/132) completed the survey. Table 2 shows the number of participating schools by geographic region as defined by the AAMC GEA.<sup>15</sup> Response rates were consistent

**Table 2. Participating Medical Schools by AAMC Geographic Region**

AAMC Region	Total number of schools in region*	Schools per region participating in study* n (%)	Participating schools with a medical Spanish curriculum* n (%)
Central	31	29 (94)	17 (59)
Northeastern	35	32 (91)	19 (61)
Western	17	14 (82)	10 (71)
Southern	48	35 (73)	27 (77)

\*excluding schools in Canada

throughout the regions, and among responders, implementation of programming was fairly consistent throughout the region.

Although 110 schools completed the survey, response rates varied for each survey item. Therefore, in the text below, response rates are designated in the denominator in the parentheses for each item.

## Prevalence of Medical Spanish Curriculum

Sixty-six percent of schools (73/110) reported that a medical Spanish curriculum was available at their school at the time the survey was completed. Of schools with medical Spanish curricula, 62 % (45/73) reported that the curriculum had existed for 5 or more years at the time of the survey. Thirty-two percent (12/37) of schools with no curriculum planned to incorporate the curriculum within the next 2 years.

LEP individuals account for 9 % of the U.S. population, and primarily reside in six traditional immigrant-destination states—California, Texas, New York, Florida, Illinois, and New Jersey.<sup>5</sup> We compared the curriculum in schools located in these states with schools across the rest of the country (Table 3). We found no association between a medical Spanish curriculum and whether a school was located in a high-LEP-population state or region of the country, or in a private versus public school (Table 3).

## Impetus for Course Development

Among schools with medical Spanish curricula, the two most common reasons for incorporating the language curriculum were: 1) the growing Spanish-speaking patient population (56 %, 35/62), and 2) student interest (53 %, 33/62). Fourteen schools developed a medical Spanish course due to physician

**Table 3. School Characteristics and Medical Spanish Coursework**

	Coursework exists	Coursework does not exist	p value
Medical school (n=110)			
Public	30	15	p>0.99
Private	43	22	
LEP state status (n=110)			
High (6 states)	26	11	p=0.76
All other states	47	25	

or faculty initiative. Eight schools reported that the curriculum was developed in order to encourage cultural sensitivity or competency among the student body.

Of the schools that did not offer a medical Spanish curriculum, 27 % (10/37) had previously offered one that was discontinued. Thirty-two percent (12/37) reported that students had expressed an interest in a medical Spanish curriculum in the 2 years prior to survey completion. Thirty-two percent (12/37) planned to incorporate a curriculum within the next 2 years.

### Instruction Modalities and Instructors

Schools were asked to acknowledge all of the instruction modalities involved in the curriculum. Of the 73 schools with a language curriculum, 84 % (56/67) reported using multiple modalities. Didactic instruction (90 %, 60/67) and student-to-student role play (69 %, 46/67) were the primary modes of instruction utilized in medical Spanish curricula across the country. Other common forms of instruction included standardized patients (46 %, 31/67) and clinical encounters with patients (34 %, 23/67). Forty-three percent (29/67) of campuses with medical Spanish curricula offered clinical Spanish language immersion experiences locally or abroad. Many institutions had developed other tools that included interpreter shadowing, on-line modules, case discussions, and interpreter Objective Structured Clinical Examinations (OSCE).

Of the schools offering medical Spanish curricula, most reported that the primary party instructing the students was a faculty member (60 %, 37/62). Six schools reported that students were the sole party responsible for instruction. Four institutions reported that they utilized an outside firm/company. Only six campuses reported having a paid trained medical interpreter responsible for instruction. Five reported using language instructors without medical training, and two reported the use of a non-medical commercial language program.

### Scholarly Recognition/Course Credit

Upon completion, course credit was offered at 62 % (41/66) of the schools with a language curriculum. Other forms of recognition included a certificate of completion, a letter or notation included in a student's file, and course completion noted on a student's transcript. A few institutions indicated that they recognized completion of the curriculum in the dean's letter for residency applications.

### Evaluation Tools

Pre-course language proficiency evaluation varied from institution to institution. Only 21 % (14/66) of institutions offering medical Spanish required some pre-course language proficiency. Fifty-nine percent of schools (39/66) reported offering multiple levels of medical Spanish curricula.

Post-course student skill evaluation most often involved oral exams (47 %, 31/66) and written exams (39 %, 26/66). Twelve institutions utilized an OSCE/standardized patient evaluation. Thirty percent (20/66) of these schools reported that the evaluation tools were developed by the instructors. However, other forms of evaluation varied widely and included, but were not limited to, attendance and participation and self-assessment (11 %, 7/66). Of note, one institution utilized an oral exam administered via a commercial phone service to assess interpreter competency.

### Students Working With LEP Patients

Of the schools with medical Spanish curricula, 75 % (51/68) reported that their students conducted patient interviews in Spanish or that students served as interpreters in university-affiliated hospitals and in other health facilities such as local community clinics. Of these schools, 57 % (29/51) did not require any proof of student language competency prior to these clinical Spanish language experiences. Thirty-five percent (18/51) of the schools did report some requirements for students interested in conducting patient interviews in Spanish or serving as interpreters for Spanish-speaking patients. Proficiency or interpreter certification tests were required at 14 of the schools, and completion of a medical Spanish course was required at three. One school required evaluation of student-patient interview skills under direct instructor supervision.

### Barriers to Implementation

Many institutions faced significant barriers to implementation of their medical Spanish curricula. Among schools with and without the curriculum, 73 % (58/79) noted significant obstacles. The most common were a lack of time in the curriculum (51 %, 40/79), overly heterogeneous student skill levels (25 %, 20/79), the cost of running the course (28 %, 22/79), and lack of student retention (18 %, 14/79). In addition, schools cited insufficient faculty support (20 %, 16/79). Two schools noted that their students' first language was Spanish.

Among the ten schools that had discontinued the curriculum, the most common reason (n=3) for discontinuation of the course was that too many students had signed up for the course, making it too expensive to support.

## DISCUSSION

This is the first study to describe the expanding state of medical Spanish curricula in schools of medicine across the United States. Most medical schools with the curriculum reported that growing LEP patient populations and medical student interest had driven implementation. The efforts of these medical schools to address the growing need for Spanish language skills among physicians are impressive.

Positive findings included that some curricular characteristics were in keeping with the principles outlined by Reuland

et al.'s landmark paper.<sup>10</sup> First, teaching modalities were varied and included didactic instruction, role play, standardized patients, and immersion activities. Second, multiple levels of instruction were available to students at over half of the schools.

However, we were disconcerted by other findings. Despite the importance of this curriculum, many schools offered no incentive for students to complete the curriculum (i.e., no course credit). In addition, language proficiency after completion of the curriculum often went untested or was tested using non-standardized measures. Few institutions required any evidence of language proficiency before allowing students to care for LEP patients.

This study had several limitations. First, our data collection process relied on public records of deans' contact information. Second, the survey was conducted over 2 years, and it is possible that schools who responded early in this time period developed a medical Spanish curriculum that went unaccounted for in the study. Third, while we learned a great deal about current content and prevalence of medical Spanish curricula in undergraduate medical education, it was not within the scope of this paper to evaluate the efficacy of current teaching modalities or quality of curricula.

Finally, even language-concordant care at a provider's office will not solve all of the issues that place LEP patients at risk for health and health care disparities. While the proportion of LEP individuals with inadequate health literacy has not been well established, it is thought to be higher than that of fluent English speakers.<sup>18,19</sup> Inadequate health literacy will affect many health measures outside the providers' offices. At the very least, it is likely that language concordance among patients and providers may improve awareness of a patient's health literacy.

## CONCLUSIONS

The Hispanic population in the United States is growing exponentially.<sup>7</sup> A lack of appropriate interpreter services and language concordance between physicians and patients contributes to an increased risk of adverse medical events.<sup>2-4</sup> Efforts to support the development of Spanish language-proficient health providers have included medical Spanish language training programs at medical schools across the United States. Unfortunately, the medical Spanish curriculum remains poorly described in the literature and non-validated.

Research does show that patient safety suffers when providers simultaneously overestimate their skills and underutilize interpreters.<sup>8,20-24</sup> Therefore, this curriculum must be paired with careful evaluation and certification of student skill levels and instruction to use formal interpreter services whenever possible in order to avoid medical errors and compounding health disparities for LEP patients. Instructors may need to look to well-established agencies that provide certification for formal interpreters for best practices in

evaluating the language proficiency and interpreter skills of medical students. This study highlights the heterogeneity of curricula offered at U.S. medical schools. Thus, further research involving process and outcome measures is needed in order to establish best practices for developing and evaluating curricula. Once these best practices have been established, appropriate non-English medical curricula may allow medical educators to promote medical students' non-English language skills to serve all growing LEP populations.

---

**Acknowledgments: Contributors:** *The authors wish to thank all of the students of the Latino Medical Student Association for their support of this study and their efforts to improve Latino health. We thank all of the deans who took the time to complete the survey and share their viewpoints and efforts in promoting medical Spanish curricula. We thank numerous faculty at the University of Michigan and the University of Chicago for guidance with developing the survey. A special thanks to Michael McGinty for his help distributing the survey. We thank Dr. Giselle Dutcher for her positive support of the authors. We thank Dr. Valerie Press, Dr. Wei Wei Lee and Nicole Twu for their helpful reviews of the manuscript.*

**Funders:** None.

**Prior Presentations:** *This work has yet to be presented at any national conference.*

**Conflict of Interest:** *The authors declare no conflicts of interest.*

**Other Disclosures:** None.

**Ethical Approval:** *This study was approved as exempt by the University of Michigan Medical School Institutional Review Board (IRB): HUM00054858.*

**Corresponding Author:** *Monica Vela, MD; Biological Sciences Learning Center, Suite 104, 924 East 57th St, Chicago, IL 60637, USA (e-mail: mvela@medicine.bsd.uchicago.edu).*

## REFERENCES

- Office of Civil Rights Guidance to Federal Financial Assistance Recipients Regarding Title VI Prohibition Against National Origin Discrimination Affecting Limited English Proficient Persons. 2002. Available at: <http://www.lep.gov>. Accessed March 13, 2015.
- Fernandez A, Schillinger D, Grumbach K, et al. Physician language ability and cultural competence. *J Gen Intern Med.* 2004;19:167-74.
- Jacobs E, Sadowski L, Rathouz P. The impact of an enhanced interpreter service intervention on hospital costs and patient satisfaction. *J Gen Intern Med.* 2007;22(2):306-11.
- Divi C, Koss RG, Schmaltz SP, Loeb JM. Language proficiency and adverse events in US hospitals: a pilot study. *Int J Qual Health Care.* 2007;19(2):60-7.
- National Center on Immigrant Policy. LEP Data Brief Report. 2011. Limited English Proficient Individuals in the United States: Number, Share, Growth, and Linguistic Diversity Available at: <http://www.migrationpolicy.org>. Accessed on March 13, 2015.
- U.S. Census Bureau, Ethnicity and Ancestry Branch. U.S. Census Bureau, Population Estimates July 1, 2000 to July 1, 2006. Available at: <http://www.census.gov/population/hispanic/data/2012.html> [http://www.census.gov/population/hispanic/files/hispanic2006/Internet\\_Hispanic\\_in\\_US\\_2006.pdf](http://www.census.gov/population/hispanic/files/hispanic2006/Internet_Hispanic_in_US_2006.pdf) Accessed March 13, 2015.
- U.S. Census Bureau, Ethnicity and Ancestry Branch. U.S. Census Bureau 1970, 1980, 1990, and 2000 Decennial Censuses; Population Projections, July 1, 2010 to July 1, 2050. Available at: [http://www.census.gov/population/hispanic/files/hispanic2006/Internet\\_Hispanic\\_in\\_US\\_2006.pdf](http://www.census.gov/population/hispanic/files/hispanic2006/Internet_Hispanic_in_US_2006.pdf). Accessed March 13, 2015.
- Flores G, Mendoza FS. Dolor aquí? Fiebre?: a little knowledge requires caution. *Arch Pediatr Adolesc Med.* 2002;156(7):638-40.
- Maben K, Dobbie A. Current practices in medical Spanish teaching in US medical schools. *Fam Med.* 2005;37(9):613-614.

10. **Reuland DS, Fraiser PY, Slatt LM, Alemán MA.** A longitudinal medical Spanish program at one US medical school. *J Gen Intern Med.* 2008;23(7):1033–7.
11. Latino Medical Student Association National. Available at: <https://lmsa.site-ym.com/>. Accessed February 9, 2014.
12. **Betancourt J.** Cross-cultural medical education: conceptual approaches and frameworks for evaluation. *Academic Medicine.* 2003;78(6):560–569.
13. **Kripalani S, Bussey-Jones J, Katz BG, Genao I.** Prescription for cultural competence in medical education. *J Gen Intern Med.* 2006;21(10):1116–1120.
14. **Beach MC, Price EG, Gary TL, Robinson KA, Gozu A, Palacio A, Smarth C, Jenckes MW, Feuerstein CBA, Bass EB, Powe N, Cooper LC.** Cultural Competency: A Systematic Review of Health Care Provider Educational Interventions. *Med Care.* 2005;43(4):356–373.
15. Association of American Colleges Group on Educational Affairs. Available at: <https://www.aamc.org/members/gea/regions/gea>. Accessed March 13, 2015.
16. Qualtrics 2012 online survey software. Available at: <http://www.qualtrics.com/>. Accessed March 13, 2015.
17. Excel Microsoft Windows 8. Available at: <http://www.office.microsoft.com/en-us/excel/>. Accessed January 23, 2015.
18. **Berkman N, DeWalt D, Pignone M, et al.** Literacy and Health Outcomes. Agency for Health Care Research and Quality; Rockville, MD; 2004.
19. **Nielsen-Bohlman L, Panzer A, Kindig D, eds.** Health Literacy: A Prescription to End Confusion. Washington, DC: National Academies Press; 2004.
20. **Burbano O'Leary SC, Federico S, Hampers LC.** The truth about language barriers: one residency program's experience. *Pediatrics.* 2003;111:569–73.
21. **Elderkin-Thompson V, Silver RC, Waitzkin W.** When nurses double as interpreters: a study of Spanish-speaking patients in a US primary care setting. *Soc Sci Med.* 2001;52:1343–58.
22. **Prince D, Nelson M.** Teaching Spanish to emergency medicine residents. *Acad Emerg Med.* 1995;2(1):32–37.
23. **Yawmna D, McIntosh S, Fernandez D, Auinger P, Allan M, Weitzman M.** The use of Spanish by medical students and residents at one university hospital. *Acad Med.* 2006;81(5):468–73.
24. **Diamond LC, Schenker Y, Curry L, Bradley EH, Fernandez A.** Getting by: underuse of interpreters by resident physicians. *J Gen Intern Med.* 2009;24:256–62.