

List of author names, degrees, affiliations, and complete contact information

Corresponding Author:

Danielle E. Rose, PhD, MPH

VA HSR&D Center for the Study of Healthcare Provider Behavior

VA Greater Los Angeles Healthcare System

16111 Plummer Street (152)

Sepulveda, CA 91343-2036

Phone: (818) 891-7711x2387

Fax: (818) 895-5838

E-mail: droseash@gmail.com

Diana M. Tisnado, PhD

Geffen School of Medicine at UCLA

Department of Medicine

Division of General Internal Medicine & Health Services Research

911 Broxton Plaza

Box 951736

Los Angeles, CA 90095-1736

Telephone: (310) 794-0711

Fax: (310) 794-0732

Email: dtisnado@mednet.ucla.edu

Jennifer L. Malin, MD, PhD

VA Greater Los Angeles Healthcare System

11301 Wilshire Blvd.

Building 500 Room, Room 4237

Los Angeles, CA 90073

(310) 478-3711 ext. 44293

Malin.Jennifer_L@WEST-LA.MED.VA.GOV

May L. Tao, MD, MS

East Bay Partners In Cancer Care

4721 Dallas Ranch Road

Antioch, CA 94531

925 778 0679

maylin.tao@epic-care.com<mailto:maylin.tao@epic-care.com>

Melinda A. Maggard, MD, MS

Assistant Professor in Residence

David Geffen School of Medicine at UCLA

Department of Surgery

and

UCLA Division of Cancer Prevention & Control Research

School of Public Health and Jonsson Comprehensive Cancer Center

Box 956904, 72-247 CHS

Los Angeles, CA 90095-6904
Telephone: 310-825-0739
Fax: 310-206-2472
E-mail: mmaggard@mednet.ucla.edu

John L. Adams, Ph.D.
Senior Statistician
RAND
1776 Main Street
P.O. Box 2138, M/S: M5N
Santa Monica, CA 90407-2138
Telephone: (310) 393-0411 x7917
Fax: (310) 260-8157
Email: adams@rand.org

Patricia A. Ganz, MD
Professor of Medicine and Public Health
David Geffen School of Medicine at UCLA & UCLA School of Public Health
Jonsson Comprehensive Cancer Center
PO Box 956900, A2-125 CHS
Los Angeles, CA 90095-6900
Telephone: 310-206-1404
Fax: 310-206-3566
E-mail: pganz@ucla.edu

Katherine L. Kahn, MD
David Geffen School of Medicine at UCLA
UCLA Department of Medicine
Division of General Internal Medicine & Health Services Research
911 Broxton Plaza
Box 951736
Los Angeles, CA 90095-1736
Telephone: (310) 794-2287
Fax: (310) 794-0732
Email: kkahn@mednet.ucla.edu

Title Page

**Use of interpreters by physicians treating
Limited English Proficient (LEP) women with breast cancer:
results from the provider survey of
the Los Angeles Women's Health Study**

Manuscript ID: HSR-08-0149

Danielle E. Rose
Diana M. Tisnado
Jennifer L. Malin
May L. Tao
Melinda A. Maggard
John Adams
Patricia A. Ganz
Katherine L. Kahn

Acknowledgement section (particularly to acknowledge funding support).

This research was funded by the UCLA Cancer Education and Career Development Program, National Cancer Institute Grant# R25 CA087949, the California Breast Cancer Research Program Grant# 7PB-0126S, and the National Cancer Institute and the Agency for Healthcare Research and Quality Grant# 1-R01-CA81338-01A1. We thank the two anonymous referees for their helpful comments.

Any conflicts of interest such as financial interests that should be published.

None.

Any disclaimer statements from your employer or funder.

The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.

This research was presented as a poster at AcademyHealth's 2006 Annual Research Meeting. "Use of interpreter services among healthcare providers treating women with breast cancer: Findings from Los Angeles County, 2004" Rose Ash, D, Tisnado, DM, Malin J, Tao, ML, Ganz, P, Kahn, KL. Annual Research Meeting, AcademyHealth, June 25-27, 2006.

ABSTRACT

Objective

Little is known about how cancer physicians communicate with Limited English Proficient (LEP) patients. We studied physician-reported use and availability of interpreters.

Data Sources

A 2004 survey was fielded among physicians identified by a population-based sample of breast cancer patients. 348 physicians completed mailed surveys (response rate: 77%) regarding the structure and organization of care.

Study Design and Settings

We used logistic regression to analyze use and availability of interpreters.

Principal Findings

Most physicians reported treating LEP patients. Among physicians using interpreters within the last 12 months, 42% reported using trained medical interpreters, 21% telephone interpreter services, and 75% reported using untrained interpreters to communicate with LEP patients. Only one-third of physicians reported good availability of trained medical interpreters or telephone interpreter services when needed. Compared to HMO physicians, physicians in solo practice and single specialty medical groups were less likely to report using trained medical interpreters or telephone interpreter services, and were less likely to report good availability of these services.

Conclusions

There were important practice setting differences predicting use and availability of trained medical interpreters and telephone interpretation services. These findings may have troubling implications for effective physician-patient communication critically needed during cancer treatment.

Keywords:

Physician survey; Limited English Proficient patients; interpreters; breast cancer care

INTRODUCTION

There are growing numbers of Limited English Proficient (LEP) residents in the United States (U.S.). According to the 2000 U.S. Census, 24 million or 9% of U.S. residents are LEP. The Census identifies LEP residents by first asking respondents if they speak a language other than English at home. Respondents who answer affirmatively are asked how well they speak English. Those who answer less than “very well,” are designated as LEP (U.S. Census Bureau, 2006). In Los Angeles County, 27% or 2.5 million residents are LEP. (U.S. Census Bureau, 2006) Among LEP Los Angeles County residents, 71% report speaking Spanish; however there are populations of 1,000 or more representing more than 30 languages. (U.S. Census Bureau 2000; Nichols et al. 2003)

As LEP patients seek treatment in a predominantly English-speaking healthcare system, considerable gaps exist in knowledge about how physicians and healthcare organizations address linguistic barriers. The Institute of Medicine and other supporters of patient-centered care have advocated that patients should have the opportunity to participate in decision-making about treatments and to communicate their symptoms and experiences to their clinicians regardless of English language proficiency. (Institute of Medicine Committee on Quality of Health Care in America 2001; Davis et al. 2000) Studying how physicians caring for cancer patients address language barriers could be particularly useful as these patients typically require explicit education to partake of patient-centered care and optimally participate in treatment decisions. (Kahn et al. 2002).

For example, women newly diagnosed with breast cancer frequently face a series of complex decisions regarding treatments in the face of symptoms and impaired quality of life. To make informed decisions, women typically need information and opportunities to meaningfully consider risks, benefits and quality of life trade-offs. After treatment is initiated, women often need to engage with clinicians about their tolerance for treatments and side effects. Yet a number of barriers, including language concordance between patient and provider constrain physician-patient communication. (Epstein and Street 2007; Sepucha et al. 2002) In this paper, we focus on language barriers between English-speaking physicians and LEP breast cancer patients.

RELATED LITERATURE

Limited English proficiency is reported to have a negative impact on access to care (Ponce et al. 2006; Ponce, Hays and Cunningham 2006; Flores 2006; Yu et al. 2006; Timmins 2002) and quality of care (Smedley, Stith and Nelson, 2003; Divi et al. 2007; Flores and Ngui 2006; Ayanian et al. 2005; Ngui and Flores 2006; Chung et al. 2006; Wilson et al. 2005; Morales et al. 1999; Karliner et al. 2007). Studies have suggested that interpreters may improve quality of care for LEP patients. (Karliner et al. 2007; Flores 2005; Green 2005; Kuo and Fagan 1999; Kuo et al. 2007) However, few studies characterize interpreter type, potentially blurring distinctions between interpreters (e.g., trained medical interpreter; telephone language interpretation services; bilingual staff not specifically trained in medical interpretation, and patient's friends or family members). Studies distinguishing interpreter by type have found that trained medical interpreters provide effective and efficient interpretation. (Sarver and

Baker 2000) Still, physicians using interpreters face certain challenges (Rosenberg, Leanza and Seller 2007; Gadon, Balch and Jacobs 2007; Karliner, Perez-Stable and Gildengorin 2004; Fagan et al. 2003), including longer visits (Fagan et al. 2003; Kravitz et al. 2000; Tocher and Larson 1999), and inconsistent interpreter effects on care and outcomes (Gadon, Balch and Jacobs 2007; Green et al. 2005; Sarver and Baker 2000). Previous work with primary care physicians demonstrated that caring for LEP patients was more time-consuming (Fagan et al. 2003; Kravitz et al. 2000; Tocher and Larson 1999), unless the physician used a trained hospital interpreter (Tocher and Larson 1999).

This study reports results from a 2004 survey of physicians identified as providers by a population-based cohort of women newly diagnosed with breast cancer. We queried physicians about the proportion of LEP patients in their main practice (e.g., the proportion who do not speak English well enough to give an adequate history) and types of interpreters used to communicate with LEP patients within the last 12 months. This paper contributes to understanding how physicians communicate with patients in the presence of language barriers, and the availability of different types of interpreters when needed.

DATA

This cross-sectional study queried physicians identified as fulfilling key roles by a population-based sample of breast cancer patients in the Los Angeles Women's Health Study (LAW) (Yoon et al. 2007 – 1; Yoon et al. 2007 – 2; Chen et al. 2008) regarding the structure and organization of breast cancer care. (Tisnado et al. 2008)

Physicians were considered as fulfilling key roles if they were named by a patient as specifically performing a cancer-related function such as being the doctor in charge of decision-making for delivery of chemotherapy, radiation therapy or surgery. (Kahn et al. 2007) The sampling strategy is explained in greater detail in Appendix A. The research team obtained 348 mailed surveys from physicians associated with 298 unique office addresses (final response rate: 77%; 63% for medical oncologists; 88% for radiation oncologists; 75% for surgeons). After declining to respond to questions about LEP patients and interpreters, one physician was excluded. The sample for this analysis includes 111 medical oncologists, 65 radiation oncologists and 171 surgeons (n=347). This study was approved by the RAND and UCLA Institutional Review Boards.

Dependent Variables

From the survey of cancer physicians in Los Angeles County, we selected three domains for analysis: proportion of LEP patients, use of interpreters, and availability of interpreters when needed.

Proportion of LEP Patients: Physicians were asked to identify the proportion of patients in their main practice who do not speak English well enough to give an adequate history, and to identify the language spoken by the majority of their LEP patients.

Use of Interpreters: Physicians were queried about interpreters they used in communicating with LEP patients within the last 12 months. Survey respondents were allowed to indicate use of more than one type of interpreter. Response options included communicating without an interpreter since the physician was language

concordant with the LEP patient, or using: trained medical interpreters; telephone language interpretation services; bilingual office staff *not specifically trained in medical interpretation*; and/or patients' friends or family members as interpreters. The definitions of interpreter types represented by our response options are similar to those described by Hsieh (2006); Anderson et al. (2003); Downing and Roat (2002); and Tanjasiri (2000). However, physicians reporting use of trained medical interpreters or telephonic interpreters may not have had knowledge of the extent of training in medical terminology undertaken by either in-person or telephonic interpreters. Since trained medical interpreters can be in-person or available by phone, the trained medical interpreter category and the telephonic interpreters will not always be mutually exclusive. Cognitive interviews with these physicians indicated they understood the term "trained medical interpreter," as a way to categorize in-person interpreters, distinct from those accessible by phone.

Availability of Interpreters When Needed: Physicians were then asked how often each interpreter type (*e.g.*, trained medical interpreter; telephone language interpretation service; bilingual staff *not specifically trained in medical interpretation*; patient's friends or family members) was available when needed. Response options included: always; often; sometimes; rarely or never available when needed. Good availability was specified when a physician indicated an interpreter type was *always* or *often* available when needed.

Independent Variables

Independent variables included self-reported physician demographics: age, gender, race/ethnicity and specialty (medical oncology, radiation oncology and

surgery), and practice characteristics: setting and size. The physician practice setting measure was derived from survey items about practice ownership and type. Practice settings were categorized as staff/group model HMO (reference group); county government or medical school/university; solo practice; single-specialty or multi-specialty medical group. Since within Los Angeles County government hospitals are also teaching hospitals, and because of small sample size, we treated county government and medical school/university as one practice setting.

Physicians reported the number of full-time physicians working in their main practice; large practice size was defined as any practice with 50 or more full-time physicians. The proportion of Medicaid or uninsured patients was not included in the multivariate analyses because this measure was highly correlated with the proportion of LEP patients ($r=0.44$, $p<0.000$).

STATISTICAL MODELS AND ESTIMATION

Univariate, bivariate, and multivariate analyses were performed for each dependent variable. The general linear model was used for analysis of proportion of LEP patients (McCullagh and Nelder 1989), and logistic regression was used for analyses of interpreter use, and availability of interpreters when needed (Hosmer and Lemeshow 1989). We tested for interactions between practice setting and large practice size, but no statistically significant differences were found.

Stata Version 10.0 was used to perform all analyses, weighting for non-response to avoid bias (Little and Rubin 2002). Survey non-response weights were calculated as the inverse of the probability of response based on a logistic regression model including physician gender, specialty type, study patient volume, and sharing

an office with another surveyed physician. Medical oncologists and surgeons were found to be less likely to respond compared to radiation oncologists ($p < 0.001$ for medical oncologists, $p < 0.05$ for surgeons); and physicians who shared offices with another surveyed physician were more likely to respond compared to those who did not ($p < 0.05$). We controlled for clustering of physicians within office addresses. (Wooldridge 2006) Using Hosmer-Lemeshow goodness of fit tests, all the logistic regression models appear to be a good fit to the data (p-values range: 0.25-0.91).

RESULTS

Univariate Results

Univariate and bivariate results are shown in Table 1. Among the 347 specialists (e.g., medical oncologists, radiation oncologists and surgeons), 99% reported caring for at least one LEP patient at their main practice within the 12 months prior to our survey. On average, physicians reported that almost one-fifth (17%) of their patients are LEP. However, the distribution was skewed; half of the physicians reported having fewer than 10%, while 10% of the physicians reported 35% or more LEP patients in their practices. Physicians most often reported that the majority of their LEP patients spoke Spanish (88%).

More than one-third (39%) of physicians reported communicating themselves in a non-English language with LEP patients. It should be noted that even physicians who reported communicating directly with LEP patients still reported at least one instance of using an interpreter to communicate with LEP patients within the last 12 months. Of physicians communicating with LEP patients without an interpreter, 46% reported speaking Spanish; others reported speaking Chinese (Mandarin or

Cantonese), Japanese, Armenian, Farsi, Russian and Korean. Although many physicians communicating without an interpreter reported proficiency in a language other than English, 30% did not.

Among those physicians who reported using interpreters to communicate with LEP patients within the 12 months prior to our survey, 41% reported using a trained medical interpreter; 21% reported using telephone language interpretation services; 76% reported using bilingual staff *not specifically trained in medical interpretation*; and, 86% reported using patients' friends or family members for assistance in communicating with LEP patients. About one-third (32%) of physician respondents reported good availability of trained medical interpreters, (e.g., they were always or often available when needed); and 33% reported good availability of telephone language interpretation services when needed.

Multivariate Results

Proportion of LEP Patients: After adjusting for physician race/ethnicity, specialty and practice type, Hispanic and Asian physicians reported a higher proportion of LEP patients on average compared to Non-Hispanic White physicians (coefficient for Hispanic: 0.81, 95%CI: 0.37, 1.25; coefficient for Asian: 0.36, 95%CI: 0.03, 0.69). Physicians in county government or medical school/university settings reported a higher proportion of LEP patients compared to physicians in solo practice after controlling for physician and practice setting characteristics (coefficient: 0.70, 95%CI: 0.14, 1.26). LEP patients appeared to cluster among Hispanic and/or Asian physicians, and physicians practicing in sites where free or low-cost care was offered.

Use of Interpreters: Table 2 presents multivariate logistic regression results for use of interpreters within the last 12 months. We find that male physicians were less likely to report using telephone language interpretation services compared to female physicians (OR: 0.52, 95%CI: 0.27, 0.97). Hispanic physicians were more likely to report communicating with LEP patients without an interpreter (OR: 14.77, 95%CI: 3.13, 69.65), and less likely to use bilingual office staff *not specifically trained in medical interpretation* or patient's friends or family members compared to Non-Hispanic White physicians (OR: 0.23, 95%CI: 0.08, 0.67; OR: 0.08, 95%CI: 0.02, 0.24, respectively). Radiation oncologists were more likely to report using telephone language interpretation services compared to medical oncologists (OR: 4.45, 95%CI: 2.01, 9.90).

Compared to physicians working in HMOs, physicians in solo practice and single-specialty medical groups were less likely to report using trained medical interpreters (for physicians in solo practice OR: 0.24, 95%CI: 0.09, 0.62; for physicians in single-specialty medical groups OR: 0.27, 95%CI: 0.12, 0.61, respectively). There were similar differences for telephone language interpretation services. Physicians in county government or medical school/university, solo practice, or single-specialty medical groups were less likely to report using telephone language interpretation services (OR: 0.31, 95% CI: 0.12, 0.78; OR: 0.30, 95%CI: 0.12, 0.71; OR: 0.21, 95%CI: 0.09, 0.48, respectively), compared to physicians working in HMOs.

Availability of Interpreters When Needed: Table 3 shows multivariate logistic regression results for good availability (i.e., physicians reported that the interpreter

type was always or often available when needed). Radiation oncologists were more likely to report good availability of trained medical interpreters, telephone language interpretation services, or either, compared to medical oncologists (OR for trained medical interpreters: 3.80, 95%CI: 1.96, 7.35; OR for telephone: 6.46, 95%CI: 2.96, 14.10; OR for either: 4.57, 95%CI: 2.25, 9.32).

Compared to physicians in HMOs, physicians in county government or medical school/university settings, solo practice settings, or single-specialty medical groups, were all significantly less likely to report good availability of either trained medical interpreters or telephone language interpretation services. We find larger odds ratios for trained medical interpreters than for telephone interpretation services for physicians in county government or medical school/university settings (OR for trained medical interpreters: 0.36, 95%CI: 0.13, 0.99; OR for telephone language interpretation: 0.18, 95%CI: 0.07, 0.46), or in single-specialty medical group settings (OR for trained medical interpreters: 0.23, 95%CI: 0.09, 0.61; OR for telephone language interpretation: 0.18, 95%CI: 0.07, 0.46). For physicians in solo practice, we find similar odds ratios for trained medical interpreters (OR: 0.24, 95%CI: 0.09, 0.65) and telephone interpretation services (OR: 0.25, 95%CI: 0.10, 0.64).

DISCUSSION

There is a growing recognition of the importance of improving patient-physician communication and patient outcomes in cancer care (Epstein and Street 2007). Yet little is known about how doctors circumvent language barriers when communicating with LEP patients. We find that, although 99% of physicians in our

sample reported having cared for LEP patients in the 12 months prior to our survey, less than half reported good availability of trained medical interpreters or telephone language interpretation services when needed.

Our analysis finds significant structural differences (e.g., staff/group model HMO practice setting, and large practice size) in predicting use of trained medical interpreters; use of telephone interpreters; and availability of these interpreter types. Physicians and office managers from small group practices have reported that high perceived cost was an important barrier to arranging for language access services, and many reported little experience using and paying for such services. (Gadon, Balch and Jacobs 2007) Many physicians (62%) in our study are associated with small and solo practices and may face similar issues. In contrast, larger practice settings may have greater resources to offer trained medical interpreters or telephone services; they may also offer training to physicians and administrators on how to access and effectively use interpreters. Although the proportion of LEP patients was similar across practice settings, in larger practice settings, LEP patients may represent a larger absolute number of patients. Thus, larger practice settings may enjoy economies of scale sufficient to staff trained medical interpreters to assist physicians in their communications with LEP patients, or to contract with trained medical interpreter services at a lower per visit rate, as compared with smaller practices. Such organizations have the administrative capacity in place to identify and establish contracts with professional in-person and/or telephonic interpreter services, a level of administrative capacity which is likely lacking in many solo physician and small group offices. In addition, the staff/group model HMOs and large physician

organizations are more likely to have the information technology capabilities to document and assess the prevalence of LEP patients in their enrolled populations.

Another possible explanation for the practice setting differences is greater levels of regulatory oversight. In Los Angeles, staff/group model HMOs and many of the network model managed care plans with whom larger physician organizations contract (Baumgarten 2005), may participate in Medicaid managed care and/or Medicare Advantage. These larger organizations may be more likely to be scrutinized for compliance under California Department of Managed Health Care regulations regarding language access (California Department of Managed Health Care, <http://wpso.dmhca.ca.gov/regulations/docs/2009ccr.txt>, accessed June 1, 2009) than physicians in solo or small practices. Thus, these larger practice settings may have greater incentives to maintain good availability of trained medical interpreters and/or telephone language interpretation services available when needed. However, we lack data to analyze these potential pathways.

By identifying practice setting differences in the availability and use of trained interpreter and telephone language interpretation services, we believe we have identified mutable structural differences which may present opportunities for interventions to provide LEP patients with greater access to interpreters. Since many practices lack a sufficient number of LEP to achieve economies of scale, Medicare reimbursement for interpreters could provide additional resources needed to encourage providers to hire professional interpreters when needed. (Ponce et al. -1, 2006)

We observe high rates of use, with no differences by practice setting, in the use of bilingual staff or patient's friends or family members. Other studies have found similar results regarding the prevalent use of patients' friends or family members as interpreters (Gadon Balch and Jacobs 2007) (Kuo et al. 2007) (Kuo and Fagan 1999). Such frequent reliance on patient's friends or family members as interpreters may be a result of patient or physician preferences, or limited availability of trained medical interpreters or telephone language interpretation services.

The prevalent use of bilingual staff *not specifically trained in medical interpretation* and patient's friends and family members as interpreters is noteworthy since prior studies comparing the quality of interpreting by trained medical interpreters to that of patient's family members found that, although both groups made errors, errors of clinical consequence occurred more frequently with untrained staff and patient's friends or family members (Karliner et al. 2007) (Flores 2005) (Laws et al. 2004) (Flores et al. 2003). Additionally, untrained interpreters have a tendency to take on inappropriate roles as advocates for certain treatment options, rather than impartially conveying information. (Preloran et al. 2005) Ideally, interpreters should facilitate communication without introducing their personal values; interpreters substituting their values or judgment for patients' is not consistent with articulated goals for patient-centered care. An additional clinical reality is that some LEP patients indicate a preference for having friends or family members interpret. (Kuo and Fagan 1999) We concur with earlier work that advocated that patients' friends or family members should participate in *decision-making* for patients who express such preferences. (Matsumura et al. 2002) However, involvement by

family or friends should not be considered a replacement for trained medical interpreters or telephone language interpretation services in facilitating important communication tasks including information exchange (e.g., patient history and symptoms, risks and benefits of different treatment options), discussing areas of uncertainty, making decisions, enabling patient self-management, responding to patient emotions and fostering a healing relationship. (Epstein and Street 2007)

A limitation of this study is that our analyses rely on physician self-report data. Since we asked physicians to recall interpreter use during the preceding 12 months, recall bias may have been an issue, though we have no reason to suspect systematic over or under-reporting across practice types. Our study could not characterize the quality of the interpreter skills for physicians who reported communicating with their LEP patients without an interpreter. Additionally, this study has no measure of the quality of interpreters available to respondents, though evidence suggests there may be differences in effectiveness among different interpreter types. (Karliner et al. 2007; Flores 2000; Laws et al. 2004; Flores et al. 2003) Thus, we are unable to conclusively determine the quality or proficiency of trained medical interpreters or other interpreters.

It should be noted that our survey response categories were not worded to ask specifically about “professional, in-person” interpreters: the survey response category “trained medical interpreter” was used to represent this concept. A limitation of this study is the absence of standard national or state certification associated with health care interpretation. As a corollary, levels of training among professional interpreters, both in-person and telephonic, vary widely, and physician respondents may have been

unaware of actual levels of training of professional in-person or telephonic interpreter services they used. We developed categories describing interpreter services used by physicians treating women with breast cancer in Los Angeles County following review of the literature and policy reports on health care interpreting, (Kuo and Fagan 1999; Sarver and Baker 2000; Fagan et al. 2003; Kravitz et al. 2000; Downing and Roat 2002; Tanjasiri 2001) after discussions with staff at community-based organizations in Los Angeles County involved with the training and provision of medical interpreter services to healthcare organizations throughout Los Angeles County. These discussions revealed concerns that interpreters in health care settings require facility with medical terminology as well as with conventional language. Since our main goal was to understand how physicians use interpreter services in the clinical setting, we chose a taxonomy that highlighted the term *medical*. With our survey, physicians reported about the availability of “*trained medical interpreters; telephonic language interpretation services; bilingual staff not specifically trained in medical interpreting; and patient’s friends or family members.*” While we recognize that not all providers will be able to describe the training of their interpreters, physicians serve as excellent informants for reporting use and availability of interpreters who translate both *medical terms* and *conventional language*. A limitation is that these categories did not specifically ask about a “professional-in-person” interpreter; instead trained medical interpreter (which could have included some in-person and some telephonic interpreters) was used. We are however able to distinguish provider and practice setting characteristics that predict use of these interpreter types as compared with clearly ad hoc interpreters (e.g., bilingual office

staff or patient's friends or family members), for whom it is reasonable to assume no specific training in medical interpretation.

Although this study inquired about availability of interpreters when needed, the study does not further characterize the elements necessary to access professional interpreters (i.e., knowledge of interpreter services, cost of interpreter services, challenges in hiring or scheduling interpreter services). Further study is needed to identify additional factors, particularly cost, that may influence physician use of trained medical or telephone language interpreter services. (Gadon Balch and Jacobs 2007)

This study does not specifically examine the impact of interpreters on LEP patients' satisfaction or outcomes, since we relied on provider self-report data. However, this report of providers' responses to communication barriers faced by LEP patients gives important new data on variations in use of interpreters of different types across practice settings, a topic not previously explored in the literature on physician report of strategies for communicating with LEP patients. This work will facilitate future interventions designed to improve communications with LEP patients by providing a foundation for understanding mutable structural aspects of care.

Conclusion and Implications

Physicians caring for LEP breast cancer patients in Los Angeles County report a variety of approaches in communicating with their patients. Although some report using trained medical interpreters and telephone interpretation language services, the overwhelming majority report using bilingual staff *not specifically trained in medical interpretation* and patient's friends or family members. Physicians appear to have

limited access to professional interpretation services. The significant practice setting variations in the use and availability of trained medical interpreters and telephone language interpretation services imply that structural measures could facilitate use of these services by physicians caring for LEP patients.

A number of studies have shown that LEP patients have less access to care and less satisfaction with care. Our survey of providers may explain some of the factors leading to these disparities in care. Despite the complexity of treatment involved in breast cancer care, many providers reported using untrained interpreters to facilitate communication across language barriers even for complex decisions involving weighing risks, benefits and quality of life trade-offs that require a full understanding of what treatments entail and what side effects may occur. We know that English-proficient women often struggle to effectively communicate with physicians during cancer treatment. (Sepucha et al. 2002) It is thus not difficult to imagine LEP women facing even greater challenges to fully understanding their treatment options, and communicating their hopes, fears and experiences to their providers. A recently published research agenda for language barriers in health care (Jacobs et al. 2006) noted more research is needed on how physicians can use interpreters to improve communication. This analysis makes clear that physicians have an important message about lack of availability of interpreters when needed for cancer patients. In response, physicians, patients and policymakers can consider strategies to ensure that physicians in *all* settings effectively address the needs of LEP patients to achieve better communication outcomes as a prerequisite to patient-centered cancer care. These include recommendations for reimbursement for

interpreter services; establishment of uniform standards for health care interpreting; clarification of existing regulations regarding the use of interpreter services in improving language access, and training for physicians on the use of professional interpreters while caring for LEP patients. In addition, the establishment of quality indicators with respect to patient-physician communication would be a major step towards achieving better communication outcomes necessary to patient-centered cancer care.

Table 1 – Physician and Practice Setting Characteristics Identified by Physician

Respondents (N=347)^{1,2}

Variable	All N=347	Medical Oncologist N=111	Radiation Oncologist N=65	Surgeon N=171
Physician Age ³	52 years (46, 58)	53 years (48, 58)	49 years (41, 56)	53 years (46, 59)
Physician Gender				
Male	81.6%	76.3%	79.1%	86.8%
Physician Race/Ethnicity				
Non-Hispanic White	67%	64%	66%	68%
Non-Hispanic Black	3%	3%	3%	3%
Hispanic	5%	3%	3%	8%
Asian	20%	23%	23%	16%
Other	6%	7%	5%	5%
Practice Type*				
County or Medical School or University	8%	12%	9%	5%
HMO	18%	16%	14%	21%
Solo practice	29%	24%	8%	42%
Single specialty group	36%	43%	60%	24%
Multi-specialty group	6%	5%	9%	7%
Practice size*				
Solo practice	27%	22%	8%	38%
2-5 physicians	35%	43%	46%	24%
6-15 physicians	15%	19%	20%	10%
16-49 physicians	6%	1%	21%	4%
More than 50 physicians	17%	15%	5%	24%
Physician report of caring for at least one LEP patient in past 12 months	99%	98%	100%	100%
Proportion of LEP patients ³	17% (5%, 20%)	16% (5%, 20%)	18% (10%, 20%)	18% (5%, 25%)
Physician report of interpreter use by type				
Physician Communicates	39%	38%	30%	44%

Without an Interpreter				
Trained Medical Interpreter	41%	40%	51%	40%
Telephone Language Interpretation Services*	21%	16%	37%	19%
Bilingual Staff Not Specifically Trained in Interpretation *	76%	77%	91%	69%
Patient's Friends or Family	86%	85%	89%	85%
Availability of Interpreter Services: Always or Often Available When Needed				
Trained Medical Interpreter*	32%	24%	52%	30%
Telephone Language Interpretation Services*	33%	26%	64%	29%
Trained Medical Interpreter or Telephone Language Interpretation Services*	47%	42%	74%	43%

¹Weighted for non-response, controlling for physician clustering at office address

level; means reported for continuous variables, chi-squares reported for categorical variables.

²Total sample = 348, one respondent declined to answer questions and was excluded.

³ 25th percentile and 75th percentile in parentheses.

* p<0.05

Table 2 –Multivariate logistic regression predicting use of interpreter services by type adjusting for physician and practice setting characteristics¹

Model Number:	Type of Interpreter Service				
	1	2	3	4	5
	Physician Communicates without an Interpreter ²	Trained Medical Interpreter ²	Telephone Language Interpretation Services ²	Bilingual Staff <i>Not Specifically Trained in Medical Interpreting</i> ²	Patient's Friends or Family Members ²
	Odds ratio 95% confidence interval				
Physician Age	1.00 (0.97, 1.02)	1.00 (0.97, 1.02)	1.01 (0.97, 1.05)	0.97 (0.94, 1.00)	1.00 (0.96, 1.04)
Male	0.80 (0.39, 1.65)	1.05 (0.58, 1.91)	0.52 (0.27, 0.97)	1.22 (0.54, 2.72)	0.71 (0.26, 1.90)
Physician Race/Ethnicity					
Non-Hispanic White	Reference	Reference	Reference	Reference	Reference
Non-Hispanic Black	1.68 (0.46, 6.11)	2.48 (0.69, 9.0)	1.01 (0.19, 5.37)	0.87 (0.24, 3.08)	---- ³
Hispanic	14.77 (3.13, 69.65)	0.78 (0.22, 2.70)	1.22 (0.33, 4.55)	0.23 (0.08, 0.67)	0.08 (0.02, 0.24)
Asian	1.06 (0.56, 1.99)	1.74 (0.96, 3.15)	1.19 (0.61, 2.32)	1.03 (0.46, 2.28)	0.96 (0.37, 2.48)
Other	2.37 (0.80, 7.01)	1.18 (0.39, 3.60)	3.65 (1.18, 11.30)	0.97 (0.30, 2.99)	2.59 (0.31, 21.57)
Physician Specialty					
Medical Oncologist	Reference	Reference	Reference	Reference	Reference
Radiation Oncologist	0.57 (0.29, 1.14)	1.65 (0.79, 3.43)	4.46 (2.01, 9.90)	2.40 (0.57, 10.11)	1.36 (0.49, 3.80)
Surgeon	1.40 (0.80, 2.46)	0.98 (0.56, 1.72)	1.19 (0.58, 2.45)	0.69 (0.36, 1.33)	1.01 (0.44, 2.31)
Practice Type					
HMO	Reference	Reference	Reference	Reference	Reference

County Gov't or Medical School/University	1.64 (0.57, 4.72)	0.62 (0.23, 1.66)	0.31 (0.12, 0.78)	1.35 (0.39, 4.65)	2.68 (0.60, 12.09)
Solo practice	0.58 (0.24, 1.43)	0.24 (0.09, 0.62)	0.30 (0.12, 0.71)	0.72 (0.23, 2.24)	1.63 (0.46, 5.73)
Single-specialty medical group	0.76 (0.35, 1.63)	0.27 (0.12, 0.61)	0.21 (0.09, 0.48)	2.15 (0.56, 8.33)	2.75 (0.90, 8.40)
Multi-specialty medical group	1.48 (0.57, 3.87)	0.77 (0.28, 2.12)	0.54 (0.21, 1.39)	1.84 (0.56, 6.04)	2.12 (0.51, 8.76)
Practice Size					
50 or more full-time physicians in practice	0.32 (0.12, 0.81)	1.70 (0.70, 4.13)	1.25 (0.58, 2.74)	0.51 (0.17, 1.52)	1.29 (0.36, 4.57)

¹: The results were weighted for non-response, controlling for physician clustering at office address level.

² The dependent variables are binary; we report the odds ratios and 95% confidence intervals.

³ All 10 Non-Hispanic Black physicians reported using friends or family members to communicate with patient during the last 12 months.

Table 3

Multivariate logistic regression predicting good availability (e.g., interpreters were always or often available when needed) to trained medical interpreters and telephone language interpretation services adjusting for physician and practice setting characteristics¹

	Good Availability of Trained Medical Interpreters or Telephone Language Interpretation Services		
Model Number:	1	2	3
	Trained Medical Interpreters ²	Telephone Language Interpretation Services ²	Trained Medical Interpreter or Telephone Language Interpretation Service ²
	Odds ratio p-value		
Physician Age	1.00 (0.97, 1.03)	0.95 (0.92, 0.98)	0.97 (0.94, 1.00)
Male	1.09 (0.56, 2.11)	0.56 (0.30, 1.04)	0.92 (0.49, 1.71)
Physician Race/Ethnicity			
Non-Hispanic White	Reference	Reference	Reference
Non-Hispanic Black	1.86 (0.61, 5.71)	3.12 (0.49, 19.85)	3.23 (0.70, 14.86)
Hispanic	0.80 (0.23, 2.76)	2.54 (0.79, 8.15)	1.11 (0.37, 3.35)
Asian	1.22 (0.64, 2.30)	0.70 (0.36, 1.36)	0.99 (0.53, 1.86)
Other	0.36 (0.11, 1.23)	2.27 (0.63, 8.18)	1.00 (0.30, 3.38)
Physician Specialty			
Medical Oncologist	Reference	Reference	Reference
Radiation Oncologist	3.80 (1.96, 7.37)	6.46 (2.96, 14.10)	4.57 (2.25, 9.32)

Surgeon	1.22 (0.66, 2.24)	0.83 (0.46, 1.52)	0.84 (0.48, 1.45)
Practice Type			
HMO	Reference	Reference	Reference
County government or Medical School/University	0.36 (0.13, 0.99)	0.18 (0.07, 0.46)	0.27 (0.09, 0.79)
Solo practice	0.24 (0.09, 0.65)	0.25 (0.10, 0.64)	0.21 (0.08, 0.57)
Single-specialty medical group	0.23 (0.09, 0.61)	0.18 (0.07, 0.46)	0.18 (0.07, 0.45)
Multi-specialty medical group	0.44 (0.16, 1.23)	0.46 (0.17, 1.21)	0.36 (0.12, 1.06)
Practice size			
Large practice (50 or more physicians)	1.34 (0.51, 3.50)	2.33 (1.07, 5.13)	2.71 (1.16, 6.32)
Proportion LEP patients	1.00 (0.98, 1.01)	1.00 (0.98, 1.01)	1.00 (0.98, 1.01)
F-test	0.0001	0.0001	0.0000

¹: We limited the sample to physicians reporting any Limited English Proficient patients. The results were weighted for non-response, controlling for physician clustering at office address level.

² The dependent variables were binary; we report the odds ratios and 95% confidence intervals.

REFERENCES

American Association of Medical Colleges. Physician Survey. Washington, DC, 2001

Anderson LM, Scrimshaw SC, Fullilove MT, Fielding JE, Normand J; Task Force on Community Preventive Services. Culturally competent healthcare systems: A systematic review. *Amer J Prev Med.* 2003; 24: 68-79.

Ayanian JZ, Zaslavsky AM, Guadagnoli E, Fuchs CS, Yost KJ, Creech CM, Cress RD, O'Connor LC, West DW, Wright WE. Patients' perceptions of quality of care for colorectal cancer by race, ethnicity, and language. *J Clin Oncol.* 2005;23:6576-86. Epub 2005 Aug 22.

Chen JY, Tao ML, Tisnado D, Malin J, Ko C, Timmer M, Adams JL, Ganz PA, Kahn KL. Impact of physician-patient discussions on patient satisfaction. *Med Care.* 2008 Nov;46(11):1157-62.

Chung PJ, Lee TC, Morrison JL, Shuster, MA. Preventive care for children in the United States: quality and barriers. *Annu Rev Public Health.* 2006;27:491-515.

Davis K, Schoen C, Schoenbaum SC. A 2020 vision of American health

care. *Arch Intern Med.* 2000;160:3357–3362.

Divi C, Koss RG, Schmaltz SP, Loeb JM. Language proficiency and adverse events in U.S. hospitals: a pilot study. *Int J Qual Health Care.* 2007;19:60-7. Epub 2007 Feb 2.

Downing B, Roat CE. Models for the Provision of Language Access in Health Care Settings. The National Council on Interpreting in Health Care. March 2002.

<http://data.memberclicks.com/site/ncihc/NCIHC%20Working%20Paper%20-%20Models%20for%20Provision%20of%20Language%20Access.pdf>. Accessed May 16, 2009.

Epstein RM, Street RL Jr. Patient-Centered Communication in Cancer Care: Promoting Healing and Reducing Suffering. National Cancer Institute, NIH Publication No. 07-6225. Bethesda, MD, 2007.

Fagan MJ, Diaz JA, Reinert SE, Sciamanna CN, Fagan DM. Impact of interpretation method on clinic visit length. *J Gen Intern Med.* 2003;18:634-638.

Flores, G. Language barriers to health care in the United States. *N Engl J Med* 2006; 355:229-31.

Flores, G. The impact of medical interpreter services on the quality of Health Care: a systematic review. *Med Care Res Rev.* 2005;62:255-299.

Flores G, Laws MB, Mayo SJ, Zuckerman B, Abreu M, Medina L, Hardt EJ. Errors in medical interpretation and their potential clinical consequences in pediatric encounters. *Pediatrics* 2003;111:6-13.

Flores G, Ngui E. Racial/ethnic disparities and patient safety. *Pediatr Clin of North America*. 2006;53:1197-215.

Gadon M, Balch GI, Jacobs EA. Caring for patients with limited English proficiency: the perspectives of small group practitioners. *J Gen Intern Med*. 2007 Nov;22 Suppl 2:341-6.

Green AR, Ngo-Metzger Q, Legedza AT, Massagli MP, Phillips RS, Iezzoni LI. Interpreter services, language concordance, and health care quality. Experiences of Asian Americans with Limited English Proficiency. *J Gen Intern Med*. 2005;20:1050-6.

Greene, WH. Econometric Analysis. Upper Saddle River, NJ: Prentice Hall; 2000.

Hsieh E. Understanding medical interpreters: Reconceptualizing bilingual health communication. *Health Commun*. 2006;20:177-86.

Hosmer, DW, Lemeshow, S. 1989. Applied Logistic Regression. New York: John Wiley and Sons.

Institute of Medicine Committee on Quality of Health Care in America:

Crossing The Quality Chasm: A New Health System For The 21st

Century, Washington, DC: National Academy Press; 2001.

Jacobs E, Chen AH, Karliner LS, Agger-Gupta N, Mutha S. The need for more research on language barriers in health care: A proposed research agenda. *Milbank Q.* 2006;84:111-33.

Kahn KL, MacLean CH, Liu H, Rubenstein LZ, Wong AL, Harker JO, Chen WP, Fitzpatrick DM, Bulpitt KJ, Traina SB, Mittman BS, Hahn BH, Paulus HE. The complexity of care for patients with rheumatoid arthritis: metrics for better understanding chronic disease care. *Med Care.* 2007 Jan;45(1):55-65.

Kahn KL, Malin JL, Adams J, Ganz PA. Developing a reliable, valid, and feasible plan for quality-of-care measurement for cancer: how should we measure? *Med Care.* 2002 Jun;40(6 Suppl):III73-85.

Karliner LS, Jacobs EA, **Hm Chen A**, Mutha S. Do professional interpreters improve clinical care for patients with Limited English Proficiency? A systematic review of the literature. *Health Serv Res* 2007;42:727-754

Karliner LS, Perez-Stable EJ, Gildengorin G. The language divide. The importance of training in the use of interpreters for outpatient practice. *J Gen Intern Med.* 2004;19:175-83.

Kravitz, RL, Helms, LJ, Azari, R, Antonius D, Melinkow J. Comparing the use of physician time and health care resources among patients speaking English, Spanish and Russian. *Med Care.* 2000; 38:728-738.

Kuo, D, Fagan, MJ. Satisfaction with methods of Spanish interpretation in an ambulatory care clinic. *J Gen Intern Med.* 1999;14:547-550.

Kuo DZ, O'Connor KG, Flores G, Minkovitz CS. Pediatricians' use of language services for families with limited English proficiency. *Pediatrics.* 2007;119:e920-7. Epub 2007 Mar 19.

Laws, MB, Heckscher, R, Mayo, SJ, Li W, Wilson IB. A new method for evaluating the quality of medical interpretation. *Med Care.* 2004;42:71-80.

Lee LJ, Batal HA, Maselli JH, Kutner JS. Effect of Spanish interpretation method on patient satisfaction in an urban walk-in clinic. *J Gen Intern Med.* 2002 Aug;17(8):641-5.

Little RJ, Rubin, DB. Statistical Analysis with Missing Data (2nd edn). John Wiley & Sons, New York, 2002. ISBN: 0-471-18386-5

Matsumura S, Bito S, Liu H, Kahn K, Fukuhara S, Kagawa-Singer M, Wenger N. Acculturation of attitudes toward end-of-life care: a cross-cultural survey of Japanese Americans and Japanese. *J Gen Intern Med.* 2002;17:531-9.

Morales LS, Cunningham WE, Brown JA, Liu H, Hays RD. Are Latinos less satisfied with communication by health care providers? *Journal of General Internal Medicine.* 1999 Jul;14(7):409-17.

McCullagh, P, Nelder, JA. *Generalized Linear Models.* London: Chapman and Hall; 1989.

Ngui EM, Flores G. Satisfaction with care and ease of using health care services among parents of children with special health care needs: the roles of race/ethnicity, insurance, language, and adequacy of family-centered care. *Pediatrics.* 2006;117:1184-96.

Nichols, M, Garcia, A, Tucker, D, et al.. *United Way of Greater Los Angeles, State of the County Report: Los Angeles.* 2003.

Ponce NA, Ku L, Cunningham WE, Brown, ER. Language barriers to health care access among Medicare beneficiaries. *Inquiry*. 2006;43:66-76.

Ponce NA, Hays RD, Cunningham WE. Linguistic disparities in health care access and health status among older adults. *J Gen Intern Med*. 2006; 21:786-91.

Rosenberg E, Leanza Y, Seller R. Doctor-patient communication in primary care with an interpreter: physician perceptions of professional and family interpreters. *Patient Educ Couns*. 2007 Aug;67(3):286-92.

Sarver J, Baker DW. Effect of language barriers on follow-up appointments after an emergency department visit. *J Gen Intern Med*. 2000;15:256-64.

Sepucha, KR, Belkora, JK, Mutchnick, S, Esserman, LJ. Communication planning to help breast cancer patients prepare for medical consultations: effect on communication and satisfaction for patients and physicians. *J Clin Oncol*. 2002;20:2695-2700.

Smedley, BD, Stith, AY, Nelson, AR, eds., Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health, Board on Health Sciences Policy, Institute of Medicine. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health*. Washington, DC: National Academies Press; 2003.

StataCorp. Stata Statistical Software: Release 10. College Station, TX: StataCorp LP; 2007.

State of California, Department of Health Services, Medi-Cal Managed Care Division, Medi-Cal Managed Care Division Policy Letter 99-03 on Linguistic Services, April 2, 1999.

Tanjasiri, SP. Pacific Asian Languages Services (PALS) for Health: Provider Needs Assessment Survey. University of California, Irvine. June 2001.

Timmins CL. The Impact of Language Barriers on the Health Care of Latinos in the United States: a Review of the Literature and Guidelines for Practice. *J Midwifery Women's Health*. 2002;47:80-96.

Tisnado DM, Malin JL, Tao ML, Ganz P, Rose-Ash D, Hu AF, Adams J, Kahn KL. The Structural Landscape of the Health Care System for Breast Cancer Care: Results from The Los Angeles Women's Health Study. *Breast J*. 2008 Dec 12. (Epub ahead of print)

Tocher, TM, Larson, EB. Do physicians spend more time with Non-English-speaking patients. *J Gen Intern Med*. 1999; 14:303-309.

U.S. Census Bureau; American Community Survey, 2006 Summary Table S1601, Language Spoken at Home; and 2006 Summary Table S16001 (Language Spoken at Home by Ability to Speak English for the Population Age 5 Years and Older: Los Angeles County) generated by Danielle Rose using American Factfinder; <<http://factfinder.census.gov>>; (October 3, 2008)

U.S. Census Bureau, Census 2000, Summary File 3, Tables P19, PCT 13, and PCT14. Internet release date: February 25, 2003 Language use, English ability and linguistic isolation for the population 5 Years and over by State: 2000

Wilson E, Chen AH, Grumbach K, Wang F, Fernandez A. Effects of limited English proficiency and physician language on health care comprehension. *J Gen Intern Med* 2005;20(9):800-6.

Wooldridge, JM. Introductory Econometrics, Third Edition. Mason, Ohio: Thompson Higher Education; 2006.

Yoon J, Malin JL, Tisnado DM, Tao ML, Adams JL, Timmer MJ, Ganz PA, Kahn KL. Symptom management after breast cancer treatment: is it influenced by patient characteristics? *Breast Cancer Res Treat*. 2008 Mar;108(1):69-77.

Yoon J, Malin JL, Tao ML, Tisnado DM, Adams JL, Timmer MJ, Ganz PA, Kahn KL. Symptoms after breast cancer treatment: are they influenced by patient characteristics? *Breast Cancer Res Treat*. 2008 Mar;108(2):153-65.

Yu SM, Huang ZJ, Schwalberg RH, Nyman RM. Parental English proficiency and children's health services access. Am J Public Health. 2006;96:1449-

55

Deleted: Page Break