

Overcoming Language Barriers in Health Care: Costs and Benefits of Interpreter Services

Elizabeth A. Jacobs, MD, MPP, Donald S. Shepard, PhD, MPP, Jose A. Suaya, MD, MBA, and Esta-Lee Stone, MS, OTR/L

More than 46 million people in the United States do not speak English as their primary language, and more than 21 million speak English less than “very well.”¹ Persons who have limited English proficiency are less likely to have a regular source of primary care^{2,3} and are less likely to receive preventive care.^{2,4,5} They also are less satisfied with the care that they do receive,^{6,7} are more likely to report overall problems with care,⁷ and may be at increased risk of experiencing medical errors.⁸

Because most health care organizations provide either inadequate interpreter services or no services at all,^{9–14} patients who have limited English proficiency do not receive needed health care or quality health care. Often, persons enlisted to help patients communicate with health care providers are not trained interpreters; instead, they are fellow patients or are family members, friends, untrained nonclinical employees, or nonfluent health care professionals.^{6–8} Reliance on such ad hoc services has been shown to have negative clinical consequences.^{15–18}

Many health care providers do not provide adequate interpreter services because of the financial burden such services impose.^{19,20} However, these providers fail to take into account both the consequences of not providing the services and the potential cost benefits of improving communication with their patients. The failure of health care providers to consider these issues is at least partially attributable to the paucity of data documenting the full costs and benefits of interpreter services. To acquire a better understanding of these costs and benefits, we assessed the impact of implementing a new interpreter service program on the cost and utilization of health care services among patients with limited English proficiency.

METHODS

The study setting and sample have been described extensively elsewhere.²¹ Briefly,

Objectives. We assessed the impact of interpreter services on the cost and the utilization of health care services among patients with limited English proficiency.

Methods. We measured the change in delivery and cost of care provided to patients enrolled in a health maintenance organization before and after interpreter services were implemented.

Results. Compared with English-speaking patients, patients who used the interpreter services received significantly more recommended preventive services, made more office visits, and had more prescriptions written and filled. The estimated cost of providing interpreter services was \$279 per person per year.

Conclusions. Providing interpreter services is a financially viable method for enhancing delivery of health care to patients with limited English proficiency. (*Am J Public Health.* 2004;94:866–869)

the study was conducted from June 1, 1995, through May 31, 1997, at 4 health centers serving approximately 122 000 patients. These health centers were staffed by salaried physicians (“staff model”) and were part of a large Massachusetts health maintenance organization (HMO) that implemented comprehensive interpreter services for Spanish- and Portuguese-speaking patients on June 1, 1995 (beginning of year 2 of the study). The services were provided by 5 full-time trained interpreters who were available to help patients 24 hours a day either by telephone or during walk-in visits and at all points of contact in the HMO.

HMO members were eligible for the study if they were at least 18 years old at the beginning of the study and were continuously enrolled in 1 of the 4 centers that had the new interpreter services. Eligible members who used the interpreter services at least once during year 2 of the study constituted the interpreter service group. A random sample of 10% of all other eligible members who had accessed care at 1 of the 4 centers at least once during year 2 of the study formed the comparison group. The comparison group was used to control for secular trends in use of health care services that were independent of the implementation of interpreter services.

The data abstracted from the automated medical record system included demographic information and information about utilization of preventive, primary care, and emergency department services. For preventive services, our measure was the percentage of recommended services (appropriate for age and gender) received each year by each person. Measures of primary care utilization included annual number of health center office visits and phone calls, urgent care visits and phone calls, and prescriptions written and filled.

Cost data included both the direct costs of providing interpreter services and the costs of net changes in health care utilization that occurred after the new services were implemented. Direct costs included interpreter salaries, fringe benefits, and overhead costs. The cost allocated to each health care service delivered before and after the new services were implemented was the average Medicaid fee-for-service payment in Massachusetts during the 2 years of the study. We used the costs to the Massachusetts Division of Medical Assistance to provide this organization with information about the impact of interpreter services on the cost of care for Massachusetts patients with limited English proficiency. The estimated net cost of medical interpretation per person per year in the interpreter service group included the cost of

interpretation plus the net change in costs of health care utilization.

We compared receipt of preventive services, primary care, and hospital-based care and the cost of that care before and after adequate interpreter services were implemented. We compared changes in the interpreter service group with those in the comparison group by calculating the net mean difference (the change in the interpretive service group minus the change in the comparison group) and by modeling this difference in a linear regression model with the within-person difference as the outcome variable. (Within-person differences reflect the change in utilization and the cost of care for each person in the study both before and after implementation of the interpreter services.) In this manner, differences in absolute level of services or costs between the 2 groups attributable to measured or unmeasured characteristics were controlled.²²

RESULTS

There were 380 patients in the interpreter service group and 4119 in the comparison group. The majority of interpreter service group patients spoke Spanish ($n=300$). Compared with the comparison group, the interpreter service group had more females (63% vs 57%); the patients were older (mean age 45 ± 14 years vs 42 ± 14 years) and lived in zip codes with lower median incomes. We adjusted for these differences in the regression analyses. Mean years of enrollment were similar between the 2 groups.

Utilization of Care

Relative to the comparison group, the interpreter service group showed significantly greater increases per person per year in the following services: percentage of the recommended preventive services received (7.3% vs 2.7%; $P=0.033$), number of office visits made (1.74 vs 0.71; $P=0.014$), and number of prescriptions written (1.70 vs 0.52; $P=0.001$) and filled (2.38 vs 0.88; $P<0.001$). Use of the emergency department was rare among both groups. Although the interpreter service group experienced a net reduction in emergency department visits per person per year relative to the comparison group (-0.04

TABLE 1—Costs of Clinical Service During Year 1 and Change in Cost From Year 1 to Year 2^a

Service	Interpreter Services Group (n = 380)		Comparison Group (n = 4119)		Net Difference ^b
	Year 1, \$	Year 2 - Year 1, \$	Year 1, \$	Year 2 - Year 1, \$	
Preventive	14	1	11	1	0
Primary care	405	99	387	43	56**
Emergency department	31	-6	38	5	-11
Total costs	450	94	436	49	45*

^aReported as total cost per person per year in each category of service use.

^b(Year 2 - Year 1 in the interpreter service group) - (Year 2 - Year 1 in the comparison group).

* $P<.05$; ** $P<.01$.

TABLE 2—Net Change in Cost per Person in the Interpreter Service Group During Year 2

	Unit Cost, \$	No. of Visits ^a	Cost, \$	Cost, %
Interpretation service	79.43	2.95	234	84
Change in health care utilization			45	16
Net change in costs			279	100

^aTotal number of visit-days per person in the interpreter service group during year 2.

vs 0.02), this change was not statistically significant ($P=0.24$).

Cost of Care and Interpreter Services

Preventive services, primary care, and total costs increased among both groups between years 1 and 2 of the study, and emergency department costs increased among the comparison group and decreased among the interpreter service group (Table 1). The increase in the cost of providing primary care was greater for the interpreter service group than for the comparison group and resulted in a significantly greater increase in the overall cost of care for the interpreter service group. The cost of providing 1 year of interpreter services for Spanish- and Portuguese-speaking patients was \$245 363 and 3089 documented interpretations were performed in the second year of the study, with an average cost of \$79 per documented interpretation. The estimated total cost per person (among the interpreter service group) of providing interpreter services was \$279 (Table 2), the sum of the average cost of interpretation (\$234) plus the average increase in cost of care (\$45) per person. The average cost for the total number of enrollees

in the 4 health centers was \$2.40 per HMO member per year.

DISCUSSION

We found that providing professional interpreter services in a large staff-model HMO increased delivery of health care to patients with limited English proficiency. We also found that the majority of the increase in cost of care was attributable to the provision of interpreter services. Patients who used the new interpreter services had significant increases in the receipt of preventive services, physician visits, and prescription drugs, which suggests that interpreter services enhanced these patients' access to primary and preventive care for a moderate increase in cost.

We consider this cost to be reasonable in the context of reimbursement costs for other types of care during 1995–1997. For example, annual Medicaid expenditures in 1996 for persons with mood disorder, diabetes, or heart disease were \$1957, \$1563, and \$2328, respectively.²³ Compared with these Medicaid expenditures, the expenditure of \$279 per person per year for interpreter services was

reasonable, especially because interpretation improved patients' utilization of preventive and primary care services, such as follow-up visits and medications, that potentially may reduce costly complications of these and other conditions. The statistically significant increase in receipt of preventive services also suggests that improving language access for patients who have limited English proficiency may lower the cost of care in the long run.

Several limitations should be considered in interpreting our findings. First, the sample size of the interpreter service group was small and may not have provided sufficient power for detection of some effects. Second, we abstracted data for only 1 year after the new interpreter services were implemented, possibly too short a time to fully assess the impact of the new services. Third, the data did not measure all of the potential benefits of these services, such as improved communication and quality of care. Likewise, the measures of health care utilization in our study did not capture all of the potential costs or cost benefits to insurers that may result from providing interpreter services. For example, interpreters may impact utilization of physician time or diagnostic testing which could either increase or decrease costs to the insurer. Conflicting evidence exists regarding whether or not the presence of an interpreter increases expenditure of physician time^{24,25}; however, some evidence suggests that the ordering of laboratory tests is reduced when interpreters are present, thus reducing costs.²⁴ Including data on such potential costs and cost benefits in our study may have had the effect of reducing our net cost of implementation of interpreter services.

The study setting also may have affected our findings. The study was conducted at a well-established staff-model HMO with enrollees who were continuously insured for an average of more than 3 years. These services may have had a different impact on a patient population in a different health system or a patient population with less familiarity with, or less access to, a health care system. On the other hand, use of hospital services in the HMO was well below national averages, so savings could be greater in other settings. The cost estimates reflect the perspective of a single insurer and would likely be higher if

calculated from a private insurer's perspective. The costs measured in our study reflect the costs of hiring staff interpreters in a large health care system." The costs of providing interpreter services via outside agencies or via telephone would likely differ.

Finally, we know from national data that the cost per interpretation in our study was excessively high. The average length of interpreter time per documented encounter was 2.55 hours, compared with about 1 hour in established programs. It appears that the interpreters were underused either because the number of full-time interpreters needed at the start of the program was overestimated or because providers were not aware of the new services and thus did not use them when needed. The costs of most interpreter services programs are more reasonable (about \$35 per interpretation vs \$79 in our study) than represented in our study.²⁶

Despite these limitations, our research has important clinical and policy implications. Patients who have limited English proficiency need to be able to communicate adequately with their health care providers if access to health care is to improve for this large and growing US population. While this fact seems obvious, millions of patients are denied adequate care every day because they do not speak English or do not speak English well. Both policymakers and health care providers are unaware of how interpretation services may benefit providers and their patients, and providers are reluctant to shoulder costs for which they are not reimbursed. Better data is needed to allow them to make more informed choices, and providers need reimbursement from insurers such as Medicaid for the provision of interpreter services. ■

About the Authors

Elizabeth A. Jacobs is an assistant professor of medicine at Rush University Medical Center and a member of the Collaborative Research Unit, John H. Stroger Jr, Hospital of Cook County, Chicago, Ill. Donald S. Shepard is a professor at the Schneider Institute for Health Policy, Heller School for Social Policy and Management, Brandeis University, Waltham, Mass. Jose A. Suaya is a PhD candidate at the Heller School for Social Policy and Management, Brandeis University. Esta-Lee Stone is Director of Clinical Projects, Office of Clinical Affairs, Division of Medical Assistance, Commonwealth of Massachusetts, Boston, Mass.

Requests for reprints should be sent to Elizabeth A. Jacobs, MD, MPP, Assistant Professor of Medicine, Rush Medical College, Division of General Medicine and Pri-

mary Care and Collaborative Research Unit, Cook County Hospital, 1900 W Polk St, 16th Floor, Chicago, IL 60612; (e-mail: ejacobs@rush.edu).

This article was accepted January 2, 2003.

Contributors

E. A. Jacobs was primarily responsible for writing the article and, along with D. S. Shepard, conceptualized the study. D. S. Shepard and J. A. Suaya contributed to both the analysis of the data and the writing of the article. E.-L. Stone oversaw the conceptualization and the implementation of the study plan and critically reviewed the article.

Acknowledgments

E. A. Jacobs was supported by a Robert Wood Johnson Clinical Scholars Fellowship at the University of Chicago when she collected the data for this study. She completed the study with support from the Center for MassHealth Evaluation and Research (CMER) and the MassHealth Access Project (MAP) of the University of Massachusetts Medical School and the Division of Medical Assistance, Commonwealth of Massachusetts. D. S. Shepard and J. A. Suaya also were supported by CMER and MAP.

We give special thanks to Monica Escobar Lowell, Jay Himmelstein, Ellen Sachs Leicher, Iris Garcia, Russ Kulp, Sheila Sullivan, and Annette Hansen for their guidance and support and to Paul Rathouz for his statistical advice.

Note. The views expressed in this article are those of the authors and are not necessarily those of the sponsors or the institutions involved in this study.

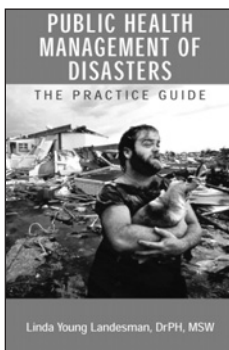
Human Participant Protection

The study was approved by the human studies committee of Harvard Pilgrim Health Care.

References

1. US Census Bureau. *DP-2. Profile of Selected Social Characteristics: 2000*. Available at: <http://factfinder.census.gov>. Accessed March 17, 2003.
2. Kirkman-Liff B, Mondragon D. Language of interview: relevance for research of Southwest Hispanics. *Am J Public Health*. 1991;81:1399-1404.
3. Weinick RM, Krauss NA. Racial and ethnic differences in children's access to care. *Am J Public Health*. 2001;90:1771-1774.
4. Woloshin S, Schwartz LM, Katz SJ, Welch HG. Is language a barrier to the use of preventive services? *J Gen Intern Med*. 1997;12:472-477.
5. Hu DJ, Covell RM. Health care usage by Hispanic outpatients as a function of primary language. *West J Med*. 1998;144:490-493.
6. Morales LS, Cunningham WE, Brown JA, Honghu L, Hays RD. Are Latinos less satisfied with communication by health care providers? *J Gen Intern Med*. 1999;14:409-407.
7. Carrasquillo O, Orav EJ, Brennan TA, Burstin HR. Impact of language barriers on patient satisfaction in an emergency department. *J Gen Intern Med*. 1999;4:82-87.
8. Gandhi JK, Burstin HR, Cook EF, et al. Drug complications in outpatients. *J Gen Intern Med*. 1998;15:149-154.

9. Association of State and Territorial Offices (ASTHO). *ASTHO Bilingual Health Initiative: Report and Recommendations*. Washington DC: Office of Minority Health; 1992.
10. Need for interpreter/translation services critical in hospitals and other clinical settings. *Health Care Strategy Manage*. 1995;13:15.
11. Baker D, Parker R, Williams M, Coates WPK. Use and effectiveness of interpreters in and emergency department. *JAMA*. 1996;275:783–788.
12. Ginsberg C, Martin D, Andrulis D, Shaw-Taylor Y, McGregor C. *Interpretation and Translation Services in Health Care: A Survey of US Public and Private Teaching Hospitals*. Washington, DC: National Public Health and Hospital Institute; 1995.
13. Schmidt RE, Ahart A, Shur G. *Limited English Proficiency as a Barrier to Health and Social Services*. Washington, DC: Macro International, Inc; 1995.
14. Robert Wood Johnson Foundation. *New Survey Shows Language Barriers Causing Many Spanish-speaking Latinos to Skip Care*. Available at: www.rwjf.org. Accessed December 14, 2001.
15. Marcos LR. Effects of interpreters on the evaluation of psychopathology in non-English-speaking patients. *Am J Psychiatry*. 1979;2:171–174.
16. Ebden P, Bhatt A, Carey OJ, Harrison B. The bilingual consultation. *Lancet*. 1998;8581:347–347.
17. Vasquez C, Javier R. The problem with interpreters: communicating with Spanish-speaking patients. *Hosp Community Psychiatry*. 1991;42:163–165.
18. Putsch R. Cross-cultural communication. *JAMA*. 1985;254:3344–3348.
19. Radcliffe Anderson E. Comments on policy guidance on the prohibition against national origin discrimination as it affects persons with limited English proficiency. Written communication to Carol Brown, Office of Civil Rights, 24 October 2001.
20. Graham JD. Assessment of cost and benefits associated with the implementation of Executive Order 13166. *Federal Register*. November 30, 2001;66: 59824–59825.
21. Jacobs EA, Lauderdale DS, Meltzer D, et al. The impact of interpreter services on delivery of health care to limited English-proficient patients. *J Gen Intern Med*. 2001;16:468–474.
22. Greene WH. *Econometric Analysis*. 4th ed. Upper Saddle River, NJ: Prentice-Hall; 2000.
23. Druss BG, Marcus SC, Olsson M, et al. Comparing the national economic burden of five chronic conditions. *Health Aff (Millwood)*. 2001;20:233–242.
24. Kravitz RL, Hems J, Azari R, Antonius D, Miramontes JM. Comparing the use of physician time and health care resources among patients speaking English, Spanish, and Russian. *Med Care*. 2000;38:728–738.
25. Tocher TM, Larson E. Do physicians spend more time with non-English-speaking patients? *J Gen Intern Med*. 1999;14:303–309.
26. White House Office of Management and Budget. Report to Congress: Assessment of the Total Costs and Benefits of Implementing Executive Order 13166: Improving Access to Services for Persons With Limited English Proficiency. Available at: <http://www.whitehouse.gov/omb/inforeg/lepfinal3-14.pdf>. Accessed August 5, 2002.



ISBN 0-87553-025-7
 2001 ■ 250 pages ■ softcover
 \$28.95 APHA Members
 \$37.95 Nonmembers
 plus shipping and handling

Public Health Management of Disasters: The Practice Guide

By Linda Young Landesman, DrPH, MSW

The tragic events of September 11, 2001, raised the stakes for public health. This timely book is both a desk and field manual for public health and safety practitioners who need to quickly access information about disaster preparedness, response and recovery.

Public Health Management of Disasters is the first comprehensive text in this relatively new practice area as public health leaders begin integrating health departments into the national emergency response infrastructure. It identifies the public health role in each aspect of disaster response, which no other book has done, and organizes morbidity and mortality concerns by disaster.

An epilogue addresses the response to and resources about the events of September 11.

American Public Health Association

Publication Sales

Web: www.apha.org

E-mail: APHA@TASCO1.com

Tel: (301) 893-1894

FAX: (301) 843-0159



MD02J1