Implementation, Outcomes, and Lessons Learned From a Collaborative Primary Health Care Program to Improve Diabetes Care Among Urban Latino Populations

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This article describes the implementation, outcomes, and lessons learned from multisectoral collaboration to implement a 3-year federally funded (Department of Health and Human Services, Office of Minority Health) service demonstration program to improve access to affordable, culturally appropriate care for limited English-proficient (LEP) Latino patients with diabetes. On the basis of a primary health care framework, the program was designed both to mobilize community health workers (CHWs) for diabetes education in the clinical setting and to increase the linguistic and cultural competence of health care professionals through Spanish language and cultural competency workshops. Positive outcomes for patients included a significant decrease in HbA1c. Health care providers reported improved patient communication and greater appreciation for cultural influences on health. Collaborating institutions realized ongoing benefits from expansion of CHWs’ role and incorporation of cultural and language classes into health professions students’ and house officers’ training programs. Lessons learned included the importance of working together at every stage to identify and provide for the CHWs’ training and support needs and to link the program’s intervention with evaluation of multilevel outcomes.

Keywords: community health workers; diabetes education; Hispanic Americans; multisectoral collaboration; primary health care

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BACKGROUND AND LITERATURE REVIEW

Limited English-proficient Latinos are a rapidly growing and vulnerable population in the United States with respect to health disparities. Language, socioeconomic status, immigration status, limited knowledge of the health care system, and cultural barriers contribute to their unequal access to quality health care. Many Latinos in the United States are working in low-paying jobs, less likely to have health insurance or a source of ongoing health care, and more likely to report their health status as “fair or poor” rather than “good or excellent” (National Center for Health Statistics, 2002). By 2004, the Latino population had grown to 40.5 million, representing 14.2% of the U.S. population (U.S. Census Bureau, 2004c). In Chicago, the site of this service demonstration program, Latinos made up 27.4% of the population in 2004 (U.S. Census Bureau, 2004a). However, only 5.8% of health care providers in the United States are Hispanic (U.S. Census Bureau, 2004b). As a result, this population receives health care primarily from non-Hispanic providers, who often lack the language skills and cultural understanding needed to provide optimal care. This systemwide problem has contributed to a growing underserved population for whom health care disparities exist (Centers for Disease Control & Prevention, 2004).

Community Health Workers: A Primary Health Care Strategy

Primary health care, promoted worldwide since the 1978 Declaration of Alma-Ata (World Health Organization, 1978), is a system-level approach that involves multisectoral collaboration to promote health for all through the development of health care that is accessible, socially acceptable, culturally appropriate, affordable, equitable, and sustainable (McElmurry & Keeney, 1999, 2006; Pan American Health Organization, 2003). An important primary health care strategy for providing affordable, accessible, acceptable, and culturally appropriate health programs is the incorporation into health care systems of CHWs (McElmurry, Tyska, & Parker, 1999), also known by a number of other terms such as lay health advisors and health promoters (Andrews, Felton, Wewers, & Heath, 2004). Community health workers are trusted, respected community members who are seen as helpful and responsive to the needs of others (Satterfield, Burd, Valdez, Hosey, & Eagle Shield, 2002). They receive special training to enable them to serve as health educators and mobilize their communities to improve their health and environments (Swider & McElmurry, 1990). Community health workers have been widely used in Latin America (Elder et al., 2005; McElmurry, Marks, & Cianelli, 2002) and the United States, especially with ethnic minority populations (Andrews et al., 2004; Elder et al., 2005; Family Strengthening Policy Center, 2006; Lewin et al., 2005).

As community members, CHWs are cultural insiders who know the health beliefs and practices common to their community. Patients view CHWs as similar to themselves, which may enhance CHWs’ ability to influence patients’ health care decision making and behavior (Satterfield et al., 2002). From their position as community insiders, CHWs provide health-related services including health education, case finding and management, transport or interpreter services, and community outreach (Earp & Flax, 1999; Zuvekas, Nolan, Tumaylle, & Griffin, 1999). Typically, paid or volunteer CHWs function in the community within community-based health care settings or in public health departments. Their primary functions are to provide culturally appropriate health education and help the community understand and
access the health care system appropriately (University of Arizona, 1998).

Community health workers have been shown to effectively screen and educate at-risk community members about health promotion practices, increase knowledge of chronic illness and prevention, improve self-care and medication compliance, improve outcomes for patients, increase the proportion of referred patients who attend follow-up appointments, and reduce health care costs through appropriate use of health care facilities. CHWs also act as bridges between their communities and the health care system, often serving as cultural brokers between clients of ethnic minority groups and majority-group health care providers (Corkery, Palmer, Schechter, Frisher, & Roman, 1997; Felix-Aaron, Bone, Levine, & Rubin, 2002; Goicoechea-Balbona, 1997; Satterfield et al., 2002; Wasserman et al., 2006). Furthermore, CHWs provide training in cultural sensitivity for health care providers from the majority group (Corkery et al., 1997; Felix-Aaron et al., 2002; Flax & Earp, 1999; Hill, Bone, & Butz, 1996; Poss, 1999). In most cases, CHWs perform multiple roles (Norr, McElmury, & Misner, 1999). Several review articles provide a comprehensive overview of the published conceptual and research literature addressing the role of CHWs in community settings (Andrews et al., 2004; Lewin et al., 2005; Nemec & Sabatier, 2003; Swider, 2002; Witmer, Seifer, Finocchio, Leslie, & O’Neil, 1995) and with persons with diabetes (American Association of Diabetes Educators, 2003). However, there has been little research into the role of CHWs in clinical settings serving ethnic minority group members. In the clinical setting, CHWs serve a dual role as cultural bridges: They both enhance patients’ understanding of how to negotiate the clinical arena and increase health care providers’ understanding of their patients’ culturally determined health beliefs and practices.

Program Description: Strategies to Improve Care and Reduce Disparities

Community health worker interventions can target one or more of three outcomes: individual behavior change, community change, and organizational change (Eng & Young, 1992). Following the recommendation of the Committee on Future Directions for Behavioral and Social Sciences Research at the National Institutes of Health (Singer & Ryff, 2001) that interventions should function at multiple levels, BTH focused on both the individual and the organizational levels. At the individual level, BTH provided culturally tailored diabetes patient education in Spanish, along with Spanish language skills and cultural competency training for health care providers. At the organizational level, BTH provided cultural workshops for clinic staff and other providers, as well as introduced HPs into the clinical area to act as cultural bridges between other health care providers and patients. The BTH program was unique because of its comprehensive, multilevel primary health care approach to improving care and reducing health disparities experienced by LEP Latino diabetes patients by increasing accessibility and acceptability of care. This was accomplished by providing culturally appropriate patient services and increasing the cultural and linguistic competence of health care providers.

Implemented from 2001 to 2004, BTH developed and provided both patient-directed and provider-directed services that together had a positive effect on the health of LEP Latino patients with diabetes. First, to address patients’ needs, a group of five HPs, with one designated as the HP coordinator, were recruited and given specific...
training on diabetes knowledge and self-care regimens. The HPs were recruited from an existing cadre of experienced community lay health workers previously trained in general health promotion content. Through the Midwest Latino Health Research, Training and Policy Center at the University of Illinois at Chicago, they were given more than 200 hours of specialized training in Spanish to provide community-based diabetes education for Spanish-speaking patients.

In addition, HPs received orientation to the clinical site, assessment of knowledge competency, and ongoing supervision and in-service training by the RNs and CDEs employed at the NDP clinics. As the HPs developed in their roles within the clinical setting, they identified gaps in their knowledge, requested further training be a part of regular monthly staff meetings, and initiated consultations with a diabetes expert from the University of Illinois at Chicago College of Nursing. They also sought out, adapted, and translated printed patient education materials for use with patients. Each HP was funded by the grant and employed at 0.5 full-time equivalent, subcontracted through Centro San Bonifacio.

These HPs were assigned to each of the five NDP clinics located in separate community areas of Chicago, where they augmented the usual care provided by physicians, RNs, registered dieticians, CDEs, and pharmacists. In the course of usual care, because so few NDP clinic staff or professional providers spoke Spanish and interpreter services were often not available, many patients failed to receive adequate diabetes education before the initiation of BTH. The HPs greatly increased access to diabetes education for this population. When Spanish-speaking diabetes clinic patients arrived for appointments, they were all offered the HPs’ services by the clinic staff. At times, the HPs approached patients to engage them in diabetes education. Over the term of the project, patients were increasingly referred to the HPs by the NDP physicians, RNs, and CDEs, as the professional staff recognized the importance of the HPs’ contributions. In some cases, HPs had encountered community members with diabetes in the course of their ordinary lives and had referred them to the NDP clinics, where they then followed up to provide diabetes education. The HPs’ services were optional, and sometimes patients declined to shorten their already lengthy appointment times.

The HPs provided diabetes education in Spanish for LEP Latino diabetes patients in individual and group sessions covering basic facts about diabetes, meal planning, exercise, medications, signs and symptoms of hypo- and hyperglycemia, and the importance of keeping appointments for routine follow-up and referrals rather than relying on crisis-oriented emergency room visits. In addition, the HPs engaged patients in discussions in their native language regarding their self-management behaviors and goals related to diet, exercise, glucose testing, medications, and symptom monitoring. They clarified questions stemming from patients’ encounters with other health care providers. In their interactions with patients, the HPs encouraged optimal self-care using culturally acceptable measures, reinforced teaching provided by the other health care providers, reiterated the importance of keeping return clinic appointments, and clarified misunderstandings that they uncovered. They also acted as interpreters to enhance communication between patients and providers. Throughout their interactions with patients and health care providers, the HPs acted as cultural bridges, enabling providers to better understand the issues patients were experiencing and helping patients to understand how to negotiate the health care system and how to incorporate the treatment plan into their lifestyle.

To address health care providers’ needs, those who were affiliated with the NDP and other ambulatory clinics of the Cook County Bureau of Health Services were invited to participate in intensive Spanish language study. This was offered as either an 8-week class series or a 1-week or 3-week integrated immersion program of Spanish language classes, cultural workshops, community-based clinical experiences, and home stays to increase health professionals’ Spanish language and cultural competency. Host families for these home stays were recruited from community volunteers, most of whom had a connection with Centro San Bonifacio and all of whom shared an interest in helping to increase the cultural and linguistic competency of the program participants. These host families were given a small stipend to cover participants’ meals and other program expenses. The BTH program, with the HPs’ participation, also provided a six-session “Nuestra Cultura, Nuestra Salud” (“Our Culture, Our Health”) workshop series that was offered annually to the health care providers and clinic staff (Centro San Bonifacio, Erie Family Health Center, & Midwest Latino Health Research Training and Policy Center—University of Illinois at Chicago, 1997). The cultural workshops addressed Latino patients’ experiences and expectations of the health care system; the effects of cultural beliefs and language barriers on diagnosis, treatment, and patients’ participation in treatment regimens; and popular herbal remedies often used in Latino cultures.

> BRIEF DESCRIPTION OF PROGRAM OUTCOMES

Evaluation of Patient-Directed Objectives

Health promoters served a total of 1,994 LEP Latino diabetes patients, providing a total of 4,242 patient
encounters over the 3-year period. The mean number of visits per patient was 2.13 (range = 1-14). (See Table 1 for demographic descriptions of patient participants.) Patient Encounter Forms were completed by HPs and other providers for every client visit to the NDP clinics. These forms documented the client’s attendance at the NDP clinic and at referral appointments, their age and sex, their reported self-care including blood glucose self-monitoring, their encounter with the HPs and related activities such as individual and group education and counseling by topic, and latest laboratory values such as hemoglobin A1c (HbA1c). To assess the outcomes for the patient-directed interventions, data from patient encounter forms were analyzed using frequencies, correlations, paired t tests, and logistic regression.

Bridges to Health was funded as a service demonstration program with few resources to support the evaluation component, such as monitoring of data collection completeness and quality; therefore, our evaluation is limited to describing within-group changes and associations. Our analysis of the available data (for the 392 patients for whom data were available at two HP encounters at least 30 days or more apart; range = 30 days to >1 year) revealed that LEP Latino diabetes patients who received HP services demonstrated improvement in blood glucose control as measured by a drop in percentage of HbA1c. (See Table 2 for summary of outcomes.) For these 392 patients, their mean drop in HbA1c from 9.65 to 8.61 was statistically significant (paired t test, \( t = -8.5344, p < .001 \)).

One aspect of HPs’ services that was associated with increased access to care was telephone reminders to LEP patients about their clinic appointments. After HPs instituted the telephone reminders, the rate of no-show appointments among LEP NDP clinic patients dropped from 23% at 4th visit to 11% at 8th visit, a 12% decrease. For the total of 1,994 patients seen by the HPs, patients with more HP contacts logged fewer no-show visits (odds ratio \([OR] = 0.79; 95\% \text{ confidence interval } [CI] = 0.67-0.95\)). In addition, the more HP contacts, the greater the likelihood that patients reported blood glucose self-monitoring (\([OR] = 1.39; 95\% \text{ CI} = 1.32-1.46\)), according to estimation results of generalized estimating equations logistic regression modeling. These findings are important because access to health care and self-care behaviors are important factors influencing health disparities.

Taken together, the above findings suggest that the HP intervention was associated with enhanced access to care, increased patient self-care behaviors, and improved blood glucose control. The HP program’s focus on providing diabetes education in patients’ native language and on delivering culturally sensitive care may have contributed to these encouraging findings.
The HPs themselves were also active participants in ongoing informal evaluation of the BTH intervention. Their comments and feedback at monthly staff meetings were noted in the meeting minutes and acted on. The changes made in response to HPs’ feedback resulted in additional in-service training by the CDEs, ongoing consultation with a diabetes expert at the University of Illinois at Chicago College of Nursing, changes in the assessment instrument used to assess patients’ knowledge of diabetes and its management, and further orientation of the clinic staff to the role of the HPs in a clinical setting.

Support for the HP program was identified by a survey administered in Year 2 of the BTH program to NDP clinic personnel (N = 18) to learn their impressions of HPs and the services they provided. All respondents reported that HPs were a valuable and important resource to the NDP and that providing diabetes education in Spanish to LEP Latino patients was very important to patient self-care. Of those surveyed, 90% indicated that HPs increased both availability of diabetes education for Spanish-speaking patients and appropriate patient use of services. The majority of respondents believed that HPs improved the quality of patient care.

**Evaluation of Health Care Provider–Directed Objectives**

A total of 386 health care professionals and health professions students participated in the provider-directed interventions (Spanish immersion program, Spanish language classes, and cultural workshops) during the 3-year funded period. (See Table 1 for demographic descriptions of provider participants.)

To evaluate the provider-directed interventions of BTH, we used a combination of open-ended questions in written evaluations of both the Spanish immersion program and the cultural workshops and pre- and post-immersion program focus groups with program participants. (See Table 3 for examples of qualitative findings.) Content analysis of these qualitative data sources revealed that participants in both the cultural workshop series and the Spanish immersion program gained an appreciation of cultural interpretations of health and illness conditions including diabetes, learned about several common health beliefs and practices of LEP Latinos, and recognized the need to consider these in their work with diabetes patients in the clinical setting. Participants also reported improved ability to interact with patients, greater respect for patients’ cultural views, and more appreciation for cultural influences on health. Participants in both the 8-week Spanish language series and the 3-week Spanish immersion program reported improved ability and greater comfort in their interactions with patients and gained in language acquisition an equivalent of one to two semesters of college-level language instruction, as assessed by standardized evaluations of written and spoken Spanish conducted by a qualified examiner.

**LESSONS LEARNED FROM MULTIORGANIZATIONAL COLLABORATION**

Many of the lessons learned from this joint effort to improve diabetes care for Latino people are common to complex programs as they move from planning and development through dissemination of outcomes. Collaboration across organizational partners requires communication, commitment (Baker et al., 1997), accountability, and continuity. Although these attributes are crucial to program success, two interrelated factors that we highlight here are linked with the intervention’s quality and demonstration of its outcomes: recruitment, training, supervision, and support of HPs and planning for evaluation.

**Recruitment, Training, Supervision, and Support of Health Promoters**

Thoughtful recruitment and training ultimately contribute to program sustainability, as the program’s effectiveness rests on the competence and contributions of the HPs (McElmurry, Park, & Buseh, 2003). Adequate training of HPs strengthens their competence, confidence, and overall contribution (Jackson & Parks, 1997). The HPs’ success was enhanced by experiential learning such as role-playing, practicing interactions with both patients and
TABLE 3
Key Qualitative Findings

<table>
<thead>
<tr>
<th>Qualitative Data Source</th>
<th>Theme</th>
<th>Respondents’ Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health promoters</td>
<td>Improved patient self-care resulted from health promoter services</td>
<td>Patients report increased motivation to make behavior changes and achieve their diabetes management goals. We have seen a lot of improvement in their dietary habits and in how frequently they check their blood sugar, to have better control.</td>
</tr>
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<td></td>
<td>Served as a bridge between LEP diabetes patients and health care professionals</td>
<td>I personally think that because of the closeness that we have with the patients, they trust us and feel comfortable with us and feel more informed by people from the community. It is important that they see me as part of their community and NOT as a doctor or nurse.</td>
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<tr>
<td>Spanish immersion program participants (health care professionals and students)</td>
<td>Increased awareness of barriers to care experienced by LEP patients</td>
<td>The clinic experience let me use what I learned in school. I considered myself culturally competent when I started the program because I spoke Spanish well and had lived with families in Spain and Costa Rica. I was surprised at the biases Latinos encounter every day and the scarcity of health care services available to people who don’t speak English well. I learned more than I thought I would.</td>
</tr>
<tr>
<td></td>
<td>Increased understanding of cultural beliefs and differences</td>
<td>My expectations of Latino patients have changed in that as part of the program, we learned a lot about their traditional beliefs and herbal remedies they might believe in, or even a spiritual reason why they’re afflicted with whatever illness they have. So that really changed my perception, realizing that there’s a lot more that people believe in than just science and medicine.</td>
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<tr>
<td>Cultural workshop participants (health care professionals and students)</td>
<td>Increased understanding of cultural beliefs and differences</td>
<td>As a result of these workshops, I am able to relate better to patients, more respectful, and more aware of my own personal culture. This is very important because the patients provide helpful information and need to be understood.</td>
</tr>
<tr>
<td></td>
<td>Increased awareness of barriers to care experienced by LEP patients</td>
<td>My patient-centered interactions with Latino patients have improved remarkably because I now understand why (this population) waits so long to receive medical care and their use of home remedies.</td>
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NOTE: LEP = limited English proficient.

health professionals with feedback to reinforce learning, and attending periodic refresher sessions and trainings tailored to the HPs (McQuiston & Uribe, 2001). General training to prepare HPs to deliver health education and to work with adult learners should be combined with specific coverage of the content they will be expected to teach (Zuvekas et al., 1999) to provide the level of knowledge HPs will require to function in the clinical setting. The only federally funded, and thus affordable, diabetes educator training that was available in the Chicago area for Spanish-speaking lay health workers focused on community-based educational approaches. However, this community-focused diabetes educator training did not prepare HPs to interact with the other health care providers in the clinical setting, nor did it fully prepare them to offer the detailed level of guidance needed by
patients in the clinical setting. As a result, the HPs experienced frustration during the early days of the intervention and needed a several-month period of on-the-job-training and additional formal learning experiences to function competently and feel comfortable in their roles.

Lay community workers or HPs fill a complementary role in today’s U.S. health services and need ongoing supervision and support to function competently and feel comfortable with their role (Swider & McElmurry, 1990). It is important to orient clinic staff members to the HPs’ level of knowledge and their role thereby reducing situations in which HPs are asked to perform tasks outside their expertise.

In future projects, we recommend facilitating HPs’ entry into a setting in which there has been no prior experience with this category of health worker. A bilingual clinical project staff member assigned to the clinic site would train, supervise, and support the HPs; advocate for their role with other clinic staff (Swider & McElmurry, 1990); serve as a liaison between clinic staff and HPs (McElmurry et al., 2003); and help other providers and clinic staff make more appropriate use of HPs’ services.

For optimal HP coordination and supervision, this liaison should be both linguistically and culturally competent, have excellent communication skills, be familiar with the health care system, and possess a thorough grounding in the planned evaluation. The liaison should be available to HPs and other clinic staff full time during clinic hours. During the BTH program, the lack of a clearly defined liaison role, staff turnover, and lack of sufficient time dedicated to HP supervision and coordination resulted in less than ideal support for the HPs. This led to an unnecessarily prolonged period of adjustment, as both HPs and clinic staff struggled to negotiate the HPs’ role in the NDP clinics.

**Program Evaluation**

We focused on evaluation components from the program’s inception that were supported by the funding agency and partners as important to demonstrate outcomes for patients. We recognized that interventions that function on multiple levels (patient, provider, and health system) should be assessed to identify the interactive effects of the multiple levels on the outcomes of interest. For example, in the BTH program the original outcome measures assessed the patient-related outcomes of the HP intervention and the provider-related outcomes of the cultural competency and Spanish language training interventions. However, during program implementation, clinicians from areas other than the NDP clinics also attended the interventions so that provider-level data were not obtained exclusively from NDP clinic providers. We also lacked measures of the indirect effects on patients of the cultural competency and language training received by the health care providers. A stronger evaluation would follow the participants over time and include measures to directly link the provider-directed intervention with the patient-directed outcomes.

Gathering system-level data on characteristics of the clinical setting, providers and policies could further specify effects of this intervention on health care delivery. Future study should gather system-level data about costs of the intervention that would yield a more precise estimate of the health care cost savings associated with reduction in patients’ HbA1c. This would provide evidence that the HP program enhanced affordability of care.

Planning for multiple methods of obtaining patient outcome data would strengthen the evaluation component. The patient encounter forms completed by HPs and other care providers during clinic visits often had a great deal of missing data. These missing data may have been available in the patients’ clinical records or in the clinic’s laboratory database. In future evaluation research, we recommend a protocol whereby the HPs can access these data sources to record the missing information on the patient encounter form or add it to the data entry file. Such a strategy will reduce the amount of incomplete data and strengthen the demonstration of program effectiveness.

For scaling up future projects, it is important to combine quantitative and qualitative data collection to gain the perspectives of HPs, patients, and health care providers regarding program strengths and areas needing improvement. Qualitative process evaluation elicits information about patients’ experiences before and after program implementation and provides valuable insights into how the HPs’ services affect accessibility, acceptability, and cultural appropriateness of care (Flax & Earp, 1999). Such qualitative evaluation proved very useful during the BTH program. Periodic interviews with HPs and the HP coordinator elicited their experiences and perspectives, both positive and negative, and described their responses to training, role implementation within the clinical sites, and the evolution of working relationships with NDP clinic personnel. These data were instrumental in effecting several changes within the clinical setting, including clarification and advocacy of the HP role and improved relationships between the HPs and other providers.

**CONCLUSIONS**

As a pilot program, we implemented a health promotion program for low-income Spanish-speaking persons with diabetes. Four collaborating agencies participated in increasing the language and cultural competency of health professionals and the health literacy of lay CHWs. The collaborative BTH program demonstrated positive
outcomes for LEP Latino diabetes patients and their health care providers. In accordance with primary health care principles, BTH increased accessibility and acceptability of care. Because HPs are a recognized primary health care resource in Latin America (Elder et al., 2005; McElmurry et al., 2002), the model of receiving health education from lay CHWs is a familiar and acceptable one within the recent Latino immigrant population. Patients received more appropriate care when linguistically and culturally competent providers and HPs were part of their care team. The BTH program also proved to be sustainable through a number of grants to Centro San Bonifacio and Cook County Bureau of Health Services to continue HPs’ provision of patient education in their clinical sites. Moreover, the Spanish immersion program has been incorporated into the missions of the Cook County Bureau of Health Services and Illinois Health Education Consortium, and they continue to offer health professionals and students opportunities to gain language and cultural competency.

The BTH program demonstrated that providing clinic-based cultural competency workshops and language classes builds the capacity of health care providers to offer minority and low-income populations culturally appropriate care. Provider participants identified the community-based language and cultural competency experiences in BTH as very influential in effecting improvements in their knowledge, attitudes, and interactions with Latino patients. The LEP diabetes patients benefited from the health professionals’ increased capacity to deliver culturally competent care. In addition, we believe that receiving culturally appropriate diabetes education and care instructions in their own language from trusted members of their communities had several benefits. Patients established a relationship with the HPs that enhanced their understanding of recommended treatment, resulting in improvements in their self-care and reduction in no-show rates. The multilevel intervention delivered was successful in improving LEP Latino diabetes patients’ access to acceptable, culturally appropriate, and sustainable health care. This approach demonstrated interventions that focused on both patients and health care providers. Bridges to Health presents a novel approach that has potential to alleviate the health disparities experienced by this growing population of LEP Latino diabetes patients.

REFERENCES