Health information Hispanic outreach in the Texas Lower Rio Grande Valley*

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Purpose: This paper provides an overview of the two-year Texas Lower Rio Grande Valley Health Information Hispanic Outreach (HI HO) project. The project included a needs assessment, four pilot projects, and focus groups on the use of MedlinePlus and MedlinePlus en español. The needs assessment included a survey of physicians' information usage and a review of the circuit librarian program that had been established in 1989. The pilot projects were located at a high school, a rural health clinic, an urban health clinic, and a community

center. Diffusion of innovation theory provided a framework for interpreting the results of the pilot projects.

Methods: The survey of physicians' information usage partially replicated a similar 1990 survey. The review of the circuit librarian program included usage statistics, interviews of administrators, and a survey of participants. Pilot project methodology varied by site. At the high school, four students were trained to instruct their peers in the use of MedlinePlus. At the two clinics, a computer workstation was installed for patients to access MedlinePlus. At the community center, staff were trained to use MedlinePlus en español to train community residents. Project evaluation included surveys, focus groups, and interviews. Indicators of success included increased level of consumer use of MedlinePlus, reports by key informants and consumers of how MedlinePlus was used, reports about training, and development of self-sustaining activity.

Results: The physician survey documented usage of health information resources in 2002 compared to 1990. The review of the circuit librarian program documented the change in program usage between 1989 and 2003. The pilot project at the high school was the most successful of the four pilot projects in introducing MedlinePlus to a large number of people, followed by the community center project. In the high school and community center projects, the participating institutions had reinforcing educational missions and paid staff who were highly motivated to achieve the project goals. The computer workstations projects at the two clinics were less successful, due in part to limited staff commitment and conflicting priorities.

Conclusions: The HI HO project tested methods of reaching the Hispanic community in the Lower Rio Grande Valley region of Texas. The four HI HO pilot projects varied in achieving their stated objectives. But taken as a whole, the HI HO project significantly contributed to a better understanding of health information outreach to the Hispanic community, knowledge that should be useful to others with similar outreach activities.

INTRODUCTION

Hispanics are the fastest growing population group in the United States and are included in the mandate of the National Library of Medicine (NLM) to reach out to minority and underserved communities. NLM's Health Disparities Plan 2004–2008 is structured around a primary emphasis on public information and community outreach, with subthemes focused on various ethnic and cultural groups, including Hispanics as well as African Americans, Asian Americans, and Native Americans, among others. At the core of NLM's Health Disparities Plan is the belief that improving access to affordable and easy-to-use health-related information and health technology can help meet the health disparities challenge in Hispanics and other underserved populations [1]. The aspect of the Health Disparities Plan most relevant to the Texas Lower Rio Grande Valley (LRGV) Health Information Hispanic Outreach (HI HO) project presented in this paper is the effort to expand partnerships among various types of libraries and community-based organizations with the goal of forming community-level coalitions to improve access to health information for members of minority and underserved populations as well as health professionals serving these populations—in this case the Hispanic population in the LRGV of Texas.

The goal of the HI HO project was to better understand the health information-seeking behavior and needs of the Hispanic population in Texas and the current and potential role of community organizations and intermediaries in meeting those needs. The project leveraged the opening of the University of Texas Health Science Center at San Antonio (UTHSCSA) Regional Academic Health Center (RAHC) in Harlingen, the existing UTHSCSA Circuit Librarian Health Information Network (CLHIN) program in South Texas, the expertise of the librarians at the UTHSCSA Briscoe Li-

* Funded by the National Library of Medicine under contract (#NO-1-LM-1-3515) with the Houston Academy of Medicine-Texas Medical Center Library. Based in part on a paper and posters presented at MLA '03, the 103rd Annual Meeting of the Medical Library Association; San Diego, CA; May 4, 2003.

brary in San Antonio and the new RAHC library, and the results of previous projects of the UTHSCSA library in the LRGV beginning in 1989 [2]. The two-year HI HO project was initiated in 2001, prior to the opening of the RAHC medical education building in July 2002 and the arrival of the first group of medical students.

This article presents an overview of the HI HO project. A copy of the project report may be viewed at the project Website at http://www.library.uthscsa.edu/rahc/outreach/HIHOindex.htm.

SETTING

The LRGV consists of four counties located in the southern tip of Texas along the Mexico border. The total population of these counties is over 1 million people, with the percentage of Hispanics varying by county from 85% to 98%. Some of the lowest levels of education and family income in the United States are found in the LRGV. Barriers to proper health care include lack of money, insurance, and transportation, as well as not-so-obvious barriers such as child care, language, and culture [3, 4]. Incidence rates for a variety of infectious diseases are significantly higher in the United States along the Mexican border than in non-border regions, particularly for diseases associated with poor sanitation and vaccine preventable diseases [5].

METHODOLOGY

Planning

Planning for the HI HO project and evaluation of the pilot projects was emphasized from the outset. HI HO project staff conducted intensive evaluation planning in collaboration with staff of the Office of Health Information Programs Development at NLM and staff of the Outreach Evaluation Resource Center of the National Network of Libraries of Medicine. Initial objectives were prepared and then revised to reflect increased familiarity with each pilot institution's needs. The applicability of the Burroughs and Wood field manual on evaluation was considered throughout the project [6].

Needs assessment

The HI HO project's needs assessment included a review of relevant literature, interviews with community stakeholders, a survey of LRGV physicians about their information usage patterns, and a review of the UTHSCSA circuit librarian program in the LRGV. The project director interviewed many health care professionals, librarians, high school students, and consumers using a structured interview format (Appendix). The evaluation specialist conducted focus groups of teachers and students at the South Texas High School for Health Professions, which from the first seemed a probable site for a pilot project. A mail survey of physicians' information habits was initiated to determine whether these habits had changed since they were surveyed in 1990 [7]. In March 2002, a four-page questionnaire with twenty-six questions in four sections—(1) ''Your Computer Experience,'' (2) ''Computers at Your Office or Home,'' (3) ''Information Resources,'' and (4) ''Professional Practice Information''—was mailed to all physicians in the LRGV identified from the database of the Texas State Board of Medical Examiners (TSBME). Administrators at nine of sixteen current and former participants in the UTHSCSA CLHIN were interviewed in 2002 about their perceptions of the CLHIN program. Questionnaires were provided to eleven CLHIN institutions in 2003 to distribute to CLHIN users. CLHIN program statistics were reviewed from the program's inception in 1989 through December 2003.

Pilot projects and focus groups

The interviews, focus groups, literature review, physician survey, and CLHIN review helped the project team understand LRGV health information needs and narrowed the focus of sites to select for pilot projects. Project staff chose community-based projects rather than projects focusing on professional personnel, following the introduction of MedlinePlus en español in late 2002. Four pilot projects involving MedlinePlus were the core components of the HI HO project. In conjunction with the pilot projects, three focus groups on MedlinePlus en español were conducted in Spanish with community groups. One focus group on MedlinePlus en español was conducted in English with bilingual participants.

High school peer tutors

The first pilot project was a cooperative project of the South Texas High School for Health Professions in Mercedes (commonly referred to as Med High) and the RAHC library. This project has been fully described by Warner et al. [8]. Four 11th grade students at Med High were trained as peer tutors to teach other students to use MedlinePlus. Between October 2001 and April 2003, demonstration and training sessions by librarians and peer tutors on MedlinePlus reached approximately 3,000 people attending 34 sessions. The Med High students responded eagerly to learning from their peers because the tutors talked to the students in their own language, used examples that were relevant to teenagers, and gave them tips to make research easier and more fun. The peer tutors helped everyone gain a sense of competency in approaching health information research.

Clinical workstations

Clinical workstation pilot projects were implemented at two LRGV health clinic sites—one rural, one urban—in October 2002. The goal of these projects was to test the effectiveness of using a computer workstation in the waiting room to increase patients' use of MedlinePlus en español and to get feedback as to what factors were important to users. The clinics already had Internet connectivity; however, interviews with

clinic staff indicated that general staff and patient knowledge about computers was low. Project activities at each clinic included setting up a computer for easy patient access; training staff and patients to use electronic health information resources in English and Spanish, particularly MedlinePlus; developing a referral method for clinic staff to encourage patients to use a workstation; and evaluating the extent of awareness and use of MedlinePlus as a result of the projects. A project staff person usually visited each clinic once a week for a few hours between October 2002 and April 2003.

Community center

The fourth pilot project at the community center at the Cameron Park *colonia* in Brownsville, Texas, was a cooperative initiative with the Texas A&M University Center for Housing and Urban Development (TAMU-CHUD) Colonia Program. ''*Colonia*'' is a Spanish term for neighborhood or community. In Texas, the term *colonia* refers to a residential subdivision that developed along the Texas-Mexico border without services like water or sewer [9, 10]. Development of Texas *colonias* began in the late 1960s and early 1970s with landowners offering mostly poor Mexican immigrants land on easy terms. Cameron Park is one of the largest *colonias* in the United States with more than 6,000 residents. Educational attainment in Cameron Park is low, with only 19.3% of people age 25 or older having a high school diploma or better, compared to the Texas average of 72.1%.

A community resource center was built in Cameron Park through the TAMU-CHUD Colonia Program. The center has a variety of programs, including matching families with food stamps, public assistance programs, and parenting, general equivalency diploma (GED), and English classes. A technology center with computers connected to the Internet opened at the center in July 2002. The Cameron Park project used the assistance of *promotoras* who worked with TAMU-CHUD staff to provide information to community residents about a wide range of community services. ''*Promotor*'' is the Spanish term for promoter. *Promotoras* are lay outreach workers who live in the *colonias,* are community leaders, and have been trained to introduce their neighbors to government, education, and social and health services.

Beginning in November 2002, project librarians provided training in Spanish on MedlinePlus en español to *promotoras* at classes in Cameron Park and at the UTHSCSA RAHC in Harlingen. The *promotoras* then showed people in their communities how to use MedlinePlus en español when it was appropriate to their needs. A project librarian visited Cameron Park between November and April, generally on a weekly basis, at which time the *promotoras* frequently consulted her.

Focus groups

Between January and June 2003, four focus groups were held to get user feedback about MedlinePlus and MedlinePlus en español. Three of the focus groups were conducted in Spanish with people with novice computer skills. Participants were trained to use MedlinePlus en español immediately prior to the focus group discussion. The fourth focus group was conducted in English with bilingual participants who used information in their occupational roles. This diverse group included people with expert computer skills. In the fourth group, all participants had received training in advance and had approximately one month to use MedlinePlus en español. All participants in the four focus groups were Hispanic of Mexican American descent.

EVALUATION

Formative evaluation

The formative methods for evaluation of the pilot projects included tracking the number of outreach activities and attendance rates by activity. For large group training sessions, an evaluation questionnaire was administered asking participants to rate the training session, the helpfulness of the database, and the ways they would apply it. At the clinics, where project staff primarily visited once a week for one to two hours at a time to provide one-to-one training as needed, the patients often were reluctant to approach the computer and had to be coaxed to try searching MedlinePlus. The project staff kept activity logs of encounters and were informally interviewed by the project's evaluation specialist to track the progress at each site, including information about the barriers that the staff were encountering. Written evaluations seemed inappropriate when simply getting people to participate in a computer search took so much effort. Thus, the formative evaluation of the clinic workstation projects relied on outreach staff members' journals to document interactions with participants during each site visit.

Summative evaluation

The pilot projects' summative assessment methods varied across sites. At Med High, students were surveyed in January 2003 as part of their ''Health Science Technology'' classes. Focus groups and individual interviews were conducted with students, teachers, librarians, and the school principal. At the three other pilot project sites, the summative evaluation mainly comprised interviews of staff and coordinators regarding their assessment of what the projects' successes were and their ideas of what the barriers to success were.

RESULTS

Physician survey

The number of physicians listed in the TSBME database as practicing in the LRGV increased from 573 in 1990 to 1,112 in 2002; however, the profile of the physicians was essentially the same. In both the 1990 and 2002 surveys, the primary workplace of respondents was in private practice and an almost equal percentage

Table 1
Experience as computer users

	1990 (N = 280)	2002 (N = 340)	*P*
Very experienced	1%	12%	0.00000
Somewhat experienced	15%	49%	0.00000
Not very experienced	21%	21%	0.97409
Not at all experienced	58%	8%	0.00000
No response	5%	10%	0.01454

in both years primarily worked in a hospital or clinic setting. In 1990, 280 usable responses were obtained from LRGV physicians, giving a response rate of 49%, compared with 340 responses, a response rate of 31%, in 2002.

Chi square tests showed significant changes in the responses to three questions. Table 1 compares the responses to the self-reported level of experience as users of computers between the respondents in 1990 and 2002. The responses reflected a significant increase in physicians' confidence in using computers.

In both years, physicians were asked why they searched MEDLINE. Table 2 shows the significant changes in the reasons for searching MEDLINE. The responses indicate an across-the-board deepening of physicians' use of MEDLINE.

In both surveys, physicians were asked why they did not use MEDLINE. Table 3 shows the reasons were significantly different in 2002 than in 1990. The responses suggest that lack of time is now the number one perceived barrier to use.

The 2002 survey provided a current profile of the physicians in the LRGV in terms of their use of computers, the Internet, and MEDLINE. Comparing the 2002 profile with results of the 1990 survey showed that overall technology and lack of awareness were no longer the major barriers to use of MEDLINE, but lack of time was a major barrier. Thus, although MEDLINE in various formats was used more in 2002 than in 1990, utilization still needs to be increased further to assure that physicians are aware of the most current advances in medical care as reflected in the journal literature covered by MEDLINE.

Circuit Librarian Health Information Network

In general, the administrators were very positive about CLHIN and did not think the anticipated opening of the RAHC library would affect their need for CLHIN services. The eighty-one people who completed questionnaires indicated they were aware of the CLHIN service, that research and patient care questions were the main reasons they used the service, and that more publicity about the program was needed. The questionnaires did not explore Internet usage. Because the number of questionnaires returned was low, generalizations about the perceptions of the continued importance of CLHIN could not be made based on the responses.

Eleven LRGV institutions participated in CLHIN in 2003, down from a high of fourteen in 1996. The number of documents delivered has varied over the years, but the general trend has been downward from the high point in 1998. Reasons for variation include personnel changes at CLHIN institutions, political factors and cost-cutting measures resulting from changes in hospital ownership, counting methods used by CLHIN staff, and increasing use of the Internet by hospital personnel. Overall, the results suggest that the CLHIN type of services is still needed, even in the age of the Internet.

Table 2
Reasons for searching MEDLINE

	1990 (N = 280)	2002 (N = 340)	*P*
Stay current	24%	44%	0.00000
Treatment recommendations and modalities	27%	43%	0.00002
Diagnostic criteria or differential diagnosis	25%	36%	0.00387
Prepare lecture or paper	23%	32%	0.01215
Drug information	14%	30%	0.00000
Information for patient or family	9%	22%	0.00000
Learn about new field	14%	22%	0.01476
Basic research	8%	17%	0.00029
No response	58%	41%	0.00001

Pilot projects

While the HI HO project team had developed outcome and impact statements during the planning stage, actual experience at the pilot project sites changed the perceptions of what constituted successful outcomes. The following were the revised indicators of success:

1. increased level of consumer participation in use of MedlinePlus
2. reports from key informants who observed consumers using MedlinePlus to explore their own health issues
3. reports from consumers of incidents in which information found through MedlinePlus helped them or others
4. reports from project participants that they had trained others to use the database or retrieved information for others
5. development of self-sustaining outreach activity at the pilot project site, with local site staff or participants willing to take over promoting the resource and assisting in teaching the search strategies to clients

After defining the indicators, project staff ranked the four pilot project sites in the following order (from most to least successful): (1) Med High, (2) Cameron

Table 3
Reasons for not searching MEDLINE

	1990 (N = 280)	2002 (N = 340)	*P*
Do not know how	28%	18%	0.00270
Not enough time	14%	29%	0.00001
No computer	21%	3%	0.00000
Never heard of it	16%	5%	0.00000
Not needed	10%	5%	0.03398
No response	30%	44%	0.00016

Table 4
Innovators or early adopters*

Project	Early adopters	Comments regarding success of relationships
Med High	Librarians and students	Successful: Librarians make a career out of finding personalized information for people and teaching search skills. They, in turn, helped identify students who could learn the search skills and teach to friends.
Cameron Park	*Promotoras*	Successful: A big part of a *promotora*'s job is to provide health care information to residents. MedlinePlus facilitated their ability to find information for their clients. Also, the *promotoras* initially used MedlinePlus to research health concerns for themselves and family members.
Rural clinic	Diabetes educators	Less successful: The clinic staff members did not have computer access at their desks, so they were unlikely to use MedlinePlus in their office. Consequently, they did not seem very committed to promoting it to patients.
Urban clinic	Diabetes educators	Less successful: Diabetes educators would have to teach clients how to use the computers; it was easier to simply give them printed material. Also, MedlinePlus training would have to be taught in a one-to-one setting at the clinic due to the lack of patient computers and the poor technology skills of patients. Diabetes education typically occurs in group settings, not on a one-to-one basis.

* These are the community members who are the first to use technology. When the project staff could identify and form relationships with these community members, they in turn would teach others. This table presents the level of success in identifying the true early adopters.

Park, (3) rural health clinic, and (4) urban health clinic. The adoption of MedlinePlus by individuals at the different sites followed patterns described in the diffusion of innovations (DI) theory, a social change theory suggested as a planning tool in the Burroughs and Wood field manual. DI theory describes the patterns of adoption typically seen when an innovation is introduced into a community or organization [11]. Adoption tends to occur in waves, with 2.5% of community members using it first (innovators), followed by 13.5% (early adopters). If an outreach project can identify and target the innovators and early adopters, these first users will introduce the innovation to others in the community. Not only does DI theory describe how innovations are adopted by communities, but it describes how the innovation should be introduced to get the attention of early users. The project staff found that DI theory allowed project staff to understand and evaluate the project results. Tables 4, 5, and 6 compare the projects on each variable.

DISCUSSION

Information outreach efforts involving computer technology are challenging in many ways. Often, the target consumers lack experience with technology and lack access except through the facilities at public institutions that have limited operating hours. This is particularly true in low-income areas such as the LRGV of Texas, where many residents do not use English as their primary language. As shown in Tables 4–6, the Med High project was considered the most successful, the Cameron Park community center project was successful, and the two clinic projects had limited success.

Key drivers of success

Successful projects meet an existing need. At Med High and Cameron Park, people had an immediate need to access health information from the Internet. The librarians at Med High realized that they had many Internet resources, but they lacked a starting place in the health sciences area that guaranteed quality information to offer the school community. Once the librarians learned about MedlinePlus, they had a new, efficient tool that could help teachers and students. Previously, students had to rely on print materials because teachers did not trust Internet resources. Teachers were concerned that when students were permitted to use the Internet, they used search engines

Table 5
Relative advantage (RA): the degree to which MedlinePlus is superior to the products already used at the site

Project	RA	Comments
Med High	Better	Prior to using MedlinePlus, students used Google and similar search engines. Students were frustrated because they received a lot of ''junk hits.'' Teachers were frustrated because many Internet sources were not reliable and students often could not tell the difference. Librarians were frustrated because Internet resources were not being used to the fullest potential. All have recognized the superior quality of MedlinePlus materials.
Cameron Park	Better	Cameron Park residents had two options for health information prior to MedlinePlus: Either they could ask their physicians or they could look at books from the community organizer. Asking questions of doctors is intimidating and considered disrespectful to many Hispanics, and borrowing books was inconvenient. Access to MedlinePlus at the technology lab provided residents with a better alternative.
Rural and urban clinics	Worse	The alternative source for health information was provided from the physician or health care providers or through printed materials. Because the health care providers did not have computers and because their clients tended to be ''low tech,'' printed and verbal instruction seemed easier for the diabetes educators to use for classes.

Table 6
Compatibility: the degree to which use of MedlinePlus is consistent with participants' existing values, habits, experiences, and needs

Project	Compatibility	Comments
Med High	Good	Med High students, teachers, and librarians are frequent health information users and value trustworthy sources. Using MedlinePlus is not very different from using other Internet search engines, so no one was intimidated by the technology. Level of experience with users was high; most stakeholders at Med High knew the Internet would be a good resource for them, but they did not have a good source for searching until MedlinePlus was introduced.
Cameron Park	Mixed	The residents of Cameron Park, particularly the staff at the community center and the *promotoras*, value good health information, and they recognized their need for a good source like MedlinePlus. However, *promotoras*' and residents' experience with technology and Internet search strategies was low. The community center's technology lab provides a place for residents to learn and practice computer skills, but the availability of the lab itself, technology assistance, and access to the Internet can be unreliable.
Rural and urban clinics	Poor	The client population did not have access to or experience with computers. Diabetes educators were relatively inexperienced with the Internet, found printed materials more convenient than computer information, and did not seem to have time to assist patients in locating and getting MedlinePlus materials.

that provided many links to irrelevant sites. Good training and mentoring and energized students overcame these concerns and opened up many positive opportunities.

At Cameron Park, the TAMU-CHUD technology center staff members were eager to have new program content and thus were very supportive of the project. The Cameron Park *promotoras* needed a good health information source, because they were the information source in their communities for any health and social services information.

A tension existed in both of these locales between a need for health information and a lack of convenient, accurate resources to meet that need. MedlinePlus met that need, so the Med High participants and the Cameron Park *promotoras* became committed to learning about MedlinePlus and using it effectively.

In contrast, the staff at the two health clinics did not seem to perceive a compelling need to provide personalized information to patients. They had developed patterns of information distribution (health pamphlets, diabetes education classes, etc.) that fit their mode of operation better than MedlinePlus. Most clinic staff did not believe that they could conveniently fit providing personalized assistance with online technology into their schedules.

Educational settings are better than health clinics for providing Internet-based health information resources. The Med High project and the Cameron Park project had paid staff, whose primary responsibilities included providing technology training and using information to improve people's ability to learn about problems. Their awareness of the possibilities of MedlinePlus for impacting community residents made them enthusiastic participants in the project. They provided the organizational support that reinforced project staff's efforts and encouraged new information-seeking behavior. The two health clinics appeared to have numerous barriers and challenges that worked against patients' willingness to leave the office of a physician or diabetes caseworker and use a computer to find information. This situation might improve with stronger support from clinic management, better staff training, and more patient-friendly workstation arrangements.

MedlinePlus training was most effectively provided by peers. The two pilot projects that were most successful used high school students and *promotoras* to provide training to peers. Project staff provided initial training and then served as backup to peer tutors in actual training sessions. The Med High students repeatedly said that they preferred learning about MedlinePlus from their peers. Cameron Park residents were open to working with the *promotoras,* who literally were their neighbors. In contrast, clinic patients did not seem interested in working with clinic staff, possibly either because the clinic staff were health professionals and not regarded as peers or were not from the community.

Teaching and promoting MedlinePlus seemed to occur more easily peer-to-peer than health provider-to-patient. Providers seemed to recognize the patients' need for resources like MedlinePlus but did not usually take the time to pass MedlinePlus information on to patients. However this could change if clinic staff were better trained, supported, and motivated to work directly with patients in facilitating access to online health information.

People sought health information for family and friends and for personal use. Med High survey respondents were asked to list up to 3 examples of people they taught or told about MedlinePlus. On average, respondents told at least 1 other person and, 59% of the time, they told a family member. Anecdotal reports from outreach staff journals and focus groups of the other pilot projects included examples of people trying to get information for a family member or friend rather than for themselves. It became very apparent that a primary purpose for using MedlinePlus was to help family members cope with a loved one's illness. Many clinic staff members were interested in getting information for themselves and family members, even

though they seldom used MedlinePlus in counseling patients.

Overall, the pilot project results seemed generally consistent with the results of the Pew Internet health resources study, which found that

> Health seekers go online to become informed, to prepare for appointments and surgery, to share information, and to seek and provide support. Health searches are not an every day thing for most Internet users. . . . More than half of those who recently conducted searches did so on behalf of someone else—a spouse, child, friend, or other loved one—not for themselves. [12]

Barriers and challenges at the clinic sites

The clinic workstation projects were considered less successful based on the criteria listed earlier in this paper. The following are examples of barriers and challenges described in interviews with personnel at the two clinics with workstation projects:

1. Due to travel requirements and the expense of coming to a clinic, many low-income patients do not come until they are very ill or in a ''health crisis.'' They may be less interested in working with a computer to get information about their illness under these conditions.
2. Patients do not always want to open up to physicians, and even staff like diabetes educators, for a variety of reasons. In the LRGV Hispanic culture, physicians are treated with formality due to their status. In some cases, patients feel uneasy that they are not doing all they can to manage their illness and may fear that they will face physician disapproval if they disclose too much.
3. Some of the patients are illiterate, so written information is not helpful to them. While MedlinePlus includes audiovisual resources, the poor technological ability of both staff and patients was a barrier to using MedlinePlus as a follow up to office visits.
4. Staff at one clinic thought the waiting room had too much noise and activity to be conducive to patient use, and they suggested placing the computer in a room by the pharmacy where patients often wait two to three hours for prescriptions.
5. Some staff reported not referring patients to the computer workstation, because they were too busy to teach patients to use the computer and already had comprehensive printed patient information materials available from a variety of sources.
6. The concern of some staff member that the computer might provide too much information to discuss with patients is a disincentive to using MedlinePlus for patients. Clinics in the LRGV have a very large number of patients, so efficiency is a high concern.

Focus group insights

1. Bilingualism is a continuum rather than a category. Different levels of experience with a language yielded different levels of need among users. The fourth focus group had bilingual participants who used English as a primary language and some who used Spanish primarily. Participants whose first language was English were easily confused by unconventional, awkward, or even incorrect usage of Spanish words in the MedlinePlus materials.
2. Focus group participants who used English primarily and would use the English-version of MedlinePlus for personal use might need the Spanish version for professional use. Therefore, while project staff tended to think of MedlinePlus user groups as either categorically English or Spanish users, a third group needs to be able to navigate both Websites.
3. Regional Spanish dialect was not a barrier to focus group participants who used Spanish as their primary language. In the bilingual focus group, Spanish speakers had little trouble even when words were used incorrectly. It is possible that those with more facility with a language can usually figure out unfamiliar terms if they are in context. On the other hand, it is possible that people who prefer English may have more trouble adapting to unfamiliar usages of Spanish words.
4. Focus groups with users who had more time with the product provided more detailed feedback than users who were introduced to it minutes before the focus group.
5. Users with more Internet experience provided more detailed feedback. For those unfamiliar with the Internet, MedlinePlus was the first online database they had encountered, and their lack of experience with consumer health databases made it difficult for them to critically assess the product. The only flaw noticed by the focus groups' novice users was that more English information existed than Spanish information (they particularly missed having drug information in Spanish). More experienced Internet users, on the other hand, usually had a basis for comparison and provided a more detailed critique.

CONCLUSIONS

The HI HO project represented the largest discrete Hispanic health information outreach project sponsored by NLM during the time period. The project was a comprehensive approach to better understanding the health information needs of the majority Hispanic population of the LRGV. In the aggregate, the project met its overall goals and significantly contributed to building a knowledgebase about Hispanic outreach.

The physician survey and the CLHIN review documented some of the changes that have occurred in the LRGV since Internet use became relatively widespread. The familiarity of primary health care providers and their access to and use of the Internet all increased significantly. However, this familiarity apparently has not yet translated into noticeably greater use of Internet-based health information by the Hispanic majority population of the LRGV. This reinforces the need for exploration and experimentation with new approaches to reach out to the LRGV communities and their health care providers, advocates, and intermediaries. In this context, the pilot projects are the most noteworthy aspect of the HI HO project.

The four pilot projects promoted community use of MedlinePlus with varying degrees of success. The two pilot projects that were most successful focused on high school students and *promotoras*, whereas the two projects that relied on health professionals at clinics were less successful. The focus groups on the use of MedlinePlus en español were also a valuable aspect of the HI HO project, because they highlighted the complementary roles of the English and Spanish versions of MedlinePlus.

Two pilot projects, Med High Peer Tutors and Cameron Park Colonia Community Center, have achieved significant recognition.† In addition, the administrators of the South Texas Independent School District (STISD) decided that the peer tutor program deserved to become an ongoing program at Med High. Med High subsequently received funding to expand the peer tutor program to other schools and clubs in the STISD.

Also, UTHSCSA was funded by NLM in 2003 to expand the Cameron Park community center project with the *promotoras* in four other *colonias* in Texas. The new *colonia* project was presented at the National Network of Libraries of Medicine Directors meeting in May 2004 and was discussed at the ''Symposium on Community-based Outreach'' at the National Library of Medicine, December 2 to 3, 2004 [13].

Finally, lessons learned from the health clinic pilot projects have informed subsequent NLM-supported efforts to better understand and test new ways to reach patients in the clinic setting. For example, one 2005 project in Washington, DC, has built on the LRGV experience by emphasizing strong clinic leadership commitment, intensive staff and patient training, appropriate clinic environment, and balanced use of both English- and Spanish-language health information resources such as MedlinePlus. These efforts are intended to enrich and optimize the patient experience and enhance the value-added nature of online health information in the clinical setting and especially in clinics that serve Hispanic and other minority populations.

ACKNOWLEDGMENTS

The authors acknowledge the assistance of many people involved with the HI HO project. Mary Jo Dwyer and Graciela G. Reyna, UTHSCSA librarians, provided training in Spanish to the *promotoras* and to the participants at three of the focus groups on MedlinePlus en español. Reyna also was instrumental in conducting the CLHIN review. Jonquil Feldman, AHIP, UTHSCSA librarian, prepared the literature review, coordinated the survey of physicians, and assisted with report preparation and poster development. Andrew Lombardo and Sylvia Muniz of the RAHC library assisted with various aspects of the project, particularly the two health clinic pilot projects. We also recognize the contributions of Catherine Burroughs, National Network of Libraries of Medicine, Pacific Northwest Region, University of Washington, who consulted on the evaluation of the project.

Many people in the Lower Rio Grande Valley community were also very involved in aspects of the HI HO project. Our special thanks to the administrators and staff of the STISD, the two participating health clinics, the TAMU-CHUD Colonia Program, the students at Med High, the *promotoras* at Cameron Park, and Lucille Hansen, lead librarian at Med High, and Santiago Villanueva at the TAMU-CHUD Colonia Program.

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† The Med High Peer Tutor project received the Texas Library Association's Project of the Year award in January 2003 and the National Commission on Libraries and Information Science Blue Ribbon Award in 2004. The University of Texas Health Science Center at San Antonio Regional Academic Health Center Library was one of three libraries in the United States to receive the 2004 National Award for Library Service from the federal Institute of Museum and Library Services for extraordinary public service.

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Received April 2005; accepted October 2005

APPENDIX

University of Texas Health Science Center at San Antonio Regional Academic Health Center Library community outreach needs assessment interview guide

Interviewee name: ____ Date: ____
1. Briefly describe the interviewee and why you chose to interview this person (name, profession, specialty, professional versus patient).
2. Describe this person usage of medical information. (How does this person get the information, what resources does this person use, does this person use electronic resources, what are the reasons this person seeks information—personal use, patient education, etc.)
3. What level of awareness does this person have about the medical information resources available to him/her online? (Note this person's awareness about the Circuit Librarian Health Information Network and MEDLINE are of particular interest.)
4. What does this person know about patients' use of online medical information? Does this person refer patients? Do patients come to this person with questions about what they read online?
5. Describe the technological infrastructure available to this interviewee. What type of access does this person have to Internet resources?
6. What type of infrastructure changes will have to be made to get this person to work more online?
7. What type of training will this person require to use online medical information resources?
8. What are the best ways for this person to get information about online resources?
9. Would this person have use for Spanish-language online medical information resources?
10. What are the community assets learned about in this interview that we could use in developing our programs and services?
11. What are this person's attitudes toward Internet resources and information? Does this person perceive a need to get information online? Does this person seem motivated to learn how to use online medical information?