

**Border Health and Environmental Threats
Initiative: Health and Migration**

by

Isidore Flores, Ann V. Millard, and K.C. Donnelly
Texas A&M University System Health Science Center

**Research Report No. 36
December 2007**

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Border Health and Environmental Threats Initiative: *Health and Migration*

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Border Health and Environmental Threats Initiative: *Health and Migration*

Executive Summary

Health and Migration

The Health and Migration section research dealt with the health of populations residing in South Texas colonias, which generally are unincorporated settlements with low living standards and residents who are largely isolated from the U.S. medical system.

Usually, disease reporting to public health authorities results from patient encounters in hospitals, clinics, and doctors' offices. Medical professionals have the responsibility of providing information on cases of specific reportable diseases to the public health system. This system is unworkable for economically poor, medically isolated populations like the great majority of adults living in colonias, who do not become patients until their disease has become quite serious. This population could suffer an unknown, significant communicable disease outbreak (like SARS), and because of their isolation and poor access to medical care, have a significant delay in the reporting of that disease. The delay would seriously jeopardize their own health and allow the rapid spread of that disease to other populations in the region, thus making its eventual control much more difficult. It is crucial to the general health of people in the border region, and elsewhere, to

streamline the process of identifying and reporting syndromic events in medically underserved populations. Streamlining allows public health authorities to make decisions that can lead to earlier warnings of a possibly dangerous communicable disease outbreak.

This study of medically isolated populations was limited to the area south of Highway 83 and north of the international border in Hidalgo County, where the South Texas Center is located. A large medically isolated population resides in the colonias of this area (see Fig. 1). Highway 83 is the main east-west road paralleling the Mexican border.

The social intervention that we developed is the Neighborhood Disease Watch System. It is similar in some respects to the long-standing Community Crime Prevention model better known as "Neighborhood Watch," which is organized around neighborhood crime prevention. The Neighborhood Disease Watch System is based on neighborhood First Aid provision. This effort employs Community Health Workers, or Promotoras, who work with existing or newly emerging social networks in colonia communities. With community members, they gather information to be used in



Figure 1.
Location of Hidalgo County, Texas

data analysis and Geographic Information Systems (GIS) modeling. Each network leader is identified, assigned a First Aid kit, provided with a bilingual manual on First Aid and basic health concepts, given means to report household syndromic events on a periodic basis, and provided training on health issues as requested.

Promotoras visited them periodically to replenish First Aid supplies while collecting completed syndromic events reports for inclusion in the dynamic project data base in development by Region 11 of the Texas Department of State Health Services. The expectation is that the reporting of syndromic events can quickly bring to light contagious disease outbreaks in the colonias closest to the U.S.-Mexico border in as timely a manner as possible.

The project had considerable success in building social networks in colonias as a basis for reporting syndromic events. Colonia members welcomed the project in most cases, and the project team found their cooperation gratifying. Several elements contributed to that success.

The design of the study to include the principle of valuing community, through the focus on social networks, was culturally congruent and met the social and practical needs of colonia residents. The First Aid kits provided them with immediate tangible benefits. The Promotoras working for this project had considerable experience in research and skill in approaching colonia residents, establishing rapport, and carrying out the project.

The project involves 293 families participating in the 33 networks established among the 51 colonias along the international border. That includes 592 adults and 516 children. There were 1,295 documented uses of the First Aid kits, and there were 200 bilingual health manuals distributed.

The Project Manager had considerable experience also in working with the Promotora team, research in colonias, and building an approach to the research that was practical and productive. The

Principal Investigator and Co-Principal Investigators had enough experience in cross-cultural work to recognize the importance of the experience and intuitions of other team members in designing the project. They also had experience in research with related populations, and in working with teams on data collection, data entry, and data analysis in both narrative and quantitative forms. Altogether, the combination of experience and creativity on the part of the research team allowed us to build an excellent foundation for continuing data collection and completing the project.

The Office of Border Health of the Texas Department of State Health Services has agreed to begin funding of the Neighborhood Disease Watch System portion of the project in the near future as part of the Early Warning Infectious Disease Surveillance (EWIDS) project. Under that project, the name changes to the Colonias Syndromic Events Reporting System.

There has been initial interest in supporting the First Aid portion of the project by a local Lions Club and negotiations are continuing.

This research project has demonstrated the benefits and usefulness of an innovative system for providing First Aid, the most basic of health care needs beyond prevention, while providing a system for reporting symptoms of contagious disease along our southern international border. Expansion of the Neighborhood Disease Watch System is warranted, for it provides a new and important addition to our efforts to secure our borders against naturally occurring infectious disease or infectious disease caused by bioterrorism.

Health and Immigration

This is a final report on research concerning the Health and Migration section of the Border Health and Environmental Threats Initiative. The initiative involves a consortium of four Texas universities; all report separately.

Specifically, the Health and Migration section research dealt with the health of populations residing in South Texas colonias, which generally are unincorporated settlements with low living standards and residents who are largely isolated from the U.S. medical system.

Usually, disease reporting to public health authorities results from patient encounters in hospitals, clinics, and doctors' offices. Medical professionals have the responsibility of providing information on cases of specific reportable diseases to the public health system. This system is unworkable for economically poor, medically isolated populations like the great majority of adults living in colonias, who do not become patients until their disease has become quite serious. This population could suffer an unknown, significant communicable disease outbreak (like SARS), and because of their isolation and poor access to medical care, have a significant delay in the reporting of that disease. The delay would seriously jeopardize their own health and allow the rapid spread of that disease to other populations in the region, thus making its eventual control much more difficult. It is crucial to the general health of people in the border region, and elsewhere, to streamline the process of identifying and reporting syndromic events in medically underserved populations. Streamlining allows public health authorities to make decisions that can lead to earlier warnings of a possibly dangerous communicable disease outbreak.

This study of medically isolated populations was limited to the area south of Highway 83 and north of the international border in Hidalgo County, where the South Texas Center is located. A large medically isolated population resides in the colonias of this area (see Fig. 1). Highway 83 is the main east-west road that parallels the border with Mexico.

Background

The Border Health and Environmental Threats Initiative

This study was part of a larger project involving a university consortium and directed by the International Consortium for Health and Environmental Security (ICHES) at Brooks City-Base Foundation. The project was conceived through discussions with researchers at various universities and with the residents of the lower Rio Grande Valley. Conceptualization of the project took place on the basis of work by Rudy Rosen, who began his efforts on behalf of the Brooks City-Base Foundation in the period ensuing the "911" terrorist attacks (Sept. 11, 2001). The timing and the context of collaboration with the Air Force and its labs at Brooks City-Base contributed to the development of the focus of the project on environmental security.

The consortium project, the Border Health and Environmental Threats Initiative, had the following goals to identify and assess threats to national health and environmental security that result from:

- *the development and spread of drug-resistant disease*
- *the proliferation of vectors that carry disease*
- *the movement of disease back and forth across the Texas-Mexico border*
- *the proliferation of disease in populations with poor access to medical care, and who are thus isolated from the usual disease reporting system.*

The expectation was that project information, continuously collected and mapped, would provide the basis for developing dynamic models and systems to provide early warning of diseases like Severe Acute Respiratory Syndrome (SARS) or Avian Flu that could threaten the U.S., Mexico, and Canada.

The different facets of our project and those project partners responsible for each area were:

- **Antibiotic Resistant Disease** — *Sul Ross State University-Alpine, Dr. Keith Stearns*
- **Disease Mapping and Modeling** — *Texas State University-San Marcos, Dr. Ben Zhan*
- **Disease Vectors** — *Sam Houston State University-Huntsville, Dr. Monte Thies*
- **Health and Migration** — *Texas A&M School of Rural Public Health-McAllen, Dr. Isidore Flores and Dr. Ann Millard*

These four facets were designed to fit together synergistically through the focus on environmental security. In addition to addressing bioterrorist threats, the project also provided a foundation for improved public health in relation to communicable diseases in general.

The Socioeconomic Context of the Health and Migration Study

Hidalgo County, the location of this study, has a number of distinctive social and economic characteristics, some of which are weaknesses and others, strengths. It is the second poorest county in the United States among those with a sizeable population (see Table 1). Cameron County is contiguous with Hidalgo and extends eastward to the Gulf of Mexico. These two counties along with Starr County, which is to the west of Hidalgo, but which has a population of less than 250,000, are consistently found together as the worst off nationally on dimensions of poverty, low education, and unemployment. On the other hand, they also have high percentages of intact families, and Hidalgo County has one of the fastest growing economies nationally.

The Colonias of Hidalgo County

As mentioned earlier, one phase of this study took place in Hidalgo County colonias. The word “colonia” has a meaning that varies according to geographic location and thus can be a source of

confusion. In the Spanish language, the word simply means “neighborhood.” In South Texas, it came to mean a cluster of humble shelters with no basic utilities. In the old border region days, people would rig up shelters close to the agricultural fields where they worked. There are advantages to farmers to have the work force near at hand. A colonia was thereby born, and those that escaped the bulldozers still exist today. At some point, enterprising farmers and other rural landowners started selling cheap plots of land with the promise that basic infrastructure would follow. It usually didn’t. Laws governing development did not exist at the time, but in the late 1980s all that changed with state legislation aimed at improvement. Today, a developer must pave and curb the streets, provide utility hook-ups to the edge of the property, and provide septic tanks or access to a sewer line for lots of at least one-half an acre. The legacy of the earlier colonias continues to exist, though. Every legislative term, resources are allocated to help right past wrongs by providing some help for older colonias. New, noncompliant colonias, unfortunately, keep popping up in spite of the law.

Valley economics play an important role in the development of colonias. For example, a producing grapefruit orchard sells for about \$6,000 an acre, or \$3,000 a half-acre. A developer will buy out a farmer, or the farmer himself will decide to convert his land for the housing market. The land is subdivided into half-acre lots, water and electricity hook-ups and septic tanks are installed, and the streets are paved. Each transformed half-acre lot now sells for \$12,000 or more (see Fig. 2). At the colonia known as Monte Carlo Estates, you can buy

Table 1. Hidalgo County's ranking among 220 U.S. Counties with populations of more than 250,000.

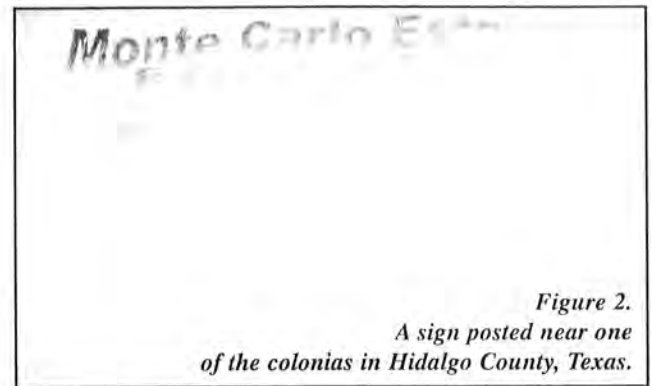
National Rankings: U.S. Counties (2004-05, in 2005 with 250,000+ population)

People below poverty level in the Census Bureau's poorest 100 counties (2002 data)	1	3
Children in Poverty (2004 data)	2	1
Percent 65+ who are below poverty level (2003 data)	7	1
Percent of population 24 years of age or younger with a high school diploma (2003 data)	2	1
Percent of population 25 years of age or younger with a high school diploma (2003 data)	218	238
Mark in Texas who have a diagnosis of Diabetes (2003 data)	212	211
People in the Labor Force (2004 data)	235	238
Median Household Income (2000 data)	125	125
Percent of Census Tracts with Housing Units	122	27
Median Monthly Housing Cost for Renters	121	121
Median Monthly Housing Cost for Mortgage Owners	121	121
Fertility Ranking (children born annually per 1,000 women 15-19, 1994-1995)	44	1
Percent of Children Under 6 with Both Parents in Work Force (2003)	721	218
Percent Who Speak a Language Other than English at Home (2001)	4	3
Percent Who Speak Spanish at Home (2002)	4	3

Source: U.S. Census Bureau, Demographic Statistics Division, County Income Measurement Office (2004-05).
 Update by Dr. A.V. Alvarez, South Texas Center for Rural Public Health, Texas A&M University Health-Science Center.

a half-acre lot for \$95 down, and \$173 per month, and you can put any kind of dwelling on it that you can afford at the moment. That may be a wrecked or worn-out recreational vehicle or school bus, a tar paper shack, or a more substantial building; there are no codes for owner-constructed and occupied housing in rural areas. Most people put up temporary housing and work at building something more permanent as time goes on and resources permit. This transition can take many years. Thus a modern-day colonia is established and evolves. Some people say "it's a better deal than you can get in Mexico."

Accurate characterization of the colonias in Hidalgo County is difficult. The basic data sources for colonia populations are the U.S. Census, the Texas Water Development board, the records of the Attorney General of the State of Texas, and the county's appraisal district office for property taxes. Each source has its shortcomings. The census is incomplete in enumerating immigrants who lack authorization to live in the United States because people are wary that census takers will turn them in to the Border Patrol. The Water Development Board reports data on the number of water meters in a colonia; however, that number does not necessarily equate to the number of dwellings. Further distortions to the data base are due to the fact that some lots are not sold right away; new owners are often slow to build; and some people buy multiple lots, but build only on one. Some houses contain more than one family.



*Figure 2.
A sign posted near one
of the colonias in Hidalgo County, Texas.*

Moreover, a range of housing may be possible from one new development to another. Some of the platted land in rural areas will become colonias, and some will become upscale gated communities; to point out the extremes. There is no way to tell because covenants that may be established to specify the type of housing that can be erected in a development are not filed with the plats.

To complicate matters, sometimes apartment houses are built on colonia lots; sometimes a winter Texan recreational vehicle park is recorded as a colonia. These examples do not fit the definition of colonia in our study, but 10 wrecked RVs parked out in a field and rented out, do (See Figs. 3-8).

The Childhood Immunization Education Initiative led by Dr. R. McCallum, Principal Investigator, and Nancy Arden, Texas A&M University System Health Science Center College of Medicine, collected data from colonia families on a number of socioeconomic characteristics. The study was



Figure 3. A new colonia with house trailers and one new house.



Fig. 4



Fig. 5

*Figure 4. A relatively old colonia with wooden houses, fenced yards, and mature trees.
Figure 5. A particularly eclectic approach to building a colonia house.*



Fig. 6



Fig. 7

Figure 6. The use of the outdoors for family living space is obvious here.

Figure 7. Trailer with outhouse, or outdoor toilet, bordering an orchard.

Figure 8. Another eclectic mix of home construction materials and techniques (below).



funded by the Houston Endowment. Our research team's project manager and promotoras worked on the immunization project. They reviewed the status of colonias in a sample of 526 of the 889 colonias listed for Hidalgo County. The immunization study focused on age-appropriate immunizations and their rates among young children in 2002. The study found that the colonia residents had immunization coverage for their children that was at least as complete as the rest of the state of Texas.

Table 2 shows a wide range in the number of dwellings per colonia (from 2-505 units). On average, the number of dwellings was 34. Regarding socioeconomic level based on observed characteristics such as housing materials and size, colonias tended to fall into the categories of poorer than most and middling, in comparison to the range of colonias, in general, in the county.

Table 2. Characteristics of Hidalgo County Colonias (n=579)		
	n	percent or mean
Colonia size (number of dwellings)		
Range	2-505	
Mean (SD)		33.9 (+ 41.8)
≥ 100	21	4.40%
House construction		
Brick or stone	244	42.14%
Wood or siding	229	39.55%
Trailer with addition	5	0.86%
Trailer	100	17.27%
Other	1	0.17%
Water system		
Public water system	563	98.27%
Well water	6	1.04%
Water from other source	4	0.69%
Sewage disposal		
Public sewage system	240	41.52%
Septic tank	319	55.19%
Cess pool	8	1.38%
Outhouse	2	0.35%
Other	9	1.56%
Road condition		
Paved, no curbs or gutters	418	72.19%
Paved, curbs & gutters	105	18.13%
Gravel	31	5.35%
Dirt	25	4.32%
Telephone in home	493	85.15%
Socioeconomic classification (n = 433)		
Poorest colonias	16	3.53%
Poorer than most colonias	133	29.36%
Middling colonias	257	56.73%
Better off than most colonias	29	6.40%
Best off among colonias	18	3.97%

Table 3 indicates that most colonia households contain one family, but one-fifth includes two families and 4% have more than two families. In other words, almost 25% of colonia homes have multiple families. Nearly a fourth of colonia families migrate to do farm work every year. This yearly flow of residents out of the lower Rio Grande Valley to work in various states in the Midwest and Southeast has significant ramifications for health.

About 15% of families lived in their colonia less than 6 months, 17% for at least 10 years, and a full 43% of families lived there between 2 and 10 years.

Table 4 shows that 94% of the respondents to the survey were the mothers of the children who were the focus of the immunization study. Mothers tend to manage health care for children in the family. The table also indicates that 83% of the respondents were between the ages of 18 and 35, which is what you would expect of a part of a population in their childbearing years. Over half of respondents had between 9 and 12 years of education. Nearly 10% of respondents had education beyond high school. Over 99% of respondents identified themselves as Mexican, or of related ethnicity, emphasizing the homogeneity of the colonia population. Among them, less than one-quarter preferred to communicate in English.

Colonia Health Issues

Some additional characteristics challenge the health and well-being of colonia residents in several ways. Private health insurance is a rarity. About 40% of Valley residents who are eligible for Medicaid are not enrolled. About 80% of all Valley residents don't have dental insurance of any sort. Many colonia residents in Hidalgo County are isolated from health care because of:

- limited literacy ("functional health illiteracy");
- limited understanding of the health care system;
- embarrassment and other cultural factors;
- limited transportation;
- long waiting times to receive an appointment;
- unaffordable health care costs; and
- the perception that undocumented immigrant status prevents access to health care.

Table 3. Colonia Families and Households (n=579)

	n	percent
No. of families in household		
1	438	75.65%
2	117	20.21%
3	18	3.11%
4	4	0.69%
≥ 5	2	0.35%
Households with 2 parents resident	472	81.52%
Migrant status		
Family migrates	133	22.97%
Family does not migrate	446	77.03%
Length of residence in colonia		
< 5 months	86	14.85%
6-11 months	42	7.25%
1 yr., < 2 yrs.	103	17.79%
2 yr.-3 yr.	113	19.52%
4 yr.-9 yr.	137	23.66%
10 yr.-19 yr.	84	14.51%
> 20 yrs.	14	2.42%

Problem 1: The nation's health care system has evolved into a form that does not serve this population with efficiency or parsimony. Generally, patients are supposed to enter the healthcare system through a provider of Family Medicine. The patient sets up an appointment with a physician for a yearly check-up and then follow-up visits as needed, with referrals to medical specialists on an appointment basis. While this system works well for families with sufficient transportation resources, medical insurance, and sick leave, it does not work well for typical colonia families. They have one vehicle needed by the primary bread winner to get to an hourly job that provides no medical benefits. Taking time off for a doctor's appointment means earning less money that day, because wages are paid only for hours worked; in some cases, taking time off jeopardizes the job. The effect is that workers do not seek medical care until they are seriously ill; they won't miss work unless absolutely necessary, and they will take family members to seek medical care after work hours.

One result is overutilization of hospital emergency departments for health care – a very expensive form of medical care delivery. A second result is the loss of preventive aspects of healthcare and again, raising costs by allowing a disease to develop and become complicated rather than nipping it in the bud. A third result is increased human suffering by colonia residents who tend to experience longer and more severe illness than those with health insurance.

Table 4. Characteristics of Survey Respondents (n=579)

	n	percent
Respondent household position		
Mother	546	94.30%
Father, Grandparent, Aunt, Uncle	10	1.73%
Other	1	0.17%
Age group		
<18	17	2.94%
18-26	206	35.58%
26-35	235	40.59%
36-45	74	12.78%
≥45	10	1.73%
Refused	7	1.21%
Years of education		
0-4	37	6.41%
5-8	163	28.15%
9-12	321	55.44%
13-18	55	9.53%
Refused	3	0.52%
Self-described ethnicity		
Mexican, Hispanic, Mexican-American, or Latino	516	89.12%
Anglo	1	0.17%
Other	1	0.17%
Refused	1	0.17%
Language preference		
Spanish	390	67.36%
English	133	23.01%
No preference	56	9.63%

Problem 2: By law, a number of contagious diseases are to be reported to the public health authorities upon diagnosis. If people wait until they are very sick before seeking a health care professional, many more people will have been exposed before reports are submitted, making it much more difficult to control a disease outbreak. The outcome could be devastating if the contagious disease has a high mortality rate.

Problem 3: In the lower Rio Grande Valley, people flow back and forth across the border. "Winter Texans" come to the Valley, then tour Mexico, and then return to their hometowns in the Midwest for the summer. U.S. retirees living in Mexico often return to visit their hometowns or relatives before returning to their Mexican residences. Mexican migratory farm workers go from Mexico to Canada every summer to work in the province of Ontario, outside of Toronto, and return home to Mexico at the end of the season. It takes them just 29 hours to transit the U.S., driving straight through. Other Mexican workers travel to Mexico from many parts of the U.S. to visit family and friends and then return to continue working. If the Severe Acute Respiratory Syndrome (SARS) outbreak in Toronto in 2004 had jumped to the surrounding rural areas, Mexican migratory farmworkers could have been exposed, traveled for 29 hours over America's

highways, and crossed into Mexico before their first symptoms of SARS had become apparent. Mexico does not have the infrastructure to stop an epidemic of this sort.

Methods and Materials

Working Toward Solutions

These problems pose a conundrum that will take time to resolve; thus, it is important to address both short- and long-term solutions. The intervention tested in this study was developed in conjunction with colonia residents to address these problems. In addition, the implementation of this intervention was continuously monitored with an eye to ongoing improvement during the study.

Our vehicle for developing the intervention in conjunction with colonia residents was Participatory Intervention Research. This methodology provides a way to make research more palatable to participants in a study by demystifying it and providing them with ways to engage at every step in the design of the research plan to further the goal of solving a problem that affects them. They become aware of the strategy of intervention by participating in the development of a demonstration project; they also participate in the evaluation of the intervention, and their comments can lead to changes in the intervention itself to make it more effective.

The elements that make up a successful intervention include minimal disruption to people in their daily lives. The intervention cannot be seen as too taxing to the individual and it cannot clash with other useful and accessible systems or institutions. Also, a successful intervention brings about positive behaviors that can be embraced by the entire community; that is, the benefits should obviously outweigh the costs to the community. To maximize success, an intervention takes advantage of a population's particular attitudes and motivations. In this regard, it is helpful that the colonia population has a significant proportion of risk takers who want a better life, and they tend to be community-oriented. Given the nature of the population, we decided on a community-based intervention.

The social intervention that we developed is the Neighborhood Disease Watch System. It is similar in some respects to the long-standing Community Crime Prevention model better known as Neighborhood Watch, which is organized around neighborhood crime prevention. The Neighborhood Disease Watch System is based on neighborhood First Aid provision. This effort employs Community Health Workers, or Promotoras, who work with existing or newly emerging social networks in colonia communities. With community members, they gather information to be used in data analysis and Geographic Information Systems (GIS) modeling. Each network leader is identified, assigned a First Aid kit, provided with a bilingual manual on First Aid and basic health concepts, given means to report household syndromic events on a periodic basis, and provided training on health issues as requested.

Promotoras visited them periodically to replenish First Aid supplies while collecting completed syndromic events reports for inclusion in the dynamic project data base being developed by the Texas Department of State Health Services (region 11). The expectation is that the reporting of syndromic events can quickly identify contagious disease outbreaks in the colonias closest to the U.S.-Mexico border in the fastest manner possible.

The Institutional Review Board of Texas A&M University approved the procedures and forms used in this study; i.e., the study met the requirements for protection of people who are participants in research projects.

Geographic Location of the Study

The pilot project on First Aid kits is limited to Hidalgo County colonias in an area bordered to the north by Highway 83, the main east-west road that parallels the border; to the south by the international border with Mexico; and to the east and west by the Hidalgo County lines (see Figure 1). This area was chosen for the project because:

- Hidalgo County has the highest number of colonias among Texas border counties;

- Most colonias in this geographic area have poor coverage by social service agencies due to their rural, isolated locations;
- The isolation and poverty of the population are expected to result in more exposure and susceptibility to various contagious diseases;
- Because the population is medically underserved, their contagious diseases are less likely to be reported by medical professionals to public health authorities; the ill are less likely than others in the county to visit a doctor;
- Colonia breadwinners tend to be geographically mobile in looking for work; many traveling to other states and thus coming into contact with a large number of widely distributed populations, therefore providing potential conduits for the spread of disease.

Case Definition of Colonia

Colonias were eligible for inclusion in this study if they had at least one of the following characteristics:

- A neighborhood made up of homes that were obviously pieced together, i.e., incongruous building materials or different sections made of different materials. Examples include a structure that integrates a school bus or a travel trailer, half a house with one side of a roof peak indicating that the other half will be built later, and a bathroom made of plywood and tacked on to the larger structure;
- Obviously unfinished but occupied buildings, implying a long-term plan to improve the housing gradually, as the family's budget permits;
- A neighborhood with electrical wires or water hoses strung between houses to share utilities;
- Roads composed of untended dirt or untended gravel surfaces.

The houses in this study were originally built as single-family dwellings although they may include multiple families. For the purpose of this study, we exclude the following:

- apartment houses;
- gated or other upscale communities, and
- solitary houses with substantial landholdings, orchards, or other agricultural land.

This case definition was based on the experience of the promotoras and the project manager, who have extensive knowledge of (and research experience in) colonias throughout the county.

Recruitment of Social Networks

When a colonia met the case definition, the promotoras used the following protocol to bring it into the project:

1. They proceeded to target a home with activity, such as:
 - A "tiendita" (neighborhood convenience store), candy and/or refreshment stand, etc.
 - A home with some type of small business set up like an ongoing garage sale.
 - A home with children playing outside.
2. Upon approaching a home, the promotoras introduced themselves, made it known where they worked, and explained the reason for their visit. They usually initiated this conversation with the person who greeted them. They could begin by sharing perceptions that the colonia seemed isolated from health care services. Most people reacted to that statement and began to share their own perceptions of the situation.

Here are examples of questions that the Promotoras have used in this process along with English translations:

- "*Que opina usted sobre la importancia de tener primeros auxilios en su comunidad?* What is your opinion about the importance of having access to First Aid in your community?"
- "*Según su opinion que tan cerca está de su comunidad para tomar ventaja de los servicios de primeros auxilios?* In your opinion, how close is your community to First Aid services?"

- *“Tienen en su comunidad la facilidad de transportación para llegar a algún lugar a tomar servicios de primeros auxilios? Do you have access to transportation in your community to reach First Aid services?”*
- *“Le gustaría compartir con nosotros sus propias experiencias sobre algún caso que haya pasado en su familia o en alguna familia vecina? Would you like to share your experiences with us about some incident that happened in your family or in another family of the neighborhood?”*

3. Once they established rapport and an atmosphere of acceptance, the promotoras invited the initial contact person to review the First Aid manual for a few days. If that person was not interested, the promotoras would approach someone else. If it appeared appropriate at this time, the promotoras suggested that the contact person begin talking to members of an existing social network about the project, or begin organizing a social network in the community.

4. The promotoras conducted follow-up phone calls with the contact person to answer questions. If the contact person appeared receptive, the promotoras asked her or him to set up an initial meeting of the contact person and network members to be attended by the promotoras.

5. At the initial meeting, the promotoras explained the purpose of the project and then discussed bringing a First Aid kit and manual to the community. If there was enthusiasm, the kit was displayed, a home was selected to hold the kit, and an alternate location was designated for those occasions when the home holding the kit became unavailable. A loose-leaf binder was also issued to keep a record of the kit's use (see Appendix A for Reporting Forms), to provide project contact information and health-care-related telephone numbers and addresses, to keep a calendar for biweekly follow-up that included replenishing kit supplies (see Appendix B for Kit Supplies Refill Order Form), and collecting syndromic events information for families in the social network (see



Figure 9 shows Social Network Meeting participants and Fig. 10 shows Network members using a first aid kit.



Appendix C for Individual Family Reporting Sheets). In addition, the home holding the kit was asked to display a green cross (see Appendix D) in a front window to alert anyone who needed First Aid. The green cross is used in low-income neighborhoods in Mexico to show residents where to go for basic First Aid and for referrals to healthcare providers.

6. After the organizing meeting, the promotora team visited each family of the newly formed network to gather basic demographic information (see Appendix C) and to take a reading of coordinates for GIS-based addressing of the family's residence using a Garmin GPS72 Personal Navigator. The readings of all network families were sent electronically to the Texas State University partner for mapping and constructing of each particular network's Syndromic Events Reporting Form that, in turn, was to be used to report a network's family's syndromic events every two weeks to public health officials.

One team of two promotoras began work on the project in April 2005, part-time; they began full-time work on the project in June. Their initial work involved surveying the area of the study to verify the existing list of known colonias and including new ones that have recently appeared, whether officially recorded with the authorities or not, and by deleting those that lacked status as a colonia as that term is used in this study.

Table 5. Some characteristics of the First-Aid Social Networks

<i>Social Network</i>	<i>Length of Colonia Residence</i>	<i># of families</i>	<i># of adults</i>	<i># of children</i>
Colonia 22	1 week–6 yrs	7	15	15
Colonia 23	2 mo–1 yr	6	14	14
Colonia 25	2 mo–23 yrs	10	20	19
Colonia 16	3 mo–5 yrs	8	15	26
Colonia 15	3 mo–10 yrs	9	16	12
Colonia 33	3 mo–17 yrs	6	13	11
Colonia 26	3 mo–24 yrs	11	20	18
Colonia 17	4 mo–20 yrs	10	19	12
Colonia 11	5 mo–10 yrs	14	16	3
Colonia 24	5 mo–15 yrs	9	22	10
Colonia 28	6 mo–10 yrs	5	11	12
Colonia 5	6 mo–25 yrs	8	19	3
Colonia 7	6 mo–28 yrs	10	19	8
Colonia 31	7 mo–34 yrs	11	18	27
Colonia 2	8 mo–30 yrs	13	39	28
Colonia 29	8 mo–40 yrs	6	10	11
Colonia 14	1–2 yrs	11	26	35
Colonia 27	1–4 yrs	4	8	11
Colonia 10	1–15 yrs	8	15	15
Colonia 6	1–20 yrs	13	23	26
Colonia 13	1–26 yrs	15	29	17
Colonia 9	2–15 yrs	12	24	42
Colonia 8	2–76 yrs	9	16	8
Colonia 32	3–4 yrs	6	15	20
Colonia 18	3–11 yrs	7	14	18
Colonia 21	3–67 yrs	5	7	7
Colonia 1	4–12 yrs	11	28	15
Colonia 19	4–17 yrs	12	33	21
Colonia 30	5–10 yrs	4	9	15
Colonia 4	5–16 yrs	11	15	3
Colonia 20	5–21 yrs	6	15	8
Colonia 12	7–17 yrs	7	12	18
Colonia 3	8–40 yrs	9	17	8
TOTAL 33 colonias		293	592	516
RANGE	1 week – 76 yrs	4-15	8-39	3-35

Results

Colonia residents generally met the promotoras and the project enthusiastically. Most of those who were invited to recruit social networks to join the project did so. They appreciated having the loan of the First Aid kits and used them throughout the project. Social network members were asked to report on symptoms and illnesses experienced by those in their households, and many did so routinely. The approach of this project, beginning with a service project and following with a research project, worked well for developing good rapport and participation on the part of colonia residents.

The success of the project in engaging colonia residents depended heavily on the dedication and imagination of the promotoras, Bonny Medina and Dora Juarez. They contributed to the original methodological design of the project, using First Aid kits to build collaboration with social networks. They also originated the methods of identifying colonia residents likely to join the project, and they were successful in explaining the project so that the participants could understand it and appreciate its importance. The project team provided support and guidance to the promotoras on matters of scientific methods and the overall goals of the project. Esmeralda Sánchez had primary responsibility for supporting the promotoras and carried out her work with insight, good cheer, and inspiration.

Table 6 provides information about the 33 social networks participating in this project by March 8, 2006. Some of their colonias are large; one has about 500 residents. The first part of the project included a plan to establish networks in all the eligible colonias before returning to the larger ones to establish more networks. In some cases, though, a large initial response dictated the forming of more than one network right from the start. The recruitment of 33 social networks required nine months (May 31, 2005 to March 8, 2006).

Table 6. Social Networks in the Project through Sept. 30, 2006

Established networks	33
Colonias that did not qualify	10
Residents not interested	8
Total, eligible colonias	51
Number of families participating	293
Number of Adults	592
Number of Children*	516
Reported uses of all First Aid Kits*	1,245
Total number of manuals distributed	200

a. Children were defined as those younger than 18 years of age on 9/19/06.

b. From June 1, 2005 through Sept. 20, 2006.

The 33 networks included in the project varied widely in length of residence of network members in their colonia, some having moved in recently, others residing there for as long as 76 years.

The number of families in the project was 293, comprised of 592 adults and 516 children. The number of adults is relatively large because a few colonias were composed mostly of older people without children in their households. Among the social networks, 21 families were recorded as having missing data. Thirteen of them were scattered among a number of colonias, and eight were from one colonia made up of rented recreational vehicles. The colonia, essentially a rental RV park, had a high turnover rate among residents. The attrition rate among families was less than 10%.

The project distributed one First Aid manual with each kit. The 33 manuals were not anywhere nearly enough, however. Other families in the social networks requested more manuals and, by the end of the project, 200 manuals had been distributed, about six per social network. Two-thirds of the families had a manual at home by the end of the project, and they reported using them in First Aid emergencies and on other occasions. It was very interesting to realize the value to colonia residents of a manual written in easy-to-read language with copious illustrations.

There were 1,245 reported uses of the 33 kits that were distributed. Some of the reasons for using the kits included:

- Cuts/scrapes/bruises;
- Red, itchy, burning eyes;
- Insect bites;
- First and second degree burns;
- Ingrown toenails.

Colonia Residents' Experiences with the Project as related by the Promotoras

COLONIA A

Los residentes de la comunidad comentaron, que antes del kit, ellos no tenían nada de recursos de primeros auxilios, ahora ha sido mas facil atender a los niños de la comunidad, cuando se caen o sufren accidentes leves.

The residents in this community commented that before they had access to the kit, they did not have any means to provide First Aid. Now it has been easier to treat the children in the community when they fall or suffer minor accidents.

Los adultos tambien han tomado ventaja, ya que antes del kit, sufrían quemaduras leves, y utilizaban tomate o remedios caseros, pero ahora les ha servido mucho el antibiotico para quemaduras.

The adults have also taken advantage; before the kit they would use tomatoes and other home remedies when they suffered minor burns. Now they have utilized the antibiotic ointment for burns.

COLONIA B

En esta colonia un adolescente fue golpeado por una pandilla, causandole muchas heridas, el kit les sirvió, para que esas heridas no se le infectaran, y no tuvieron que llevarlo al hospital de emergencia, ya que encontraron lo necesario, para esa situación.

A young man from this colonia was “beat up” by a gang, leaving him with many wounds. The kit was useful in preventing infection and he did not have to be taken to the hospital emergency room, having found what was necessary in that situation.

COLONIA C

Les dio mucho gusto tener el kit, ya que días antes, a un muchacho lo golpearon, y el huyó, y al meterse a su casa por una ventana, se cortó sus manos, y al desangrarse a causa de los golpes y esas cortadas, no alcanzo a llegar la ambulancia, y falleció, comentaron que ahora que tienen el kit, pudieron ayudarlo a un señor, con heridas similares, mientras llegaba la ambulancia por el.

The people were very happy to have the kit. A few days before the kit was placed in the colonia, a young man was attacked, but was able to get away. As he was trying to get into the house through a window, he cut his hands. The excessive bleeding from his wounds and cuts on his hands died before the ambulance arrived. The individuals in the network commented that since they received the kit, they were able to help a man with similar wounds while the ambulance arrived.

COLONIA D

La mayoría de los residentes no tienen ninguna clase de seguro, que los pueda ayudar, a pagar por sus servicios médicos, y muchas veces han tenido que utilizar los cuartos de emergencia por simples temperaturas, pero ahora con el manual de primeros auxilios que les dejamos junto con el kit, se han orientado mas.

Most residents in this colonia do not have any type of insurance that might help them pay for medical services. Many times they have to resort to using the emergency room for conditions like fevers. Now that they have the First Aid manual that accompanies the kit they are able to better orient themselves.

COLONIA E

Solo han comentado que les ha sido muy util.

The people in this colonia have only commented that the kit has been very useful.

COLONIA F

En esta comunidad una niña. se quemó con un cuete, verificando en el manual de primeros auxilios, pudieron determinar el grado de la quemadura, y fue en un grado muy elevado, la curaron con el antibiotico para quemaduras, mostrando mucha mejoría para el segundo día del accidente.

A little girl from this colonia burned herself while setting off fireworks. By using the First Aid manual they were able to determine the degree of the burn, which was very severe. They treated her with the antibiotic for burns and, by the second day after the accident, she showed much improvement.

Para los adultos ha sido muy benefico, ya que no cuentan con ninguna ayuda de salud.

The kit has been very beneficial for the adults because they do not have any health benefits.

COLONIA G

En esta comunidad tienen muchos problemas de los ojos, les ha servido mucho el salinaax, que contiene el kit de primeros auxilios.

This community experiences many eye problems. The saline (eye wash) in the First Aid kit has really helped.

COLONIA H

Los residentes de esta comunidad son personas de edad muy avanzada, el cual han tomado ventaja sobre las pastillas de dolor, una de ellas dice que antes de tener el kit, ella sufría muchas migrañas, y estas pastillas (apap) le ha tranquilizado estos dolores.

The residents of this community are elderly. They have taken advantage of the pain medication in the kit. One lady says that before the kit, she suffered from migraines and the pills (APAP packet) have alleviated those pains.

COLONIA I

Nos cuentan los residentes, que estan muy contentos que alguien se haya interesado en acercar estos beneficios a la comunidad, ya que ellos se encuentran muy alejados de los servicios de salud, y muchas veces iban al cuarto de emergencia, por alguna cortada de sus niños, y era mucho el tiempo que pasaban en el Hospital, y muchas veces solo les daban cosas que ahora ellos utilizan con el kit.

The residents have shared that they are very happy that someone has shown interest in bringing this beneficial service to their community, since they are located far from health services. Many times they would take their children to the emergency room for things like cuts and they would spend a long time waiting at the hospital. Many times they would receive what is now found in the First Aid kit.

COLONIA J

Estan muy contentos, ya que dicen que es algo muy interesante, ya que se han educado mucho con el manual de los primeros auxilios, en como utilizar el kit, ya que muchas veces no cuentan ni tan siquiera con un curita (band-aid).

They are very happy and they say this is something very interesting now that they educated themselves with the First Aid manual in how to use the kit. Many times they did not even have band-aids.

COLONIA K

En esta comunidad, viven algunas familias dueñas de su propio terreno, la mayoría son RV's que utilizan los Winter Texans, que vienen por temporadas, pero igual han utilizado el kit,

comentan que ellos les platican a sus amigos de este proyecto, y se quedan muy sorprendidos de el interes que tienen sobre las comunidades con problemas de encontrar servicios de salud basicos.

In this community you find some families that own their own properties, but the majority are RV's that are used by Winter Texans. The Winter Texans live here temporarily, but they have also used the kit and commented to their friends about the project. They were surprised by the interest shown for the communities with problems accessing basic health services.

COLONIA L

Esta comunidad es bastante grande, y se encuentra muy alejada de los servicios de salud, se encuentran en una area de mucha contaminacion, tienen muchos problemas con los ojos, y el salinaax, les ha ayudado un poco con este problema.

This is a very large community that is far from any health services. It is an area of contamination; the community has many problems with their eyes and the saline (eye wash) has helped them a little with this problem.

COLONIA M

Los residentes de esta comunidad, comentan que desde que llegaron alli, han tenido muchos problemas de alergias y de los ojos, ellos piensan que se debe a una planta de luz, que se encuentra cerca, les ha sido de mucha utilidad el salinaax, y todo lo demas.

The residents comment that they experienced many problems with allergies and their eyes since arriving in this community. They think it might be attributed to the electricity plant that is located nearby. The saline (eye wash) has really helped them as well as everything else.

COLONIA N

Han utilizado muy poco el kit, pero se les ha dado referencias para ferias de salud, donde han tomado ventaja de exámenes de la vista, ya que en esa area como en otras, hay mucho riesgo de diabetes.

They have used the kit very little, but they have been given referrals to health fairs where they have taken advantage of eye exams since in this area—like in others — there is a great risk of diabetes.

COLONIA O

Estan muy contentos que haya entrado este proyecto, ya que comentan que nadie antes habia tenido interes, por conocer sus necesidades, por eso en un principio no querian participar, pero ahora toman ventaja del kit todos los vecinos.

The residents are very happy that they are involved in this project, and they comment that no one else had every shown an interest in learning about the needs of their community. This is why they were hesitant to participate initially, but now all of the neighbors take advantage of the kit.

COLONIA P

En esta comunidad, hay varios residentes que tienen diabetes, y uno de ellos ya le cortaron sus dedos, y tenia mucho problema para las curaciones, ya que es una persona indocumentada, siempre estaba con la duda de que le cayera alguna infeccion, usaba mucho el agua con jabon, pero ahora se cura con lo que tiene el kit, esta muy contento.

There are several residents in this community with diabetes and some of them have had their toes amputated. They experienced many problems with wound care. An undocumented resident with diabetes always worried about the possibility of infection, so they would wash any wound with soap and water. But now that they have access to the kit, the individual is very content.

COLONIA Q

Han utilizado en pocas ocasiones el kit, pero igual estan muy contentos de tenerlo, ya que dicen que en una ocasion, una señora sufrio una caída, que si no hubieran tenido esa ventaja, la hubieran tenido que llevar al cuarto de emergencia.

They have used the kit on a few occasions, but they are happy to have it available. On one occasion, a lady suffered a fall and if they had not had access to the kit, they would have had to take her to the emergency room.

COLONIA R

En esta comunidad una persona se encontraba cortando un arbol, se le cayo un machete y le corto bastante feo una pierna, inmediatamente fueron por el kit, le hicieron varias curaciones con el antibiotico, First Aid antiseptic, gasas, y varias cosas que se encuentran en el kit, que para el tercer dia noto mucha mejoria, la familia nos dio las gracias ya que dicen que si no hubieran tenido este proyecto que esta a disposicion de ellos, no saben que hubieran hecho, ya que no tienen ninguna clase de aseguranza.

A person in this community was cutting a tree and he dropped the machete and cut his leg severely. They immediately went for the kit and used it to treat the wounds with antibiotic, First Aid antiseptic, gauze, and various things they found in the kit. By the third day, they noticed substantial improvement. The family thanked us, commenting that if they had not been participating in this project that is available to them, they do not know what they would have done because they do not have any type of insurance.

COLONIA S

Esta comunidad escribio sus propias sugerencias, sobre porque querian este proyecto con ellos, la mayoria de las personas trabajaban, sin el beneficio de ninguna clase de seguro de salud, y que muchas veces, tenian que viajar hasta mexico, para traer algunos articulos de primeros auxilios, pero que desgraciadamente cuando los necesitaban, no los tenian a la mano.

This community listed their own needs about why they wanted this project. The majority of the people work but do not have the benefit of any type of health insurance. Many times they had to travel to Mexico to bring back First Aid supplies, but unfortunately when they needed them, they did not have them available.

COLONIA T

Los residentes de esta comunidad, son personas de edad mayor, pero les interesa mucho este proyecto, ya que en muchas ocasiones que les pasaba algun accidente leve, sus familiares se tenian que salir de su trabajo para llevarlos al hospital, que ahorita con el kit, la señora encargada siempre esta dispuesta para ayudarles.

The residents of this community are elderly, but they were very interested in this project. They commented having experienced minor accidents causing their relatives to have to leave work to take them to the hospital. Now that they have the kit, the network leader is always willing to help them.

COLONIA U

Esta es una de las comunidades que tambien tienen el problema de la contaminacion, y comentan que les ha sido muy util el salinaax, ya que la mayoria de los residentes no tienen ninguna ayuda para su salud.

This is a community that also experiences problems with contamination and they comment that the saline (eye wash) has been very helpful because the majority of the residents do not have any health benefits.

COLONIA V

Es una colonia con mucha necesidad, pero tambien con muchas ganas de cambiar su vida, por eso cuando llegamos alli, les dio mucho gusto, por que nadie les habia ofrecido ningun proyecto de salud, la mayoria solo se enfoca en educacion (que les ha ayudado mucho) pero tambien tenian la inquietud de que alguien las orientara sobre servicios de salud, el kit les ha ayudado mucho, ya que tienen un buen numero de niños.

This is a community with many needs and with a great desire to change their lives. This is why when we first arrived there, they were very happy because no one had ever invited them to participate in any health related project. The majority of the projects they had been involved in were focused on education (which helped them a lot) but they were also concerned with learning about health related services. The kit has helped them a great deal, especially because they have a large number of children in the colonia.

COLONIA W

Es una comunidad, que esta bastante alejada de los servicios de salud, les dio mucho gusto que alguien se interesara por ellos.

This community is very far from health care services. They were very happy that someone expressed interest in them.

COLONIA X

En esta colonia, desde que llegamos con el proyecto, siempre estan dispuestos a ayudarnos en todo la informacion que necesitamos, ya que comentan que estan bien agradecidos por el proyecto del kit, por que les ha servido mucho a toda la comunidad.

This colonia has always been willing to help us with any information we have needed. They comment that they are very appreciative of the First Aid project because it has really helped their entire community.

COLONIA Y

Los residentes nos han comentado, que ellos pensaban que en este pais, no tenian el interes de conocer sus necesidades, ni mucho menos acercarlos los recursos, ya que uno de los problemas que la mayoria tienen, es la transportacion, y para ellos ha sido una ayuda muy grande, ya que hay muchos niños y familias con necesidades de primeros auxilios ya que hay varios niños indocumentados, y no tienen ninguna ayuda sobre los servicios de salud.

The residents have commented that they thought that in this country they did not care to know about the needs of the community, much less about their resources. One of the problems most residents experience deals with transportation. Access to the First Aid kit has been a huge help because there are many children and families with First Aid needs. Many of the children are undocumented and do not have any health benefits.

COLONIA Z

Estan muy contentos con el proyecto, ya que comentan que antes era bien difícil encontrar algo de primeros auxilios, y utilizaban mucho el cuarto de emergencia.

These residents are very happy with the project. They comment that before they had the kit it was very difficult to find anything to give First Aid, so they would use the emergency room a lot.

COLONIA AA

Les dio mucho gusto que llegamos a visitarlos, ya que además de los beneficios del kit, que les hemos llevado, se han complementado con información de el manual de primeros auxilios, ya que antes nadie les había preguntado sobre sus necesidades.

The residents were very happy when we first came to visit and about the benefits of the First Aid kit we left for them. They have complemented the kit with the information in the First Aid manual provided, especially because no one had ever asked them about their needs before.

Comments about the Project from the Promotoras/Comentarios de Promotoras

Para nosotros ha habido un cambio general entre estas comunidades, ya que las preguntas que les hacíamos en un principio, eran un poco de duda en sus respuestas, en este tiempo, están bien convencidas, sobre los beneficios que este proyecto les ha traído, según sus comentarios, ha disminuido el uso de los cuartos de emergencia, que además

del costo, el tiempo bastante largo que pasaban allí, y en muchos casos, les daban artículos que ahora tienen a la mano, todos en su mayoría, han tenido cambios en sus vidas, tanto de educación de como actuar en un caso de primeros auxilios, y se han orientado en varias enfermedades con el manual que se les entregó a cada persona que se encontraba interesado en leerlo.

We have seen an overall change in these communities. When we first asked them questions they would hesitate to respond. Now they are sincerely convinced about the benefits that this project has brought to them. According to their comments, they have decreased their use of the emergency room, saving time and money. In many cases, the hospital would treat them with items now found in the First Aid kit. Everyone, in general, has experienced changes in their lives. They have become educated on how to act in a situation requiring First Aid and have learned about various illnesses by using the manual, which was distributed to everyone interested in reading a copy.

Project Participation Through Use of the First Aid Kits

Table 7 shows how colonia residents used the First Aid kits. The data come from the records on supplies ordered to replace supplies that had been used up. Mostly, the residents used bandaging materials (64.81%) and antiseptics (22.05%). These two types of supplies add up to 86.86% of all the

Table 7. Supplies Used from First-Aid Kits

Bandaging materials ^a	3180	64.81%
Antiseptics ^b	1082	22.05%
Eye wash	56	1.14%
Cold packs and elastic bandages	106	2.16%
Packets of cotton-tip applicators	248	5.05%
Ammonia inhalant pads	61	1.24%
APAP packets (acetomenophen)	143	2.91%
Vinyl gloves	30	0.61%
Scissors	1	0.02%
	4907	100.00%

a. Fifteen types of adhesive and plastic bandaging supplies, including pads, gauze, tape, and eye bandages.

b. Seven types of wipes, creams, and sprays containing iodine or other antibiotics.

materials used. Often, people used the cotton-tip applicators to economize on the antiseptics. They were able to get several applications from each packet designed to be used one time. It appears that they also stretched the eye wash. Other frequently used supplies included cold packs and elastic bandages and acetomenophen to control pain.

An important methodological implication of Table 7 is that the families found the First Aid kits useful, and the continuing restocking of the kits assisted promotoras in maintaining rapport with the social network members and motivating them to report illnesses.

Reported Health Problems

Some of the more common health problems reported by social network members were:

- Diabetes and dialysis;
- Heart and circulatory-system related conditions; mostly high blood pressure and high cholesterol;
- Problems with wounds that would not heal (some think it was due to the polluted environment or diabetes).

We have not quantified the number of people in each of the networks who had these problems because this project was not designed to assess initial health status. Network members discussed these issues informally with the promotoras.

Other Problems and Requests for Assistance

Other issues most often raised by members of the social networks included:

- *problems with health agencies;*
- *poor lighting in the colonias;*
- *lack of police patrols;*
- *dental problems;*
- *requesting cultural events for adults and children.*

They also asked for information regarding:

- *Women's health;*
- *Hurricane shelters, emergency preparedness;*
- *CPR Training;*
- *First Aid Certification.*

Symptoms Reported by Colonia Residents

Table 8 shows the symptoms reported in project colonias during a ten-month period.

Table 8. Report of Symptoms		
<i>Potential Indicators of Communicable Disease</i>		
Cough	192	16.58%
Cold	166	14.34%
Headache	166	14.34%
Fever	159	13.73%
Sore Throat	138	11.92%
Stomach Ache	108	9.33%
Diarrhea	75	6.48%
Rash	31	2.68%
Sores	26	2.25%
Insect bites	97	8.38%
	1158	100.00%
<i>Other symptoms and problems</i>		
Joint pain	118	
Back pain	121	
Tooth ache	85	
Other	109	
	433	
Total Number of Reports	1591	

The first group of symptoms includes potential indicators of communicable diseases, although these non-specific symptoms and illnesses could also be caused by other factors.

The most common symptoms reported were coughs (16.58%), colds (14.34%), and headaches (14.34%), accounting for 45.25% of the reports in the communicable disease category. Other frequent symptoms were fevers, sore throats, and stomach aches. Diarrhea was less common among the reports. Rashes, sores, and insect bites also could indicate communicable disease, although rashes may also indicate exposure to pesticides or other noxious agents. Reports of sores and insect bites are nonspecific regarding communicable disease. Several people reported sores that would not heal; however, we do not know the causes. Insect bites can be a route of transmission of diseases such as West Nile virus, dengue fever, and Chagga's disease, all of which are found in the region. The communicable disease indicators made up almost three-quarters of the symptoms reported.

The other group in the table includes other symptoms and health problems less likely to indicate communicable disease. Pain in the joints and back can be expected in a population of farm workers and other day laborers, who use their bodies to earn their wages (they could also indicate communicable disease in some cases). Lack of access to dental services results in those with dental problems suffering tooth aches for long periods of time. In addition, other problems were reported in very small numbers, including irritated eyes, vomiting, and nosebleeds.

Discussion

The project had considerable success in building social networks in colonias as a basis for reporting syndromic events. Colonia members welcomed the project in most cases, and the project team found their cooperation gratifying. Several elements contributed to that success.

The design of the study to include the principle of valuing community, through the focus on social networks, was culturally congruent and met the social and practical needs of colonia residents. The First Aid kits provided them with immediate tangible benefits. The Promotoras working for this project had considerable experience in research and skill in approaching colonia residents, establishing rapport, and carrying out the project.

The Project Manager had considerable experience also in working with the Promotora team, research in colonias, and building an approach to the research that was practical and productive. The Principal Investigator and Co-Principal Investigators had enough experience in cross-cultural work to recognize the importance of the experience and intuitions of other team members in designing the project. They also had experience in research with related populations, and in working with teams on data collection, data entry, and data analysis in both narrative and quantitative forms. Altogether, the combination of experience and creativity on the part of the research team allowed us to build an excellent foundation for continuing data collection and completing the project.

Problems

The project faced setbacks, including late access to funding, which delayed the start of the project until the fall of 2004. Implementation of the project was hampered by problems in the winter and spring of 2005 in hiring the promotoras. Consecutive offers to, and negotiations with, two different local, publicly-funded clinics to participate as subcontract employers for our project's promotoras were not fruitful even though those clinics were, and remain, in support of the project. Each clinic became less enamored with its proposed role as the necessity for the Promotoras to devote all their time to the project became apparent. They had expected that some of the promotoras' time would be available for clinic activities, including meetings of promotoras working for the clinic, training sessions, and so on.

After the Promotoras were offered employment by the School of Rural Public Health, the necessary elements of transition from their previous jobs (i.e., giving notice, beginning work on a part-time basis to allow time to finish prior job responsibilities) took longer than expected because of the unpredictability of our project contract start date.

Development of Methods

The project developed an approach for identifying colonias eligible to participate in the project and a protocol for the promotoras to use for outreach. The list of colonias for Hidalgo County, provided by government agencies and updated and corrected by the Childhood Immunization Study, was further updated and corrected by the promotoras working on this project. The methods and materials developed by the project team proved acceptable to most colonia residents. In fact, we were gratified by the enthusiasm of colonia residents about the First Aid kits, manuals, and our interest in their health. In a number of cases, members of social networks requested additional manuals and training. All in all, the project distributed 200 manuals to network leaders and participating families that requested them.

We were surprised to find that in most cases, social networks were developed by colonia residents among their neighbors as opposed to family members or friends farther afield. Initially, many did not know one another well enough to chat among themselves; they have expressed gratitude that the project gave them a structure for establishing or furthering their relationships.

In addition, the meetings have routinely taken place in colonia homes. We had thought that we could use community centers to hold meetings. However, they are not easily accessible, and colonia residents apparently are more comfortable having the meetings in their homes.

Continuing Support of Project Activities

The Office of Border Health of the Texas Department of State Health Services has agreed to begin funding of the Neighborhood Disease Watch System portion of the project in the near future as part of the Early Warning Infectious Disease Surveillance (EWIDS) project. Under that project, the name changes to the Colonias Syndromic Events Reporting System.

There has been initial interest in supporting the First Aid portion of the project by a local Lions Club and negotiations are continuing.

Project Presentations

- Colonia Syndromic Event Reporting System presentation to the Texas A&M University System Health Science Center faculty and staff, Oct. 10, 2006.
- Colonia Syndromic Events Reporting System presentation to the Hidalgo County Health Department, Oct. 4, 2006.
- Promotor [Community Health Worker] Conference, Border Binational Health Week, Brownsville, Oct. 13, 2005.
- Brooks City-Base conference, hosted by Dr. Roberto E. Villarreal and Lt. Col. Laura Trent, Aug. 5, 2005.
- South Texas Center (McAllen) and Coastal Bend Education Center researchers and staff, TAMUSHSC.
- University of Texas-Pan American faculty.
- Midwest Migrant Stream Forum, "Border Health and Environmental Security Initiative," Denver, Nov. 19, 2004.
- U.S.-Mexico Border Health Association 62nd Annual Meeting: "Public Health on the Texas-Mexico Border: Enhancing Systems for Disease Reporting and Early Response," by I. Flores, A. V. Millard & E. Sanchez, Ciudad Juarez, Mexico, June 10, 2004.

Recommendations

This research project has demonstrated the benefits and usefulness of an innovative system for providing First Aid, the most basic of health care needs beyond prevention, while providing a system for reporting symptoms of contagious disease along our southern international border. Expansion of this Colonias Syndromic Events Reporting System is warranted, for it provides a new and important addition to our efforts to secure our borders against naturally occurring infectious disease or infectious disease caused by bioterrorism.

Overview of Health and Migration Component *Border Health and Environmental Threats Initiative*

	2004				2005							2006				
	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Social Networks-First Aid Kits																
Funding begins	X															
Hire and train staff																
Efforts to subcontract with community clinics		X		X	X	X										
Direct hire of promotoras							X									
Part-time transition to full-time positions							X	X								
Train promotoras with project staff							X	X	X							
Review relevant publications	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Work with promotoras on social networks																
Develop initial process for choosing colonias							X	X								
Begin initial contacts with networks							X	X								
Identify social network contacts							X	X	X	X	X	X	X	X	X	X
Organize initial meetings in colonias							X	X	X	X	X	X	X	X	X	X
Meet with social networks (Human subjects review, survey, snacks)									X	X	X	X	X	X	X	X
Data collection																
Use of first-aid kits								X	X	X	X	X	X	X	X	X
Syndromic effects								X	X	X	X	X	X	X	X	X
Data analysis								X	X	X	X	X	X	X	X	X
Write draft and final reports										X		X		X	X	X

____ / ____ /2005 - ____ / ____ /2005
 month day month day

Reporting Form

Colonia: _____

Date reported	Name	age	sex M or F	date became ill	Health Problem & symptoms
1					Health Problem: Symptoms:
2					Health Problem: Symptoms:
3					Health Problem: Symptoms:
4					Health Problem: Symptoms:
5					Health Problem: Symptoms:
6					Health Problem: Symptoms:
7					Health Problem: Symptoms:
8					Health Problem: Symptoms:
9					Health Problem: Symptoms:
10					Health Problem: Symptoms:
11					Health Problem: Symptoms:
12					Health Problem: Symptoms:

____/____/2005 - ____/____/2005
 mes día mes día

Forma de Reportar

Colonia: _____

Fecha	Nombre	Edad	Sexo	Fecha en que se enfermo	Problema de salud y síntomas
			M o F		
1					Problema de salud: Síntomas:
2					Problema de salud: Síntomas:
3					Problema de salud: Síntomas:
4					Problema de salud: Síntomas:
5					Problema de salud: Síntomas:
6					Problema de salud: Síntomas:
7					Problema de salud: Síntomas:
8					Problema de salud: Síntomas:
9					Problema de salud: Síntomas:
10					Problema de salud: Síntomas:
11					Problema de salud: Síntomas:
12					Problema de salud: Síntomas:

**First Aid Kit Supplies
Refill Order Form**

Item	Size	Need	Date requested	Quantity remaining	Comments
30 Adhesive Bandages	1" x 3"				
30 Adhesive Bandages	3/4" x 3"				
5 Bandages Plastic	2" x 4"				
5 Fingertip Bandages					
5 Knuckle Bandages					
10 BZK Towelettes					
6 Burn/First Aid Cream Packettes					
2 Sting Relief Wipes					
3 PVP Iodine Wipes					
2 Eye Pads Medium					
3 Non-stick pads	2" x 3"				
3 Non-stick pads	3" x 4"				
4 Gauze Pads	2" x 2"				
4 Gauze Pads	3" x 3"				
3 Ammonia Inhalant Pads					
1 Antiseptic Spray	2 oz.				
4 APAP packets (acetaminophen)					
1 Bio wast bag	11" x 14"				
2 Cold Pack Junior, Boxed, disposable					
1 Combine Pad	5" x 9"				
10 Cotton Tip Applicators	3" (2pk)				
1 Cotton Roll 1/4 oz					
1 CPR Life Mask					
1 Elastic Bandage	3" x 5 yds.				
1 First Aid Guide					
1 Tape	1/2" x 5 yds.				
1 Roll Gauze	2" x 10 yds.				
4 gloves, vinyl					
1 Scissors, wire					
1 Tweezers					
1 Triangular Bandage	40" x 40"				
1 Eyewash	1 oz.				
10 individual antibiotic ointment packs*					

Office use only

Date request received: _____

Initials: _____

Date delivered: _____

Initials: _____

First Aid Social Network Individual Family Information Sheet

Name _____
(First Name) (Last Name)

Address _____
(City) (State)

Telephone _____ How long have you been living in this colonia? ____ years ____ months

Age: ____ Sex: M or F What is your occupation? _____

How many years of school did you complete? ____ Where did you start school? _____ (city/state)

How many people live in your house? ____ Does anyone in your household have medical benefits? ☐ Yes ☐ No

Name	Sex	Relation	Date of Birth	Medical Benefits: Insurance Medicare Medicaid	Asthma	Cancer	Diabetes	Heart Disease	High Blood Pressure	Other:	Comments
	M / F			Yes / No							
	M / F			Yes / No							
	M / F			Yes / No							
	M / F			Yes / No							
	M / F			Yes / No							
	M / F			Yes / No							

For Office Use Only:
GIS Position _____

Red Social de Primeros Auxilios
Hoja de información de familia individual

Nombre _____
(Nombre) (Apellido)

Dirección _____
(Ciudad) (Estado)

Teléfono _____ Cuanto tiempo tiene viviendo en ésta colonia? ____ años ____ meses

Edad: ____ Sexo: M or F Cual es su trabajo? _____

Cuantos años de escuela completó? ____ Donde empezó la escuela? _____ (ciudad/estado)

Cuántas personas viven en su casa? ____ Alguna de estas personas tiene beneficios médicos? ☐ Si ☐ No

Nombre	Sexo	Relación	Fecha de nacimiento	Beneficios médicos: Aseguranza Medicare Medicaid	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Asma</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Cancer</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Diabetes</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Enfermedades de corazon</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Alta Presión</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Otro: _____</div> </div>	Comentarios
	M / F			Yes / No		
	M / F			Yes / No		
	M / F			Yes / No		
	M / F			Yes / No		
	M / F			Yes / No		

For Office Use Only:
GIS Position _____

