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U.S.-Mexico Border Health Data Infrastructure Improvement Project: Draft Final Report Volume 1

U.S.-MEXICO BORDER HEALTH DATA INFRASTRUCTURE IMPROVEMENT PROJECT DRAFT FINAL REPORT VOLUME I

Contract 240-95-0041

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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

In 1995, the Health Resources and Services Administration (HRSA) contracted with the Center for Health Policy Studies (CHPS) and CHPS' subcontractor, the National Center for Farmworker Health (NCFH) to conduct the US-Mexico Border Health Data Infrastructure Improvement Project. This three-year project encouraged the formation of partnerships in and among the U.S.-Mexico border states for building and improving health data infrastructure to meet information needs along the border. This has included improving the comparability and completeness of health data collection; the communication and exchange of health data among public health agencies, Community and Migrant Health Centers (C/MHCs), and other providers and users of these data; and using these data for health surveillance and decision making. Over the past three years, four unique demonstration models were developed, implemented, and evaluated on the state level in each of the U.S.-Mexico border states (hosted on the U.S. side of the border). There were also several concurrent efforts that were completed to improve border health data infrastructure, many of which were implemented in the four U.S.- Mexico border states. This Executive Summary provides an overview of activities supported under this contract.

This project sought to address the unique health data issues that exist on the border. A number of individuals receive health care services from providers on both sides of the border. The organization of health care delivery and health information systems in the United States and Mexico are also very different, which presents specific challenges when attempting to compare existing data from both countries. Protocols and systems are needed for cross border reportable disease notification, identification of environmental health risks, comparison of vital statistics, and data and information transfer for improving health care. The design of these systems is very involved and complex, but necessary. High rates of population growth, shortages of primary care capacity, poverty, and environmental health hazards require continual monitoring and quick response to changing needs in border areas.

A long-term vision of a comprehensive, integrated data and communications network, which links together health officials and providers on both sides of the border, was used to stimulate interest in the state level demonstrations. In each state, the specific objectives to be addressed through the project were determined by partnerships among the state health departments, local health departments, HRSA and others interested in border health data and communications. The project also supported and promoted health data related activities involving other federal agencies and the PAHO Field Office in El Paso.

Development of State Binational Data/Surveillance Projects

During the first year of the project, work was conducted in each of the states in order to:

- identify key contacts in the state health departments and other state agencies,
- recruit the active participation of local health departments in the demonstration,

- compile a preliminary inventory of existing health data and data systems, and
- initiate a needs assessment for health data infrastructure improvements.

In each U.S. border state, the initial contact was the state health officer, who then specified an individual to serve as an ongoing contact and source for identification of persons to be interviewed. Interviews were then conducted in-person or by telephone to acquire additional state contacts, inventory data and data systems, identify data infrastructure needs, and to begin the process of developing recommendations for a local site for demonstration focus.

Mini-forums were then held to bring together those interested in health data infrastructure improvements. Local and state health department officials, provider groups (including C/MHCs) and representatives from academic institutions participated. Each mini-forum also included participants from the PAHO field office, public health officials from the contiguous Mexican state, and several federal agencies (e.g., HRSA, CDC, and EPA).

The networking and discussions at the mini-forums brought together individuals and organizations that produce and use health data along the border. The mini-forums helped these key principals to better understand the needs and the operational constraints of one another. There were immediate benefits of this process, including the establishment of new linkages and information sharing on how to access existing border health data sources (e.g., preliminary vital statistics). Proceedings from the meetings were widely disseminated. The key product of each mini-forum consisted of a consensus list of priority needs for health data and data communications infrastructure improvements. These lists of priority needs were the building blocks upon which project activities were developed.

The process and results of the needs assessments, inventories, and mini-forums have been previously reported in great detail and are not repeated in this report (see *U.S.-Mexico Border Health Data Infrastructure Improvement Demonstration Progress Report--Year One, January 1997.*)

During the second year of the project, demonstrations were initiated in the four U.S.-Mexico border states with the collaboration of a contiguous Mexican state. Demonstrations were developed to improve reportable disease notification systems, to facilitate binational epidemiological studies, and to improve cross-border health information communications using information technology as appropriate.

It took much time and effort to attract the enthusiastic participation of all levels of health officials and private sector health professionals on both sides of the Border. It is important to emphasize, however that many of the work groups and relationships that were established or supported by this contract will continue beyond the project's end date. Some of the activities will require ongoing external support in order to continue, although at lower levels of funding than were made available through this demonstration.

In the third year of the demonstration, work continued for the four state models. Cross-site transfer of lessons was also emphasized, and project sites searched for potential sources of

additional funding. A major activity during the third year was evaluation of each of the state demonstration models. The qualitative evaluation documented demonstration project history and activities, the obstacles encountered and how they were overcome, and what differences the demonstration has made along the border. Representatives from both sides of the border provided input for the evaluations to reflect the true binational impact of the demonstrations. The project culminated with a final meeting with project principals in El Paso, Texas. The meeting centered around discussions of key accomplishments, issues that cut across all projects, and identification of funding sources for demonstration project continuation, expansion, or replication as appropriate.

State-specific demonstration activities are summarized as follows:

New Mexico. In New Mexico, support was provided for a consulting epidemiologist to work with the New Mexico Border Health Office (NMBHO) on improvements to a public health notification system. The notification system represents a collaborative effort among several US and Mexican states, the Mexican federal government, and local and district health departments along the border. In November 1997, a Memorandum of Understanding (MOU) was signed by state officials in New Mexico, Texas, and Chihuahua to formalize this system of information exchange and epidemiological response along the border. Binational working groups met monthly to refine the data set for notifications, identify whom to notify about what events, define each data element clearly in both Spanish and English, and standardize the reporting format. Collaborative working relationships were established among working group participants, which facilitated and encouraged additional binational border health efforts.

The notification system used primarily fax technology for transmissions, since this was the medium for which all participants have availability. Each faxed notification was called either an "Epi-Fax" or "Info-fax", depending on whether it was an emergent notification or simply information that may be of interest. Since the establishment of the MOU in November 1997 and through January 1999, more than ten fax transmissions have occurred to notify key officials of disease outbreaks or other pertinent information. The NMBHO also provided training to private and public providers in the use of the notification system.

Arizona

In Arizona, support was provided for a joint Arizona-Sonora epidemiological field station, with the mission of promoting, developing, and coordinating epidemiological activities along the Arizona-Sonora border. The Arizona Department of Health Services provided computers, communications equipment, and furnishings for the field station. Space for the field station was provided by the Sonoran government. The demonstration project provided for the full functioning of the field station, including the recruitment and training of an office manager, epidemiologist, and information system worker. The field station serves as a venue for consultation on border related epidemiological studies, examining ways to resolve possible differences between health statistics collected on each side of the border, and promoting data communication and exchange using the Internet. The field office has also assisted in training public health personnel along the border, supported local health programs in community

outreach activities, and facilitated the dissemination of border epidemiological information to state and local health officials and the general public on both sides of the border.

Both public and private providers made use of this communication medium. More than sixty meetings related to epidemiological and other border health studies were coordinated through the field station since October 1997. The field station has provided a neutral meeting site for the coordination of a number of binational efforts.

The field station has conducted and facilitated a number of studies including an epidemiological investigation of blood lead levels in children residing on both sides of the border. Other studies have focused on childhood asthma, systemic lupus erythematosus, diabetes mellitus, cervical cancer, sexually transmitted diseases, tuberculosis, and pesticide screening. Future projects are planned to expand and replicate efforts to other Arizona-Sonora border communities, which will include the provision of training on data collection protocols in these other localities. Other projects planned may focus on adolescent health and behavioral health issues.

Texas

The Texas demonstration project provided for improved cross-border health communications and established the Internet as a key tool for such communication. The main site for demonstration project activities was Cameron County, and there were several key collaborators for the project, including representatives from county and city health departments, various public health agencies, private sector providers, health data users, the Texas Department of Health Region II, and areas of Matamoros, Reynosa, and Tamaulipas. Training was provided on use of Internet tools, computers were placed in two locations on the Mexican side of the border (Hospital General de Matamoros and Jurisdiccion Sanitaria III), upgrading of computer communications was supported on the Texas side, and work groups defined priorities for additional activities. An Internet provider donated access to demonstration participants. Additionally, an electronic board was designed for participants to exchange public health information.

A long-term goal of the demonstration is to demonstrate the utility of an organized and standardized communication network among Cameron County and Tamaulipas participants. If successful, the demonstration will be replicated in the McAllen/Reynosa border area. TDH will also be asked to extend access to state systems, such as the Integrated Eligibility and Enrollment System, to C/MHCs in the District as part of the demonstration.

Also, as part of the data infrastructure project, support was provided to a University group in Texas to update the health data contained in a report evaluating the health impacts of NAFTA.

California

In California the demonstration was coordinated through the San Diego Health Department, and it focused on improving cross-border communications and health event notifications. A student coordinator was hired to assist with implementation of priority activities. The coordinator assisted in the installation of computers and modems to facilitate cross border

communication, and Internet access was also arranged. The demonstration promoted and facilitated collaborative activities in the collection and exchange of health data among California, Baja California, the Imperial County and San Diego Health Departments, the Tijuana Health Department and safety net providers. There are future plans for training health department staff on use of the Internet to facilitate binational communication and use of standard epidemiological software.

The demonstration project also included support for the California/Mexico Public Health Strategic Planning Meeting that was held in February 1998. At this meeting, representatives from county, state, and federal governments; universities; foundations; community-based organizations; and businesses developed an action plan for cultivating public private partnerships in the coordination and support of initiatives that improve border public health. This included discussion of funding priorities, among which were major tenets of the California demonstration project. These priorities included the need for improving access to and exchange of information at the border, including for the collection and sharing of disease outbreak information, the exchange of epidemiological data to reduce morbidity and mortality, sharing of immunization data, and tracking movement of people with tuberculosis along the border. Other priorities included the purchase of Internet ready computers to establish essential infrastructure for health alerts and communications and the provision of technical support to assist in information exchange.

Other U.S.-Mexico Border Health Data Infrastructure Activities

Three other activities were supported under the data infrastructure project, each of which crossed over state and country lines. First, CDC collaborated with HRSA to provide funds for a study of children's blood lead levels in Border communities, since lead exposure in the border population had never been well defined. The Pan American Health Organization (PAHO) Field Office in El Paso coordinated the recruitment of participating families residing on both sides of the Border. Study findings are being provided to local health officials.

Another crosscutting project was the development of a four-state directory of officials to be notified concerning certain health and environmental events. The *U.S-Mexico Border Environmental Health Yellow Pages- Spring 1999* includes contact information for event notifications, vector control, product safety, drinking water, food product alerts, and other risks. Each state prepared its own data. The New Mexico Environment Department, with assistance from the U.S. Department of Health and Human Services, Office of International and Refugee Health, compiled and indexed the four state lists into a single directory. Directories were distributed at the final project meeting and are being distributed to other officials in the four border states. There are future plans to add Mexican contact information to the directory as well as to post it on the Border XXI Environmental Health Workgroup website. The directory will be updated and changed as needed.

Another effort supported by the data infrastructure project was the development of a HRSA Border Health website. CHPS' subcontractor, the National Center for Farmworker Health

(NCFH) developed and implemented the website in August 1996. The website included a preliminary directory of key health officials for each of the four US and six Mexican border states, information on HRSA border health projects and strategies, hot links to other border health web sites, health statistics, and notices (such as meeting announcements and vacancy lists for border area C/MHCs clinical staff). The website URL is <http://www.bphc.hrsa.dhhs.gov/borderhealth/>. PAHO and the HRSA Bureau of Primary Health Care are now responsible for certain portions of the website.

1. INTRODUCTION AND BACKGROUND

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1.1 INTRODUCTION

In 1995, the Health Resources and Services Administration (HRSA) contracted with the Center for Health Policy Studies (CHPS) and CHPS' subcontractor, the National Center for Farmworker Health (NCFH) to conduct the US-Mexico Border Health Data Infrastructure Improvement Project, under contract number 240-95-0041. This three-year project encouraged the formation of partnerships in and among the U.S.-Mexico border states for building and improving health data infrastructure to meet information needs along the border. This has included improving the comparability and completeness of health data collection; the communication and exchange of health data among public health agencies, Community and Migrant Health Centers (C/MHCs), and other providers and users of these data; and using these data for health surveillance and decision making.

Over the past three years, four unique demonstration models were developed, implemented, and evaluated on the state level in each of the U.S.-Mexico border states (hosted on the U.S. side of the border). There were also several concurrent efforts that were completed to improve border health data infrastructure, many of which were implemented in the four U.S.- Mexico border states. This report documents these efforts and lessons learned, and it describes how demonstration activities may be continued in the future.

1.2 REPORT OVERVIEW

There are eight chapters for this report. The remainder of this chapter describes the project's background and provides a brief synopsis of efforts supported under this contract. Chapter two describes the methodology that was used to document outcomes from and evaluate the four state demonstration activities. Subsequently, chapters three through six present the evaluation reports for each of the state demonstration models. These chapters are written in a case-study format so that project outcomes may be understood in the context of each demonstration's history, design efforts, and implementation process. Chapter seven describes three other activities that were supported by this contract, including a study of pediatric blood lead levels along the border, the development of a border-specific environmental yellow pages directory, and the creation of a border health web page. The report ends with some summary conclusions, many of which were developed at the project's closeout meeting in which project principals gathered to discuss project outcomes and to plan for the future.

1.3 PROJECT HISTORY AND BACKGROUND

Due to the North American Free Trade Agreement (NAFTA), dramatic population growth has occurred on both the U.S. and Mexican sides of the border, bringing with it major demographic changes. These changes have had large impacts on almost every aspect of life in the border

communities. They have had a direct impact on the health, environmental, and social services systems in these areas.

In the early 1990s, the Department of Health & Human Services urged all of its component agencies to determine how to address emerging border health issues and to implement these strategies within their respective funding and legislative constraints. In November 1994, HRSA's administrator formed the U.S. Mexico Border Health Task force to assess the problems, to identify needs and resources, and to seek participation from state and local health agencies in defining objectives for new projects. The Task Force was charged with preparing a strategic plan for HRSA's U.S.-Mexico border health activities. The Task Force met during the winter of 1994-1995, identified a number of border health problems that fell within the HRSA mission, and examined the feasibility of specific interventions. The work of the Task Force was facilitated by materials from prior studies of the border area, including Proyecto Consenso and *Sister Community Health Profiles, United States-Mexico Border, 1989-1991*, which was published by the United States-Mexico Border Health Association in 1994.

The Task Force compiled an inventory of activities that HRSA already supported in the border states, and it collected and reviewed the most current morbidity, natality, mortality, and health resource data available for that region. A strategic plan was then developed to identify issue areas for further study. Four issues were identified, which included the need for:

1. Improvement in the quality, timeliness, communication and utilization of health data,
2. Outreach improvements to enhance access to and utilization of existing primary care resources,
3. Expansion of the health services work force, and
4. Capital investment in facilities and equipment for the delivery of health services in both new and rapidly growing communities along the border.

Task Force representatives then contacted each of the four U.S. border state health officers to discuss these issues. In doing so, they determined that the perceived needs in each state were different for each of the issue areas. It was clear that no single project design could be developed by HRSA to meet the needs of all states. Such activities would require the active collaboration among the stakeholders in each respective U.S. and bordering Mexican states. The Task Force then recommended funding of several demonstration projects, one of which was the U.S.-Mexico Border Health Data Infrastructure Improvement Project. Subsequently, in 1995, HRSA began implementation of two multiyear demonstration projects, including the U.S.- Mexico Border Health Collaborative Outreach Demonstration Project, which was awarded to the University of Arizona, and the U.S.-Mexico Border Health Data Infrastructure Improvement Project, which was awarded to CHPS and its subcontractor, NCFH.

1.4 OVERVIEW OF PROJECT ACTIVITIES

A vision of a comprehensive, integrated data and communications network, which links together health officials and providers on both sides of the border, was used to stimulate interest in the state

level demonstrations. In each state, the specific objectives to be addressed through the project were determined by partnerships among the state health departments, local health departments, HRSA and others interested in border health data and communications. The project also supported and promoted health data related activities involving other federal agencies and the PAHO Field Office in El Paso.

During the first year of the project, work was conducted in each of the states in order to:

- identify key contacts in the state health departments and other state agencies,
- recruit the active participation of local health departments in the demonstration,
- compile a preliminary inventory of existing health data and data systems, and
- initiate a needs assessment for health data infrastructure improvements.

In each of the four U.S. border states, the health officer was asked to designate an individual to serve as an ongoing contact within the state health department. These contacts helped to identify other persons to be interviewed, including other health department officials, representatives of other state agencies, and local/county health department contacts. Interviews were then conducted in order to develop an inventory of border health data and relevant data systems, to assess perceptions of data deficiencies, and to begin the process of a needs assessment for data and communications infrastructure improvements. In consultation with the state health departments, recommendations were then developed for a local/county site in which the demonstration would be focused.

In New Mexico and California, selection of the local/county demonstration sites was self-evident. In Arizona, the state health department contact suggested a county health department. The director of the health department agreed to participate after being interviewed, with the proviso that participation not interfere with other ongoing and new commitments. In Texas, four county health departments were identified as suitable for demonstration activities, and the four county health officers made the selection during a conference call.

After selection of the local/county demonstration sites, interviews were then conducted within the local/county health department staff in order to understand which health data and data systems were used; how health data was accessed and communicated within the state; and if and how health data were communicated and exchanged with counterparts on the Mexican side of the border. A formal needs assessment was conducted in Arizona and California at the county level.

Mini-forums were then held to bring together those interested in health data infrastructure improvements. Local and state health department officials, provider groups (including C/MHCs) and representatives from academic institutions participated. Each mini-forum also included participants from the PAHO field office, public health officials from the contiguous Mexican state, and several federal agencies (HRSA, CDC and EPA).

To facilitate mini-forum discussions, the data and data system inventories and an English/Spanish description of the Mexican Federal Health Data Systems were made available at

the meeting. Concurrent English/Spanish translations were provided at each mini-forum. Detailed information on the inventories, needs assessments, and mini-forums have been previously reported and are not repeated in this report (see *U.S.-Mexico Border Health Data Infrastructure Improvement Demonstration Progress Report--Year One, January 1997.*)

The networking and discussions at the mini-forums brought together individuals and organizations that produce and use health data along the border. The mini-forums helped these key principals to better understand the needs and the operational constraints of one another. There were immediate benefits of this process, including the establishment of new linkages and information sharing on how to access existing border health data sources (e.g., preliminary vital statistics). Proceedings from the meetings were widely disseminated. The key product of each mini-forum consisted of a consensus list of priority needs for health data and data communications infrastructure improvements. These lists of priority needs were the building blocks upon which project activities were developed.

During the second year of the project, demonstrations were initiated in the four U.S.-Mexico border states with the collaboration of a contiguous Mexican state. Demonstrations were developed to improve reportable disease notification systems, conduct binational epidemiological studies, and improve cross-border health information communications using information technology as appropriate.

It took much time and effort to attract the enthusiastic participation of all levels of health officials and private sector health professionals on both sides of the Border. It is important to emphasize, however that many of the work groups and relationships that were established or supported by this contract will continue beyond the project's end date. Some of the activities will require ongoing external support in order to continue, although at lower levels of funding than were made available through this demonstration.

In the third year of the demonstration, work continued for the four state models. Cross-site transfer of lessons was also emphasized, and sites searched for potential sources of additional funding. A major activity during the third year was evaluation of each of the state demonstration models. The qualitative evaluation documented demonstration project history and activities, the obstacles encountered and how they were overcome, and what differences the demonstration has made along the border. Representatives from both sides of the border provided input for the evaluations to reflect the true binational impact of the demonstrations. The project culminated with a final meeting with project principals in El Paso, Texas. The meeting centered around discussions of key accomplishments, issues that cut across all projects, and identification of funding sources for demonstration project continuation, expansion, or replication as appropriate.

In addition to the four state demonstration models, three other activities were supported under the data infrastructure project, each of which crossed over state and country lines. These activities included a study of blood lead levels in the border's pediatric population, the development of an environmental health yellow pages directory for the border states, and the creation of HRSA's border health Internet web page.

1.4.1 U.S.-Mexico Border State Demonstration Projects

There were four unique demonstration projects that were developed and implemented in each of the four U.S. Mexico Border states. Each project is described briefly as follows.

New Mexico. In New Mexico, support was provided for a consulting epidemiologist to work with the New Mexico Border Health Office (NMBHO) on improvements to a public health notification system. The notification system represents a collaborative effort among several US and Mexican states, the Mexican federal government, and local and district health departments along the border. In November 1997, a Memorandum of Understanding (MOU) was signed by state officials in New Mexico, Texas, and Chihuahua to formalize this system of information exchange and epidemiological response along the border. Binational working groups met monthly to refine the data set for notifications, identify whom to notify about what events, define each data element clearly in both Spanish and English, and standardize the reporting format. Collaborative working relationships were established among working group participants, which has facilitated other binational border health efforts.

The notification system used primarily fax technology for transmissions, since this was the medium for which all participants have availability. Each faxed notification was called either an "Epi-Fax" or "Info-fax", depending on whether it was an emergent notification or simply information of interest. Since the establishment of the MOU in November 1997 through January 1999, more than ten fax transmissions have occurred to notify key officials of disease outbreaks or other pertinent information. The NMBHO also provided training to private and public providers in the use of the notification system.

Arizona. In Arizona, support was provided for a joint Arizona-Sonora epidemiological field station, with the mission of promoting, developing, and coordinating epidemiological activities along the Arizona-Sonora border. The Arizona Department of Health Services provided computers, communications equipment, and furnishings for the field station. Space for the field station was provided by the Sonoran government. The demonstration project provided for the full functioning of the field station, including the recruitment and training of an office manager, epidemiologist, and information system worker. The field station serves as a venue for consultation on border related epidemiological studies, examining ways to resolve possible differences between health statistics collected on each side of the border, and promoting data communication and exchange using the Internet. The field station has also provided training for public health personnel along the border, supported local health programs in community outreach activities, and facilitated the dissemination of border epidemiological information to state and local health officials and the general public on both sides of the border.

Both public and private providers made use of this communication medium. More than sixty meetings related to epidemiological and other border health studies were coordinated through the field station between October 1, 1997 and September 31, 1998. The field station has provided a neutral meeting site for the coordination of a number of binational efforts.

The field station has conducted and facilitated a number of studies including an epidemiological investigation of blood lead levels in children residing on both sides of the border. Other studies have focused on childhood asthma, systemic lupus erythematosus, diabetes mellitus, cervical cancer, sexually transmitted diseases, tuberculosis, and pesticide screening. Future projects are planned to expand and replicate efforts to other Arizona-Sonora border communities, which will include the provision of training on data collection protocols in these other localities. Other projects planned may focus on adolescent health and behavioral health issues.

Texas. The Texas demonstration project provided for improved cross-border health communications and established the Internet as a key tool for such communication. The main site for demonstration project activities was Cameron County, and there were several key collaborators for the project including representatives from county and city health departments, various public health agencies, private sector providers, health data users, the Texas Department of Health Region II, and areas of Matamoros, Reynosa, and Tamaulipas. Training was provided on use of Internet tools, and computers were placed in two locations on the Mexican side of the border. Upgrading of computer communications is being supported on the Texas side. Work groups defined priorities for additional activities. Additionally, an Internet provider donated access to demonstration participants, and an electronic bulletin board was designed for participants to exchange public health information.

A long-term goal of the demonstration is to demonstrate the utility of an organized and standardized communication network among Cameron County and Tamaulipas participants. If successful, the demonstration will be replicated in the McAllen/Reynosa border area. TDH will also be asked to extend access to state systems, such as the Integrated Eligibility and Enrollment System, to C/MHCs in the District as part of the demonstration.

Also, as part of the data infrastructure project, support was provided to a University group in Texas to update the health data contained in a report evaluating the health impacts of NAFTA.

California. In California the demonstration was coordinated through the San Diego Health Department, and it focused on improving cross-border communications and health event notifications. A student coordinator was hired to assist with implementation of priority activities. The coordinator assisted in the installation of computers and modems to facilitate cross border communication, and Internet access was also arranged. The demonstration promoted and facilitated collaborative activities in the collection and exchange of health data among California, Baja California, the Imperial County and San Diego Health Departments, the Tijuana Health Department and safety net providers. There are future plans for training health department staff on use of the Internet to facilitate binational communication and use of standard epidemiological software.

The demonstration project also included support for the California/Mexico Public Health Strategic Planning Meeting that was held in February 1998. At this meeting, representatives from county, state, and federal governments; universities; foundations; community-based organizations; and businesses developed an action plan for cultivating public private partnerships

in the coordination and support of initiatives that improve border public health. This included discussion of funding priorities, among which were major tenets of the California demonstration project. These priorities included the need for improving access to and exchange of information at the border, including for the collection and sharing of disease outbreak information, the exchange of epidemiological data to reduce morbidity and mortality, sharing of immunization data, and tracking movement of people with tuberculosis along the border. Other priorities included the purchase of Internet-ready computers to establish essential infrastructure for health alerts and communications and the provision of technical support to assist in information exchange.

1.4.2 Study of Pediatric Blood Lead Levels

The Centers for Disease Control collaborated with HRSA to provide funds for a study of children's blood lead levels in Border communities, since lead exposure in the border population had never been well defined. The Pan American Health Organization (PAHO) Field Office in El Paso coordinated the recruitment of participating families residing on both sides of the Border. Study findings are being provided to local health officials.

1.4.3 Yellow-Pages Directory

Another crosscutting project was the development of a four-state directory of officials to be notified concerning certain health and environmental events. The *U.S-Mexico Border Environmental Health Yellow Pages- Spring 1999* includes contact information for event notifications, vector control, product safety, drinking water, food product alerts, and other risks. Each state prepared its own data. The New Mexico Environment Department, with assistance from the U.S. Department of Health and Human Services, Office of International and Refugee Health, compiled and indexed the four state lists into a single directory. Directories were distributed at the final project meeting and are being distributed to other officials in the four border states. There are future plans to add Mexican contact information to the directory as well as to post it on the Border XXI Environmental Health Workgroup website. The directory will be updated and changed as needed.

1.4.4 HRSA Border Health Web Page

Another effort supported by the data infrastructure project was the development of a HRSA Border Health website. CHPS' subcontractor, the National Center for Farmworker Health (NCFH) developed and implemented the website in August 1996. The website included a preliminary directory of key health officials for each of the four US and six Mexican border states, information on HRSA border health projects and strategies, hot links to other border health web sites, health statistics, and notices (such as meeting announcements and vacancy lists for border area C/MHCs clinical staff). The website URL is <http://www.bphc.hrsa.dhhs.gov/borderhealth/>. PAHO and the HRSA Bureau of Primary Health Care are now responsible for certain portions of the website.

2. METHODOLOGY FOR DEMONSTRATION PROJECT EVALUATION

2. METHODOLOGY FOR DEMONSTRATION PROJECT EVALUATION

2.1 INTRODUCTION

A key task that was completed during the final year of the contract was evaluation of the four border state demonstrations. This chapter describes the methodology that was used, including the evaluation approach and protocol. An evaluation was completed for each demonstration model, with the purpose of documenting the processes through which the demonstration was developed and how the project contributed to the improvement of data infrastructure for border health. Specifically, the evaluation was designed to address how demonstration objectives were met, specific achievements of the projects, lessons learned, and plans for continuation or replication of the demonstrations.

2.2 EVALUATION APPROACH

A case-study, qualitative approach was used for the evaluations. This approach was chosen since each demonstration project was unique in scope while also sharing the same broad goal of improving health data infrastructure. Written evaluation reports were completed for each demonstration, and they are presented in the following four chapters. Each case study report is organized into seven sections:

- Demonstration Project Background
- Objectives for Demonstration
- Project Organizational Structure
- Project Activities
- Project Outcomes
- Lessons Learned
- Future Opportunities

Exhibit 2-1 presents the evaluation tool that was used to address each part of the evaluation. The first four sections of each written case study lay the groundwork for evaluating the success of the projects. The first section documents the historical context of the demonstration and identifies those individuals and organizations involved in its development. The second section lists project objectives and describes how and why they were set. The project's organizational structure is then detailed, followed by a description of project activities and data collection efforts. Sections five and six present the outcomes of the project and lessons learned. For these sections, individuals involved in each project were asked to describe project successes and provide insights on those factors that either facilitated or obstructed the successful completion of project objectives. The final section of the case study describes how successful project activities may be continued and/or replicated at the end of the project year.

EXHIBIT 2-1

U.S. -MEXICO BORDER HEALTH DATA INFRASTRUCTURE IMPROVEMENT PROJECT
Evaluation Questions

Demonstration Project Background

- Briefly describe how the idea for the demonstration project was initiated. Was there an event that made the need for the demonstration evident? Was the demonstration a natural next step for a project already underway? Would the project activities have occurred even if HRSA support had not been provided?
- Who was involved in the development of the demonstration idea?

Objectives for Demonstration

- What were the objectives of the project?
- Who set these objectives?
- Why were these objectives selected?
- What was the process for setting the demonstration project objectives?

Project Organizational Structure

- Describe the organizational structure of the project and identify the project leaders and other individuals with major responsibilities.
- Who are the key persons and collaborators who have made the demonstration possible on both sides of the border, including on the federal, state, and local level? Identify any specific individuals who were essential for initiating work on the project and facilitating its completion.
- Describe how the demonstration is funded and identify all funding sources (including amounts and types of funding) for the project. Can this support be converted into dollar equivalents in order to identify and compare the relative amounts by source?

Project Activities

- Describe the work that has been completed for the demonstration project.
- What types of data have been collected and what studies related to border health have been facilitated by the project?

Project Outcomes

- In your opinion, how successful has the demonstration been in meeting its objectives? Can this success be stated in measurable terms?
- What have the benefits been and to whom?
- Describe how the organizational structure has contributed to the completion of the project. How could the organization of the project been more effective?

EXHIBIT 2-1

U.S. -MEXICO BORDER HEALTH DATA INFRASTRUCTURE IMPROVEMENT PROJECT
Evaluation Questions (Continued)

Lessons Learned

- What were the key obstacles to completing the project? How were these obstacles overcome?
- What factors were essential in facilitating completion of the project?
- If the demonstration were to be replicated elsewhere, what experiences or information would you share with those individuals who would be involved in the new project that you feel would be beneficial?

Future Opportunities

- Are there plans for continuation of this project after support from the data infrastructure project is completed? If yes, what activities are planned and what are the probable sources of funding for the project?
- How/where do you feel that the demonstration could be replicated?

2.3 EVALUATION PROTOCOL

For each demonstration project, one individual on the project staff from CHPS or NCFH took primary responsibility for documenting the evaluation. Interviews were conducted with the key individuals who were involved in the design and implementation of each project (including representatives from Mexico) through telephone calls and visits to demonstration sites. Interviewees were asked the questions presented in Exhibit 2-1 as appropriate given their involvement in the project. Although heavily dependent upon participant opinions, the evaluation was supplemented with quantitative data when available. Attempts were made to document all studies and data collection efforts that have occurred within each demonstration. Case study reports were then written for each demonstration, and they appear in the following four chapters. Data collection efforts were scheduled to allow for the optimal completion of work for demonstrations prior to evaluation. CHPS staff documented evaluations for the Arizona and New Mexico projects. NCFH staff led evaluation efforts in Texas and California.

3. NEW MEXICO PROJECT EVALUATION REPORT

3. NEW MEXICO PROJECT EVALUATION REPORT

3.1 INTRODUCTION

This chapter documents the evaluation of the New Mexico demonstration, which focused on the refinement of a binational system for notifications of disease outbreaks and communications regarding epidemiological information. The following seven sections describe the background of the demonstration, project objectives, the project's organizational structure, project activities, key outcomes, lessons learned, and future opportunities. Appendix A (English version) and Appendix B (Spanish version) present the project processes and working relationships recorded by the demonstration project principals in New Mexico as well as a compilation of pertinent project documentation.

3.2 DEMONSTRATION PROJECT BACKGROUND

The New Mexico Border Health Office in Las Cruces, New Mexico was selected to host and coordinate the demonstration project in early 1996. The BHO began its operations in July 1993 as a component of the New Mexico Department of Health, Public Health Division III. The BHO was a good fit for coordinating the demonstration project as its mission is border-specific and its goals include:

- Developing systematic information, surveillance, research and data collection systems to monitor changes in health status,
- Developing and conducting training programs,
- Developing mechanisms for cooperating with health officials of neighboring states and Mexico, and
- Assisting in the development and funding of health projects.

In May 1996, CHPS and NCFH held a mini-forum in Las Cruces, NM to facilitate the planning of the demonstration project. There were fifty-one participants, including representatives from:

- The Departments of Health in New Mexico and local U.S.-Mexico border counties;
- State officials and legislators from New Mexico and the neighboring Mexican state of Chihuahua;
- Universities;
- Health care providers, including community health centers and hospitals;
- Federal government agencies, including HRSA and the Environmental Protection Agency;
- Private organizations; and
- The Pan American Health Organization (PAHO) Field Office in El Paso, Texas.

The purpose of the mini-forum was to seek consensus among participants on the needs and priorities for improving health data and communication infrastructure along the New Mexico-Chihuahua border. Mini-forum participants collaborated to choose priority areas for

demonstration project improvements. The project was developed as an outgrowth of key priorities that were established locally. Four discussion work groups were formed at the mini-forum to discuss epidemiological surveillance, health services programs, prevention programs, and population and vital statistics. The four workgroups each identified four priority areas for improving health data infrastructure along the border. The priorities that were identified are listed in Exhibit 3-1. The final content and scope of the data infrastructure improvement demonstration was derived from this initial priority list.

Following the mini-forum, CHPS worked with the New Mexico Border Health Office (BHO) on further development of demonstration activities. It was felt that the demonstration should be synergistic with other BHO priorities so to build upon and enhance current efforts and strengthen existing relationships. At that time, the BHO was continuing development of its Integrated Border Information and Surveillance System (IBISS) to collect border-specific health and environmental information. In concert with IBISS, the BHO wanted to institutionalize an epidemiological alert system to provide information regarding communicable disease cases. There was no formal communication mechanism to ensure that all key health officials were aware of disease outbreaks that may be occurring just across state and country borders. This issue had become increasingly important due to the growth in border crossings, particularly those occurring between El Paso, TX and Juarez, Chihuahua. Due to the proximity of New Mexico border to El Paso and Juarez, representatives were needed from all three states to develop the alert system.. Exhibit 3-2 presents a map of this border area.

In 1995, the BHO had begun development of an epidemiological alert system called, EPI-FAX, to transmit information via facsimile to public health officials in New Mexico, Texas, and Mexico. Because this alert system was to be implemented in three states, intensive coordination was needed to fully implement this system. Active participation by all parties involved was essential, given the differences in the health care systems in the United States and Mexico, as well as the differences in the structure of the two U.S. states' health departments. The protocols, guidelines, and distribution list for the EPI-FAX required further development and involvement from key individuals on both sides of the border. Based on the priorities established at the mini-forum and other BHO objectives, it was decided that the demonstration project should focus on further development of the EPI-FAX system, as the beginnings of a more extensive effort to develop a comprehensive binational health information and surveillance system.

3.3 DEMONSTRATION PROJECT OBJECTIVES

At the mini-forum in May 1996, participants collaborated to establish general criteria for choosing the demonstration project focus. It was decided that the demonstration should be:

- Organized around a concrete project;
- Consistent with other activities, including binational programs and interests, New Mexico Health Policy Commission plans, other funding streams, and Border Health Office programs; and
- Built on existing organizational and personal relationships.

EXHIBIT 3-1

PRIORITIES FOR DATA INFRASTRUCTURE IMPROVEMENT
New Mexico Mini-Forum, May 20-21, 1996

Epidemiological Surveillance Workgroup

1. Organize a clearinghouse on binational health data exchanges, including information on the conditions studied, where and when, and whom to contact for additional information.
2. Expand the role of local public health offices as passive sentinel sites for monitoring morbidity (also increase their active surveillance of infectious diseases).
3. Use data demonstration to compile information for developing successful applications for funding binational epidemiological studies, including cross-border contact tracing.
4. Help obtain equipment, software and arrangements for ensuring that health officials on both sides of the Border have internet access and can use it for surveillance reporting and information exchange. Explore arrangements with universities for list-serve distribution of alerts.

Health Service Programs Workgroup

1. Implement common data standards, such as HL-7 and ANSI. Need unique patient identifiers that work for both sides of the Border, and which protect patient and provider confidentiality.
2. Identify a specific service application, such as an immunization program, that can be a model for a data infrastructure demonstration of GIS, telecommunications, and common data sets.
3. Establish Border Health home page on internet to facilitate data and information sharing.
4. Work with the NM Health Policy Commission to coordinate Border health information demonstration with the development of a statewide master patient index system.

Prevention Program Workgroup

1. Design and implement Border-wide household interview survey that emphasizes behavioral risk factors and care seeking behavior. Include demographics and health status information.
2. Work to reinstate Migrant Student Referral Transfer Service (MSRTS), strengthen to include data on immunizations administered on the Mexican side of the Border.
3. Identify and promote special Border-area rural "set asides" in grant programs to help foster improved economic development in rural areas.
4. Work to formalize U.S.-Mexico Border Health Commission and data exchange role.

Population and Vital Statistics Workgroup

1. Define common data elements for Mexico/New Mexico that are comparable, valid, and reliable.
2. Improve access to existing state databases.
3. Improve data availability/reliability for mobile populations.
4. Identify, collect, and link non-medical data elements, such as environmental, economic, social, and cultural information to provide context for vital statistics.

EXHIBIT 3-2

Las Cruces-El Paso-Juarez Area

CHPS CONSULTING
center for health policy studies

Using these broad criteria, CHPS then worked with the BHO to focus on immediate needs for data infrastructure improvements and to identify how the demonstration project could best be structured to meet these needs. In early 1997, the binational health notification system (EPI-FAX) was chosen as the demonstration project focus, and a scope of work for the project and specific objectives were finalized in September 1997. The BHO developed these objectives in collaboration with CHPS. Demonstration project objectives included:

- To improve the reliability and completeness of notifications of border area and state health departments concerning suspicious and confirmed cases;
- To develop protocols, formats, and standard contents of notifications in order to minimize the potential for misunderstandings and/or incomplete information communication;
- To expand EPI-FAX to other communications media;
- To develop and complete at least one training seminar for New Mexico Health Department staff on disease reporting systems used in Texas and Chihuahua, Mexico; and
- To familiarize and train key individuals in the use of EPI-FAX and any new protocols and formats.

This project was chosen for the demonstration because it built on the priorities that were discussed at the mini-forum (most specifically from the environmental work group) and it was also an immediate need for BHO.

3.4 PROJECT ORGANIZATIONAL STRUCTURE

The demonstration project was organized and coordinated through the New Mexico BHO, under the primary direction of Mr. Daniel Reyna, BHO Director. In September 1997, CHPS established a subcontract with BHO to formalize its role in the demonstration. Specifically, the BHO was to:

- Organize and support the development and implementation of an enhanced and formalized EPI-FAX epidemiological alert system,
- Consult with state agency officials in New Mexico and contiguous Border states, including those officials with responsibilities for environmental health, administration of the reportable disease system and compliance with this system, and
- Consult with, as appropriate, federal agencies such as HRSA, CDC, SAMSHA, and EPA.

The BHO had previously contracted with Hugo Vilchis, MD to facilitate the office's interaction with public health officials in Mexico. Dr. Vilchis had previously worked for the Pan American Health Organization in El Paso, TX, and he was very knowledgeable and experienced in cross-border collaborations. Per the recommendation of the BHO, CHPS contracted with Dr. Vilchis in June 1997 to work as a consultant for the project and work collaboratively and under the general direction of the BHO for the project. The role of Dr. Vilchis was to assist with the day-to-day implementation of the project and coordinate communication between New Mexico, Texas, and Mexico.

There were several collaborators for the project that participated in a Binational Health Working Group (BWG) that helped to develop protocols for and implement the EPI-FAX system. Appendix A lists these members, which included representatives from the Las Cruces, NM; El Paso, TX; and Ciudad Juarez, Chihuahua areas. Participants were directors and epidemiologists from state, region, and local health departments in these areas. Dr. Vilchis led the meetings of the BWG, which initially met in July 1997 and has continued to meet in person or via conference call on a monthly basis. A working document was created and refined by the BWG to define its role for EPI-FAX and other binational health efforts. This document is presented in Appendix A. Exhibit 3-3 presents a general organizational chart for the project.

CHPS provided some financial support for the project through a subcontract with the BHO in 1997 to assist with administrative and overhead costs incurred in coordinating the project. In addition, CHPS hired Dr. Vilchis as a consultant from June 1997 through September 1998 to coordinate activities of the BWG and to further develop EPI-FAX protocols. CHPS provided for a total of 1,000 paid consulting hours for Dr. Vilchis plus local travel expenses incurred for attending various meetings. Additionally, although difficult to quantify, there was substantial in-kind support for the project contributed by all of the organizations, on both sides of the Border, that provided representation in project activities, including participation in meetings and other consultation time.

3.5 PROJECT ACTIVITIES

This section describes specific activities that were completed for the demonstration project. Five essential activities have been completed or are ongoing for the project:

- Establishment of a Memorandum of Understanding to facilitate binational communication,
- Conduct of meetings to develop a distribution list and protocols for the binational epidemiological alert system,
- Implementation of EPI-FAX system,
- Project coordination activities by Dr. Vilchis, and
- Project evaluation.

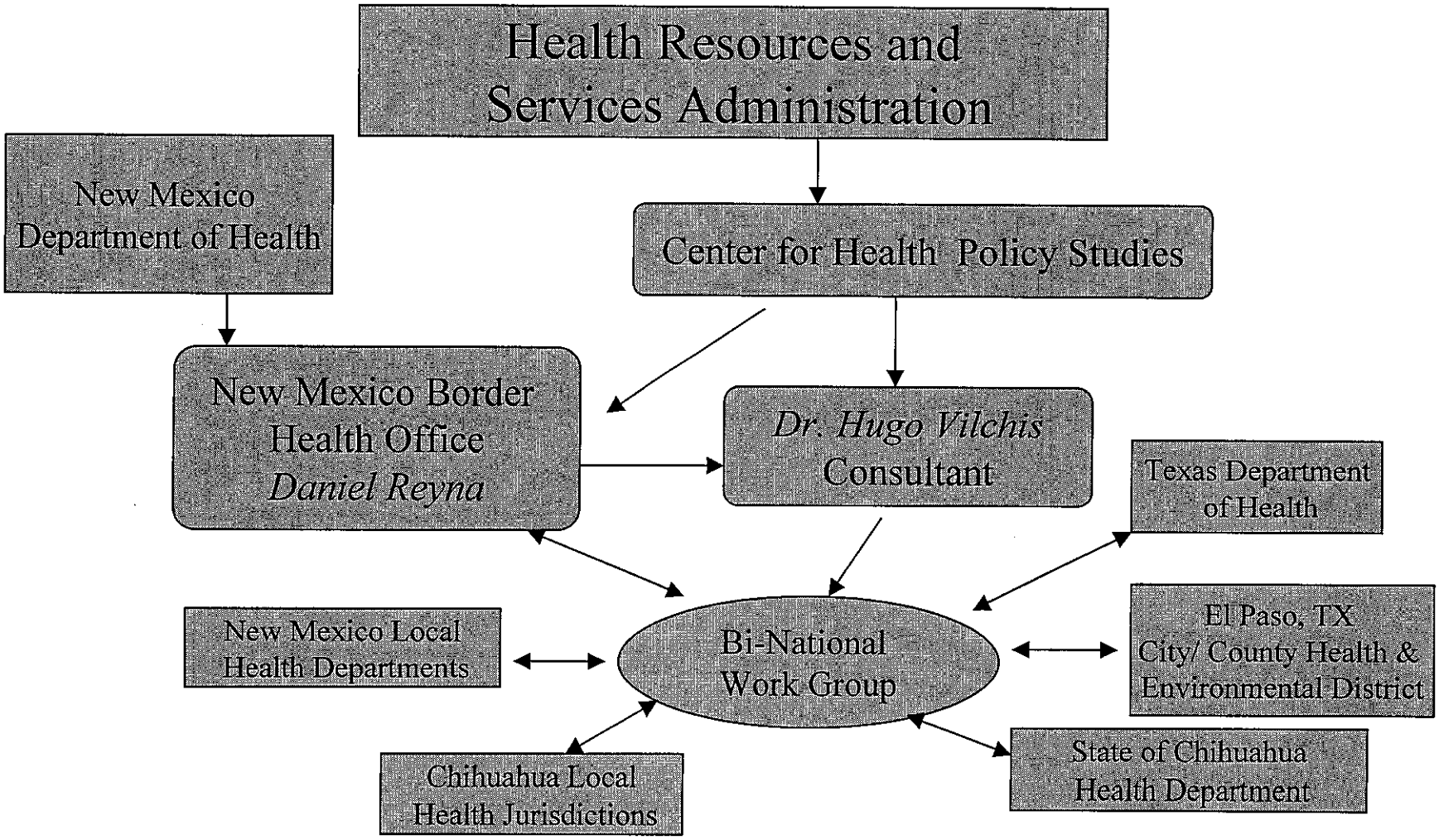
Each of these activities is briefly discussed in the paragraphs that follow.

Establishment of a Memorandum of Understanding On November 21, 1997, a Memorandum of Understanding (MOU) was signed by state and local border health authorities in Chihuahua, New Mexico, and Texas to "facilitate the establishment of a system of information exchange and epidemiological response as a model for border-wide application." The MOU is a formal agreement for the states to work together on border-specific health and environmental information sharing. Specifically, the MOU provides for binational collaboration among the states on the following activities:

EXHIBIT 3-3

U.S.-MEXICO BORDER HEALTH DATA INFRASTRUCTURE IMPROVEMENT PROJECT

Organization of New Mexico Demonstration



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- Establishing a communications process between designated Mexican Federal officials and public health authorities in New Mexico, Texas and Chihuahua,
- Developing this communication process as a model for border-wide implementation,
- Implementing the EPI-FAX epidemiological alert system as an urgent notification tool between public health authorities,
- Developing a binational publication about border health issues, and
- Establishing a cooperative, binational public health network to facilitate quick response to pertinent health situations.

The MOU laid the groundwork for formalizing protocols for the EPI-FAX system by providing an official commitment for cooperation on the project from all levels of public health officials on both sides of the border. Additionally, inherent in the MOU is a commitment to a long-term relationship regarding border health data infrastructure as it covers a five-year period. A copy of the Memorandum of Understanding and a program from the signing ceremony is presented in Appendix A. The document was signed by the Cabinet Secretary from the New Mexico Department of Health, the General Director of Health Services of Chihuahua, the Commissioner of Health from the Texas Department of Health, and six jurisdictional, regional, or division public health officials. Due to the centralized nature of the Mexican health care system, the MOU document was sent to Federal officials for comments, suggestions, and necessary approvals prior to the signing in November.

Working Group Meetings On March 30, 1997, a binational working group met in El Paso, TX to begin discussing the need for a border health information system and development of an MOU. Dr. Vilchis and representatives from regional and local health departments were part of this initial group. As a result of this initial meeting, a document was drafted to communicate the purpose of this new working group and its functions (see Appendix A). The document established the working group's mission to institute a system of information interchange and epidemiological response between Chihuahua, New Mexico and Texas, specifically based in the counties of Luna, Hidalgo, and Dona Ana, New Mexico; the health jurisdictions of Ciudad Juarez and Nuevo Casas Grandas, Chihuahua; and El Paso, Texas.

The BWG met again in September 1997 to continue discussions on the binational health information system, to plan for the November 1997 signing of the Memorandum of Understanding, as well as to discuss work on a project between Chihuahua and New Mexico regarding Hantavirus cases. The signing of the MOU then enabled the group to establish protocols and a prioritized distribution list for EPI-FAX with full support from the necessary officials.

In order to facilitate communication and project implementation, the group agreed to hold regular meetings, including monthly telephone conference calls for local members of the BWG, quarterly meetings (face-to-face) with state and regional level working group members, and annual meetings with State health officials. Monthly conference calls commenced in March 1998. Activities have included: finalizing the documents that define the role of the BWG, work on EPI-FAX protocols, discussions on specific diseases/outbreaks of concerns, and planning for future projects. One of the outgrowths of these meetings has been collaboration on a project

proposal for a Binational Infectious Disease System (BIDS). This project is co-sponsored by the Centers for Disease Control and the Mexican Epidemiology General Directorate.

Implementation of Binational Epidemiological Alert System (EPI-FAX) A significant activity conducted for the demonstration was the binational implementation of the EPI-FAX system. It is important to note that EPI-FAX had been in development prior to the demonstration, but it was not until the signing of the MOU that there was official authority and commitment for transmission. Facsimile technology was chosen as the mechanism of communication because all parties who would receive the written notifications had already implemented this technology. It was felt that e-mail transmission would be preferable, but not all parties had reliable capabilities to receive timely e-mail transmissions at that time.

A number of tasks were necessary for implementation, including:

- Definition of the conditions (illnesses and health risks) that are appropriate for notifications,
- Description of the key data elements to be included in notifications,
- Identification of the key individuals on the state and local level to receive and transmit notifications, and
- Distribution of a directory of key health organizations for the system, with names of responsible individuals, addresses, telephone and fax numbers, and e-mail addresses.

The format developed for EPI-FAX is similar to a memorandum (see Appendix A). The title "EPI-FAX" is in a large bold font so that it is easily recognizable as it is received through the fax machine. The fax numbers of the receiving parties are printed on the form, so there is no need to look up names and numbers to transmit the notification. There are fields on the form to identify the sender, date, and an appropriate contact person and telephone number for any follow-up questions. There are also check-boxes so that the sender may specify whether the EPI-FAX is relaying a new report, suspected case, follow-up to a previous case, or a confirmed case. The sender can specify the suspected disease for the notification, and there is approximately one-half of a page for the text portion of the notification.

The BWG collaborated to establish the appropriate procedures for implementation. Since EPI-FAX is a binational effort, it may be transmitted in English and/or Spanish, and targeted recipients are bilingual. Whenever possible, special efforts are made for appropriate translation prior to sending the fax. The BWG acknowledged that all information remitted via EPI-FAX should go through the appropriate channels and follow the guidelines as established in each country, state, and jurisdiction.

To encourage regular interaction among EPI-FAX users and to test the protocols for EPI-FAX in the absence of a disease outbreak, the group decided to also transmit routine epidemiological information and news among recipients of the EPI-FAX. The BWG termed this type of information sharing "INFO-FAX", since it is also transmitted via fax technology. INFO-FAX was designed in a similar format to EPI-FAX. The title, "INFO-FAX", is in large, bold print so that it may be easily distinguished from the more emergent, EPI-FAX.

Project Coordination Activities Day-to-day demonstration project activities were coordinated primarily by Dr. Hugo Vilchis. His responsibilities included:

- Leading BWG meetings, including developing agendas and meeting minutes,
- Preparing a report that formally documented the purpose of the BWG and its activities, and
- Facilitating binational communications.

Additionally, Dr. Vilchis coordinated two training seminars in October and November 1997 on the disease reporting system used in Mexico for epidemiologists from New Mexico and other border states as well as CDC.

Dr. Vilchis regularly met with (and continues to meet with) health authorities in the three states to promote utilization of the EPI-FAX system, to present the system to different agencies, to continue work on a more extensive binational border health information system, and to maintain binational communications. He also has worked to begin expansion of the system to other border areas in New Mexico and Texas. To help facilitate binational communications, Dr. Vilchis developed a newsletter entitled, *Border Health Bulletin*, for distribution to BWG members and other interested parties along the border.

Project Evaluation The BWG established that it would monitor and evaluate the binational border health information system on a regular basis and make modifications as necessary. Dr. Vilchis has stated that the group will evaluate the EPI-FAX system in November 1998, one year after the signing of the MOU.

3.6 PROJECT OUTCOMES

In considering project outcomes, it is important to recall the demonstration project objectives that were presented in Section 3-3. Table 3-1 briefly addresses how each objective has been achieved.

TABLE 3-1
PROJECT OBJECTIVES

Objective	Achieved?	Comments
To improve reliability and completeness of notifications of border area and state health departments concerning suspicious and confirmed cases	Yes	10 EPI-FAXes and INFO-FAXes have been issued over the duration of the project through September 1998.
To develop protocols, formats, and standard contents of notifications in order to minimize the potential for misunderstandings and/or incomplete information communication	Yes	EPI-FAX form and protocols have been developed with collaboration of BWG. Protocols are being refined to address how notifications should be handled after hours and on weekends.
To expand EPI-FAX to other communications media	No	All receiving parties do not have e-mail or Internet capabilities.
To develop and complete at least one training seminar for New Mexico Health Department staff on disease reporting systems used in Texas and Chihuahua, Mexico	Yes	Seminars occurred in October and November 1997
To familiarize and train key individuals in the use of EPI-FAX and any new protocols and formats	Yes	Protocols have been established as appropriate for each receiving office.

The demonstration project has resulted in a number of successful outcomes. Table 3-2 summarizes key project outcomes. Each EPI-FAX and INFO-FAX that was transmitted is presented in Appendix A. The document in Appendix A also presents the Border Health Bulletins that were distributed by Dr. Vilchis.

TABLE 3-2
SELECTED PROJECT OUTCOMES: 1997- 1998

Number of EPI-FAX transmissions:	4
Number of INFO-FAX transmissions:	6
Diseases Reported/Discussed in EPI-FAX and INFO-FAX transmissions:	• Botulism • Pertussis • Rubella • Hantavirus • Typhus
Offices connected via EPI-FAX system	• NM Department of Health, District III • NM Border Health Office • Chihuahua State Health Office • City of Juarez Health Office • Nuevo Casas Grandes Health Office • El Paso City-County Health District • TX Department of Health, Region 9-10 • PAHO
Number of BWG Conference Calls:	6
Number of BWG Meetings with Regional Representatives:	3
Issues of Border Health Bulletin distributed:	2

Ten EPI-FAXes and INFO-FAXes were transmitted between September 1, 1997 and October 1, 1998 (when this evaluation occurred). Faxes were initiated out of the New Mexico Border Health Office, New Mexico Department of Health District III Office, El Paso City-County Health District, and Chihuahua. The EPI-FAXes reported cases of botulism, hantavirus, and pertussis. INFO-FAXES provided discussions on rubella, pertussis, typhus, hantavirus, and information on BWG meetings.

As part of this evaluation, participants in the BWG from both sides of the border were asked to comment on any benefits that have resulted from the demonstration project. There were three major benefits that were cited from all interviewees. It was felt that:

- The EPI-FAX epidemiological alert system is a successful communication tool;
- There has been significant improvement in binational communication among public health officials; and
- BWG members have been enabled to collaborate on other important projects.

First, it was felt that the EPI-FAX notification system is working effectively and that it is an important mechanism of communication among the three states. It has successfully transmitted necessary notifications, in a timely manner, to the individuals in each locality that need to know about disease cases and outbreaks. A second benefit that was cited was the improved binational and interstate communication among health officials and epidemiologists, especially on the local level. In addition to the formal communication mechanism that EPI-FAX provides, the collaboration that was necessary for its implementation has forged strong relationships among

health officials. As one BWG participant stated, "We know what each others' knowledge, strengths and abilities are, and we can call on each other when we need to." A third benefit from the demonstration project, specifically the BWG meetings, has been the opportunity to collaborate on other border-related projects. As stated previously, many members of the BWG are also working on the BIDS project, and the group has plans to incorporate the EPI-FAX system into a more comprehensive information and surveillance system.

One of the most significant outcomes from this project has been interest in expansion of the EPI-FAX system, as well as potential replication of the system, in other border areas. Representatives from Arizona and Texas have traveled to New Mexico to discuss how the system works and to identify key steps for implementation. There have also been requests to expand the EPI-FAX system to the Taumalipas-Texas border area. Dr. Vilchis is working with representatives in this region to discuss how this may be achieved.

3.7 LESSONS LEARNED

While the project, specifically the EPI-FAX epidemiological alert system, has been successful, there were a number of obstacles that had to be overcome or addressed during the implementation process. These obstacles included:

- The different health care systems in the United States and Mexico,
- The different political and public health systems in the United States and Mexico,
- Differing policies regarding confidentiality issues and channels for communication for notifications,
- Lack of technological resources in Mexico,
- Difficulty translating high level agreement into everyday action, and
- Need for a continual funding stream for project continuation.

Each of these obstacles is discussed in the paragraphs that follow.

Different Health Care Systems The United States and Mexican health care systems are structurally different, an issue which had to be addressed for successful project implementation. The Mexican health care system is centralized and much time was needed to get appropriate state and Federal approvals for involvement in the project. On the United States side of the border, local health officials tend to have more autonomy in implementing such efforts. BWG members felt that the MOU was critical for project success because it provided for formal support and commitment on both sides of the border for the project. Although the structure and hierarchy of the Mexican health care system may have made it fairly time intensive to implement the project, it is noteworthy that this same structure should facilitate quicker replication of EPI-FAX to other border areas. Inherent in the MOU is Federal support for the project in Mexico since Federal approvals had to be obtained prior to the signing. Since the United States health care system is fairly decentralized and also privatized, there may be more groundwork to be completed on the United States side of the border than on the Mexican side when attempting to replicate or expand the project. It was also noted that there are fewer epidemiologists on the local level in Mexican

cities, and they tend to be responsible for numerous projects and activities, more so than their U.S. counterparts. This had to be considered during the implementation of this project.

Political and Public Health Systems A related obstacle to expedient project implementation was the need to work within the political systems of both countries. As one BWG member stated, "It is easy to underestimate the difficulty of working with two different systems." In October 1998, elections were held for Governor of Chihuahua, and it was recognized by project principles that when the governor changed, Mexican colleagues that have collaborated with the BWG may be replaced, and new relationships would have to be established. The MOU helps to overcome this barrier because there is a formal five-year commitment for collaboration. Should health officials on the local level change, some effort will be needed by other BWG members to develop new relationships to ensure future commitment to the binational surveillance efforts.

Differing policies regarding patient confidentiality Another issue that had to be addressed was that of patient confidentiality in notifications. A high priority is placed on protecting patients' medical information in the United States, a priority that is not equally shared in Mexico. BWG members discussed and recognized that when an EPI-FAX is initiated out of Mexico, there is the potential for patients' names to be included. This would not occur for EPI-FAXes transmitted from the United States. The BWG members recognized and accepted that there are different policies on both sides of the border, and they felt that it was essential to respect the potential boundaries of both countries' systems.

Lack of Technological Resources While one of the project goals was to extend EPI-FAX to other communications media, it was not possible to do so, mainly due to lack of technological resources in Mexico. The New Mexico Border Health Office was successful in donating previously owned computers with word processing and epidemiological software to health officials in Juarez. However, health officials in Juarez have limited access to telephone lines, and therefore e-mail and Internet transmissions are not reliable for disease notifications. Additionally, it is rare to have a dedicated fax line in Juarez, and it was noted that EPI-FAX would work more effectively if one telephone line was dedicated for a fax machine, preferably located in the epidemiologists' offices.

Difficulty translating high level agreement into everyday action Another issue that was noted was that the MOU was a very high level agreement for binational collaboration on a disease notification and surveillance system which was difficult to translate into actual results. While the MOU was a very important and necessary step in the process, it took the day-to-day coordination efforts of Dr. Vilchis and much time for the BWG to actually establish and refine the day-to-day protocols during the initial implementation of EPI-FAX. Although time and resource intensive, this deliberate process was essential to the long-term success of the project.

Need for a continual funding stream for project continuation An important obstacle that remains to be addressed is finding a continual funding source for the EPI-FAX system to continue, expand, and replicate. While the time involvement of BWG members will continue to be supported by their employing organizations, there is no mechanism in place to continue the coordination efforts of Dr. Vilchis. Members of the BWG commented that they need to further

develop and refine their grant writing abilities so that their efforts may continue. One member suggested that PAHO should play a larger role in supporting their efforts.

BWG members reported the following key lessons learned, which should be considered when replicating or expanding the binational notification and surveillance system:

- ***The route of communication for notifications must provide for quick transmission and easy visibility.*** It is important to remember that many people either do not have e-mail or check it regularly over the course of a day. It is fairly easy to hear when faxes have been transmitted as well as see the output. This route of communication was most appropriate at the time of project implementation.
- ***There must be participation and buy-in from key agencies and individuals on both sides of the border for any binational effort to succeed.*** The MOU was seen by all BWG members as an essential step for project success. Binational projects will not be successful if they are not efforts of both countries. Project organizers must respect and work within the constraints of all involved countries. In Mexico, lower level officials cannot act without formal approval from higher level state and federal officials. Since much of the work on the notification system was done on the local level, it was necessary to gain Federal and state buy-in.
- ***Protocols must be established for situations that occur when offices are closed and on weekends/holidays.*** There was an instance when a botulism case occurred on a weekend, and on-call staff had to use means other than EPI-FAX to immediately notify providers and hospitals on both sides of the border regarding the situation. The BWG determined that a directory should be developed with first responders' and epidemiologists' home telephone numbers and beeper numbers so that timely communications could occur when necessary.
- ***Emergent notifications must be followed-up with a telephone call.*** This will ensure that communications have gone through and that there is also a written record of the notification.
- ***A coordinator is needed to manage project activities and communications.*** Much time and effort was and is needed to establish and maintain binational relationships and to facilitate project completion. The coordinator must be able to present ideas diplomatically to officials on both sides of the border, and much of this work involves building relationships and networking. Dr. Vilchis spent ten to twenty hours per week coordinating project activities, including visiting health officials and making telephone calls. This was a more intensive effort during the initial stages of the project, during the planning stages of the MOU. Dr. Vilchis stated that expansion of the EPI-FAX to multiple cities would require a full-time coordinator, who would also need to train local staff on protocols and appropriate use. A physician, epidemiologist, or nurse could perform this coordination role.
- ***The system must be institutionalized so that it may continue to provide necessary alerts and notifications after people leave.*** Protocols must be established to ensure that the notification system will still work and progress without working group members and others that may be involved in project implementation

3.8 FUTURE OPPORTUNITIES

The BWG plans to continue its efforts on development of a binational notification and surveillance system and the other binational projects of interest. Implementation of EPI-FAX was seen as the first step in the development of a more sophisticated surveillance and information system. Monthly conference calls will continue for local participants on the border, quarterly meetings will continue on a regional level, and the first annual meeting is planned for the end of the year.

Specific future efforts for refining the EPI-FAX system include:

- Creating a pocket after-hours directory with key individuals' home telephone and beeper numbers,
- Creating a directory of hospitals on both sides of the border,
- Developing a formal protocol for timely updating of directories,
- Refinement of a protocol for weekend and after-hour notifications based on the level of epidemiological response needed,
- Expanding EPI-FAX to include food safety and environmental notifications, and
- Incorporating and involving health care providers and the media in notification system protocols.

As resources allow, the EPI-FAX system will be replicated and expanded into other areas along the border. Health officials from the border region of Texas and Taumalipas have begun discussions with Dr. Vilchis and the New Mexico BHO about potentially collaborating on the implementation of EPI-FAX in their area. Dr. Vilchis believes that replication of the notification system in another area would require approximately six months, which includes the time needed to link the system with other EPI-FAX areas. The time required depends on the state and local political situation and whether there are appropriate resources to facilitate timely implementation.

4. ARIZONA PROJECT EVALUATION REPORT

4. ARIZONA PROJECT EVALUATION REPORT

4.1 INTRODUCTION

This chapter documents the evaluation of the Arizona demonstration, in which a binational field station was established to help improve health data infrastructure along the Arizona-Sonora border. The following seven sections describe the background of the demonstration, project objectives, the project's organizational structure, project activities, key outcomes, lessons learned, and future opportunities.

4.2 DEMONSTRATION PROJECT BACKGROUND

In April 1996, CHPS and NCFH organized a mini-forum in Bisbee, AZ to facilitate broad participation in the planning of the demonstration project. There were fifty participants, including representatives from:

- The state health departments in Arizona and Sonora, Mexico
- Other state and local officials from Arizona and Sonora;
- Academic Institutions;
- Health care providers from the U.S. and Mexico, including community health centers and hospitals;
- Federal government agencies, including HRSA, the Centers for Disease Control and Prevention, and the Environmental Protection Agency;
- The Pan American Health Organization (PAHO); and
- Private organizations.

The purpose of the mini-forum was to bring together public health officials from Arizona, Cochise County, and Sonora, together with providers, researchers and others knowledgeable about border health issues to seek consensus for improving health data and communication infrastructure along the Arizona-Sonora border. Mini-forum participants collaborated to choose priority areas for demonstration project improvements as it was felt that the demonstration should be developed as an outgrowth of these key priorities. Four discussion work groups were formed at the mini-forum to discuss data and communication needs related to epidemiological surveillance, service programs, prevention programs, and population and vital statistics. The four workgroups each identified priority areas for improving health data infrastructure along the border. The priorities that were identified are listed in Exhibit 4-1. The final content and scope of the data infrastructure improvement demonstration was derived from this initial priority list.

EXHIBIT 4-1

PRIORITIES FOR DATA INFRASTRUCTURE IMPROVEMENT
Arizona Mini-Forum- April 12-13 1996

Epidemiological Surveillance Workgroup

1. Linkage between public health officials and environmental emergency response network
2. Listserv communications of crucial epidemiological information:

- who controls
- what confidentiality issues will need to be addressed
- what potential is there to link with CDC plans for future growth
- epidemiological cross border pairing

Service Programs Workgroup

1. Comprehensive (and comparable) morbidity database development in which data from the following sources are regularly collected and integrated:

- tobacco tax primary care grantees
- C/MHCs encounter data and annual UDS reports
- AHCCCS encounter and claims data
- "volunteer" private physician provider groups
- hospital discharge database, ER reports, and ambulatory surgery reports
- behavioral health care database
- cross border exchanges

Prevention Programs Workgroup

1. Social and behavioral data needs:

- will use focus groups on environmental health from both sides of border (Binational Environmental Health Council)
- behavioral health school survey
- environmental health school focus group
- asthma study with children in border communities (Nogales, Agua Prieta, Douglas)

2. Tradition, cultural factors—where does the information come from:

- models for prevention—sorting and evaluating for use in Cochise County
- inclusion of relevant data in data collection systems
- acculturation and its negative association with health outcomes

Population and Vital Statistics Workgroup

1. Training of county level personnel on access/use of available data. Also training on technology utilization (Internet, EPINFO, dial-in systems).

2. Issue of births in U.S. of children whose mothers return to Mexico and vice versa. How do we do better at identification of these births and transfer/exchange of information? Similarly, how do we provide access to prenatal care records of women who receive prenatal care in Mexico, but deliver in Arizona?

Prior to the mini-forum and the identification of the specific scope of work for the demonstration, the Cochise County Health Department was preliminarily chosen as the project site. However, a needs assessment conducted among the county health department staff revealed that there was broad consensus that available health information and communications were adequate, although some improvements would be useful. Moreover, interest in conducting the demonstration as well as the focus of the project evolved following the mini-forum, due to changing interests in participation on the county level as well as other opportunities that emerged.

Subsequently, in June 1997, CHPS contracted with the Arizona Department of Health Services to support the demonstration project, which centered around a binational epidemiological field station in Nogales, Sonora, named the *Sonora-Arizona Border Public Health Office* (SAHO). The idea for SAHO was developed in 1995 as part of a grass-roots community effort. During this time, the media was reporting on diseases that seemed to be clustered in this area, and state and local politicians charged the Arizona Department of Health Services to respond. The field station was then created as an outgrowth of the collaborative and collegial relationship between the governors and the health directors of both states to identify health issues of concern to the border communities and to coordinate binational activities of public, private, and academic institutions. A significant effort of the field station has been to provide both states with pertinent border specific health information that also respected and conformed to the respective health care delivery and information systems of both states. Consistent with the many items on the consensus list of priorities identified at the mini-forum, the field station sought to link public health officials from both sides of the border, promote joint epidemiologic studies, develop uniform data definitions and indicators, facilitate the prompt communication of epidemiologic data, and focus on binational environmental health issues.

4.3 DEMONSTRATION PROJECT OBJECTIVES

CHPS worked with the Arizona Department of Health Services (ADHS) to set goals for the demonstration project. These objectives were documented in the scope of work that was made part of a subcontract between CHPS and the ADHS, initially in June 1997 and renewed in March 1998. Dr. Norman Petersen, Chief of the Bureau of Epidemiology and Disease Control Services for the ADHS, helped to set these initial objectives, through discussions with Luis Ortega, Border Epidemiology Coordinator with the Bureau. Drs. Ortega and Petersen had also collaborated with Sonoran Health Officials to establish mutually important goals for the field station.

The objectives that were set as part of the project's scope of work included:

- To support the binational field station in fulfilling its mission to promote, develop, and coordinate epidemiological activities along the Sonora-Arizona border;
- To support organizational meetings at the field station between Arizona and Sonora health officials;
- To develop epidemiological surveillance and reporting protocols which meet the needs of Arizona and Sonora as well as the two federal governments;

- To implement a binational disease notification system within the field station;
- To extend the surveillance system, as appropriate, into communities along the border to provide sentinel sites for surveillance; and
- To support ADHS in collecting documentation for evaluation of field station processes and effectiveness.

Support for SAHO and its work was chosen for the demonstration project because it built on the consensus areas that were identified at the April 1996 mini-forum (particularly from the prevention programs workgroup). The mission of the field station, which had been in existence since 1995 but was not fully functional due to lack of necessary resources, was consistent with the goals of the HRSA demonstration project to provide for data infrastructure improvements along the U.S.-Mexico border. The field station required additional support in 1997 and 1998, primarily as seed money, in order to further develop and implement its binational epidemiological surveillance and reporting work and to have the ability to fulfill its mission.

4.4 PROJECT ORGANIZATIONAL STRUCTURE

The demonstration project was organized and coordinated through the Arizona Department of Health Services, under the primary direction of Dr. Luis Ortega. In June 1997, CHPS established a subcontract with ADHS to formalize its role in the demonstration. Specifically, the ADHS was to:

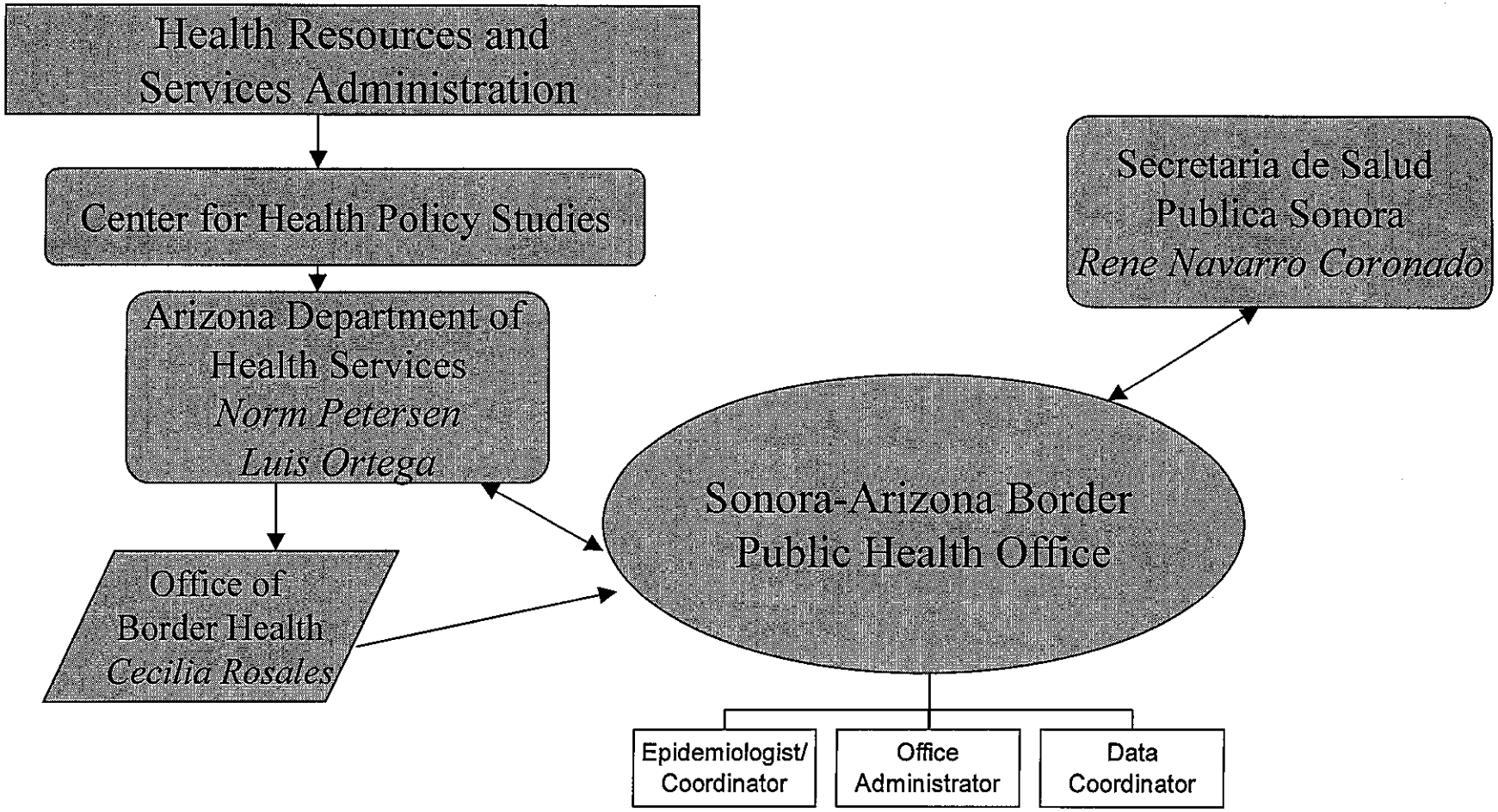
- Seek agreement with Sonora health officials concerning protocols, information and data sets, and integration of a border surveillance and reporting system within the two existing state systems;
- Coordinate demonstration activities, with technical assistance from CHPS as needed;
- Organize work groups to implement project activities at the field station; and
- Report demonstration project progress to CHPS.

Exhibit 4-2 presents a general organizational chart for the project. Dr. Norman Petersen, Chief of the ADHS Bureau of Epidemiology & Disease Control Services in Phoenix, named Dr. Luis Ortega, Border Epidemiology Coordinator, to direct the demonstration. Dr. Ortega then recruited Dr. Cecilia Rosales with the Border Health Office in Tucson to assist him in implementing project activities. Dr. Rosales was able to provide more day-to-day oversight, given the geographic proximity of Tucson to the Arizona-Sonora border relative to Phoenix (see Exhibit 4-3). On the Sonora side of the border, Dr. Rene Navarro, Director General de Servicios de Salud, teamed with Dr. Petersen, to provide for the field station.

EXHIBIT 4-2

U.S.-MEXICO BORDER HEALTH DATA INFRASTRUCTURE IMPROVEMENT PROJECT

Organization of Arizona Demonstration



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Arizona-Sonora Border Area

CHPS CONSULTING
center for health policy studies

The field station is jointly operated by the two state health departments. Both state health directors named Dr. Ortega to oversee and direct the work. The physical building for the field station is in Nogales, Sonora, and it is manned day-to-day by three Mexican employees. These staff provide for a fully functioning operation, and they include:

- An *office manager* who coordinates and records day-to-day activities, manages the office budget and finances, provides administrative support, manages the office's public relations, and coordinates office maintenance activities;
- An *epidemiologist* whose role has been to integrate existing health data from both sides of the border to make it meaningful for the border region as well as to participate in primary data collection activities; and
- An *information systems coordinator* who assists with data entry and database management for projects conducted through the field station.

The facility for the field station is shared with a satellite office for the local health department, which uses adjacent office space. There are three dedicated offices for SAHO, including a large room that is furnished with a conference table and chairs for meetings.

SAHO has four 486 MHz computers (two with modems) and a printer. EPI-INPHO software from the Centers for Disease Control is utilized for epidemiological studies. Other software packages utilized by the field station include Word Perfect, Quattro, Microsoft Word, Paradox, Microsoft Excel, Netscape, and dBase. There is one telephone line for the office, which is used for both telephone calls and Internet access. The office operates without a fax machine or copier.

The ADHS donated three computers and furniture for the field station, while the Sonoran health department provides the physical space. The Pan American Health Organization (PAHO) provided one of the four computers. CHPS subcontracted with the ADHS to provide some financial support for the field station operation, totaling $55,000 over two years. This amount was stretched to allow for the employment of the full-time time professional staff as well as to help provide for overhead and administrative expenses. Additionally, although difficult to quantify, there was substantial in-kind support for the project contributed by all of the organizations, on both sides of the Border, that participated in meetings and project activities at the field station and that publicly supported its existence. There were several collaborators for the project who assisted with the start up of the field station as well as facilitated its work. Appendix C lists these collaborators, which included federal, state, and local agencies; academic institutions; binational organizations, and other groups.

4.5 PROJECT ACTIVITIES

This section describes the specific activities for the demonstration project. Three essential activities have been completed or are ongoing for the project, including:

- Facilitation of a fully-functioning epidemiological field station, including the provision of support for overhead costs and staffing,
- Conduct of binational meetings at the field station, and

- Completion of epidemiological studies.

Each of these activities is briefly discussed in the subsections that follow.

4.5.1 Provision for Fully-Functioning Epidemiology Field Station

Support for the field station enabled it to fulfill the six functions that were initially established for it in 1995 by the two state health agencies, which include:

- Collecting and analyzing epidemiologic information generated on both sides of the border;
- Disseminating border epidemiologic information to state and local health officials and the general public;
- Designing, implementing, and coordinating binational health research projects;
- Participating in outbreak investigations and epidemiologic emergencies;
- Providing education and in-service training to public health personnel; and
- Supporting local health programs in their community outreach activities.

The office's three staff members, with direction from Dr. Ortega, worked to carry out these functions for the field station. The office manager coordinated meetings at the field station, including those conducted between state and local officials and for planning health research projects. The field epidemiologist conducted epidemiological studies, which included training data collectors and analyzing data. The information systems coordinator both collected data and entered it into the computer. Dr. Cecelia Rosales and other collaborators, including those linked with academic institutions, brought their knowledge and ideas for designing and coordinating research projects to the field station and assisted in training and educational functions.

Since 1997, the field station team, led by Drs. Ortega and Rosales, have been working to develop models to allow the comparability, standardization and interpretation of health data for the border region. The team has also started discussions on the design of disease surveillance systems along the border, so as to satisfy the information needs of both the Arizona and Sonora public health departments. These efforts are ongoing.

The building and its maintenance has been provided by the Sonora Health Department. Furniture, equipment, staff, and staff training have been provided by both states and through HRSA funding.

4.5.2 Conduct of Binational Meetings

One of the roles of the office manager was to coordinate and schedule meetings out of the field station. Binational meetings have been held at or coordinated through SAHO for a number of purposes, including training health workers, designing epidemiological studies, and holding general binational meetings. Between October 1, 1997 and September 30, 1998, there were 60 meetings coordinated through the field station. A listing of these meetings is provided in Appendix D, and they included:

- Organizational, planning, and staff meetings for the field station operation;
- Binational Health Council meetings;

- Binational Health subcommittee meetings;
- A workshop to study the capacity/qualifications for conducting projects;
- Workshops for educating and providing information on lead poisoning prevention;
- Planning meetings and workgroups for each of the studies conducted through the field station,
- Other public/community meetings; and
- Various meetings among individuals.

The location of the field station encouraged its use for meetings, as it is located just a few miles over the Arizona-Sonora border in the middle of "Ambos Nogales."

4.5.3 Epidemiological Studies

Since 1995, the field station has been involved with the conduct of more than ten epidemiological studies, including studies of asthma, systemic lupus erythematosus, diabetes mellitus, pediatric lead levels, cervical cancer, sexually transmitted diseases, and tuberculosis. Some of this work has included the integration of existing data collected from both sides of the border. Specific studies are briefly described in Table 4-1. Future studies are planned out of the field station related to adolescent health, behavioral health, and expansion of the pediatric lead screenings and tuberculosis studies.

TABLE 4-1
SELECTED STUDIES CONDUCTED AT SAHO

Condition Studied	Description
Asthma	This study sought to determine prevalence of asthma and respiratory symptoms among elementary-aged students in the border towns of Nogales, AZ and Nogales, Sonora (*Ambos Nogales)*. Both parents and students completed baseline questionnaires. Students were taught to record their respiratory symptoms and took measurements of their peak expiratory flow on a daily basis for 10 weeks. Daily air quality data was also collected. The study found that the prevalence rate of self reported asthma among 5th graders was 7.6% on the AZ side, and 6.9% on the Sonora side. Air quality measurements revealed that there was considerable variation in the level of particulate matter day to day.
Systemic Lupus Erythematosus	This ongoing study seeks to identify cases of lupus in Nogales, AZ and to assess whether exposure to chemicals in the environment is associated with the disease. Those who are identified with lupus are also referred to medical evaluation and treatment as clinically indicated.
Diabetes Mellitus	Studies of prevalence of and risk factors for diabetes were conducted through community health surveys in Douglas, AZ and its sister city of Agua Prieta, Sonora. Surveys collected information on risk factors and sample population demographics. Blood glucose screenings and anthropometric measurements were taken. Field station staff entered findings into a database for analysis. The results will be used to design and implement health promotion and prevention programs.
Cervical Cancer and Sexually Transmitted Diseases	A study was conducted to determine prevalence of infections caused by human papilloma virus (HPV), chlamydia, and cervical cancer among females living along the AZ-Sonora border. Approximately 2,400 women participated from both sides of the border. Women were recruited during visits to local health clinics for routine gynecological care. Laboratory screening tests were conducted, and the women completed a risk factor questionnaire. Women with positive results were offered treatment and follow up care, as clinically indicated. Findings are being used to design and implement prevention and control strategies as appropriate for each participating area.
Pediatric Lead Exposure	This effort studied pediatric blood lead levels in the Sonoran areas of Agua Prieta and San Luis Rio Colorado and in Yuma County in AZ. Field station staff trained data collectors in the use of a blood lead monitor. Children were recruited for the study through health fairs, visits to schools, and in community based clinics. Children with elevated blood lead levels were referred for medical follow up.
Tuberculosis	The goal of this ongoing study is to minimize prevalence of tuberculosis along the AZ-Sonora border. SAHO has assisted in early detection of tuberculosis, drug susceptibility testing, and assessment of adherence to antituberculosis regimens and preventive therapy for those at risk for active disease.

4.6.2 Objective Outcomes

The demonstration project has resulted in a number of successful outcomes that may be objectively measured. Table 4-3 summarizes key project outcomes.

TABLE 4-3
SELECTED PROJECT OUTCOMES: 1997- 1998

Number of projects completed at the field station	10
Number of meetings held at the field station	60
Types of projects conducted	• Asthma • Systemic Lupus Erythematosus • Diabetes Mellitus • Childhood lead levels • Cervical Cancer, Chlamydia, and HPV • Tuberculosis
Offices/Organizations connected through the field station (abridged list)	• Arizona Department of Health Services • Secretaria de Salud Publica de Sonora • Binational Health Councils • Arizona-Mexico Commission • County Health Departments • Arizona State University • University of Arizona • El Colegio de Sonora • Border Health Foundation • PAHO • USMBHA
Border Areas Included in Epidemiological Studies	• Nogales, Sonora • Nogales, Arizona • Douglas, Arizona • Agua Prieta, Sonora • San Luis Rio Colorado, Sonora • Cananea, Sonora • Hermosillo, Sonora • Yuma County, Arizona • Bisbee, Arizona • Sierra Vista, Arizona • Tucson, Arizona

4.6.3 Subjective Outcomes

As part of this evaluation, key project principals from both sides of the border were asked to comment on any benefits that have resulted from the demonstration project. There were five

major benefits that were cited from all interviewees. It was felt that the demonstration project has resulted in:

- **Increased and Improved Binational Communication**- The field station's location facilitated communication between representatives on both sides of the border. Its location, just a few miles from the border on the Sonora side, was considered a neutral spot for meeting. It was also a mutually convenient place for state officials to meet, given distance between Hermosillo and Phoenix. Both capitols are located a few hours driving distance from the border, so the field station in Nogales provided a good middle point for meeting.

- **A functional and flexible site for field work and meetings**- the physical location of the field station, as well as its staffing enabled its work in completing epidemiological studies as well as in training others to assist in its efforts. It was noted that the ability to perform data entry and verification at the field station on the border, close to the populations being studied, had significant value.

- **Successful completion of epidemiological studies**- An obvious benefit that interviewees cited was that the project provided for studies that helped health officials to better understand the health status and needs of the populations along the U.S. Mexico Border. These studies provided for comparison of health indicators across the border in a standardized manner. As some of the studies focused on diseases that may be impacted by environmental factors, such studies also contributed to the body of knowledge about how the environment maybe affecting health status along the border. One state official from Sonora noted that the work of the field station was especially important for helping the state identify health needs along the border, and that it was an important part of their health data infrastructure. He felt that the state would not have otherwise been able to identify these health issues as easily or as quickly.

- **Cross-border knowledge transfer**- The field station allowed for the sharing of information about how data are collected and utilized in each state. Such information is a vital first step in designing and implementing binational studies. Office staff were also provided opportunities to both receive and provide training. Staff received training on epidemiological methods and software usage. Once staff were trained they were able to teach other data collectors regarding study protocols. Additionally, a number of studies have required self-reporting behaviors from participants, and they provided opportunity for health education and promotion in the communities studied.

- **Positive border community impact**- The field station is perceived favorably in its border community because of its geographic location and accessibility as well as the work that is completed there. One interviewee felt that previous binational epidemiological efforts and studies might not have been successful because researchers did not work directly in and with the community. On the contrary, the field station was staffed by residents from the border and was also accessible in the Nogales area. The sharing of the field station with another office supported by the health department in Nogales, Sonora helped to increase the visibility of the work done there and enhance its

public image. Additionally, one interviewee noted that study participants had benefited by receiving health information, since many of the studies were designed to enlist active participation. For example, in the lead study and the diabetes study, participants were provided their results, and children in the asthma study were taught how to use peak flow meters.

4.7 LESSONS LEARNED

While the project, specifically the functioning and work of the binational field station, has been successful, there were a number of unforeseen obstacles that had to be overcome. This section describes the obstacles faced during the implementation of the field station as well as key considerations for future replication efforts.

4.7.1 Obstacles

There were a number of obstacles that had to be overcome or addressed during the implementation of the demonstration project. These obstacles included:

- Different health care systems in the United States and Mexico,
- Amount of time required to design epidemiological studies prior to implementation,
- Need for additional resources to conduct epidemiological work,
- Need to identify a continual funding stream for project continuation.

Each of these obstacles is discussed in the paragraphs that follow.

Different health care systems The United States and Mexican health care systems are structurally different, an issue which had to be addressed for successful completion of epidemiological projects. It is notable that an amicable relationship has existed between the governments and health departments in Arizona and Sonora for more than thirty years. Therefore, there were no problems in creating and developing a binational field station, and a Memorandum of Understanding was not needed for the field station to be operational. There were and are, however, differences in how data are collected and used on both sides of the border, and these issues had to be recognized and handled in a mutually satisfying way. Time and effort had to be invested so that studies could be designed to meet the needs of both countries.

Additional differences in the health care systems that had to be addressed included the decentralized structure of the U.S. system versus Mexico and differing priorities regarding patient confidentiality. It was also noted that the United States, generally, has more resources than its Mexican counterparts for conducting health studies.

Time was needed to design binational studies An issue that is related to the existence of different health care systems in the U.S. and Mexico is that much time was needed to design and implement studies, even once there was agreement for the conduct of a study. Since there are two different official languages and health reporting systems for the U.S. and Mexico when efforts were being initiated, collaborators had to find ways to interpret existing data and collect

new data so that each state was satisfied with study results. For example, in designing one of the binational epidemiological studies, it was discovered that the U.S. and Mexico classify data into different age groupings and that there were different clinical criteria for defining occurrences of disease cases. Such differences were manageable, but they delayed implementation of studies. It took two years to develop the core questions for the diabetes study, even though it was considered an important study on both sides of the border. Additionally, it took a year and a half to develop the survey instrument for the asthma study. Since health officials from Sonora and Arizona respect each others' methods and data needs, they have been willing to invest the time that it has taken to design binational studies. Officials agreed that studies should be implemented in accordance with all state and federal laws and regulations. It was considered mutually important to go through the appropriate channels to obtain approvals for the work supported under the demonstration.

Need for additional resources The field station operated with just one telephone line and without a fax machine or copier. A single telephone line had to be used for both telephone calls and for Internet access. Although the field station was able to complete a number of epidemiological studies successfully, additional access to fax and improved Internet access could assist with scheduling meetings, in accessing epidemiological information, and in developing a notification system for outbreaks. Additionally, the flow of resources for the demonstration was not seamless, and there were times when funds were not available when they were needed. For example, the office manager admitted to paying for utilities out of her own pocket at one point, until funds were available for reimbursement at a later date.

Other resources that were needed included funds for hiring field data collectors and transportation. One person interviewed felt that additional studies would be facilitated if there were a more readily accessible source of funds for the hiring of data collectors. Another SAHO staff member felt that the field station also needed a car, since much of their data collection activities and training is conducted off-site. Staff had to be reliant on others to provide their transportation.

Need for a continual funding stream for project continuation and expansion While the funds from the subcontract were useful in providing for staff, staff training, and overhead costs, an ongoing source of funds is needed. In 1998, staff members were trained in grant writing skills and methods from a post-doctoral student who was assisting in work at the field station. Such training may allow staff to find funding sources for additional epidemiological studies. Additional funding is needed, however, for the ongoing existance of the field station, as well as for potential replication of the field office elsewhere on the border.

4.7.2 Key Considerations for Replication

Those interviewed for the evaluation also reported that the following issues were key lessons learned that should be considered when replicating or expanding the bi-national epdiemiological field station:

- **Time and patience is needed during the design of binational epidemiological studies.** It is important that representatives on both sides of the border respect each other's health

reporting systems, data needs, and priorities. In doing so, it may take a significant amount of time to develop mutually beneficial epidemiological studies.

- **A sustainable funding source must be identified.** The funds provided for the staffing of the field station were of limited duration. It was initially felt that these funds would be used as seed money and that the capabilities for identifying a sustained source of funds would be developed. While this did occur to some extent, there is still the need for a consistent and steady stream of support.

- **There must be community support for a binational field station to be successful.** It was felt that this demonstration project succeeded where other efforts had failed because it positioned itself as a community center for health studies. Other such efforts should recognize the importance of a facility's role in the community and the need for community support.

- **Identify other groups and organizations for collaboration.** The importance of collaborators with similar interests in a binational effort cannot be overstated, especially when there may be limited resources available from a single source to provide for efforts. Non-governmental organizations (NGOs), local health departments, and academic institutions were suggested as potential partners for such future efforts, as they were important collaborators for the demonstration project.

4.8 FUTURE OPPORTUNITIES

There are a number of future opportunities that may exist for SAHO, which were identified during the evaluation interviews. These opportunities include the replication of the field station model to other border areas, expansion of current epidemiological studies to other border areas, expanding the capacity of the field station to conduct additional health studies and health promotion activities, and the development of a communication system for disease outbreaks. These opportunities are discussed briefly in the paragraphs that follow.

Expansion and Replication of Current Efforts to Other Areas The field station could be replicated in other areas along the Arizona-Sonora border or to other border state areas. Such an effort would be facilitated in Arizona and Sonora, given the state support for SAHO. This model could be replicated in other border states as well, building on the experiences in Arizona and Sonora. Specific studies conducted by the field station (e.g., diabetes mellitus, asthma) could also be expanded to other border areas where these health issues may be of concern. The field station has already developed protocols for integrating existing binational health data as well as for new data collection activities, and these protocols could also be used in other border areas.

Expanding SAHOs Capacity With additional resources, the field station's functional capacity could also be expanded to study other diseases and issues, such as substance abuse, infectious diseases, mental health, and violence. This would be facilitated by the field station's location in the community as well as its public perception. It was noted during the evaluation interviews that there might be accessible federal funding sources for substance abuse and mental health

studies along the border. Other interviewees felt that the field station may also be positioned to take on a health education role, in addition to conducting field studies.

Another related opportunity that was proposed for the field station was for it to become an epidemiological center for the Arizona-Sonora border area. Smaller field stations could then be developed in other areas to serve as satellites to SAHO in Nogales. These sites could be manned by two staff members: a physician epidemiologist and a data entry employee. Satellites would feed data to the main field station in Nogales, which would coordinate studies and compile data from multiple sites. Again, a funding source is needed for such an effort.

Development of a Binational Communication System One of the goals stated in the demonstration project's scope of work was the development of a communication system for notifications of disease outbreaks. While this effort is still important to demonstration project principals, other efforts have taken priority over this project. The binational communication efforts that have begun are an important first step for the development of such a system. However, efforts must be focused for the system to become operational, and there must be funds available to allow for the design of such a system.

At this time, future funding for staffing and overhead at the field station is uncertain. Demonstration project leadership and field station staff have made efforts to promote its work, through the development of the brochures presented in Appendix E as well as through presentations at meetings and binational conferences. While the field station has succeeded in gaining funding for individual studies, ongoing staffing and provision for field station overhead is still a need. The office manager at the field station recently left for other employment. The epidemiologist and information systems coordinator remain, but there is an ongoing need for a consistent flow of funds for the station to be fully operational and to function as intended.

5. TEXAS DEMONSTRATION EVALUATION

5. TEXAS PROJECT EVALUATION REPORT

5.1 INTRODUCTION

This chapter documents the evaluation of the Texas demonstration project. The following seven sections describe the background of the demonstration, project objectives, the project's organizational structure, project activities, key outcomes, lessons learned, and future opportunities.

5.2 DEMONSTRATION BACKGROUND

The concept for the U.S./Texas-Mexico Border Health Data Infrastructure Improvement Demonstration was initiated at a Texas mini-forum in Brownsville, Texas in August of 1996. Sponsored by the Center for Health Policy Studies (CHPS), with funding from the Health Resources and Services Administration (HRSA) and the National Center for Farmworker Health, Inc. (NCFH), the Texas mini-forum brought together forty-nine participants from the following areas:

- The state, county and local Departments of Health in Texas and Mexico;
- Other health care providers, including community health centers and hospitals;
- Universities;
- Federal government agencies, including HRSA; and
- Private organizations.

The purpose of the Texas mini-forum was to bring together public health officials from Texas, including from Texas Department of Health (TDH) Region 11 and Cameron County, and Tamaulipas, Mexico with providers, researchers and others knowledgeable about Border health issues. Their task was to identify, categorize and prioritize issues that influence or hamper effective collection, communication, and use of health data information. They were then challenged to commit human resources towards a project that would enhance data and communication about these issues.

It was noted that though data collection was important, the sharing of data collected was the more problematic issue. It was concluded that effective exchange of epidemiological information could best be achieved by developing a binational data sharing and communication system. Participants emphasized the need for a "bottoms-up" approach that would bring local, state, and federal public health representatives together to collectively build a consensus for organizing activities and demonstration projects.

Four discussion groups were created at the mini-forum focusing on the following issues:

- Epidemiological surveillance,
- Health services programs,
- Prevention programs, and

- Population and vital statistics.

Each workgroup was asked to identify priority areas for improving health data infrastructure along the border within their particular topic area. They were asked to identify information gaps and to consider which improvements could be made to share already available information. The priorities identified by the workgroups are listed in Exhibit 5-1.

5.3 DEMONSTRATION OBJECTIVES

At the Texas mini-forum, participants began to discuss steps for the development of a workplan for the Texas/Mexico border region. During the discussion, partners decided that the demonstration should be:

- Organized around a concrete project;
- Consistent with other activities: including binational programs and interests, Border Health Office activities, Texas Department of Health and Region 11 programs, Texas Health Policy Commission plans, and other funding streams;
- Built on existing organizational and personal relationships; and
- Led by an appointed steering committee.

Using these guidelines, NCFH began working with the Cameron County Health Department, the project demonstration home, to focus on the priority areas for data infrastructure improvements. A steering committee was formed, and partners from TDH, TDH Region 11, Cameron County Health Department, South Texas Hospital, and Su Clinica Familiar began identifying key individuals and resources for the project demonstration. Partners also began the process of developing a draft work plan and timeline.

5.4 PROJECT ORGANIZATIONAL STRUCTURE

The newly formulated Texas Data Infrastructure Project (TDIP) was organized and coordinated through NCFH under the combined direction of Tina Fields, former Director of the Cameron County Health Department and Madge Vasquez, Program Coordinator at NCFH. The initiative's original focus was to increase the understanding of border health data needs and communication systems along the Texas/Mexico (specifically Cameron County/Tamaulipas) border. The goals of the TDIP were to:

- Build federal-state-local public health alliances to make the most efficient use of existing resources;
- Identify border health issues and seek consensus on priorities for health data exchange;
- Refurbish and loan computer equipment to Mexican partners; and
- Develop a sustainable data and communications system for the exchange of public health information along the border.

EXHIBIT 5-1

PRIORITIES FOR DATA INFRASTRUCTURE IMPROVEMENT
Texas Mini-Forum- August 28-29, 1996

Epidemiological Surveillance Workgroup

1. Collect reportable disease data by geographic areas (to permit tabulation by sub-county areas and multiple addresses where patients frequently spend time on both sides of the Border). Make use of existing data collected by state agencies that may have sub-county identifiers available.

2. Provide epidemiological training for health department staff and others along the Border. Training might include CDC/Wonder demonstrations and training as well as the use, interpretation and application of national, state and local data sources. Also, enhance the ability to expedite publication of study results.

3. Improve compliance with reportable disease requirements by reducing barriers/deterrents--streamline forms, utilize technology to facilitate reporting, seek common US/Mexico core data sets and report formats to facilitate data exchange.

Health Services Programs Workgroup

1. Expand access and use of Texas Integrated Enrollment System (TIES) and Integrated Data Base Network (IDBN) to reduce data collection burden and facilitate client tracking across systems.

2. Organize hardware/software compatibility workgroup to identify long-range needs for future systems compatibility. Disseminate this information.

3. Expand use of 1-800 numbers to facilitate US/Mexico referrals to bilingual providers. Ensure appropriate cross referrals to special systems, such as behavioral health, TBNET.

Prevention Program Workgroup

1. Improve access to and use of results of surveys and studies dealing with behavioral and environmental risk factors, use of preventive services, and results of interventions, etc. (disseminate list of internet bookmarks on prevention related topics).

2. Organize data collection and sharing among private sector providers on behavioral risks and relation to disease.

Population and Vital Statistics Workgroup

1. Organize demonstration of exchange of vital statistics files between Texas and a Mexican State, such as Tamaulipas.

5.5 PROJECT ACTIVITIES

The workplan of the TDIP was to start with the most basic communication linkages between health providers in the U.S. and Mexico. Specific activities that have been completed or remain ongoing to achieve this include:

- Establishment of a core group of community partners;
- Coordination of meetings to build binational relationships, exchange information, determine protocols;
- Refurbishment and loan of computer equipment to Mexican partners;
- Training on Internet/E-mail technologies
- Development of a communication system specific to the demonstration project;
- Implementation of a Bulletin Board;
- Project Coordination activities by Cameron County Health Dept, TDH Region 11, and NCFH; and
- Project Evaluation.

Each of these activities is briefly described as follows.

5.5.1 Establishment of a core group of community partners

Due to changes in leadership in some of the participating agencies and organizations on both sides of the Border, the membership of the steering committee continued to involve new staff members throughout the project period. Cameron County Health Department remained the demonstration project home and the initial meetings of the TDIP took place during the Fall of 1997. During this period, a core group of partners was established which included: Cameron County Health Department, Brownsville City Health Department, Brownsville Community Health Center, the Texas Department of Health in Austin, TDH, Region 11, and Mexican health officials and professionals from Hospital General de Matamoros, "Dr. Alfredo Pumarejo" and the Jurisdicción Sanitaria III. A directory of project participants appears in Appendix F.

5.5.2 Project Meetings

During 1997-1998, project participants held a series of planning meetings to discuss technical differences and needs, build binational relationships, and determine protocols for the exchange of public health information. On October 14, 1997, the TDIP held a binational gathering of local public health officials and Mexican health officials and professionals at the Regional Health Department in Harlingen, Texas. Facilitated by Cameron County Health Department Director, Tina Fields, this meeting provided a roundtable discussion of technical needs as well as a hands-on computer demonstration session utilizing internet and e-mail programs.

The TDIP met again in November 1997 to continue discussions on binational data infrastructure needs. During this time, participants were asked to complete a survey to assess the technological capabilities of their agencies. The survey results demonstrated that partner agencies in Mexico had the greatest technological need in terms of equipment, access to technology, and resources. Though a few partners in Mexico possessed computer equipment, they did not have access to internet and e-mail. Conversely, all of the Texas partners possessed fully functional computer

equipment, complete with internet and e-mail service. Thus, the group concluded that it was imperative to assist Mexican partners in building their technological capacity, in order to achieve an equal binational partnership.

In March 1998, project members gathered to collectively identify border health issues and establish a consensus on priorities for exchanging public health information. During this meeting, the following health topics were identified as border concerns:

- Diabetes
- Hypertension
- Obesity
- Bronchial Hyperactivity
- Cholera (alerts)
- STD's (HIV/AIDS)
- Tuberculosis
- Hepatitis (All types)
- Dengue Fever
- Trauma (before 40 years)
- Strep A
- Birth defects (NTD's)

Participants also emphasized the need for exchanging and tracking epidemiological cases. Concern regarding correct data on infant mortality rates along the border was expressed. During the discussion, project members cited the importance of establishing a methodology or protocol for collecting data, as well as for the dissemination of information.

The TDIP sent two representatives to attend the Texas-Mexico Border Health Symposium held in South Padre Island, October 1998. Several project members also attended a side meeting organized by the New Mexico Border Health Office at the Jurisdicción Sanitaria III in Matamoros, where they received a presentation on the Epi-Fax system.

5.5.3 Refurbishment and loan of computer equipment

In order to facilitate project implementation, NCFH collaborated by loaning refurbished computers to Mexican participants to enhance technological capability necessary for the TDIP initiative. During the project term, nine computers complete with monitors, keyboards, mice, modems and basic software were refurbished and shipped to South Texas to be distributed to Mexican participants. Computers were distributed in January 1998 and May 1998. Of the nine, six computer packages arrived in operable condition. NCFH contracted with two consultants, John Farquhar in Cameron County and Oria Alcantara from OMA, Inc. in Mexico City, to facilitate the technical aspects of the project.

5.5.4 Training on Use of Internet and E-mail

During the project, three hands-on computer demonstration sessions were held to familiarize participants with current communication technologies. TDIP members used the computer lab facilities at the Regional Health Department to learn how to access the internet and e-mail. Guests from the Pan American Health Organization joined us at one meeting to present a data show of PAHO's bulletin board. Dr. Joaquin Salcedo and Jim Davenport from PAHO, shared valuable information and experience regarding the use of technological applications.

5.5.5 Development of a Communication System

After reviewing various technologies, project participants decided that a Bulletin Board would best meet their needs for electronic communication. Having considered facsimile transmission as a possible vehicle for communication, project members felt that a Bulletin Board would fully utilize and build upon existing resources of computer equipment. The TDIP contracted with Oria Alcantara, to develop a basic interactive Bulletin Board to dynamically link health professionals on the Texas/Mexico border.

Due to technological difficulties and ongoing negotiations with internet service companies in Mexico, the development time for the Bulletin Board was prolonged. TDIP Project Consultant, Oria Alcantara, was able to secure free sponsorships for web site hosting services and internet connections from CompuServe de Mexico and TelMex de Mexico, respectively. The Bulletin Board was ready by late November 1998 and project members began using it as a communication system in early December 1998.

5.5.6 Implementation of Bulletin Board

The Bulletin Board format consists of a website found at www: http://OMA.ORG.MX. It is an open database that facilitates discussions grouped by author, category, and title and allows users to write new messages and/or respond to posted messages. All topics can be categorized and listed in a variety of ways, facilitating searches and accessing specific information to a given item or discussion. The ability to keep discussions on the database automatically creates a depository of information, history of events, or cases that allow users to reference and/or review duplicate results in new cases. Via the bulletin board, users may view the project background, which contains a directory of project contacts; they may register as users; and view, create or respond to messages (See Appendix G).

Preparations for Bulletin Board implementation included:

- Negotiations with CompuServe de Mexico and TelMex de Mexico for free web site hosting services and internet connections,
- Installation of computer ID's at the Hospital General de Matamoros "Alfredo Pumarejo" and the Jurisdicción Sanitaria III,
- Technical assistance to project members for Bulletin Board registration,
- Assignment of topics to begin Bulletin Board use, and
- On-going monitoring of Bulletin Board.

In order to coordinate regular use of this communication system, project members determined that the protocol for Bulletin Board use would be to log onto the site weekly. Friday mornings were designated as the time for posting messages. Over the course of the past two months, project members have used the Bulletin Board to share information about the following topics: Neural tube defects; Shigellosis; Epidemiology of Neural Tube Defects in Mexico; Tuberculosis; the Border Infectious Diseases Project; a Binational meeting on Tuberculosis in Cameron County, and general announcements regarding binational conferences and meetings (See Appendix H).

The messages posted have been written by participating project members on both sides of the Border. Thus far, seventeen messages have been posted on the Bulletin Board. Documents are written and posted in the preferred language of the author. Because this is a binational effort, project members have been requested to post documents and messages in both Spanish and English. Project members have demonstrated an interest in investing in a translation software program to facilitate this process.

5.5.7 Project Coordination Activities

Most of the project coordination activities were led by Madge Vasquez of NCFH and included: meeting coordination, development of agendas, and meeting minutes. NCFH also coordinated and contracted with different data administrators to secure the refurbishment of computers, purchase of equipment, and development of the communication system. Ms. Vasquez maintained binational communications by providing technical assistance to project members regarding their computer equipment and use of the bulletin board. Other project partners including Ramiro Gonzales and Jorge Trevino, Regional Health Department; Joshua Ramirez, Brownsville City Health Department; and Dr. Gilberto Yarritu Saeb, Jurisdicción Sanitaria III, collaborated by facilitating project meetings in their sites.

5.5.8 Project Evaluation

The Texas Data Infrastructure Project conducted an evaluation meeting in January 1999 to assess the successes and obstacles of the project. Project members collectively shared their recommendations for the sustainability of the project and future actions to continue building binational relationships. In addition, a survey was conducted to determine the status and condition of computer equipment.

5.6 PROJECT OUTCOMES

To examine project outcomes, it is important to revisit the demonstration project objectives outlined in Section 5.3. The following table presents how each objective was accomplished.

TABLE 5-1
PROJECT OBJECTIVES

Objective	Achieved?	Comments
Build federal-state-local public health alliances to make the most efficient use of resources.	Yes	Over the duration of the project, 8 binational project meetings were held, which helped cultivate and solidify state-local binational relationships and resource sharing.
Identify border health issues and seek consensus on priorities for health data exchange.	Yes	A list of border health priorities was identified by project partners. From those priorities, topics were chosen for discussion via the Bulletin Board.
Refurbish and loan computer equipment to Mexican partners.	Yes	Nine computer packages (six received in good condition) with monitors, keyboards, mice, modems and basic software were permanently loaned to partners at the Jurisdicción Sanitaria III and the Hospital General Alfredo Pumarejo.
Develop a sustainable data and communications system for the exchange of public health information along the border.	Yes	A basic interactive bulletin board was developed for the project.

The demonstration project has yielded several outcomes. Table 5-2 outlines key project outcomes achieved over the duration of the project. Each bulletin board message that was posted can be found in Appendix I.

TABLE 5-2
SELECTED PROJECT OUTCOMES: 1997-1998

Number of functional computer packages donated to Mexican partners	6
Number of project partners with internet and e-mail access	20
Number of computer training sessions conducted on internet and e-mail	3
Number of TDIP meetings	8
TDIP Meeting Hosts	• Regional Health Department • Cameron County Health Department • Brownsville Community Health Center • Jurisdicción Sanitaria III
Agencies and organizations linked to the Bulletin Board	• Hospital General Alfredo Pumarejo • Jurisdicció Sanitaria III • Regional Health Department • Texas Department of Health • Brownsville City Health Department • Cameron County Health Department • Brownsville Community Health Center
Number of Bulletin Board Messages	17
Topics of Bulletin Board Messages	• NTD's • Shigellosis • BIDS Project • Tuberculosis • Epidemiology of NTD's in Mexico • Sepsis y Mortalidad • Sindrome Hepatorenal Asociado a Hepatopatia Alcoholica • Binational meetings and announcements.

As part of the evaluation process, TDIP participants were asked to comment on any benefits that may have resulted from the demonstration project. The following benefits were cited:

- Building of interpersonal and professional relationships with colleagues binationally,
- Provision of computer equipment for partners who lacked basic equipment,
- Sharing of Resources via Internet and E-mail, and
- Collaboration on binational work.

First and foremost, project members felt that the TDIP had been instrumental in cultivating binational relationships among public health officials. More importantly, communication among local health officials, epidemiologists and community partners was improved through regular binational meetings and project activities. As one health official in Brownsville stated,

> *I have been working in the area of public health for over twenty years, but had never met my counterpart at the Jurisdicción Sanitaria III in Mexico, until this project. I met him for the first time last year and since then have developed a working relationship. I've come to know him personally and recognize him as a primary contact for the binational work in my office.*

In addition to binational relationships and communications, Mexican partners cited the provision of computer equipment as a catalyst for building data infrastructures within their agencies. Before the project, neither representatives from the Jurisdicción Sanitaria III, nor the Hospital General de Matamoros "Alfredo Pumarejo" possessed computer equipment. For these institutions, the donation of computer equipment provided not only a foundation for additional data initiatives, but also a window to the world of the web. Both institutions currently have data administrators that are working to acquire more computers and develop institutional network systems.

Another benefit created by the project has been the sharing of resources via the Internet and E-mail. At the Hospital General de Matamoros "Dr. Alfredo Pumarejo", medical professionals have utilized the Internet to download materials for research and training of residents.

Finally, an overarching benefit of the project is that through the building of a binational partnership, the donation of computer equipment, and the development of a communication system, partners are now ready to begin the groundwork for collaborating on binational projects. Recently, the Jurisdicción Sanitaria III joined the Cameron County Health Department in a binational meeting to discuss future collaboration on a binational tuberculosis project. In addition, all project members have expressed their interest and willingness to work with the Binational Infectious Diseases Project (BIDS).

5.7 LESSONS LEARNED

Though the Texas Data Infrastructure Project was successful in meeting its proposed goals, several obstacles had to be addressed or overcome during the implementation process and which represent a continuing concern. These included:

- The different health care systems in the United States and Mexico,
- The lack of technological resources in Mexico,
- Challenges in dealing with various technologies,
- Bulletin board confidentiality and use, and
- Financial need for project sustainability and continuation.

Each of these obstacles is described in the following sub-sections.

5.7.1 Different health care systems

Due to the structural differences in the United States and Mexican health care systems, special coordination was required for project planning and implementation. The Mexican health care system, being more centralized, had an extensive process for authorizing state and local health officials to participate in project activities. Conversely, the local health officials within the United States health care system operated with more autonomy and flexibility. Despite the structural differences, Mexican partners worked within the health care system to secure commitment and authorization for project activities. As a result, they expressed a need for more project commitment from the state health department.

5.7.2 Challenges in Coordination

While the TDIP was able to arrange for the donation of previously owned computers, transfer of this equipment to Mexican partners, posed many challenges. The first was the transportation of computer equipment across the border. NCFH wrote special letters describing the project purpose as well as the type of equipment that Mexican partners were receiving, in order to obtain clearance at the border. The computers were shipped to South Texas to be collected by Mexican partners, who then took them across the border to their home institutions.

5.7.3 Lack of technological resources

A very basic obstacle was the difficulty in securing a telephone line solely for internet connection. Mexican partners had to arrange with telephone companies within their areas to add an additional telephone line. Though this was achieved, the process was lengthy.

5.7.4 Bulletin Board Confidentiality and Use

Once having utilized the bulletin board application, project members cited areas for improvement. The most pressing issue was the need to secure the website so that project members could exchange confidential data. Currently, the web site is an open forum that may be viewed by the public. Plans are underway to research a security system to protect the information that is posted on the bulletin board via a specific password.

5.7.5 Financial need for project sustainability and continuation

The challenge that lies before the project is that of obtaining additional funding for project sustainability and continuation. To this point, project members have utilized free web hosting services and internet connections donated through CompuServe de Mexico and TelMex de Mexico. These services, however, expire in September 1999. Project partners on both sides of the border are committed to exploring other sources of funding to secure project continuation.

Due to the challenges involved in the coordination and implementation of the TDIP, the factors that were essential in facilitating the completion of the project were diligence, patience and the full commitment of project partners to build binational relationships and communication. Other factors include binational meetings as well as the donation of computer equipment and technology for Mexican partners.

5.8 FUTURE OPPORTUNITIES

Members of the TDIP have outlined a plan for the sustainability and continuation of the project. At the last meeting, project participants agreed to merge with the Lower Rio Grande Valley Binational Council of the United States/Mexico Border Health Association (USMBHA) to continue collaboration on data infrastructure needs along the Texas/Mexico Border.

Project members have formalized the structure under the name of Epi-Com. A leadership team of representatives from the Texas Department of Health, the Regional Health Department, the Hospital General "Dr. Alfredo Pumarejo", the Brownsville City Health Department, the Jurisdicción Sanitaria III, and Cameron County Health Department has been identified to lead the project into its next phase.

Regarding computer equipment and technology, the term for free Internet and web-hosting services expires June 8, 1999 and September 8, 1999, respectively. NCFH has committed to fund continuation of Internet services until September 8, 1999 when the web hosting service expires. Costs for sustaining the application via CompuServe de Mexico for one year would be $1,750. Expenses for Internet connection through TelMex de Mexico would be $18.00 per month per connection (the project currently sustains two connections in Mexico). To reduce costs, project participants are exploring other sources of funding as well as in-kind contributions to sustain the data infrastructure model. Both the Jurisdicción Sanitaria III and the Hospital General Alfredo Pumarejo have submitted requests to their institutions for financial support of their Internet connections. In addition, project members are currently in discussions with the Texas Department of Health to determine the possibility of sharing web space on their Healthy Texas Bulletin Board. Linking to the USMBHA web page is also being considered as an option.

Depending on the availability of funds, the TDIP is planning on refining the current communication system. In the future, project members may choose to add certain features to enhance the Bulletin Board. These include the following:

- *A Registry/Directory:* This would allow users to setup and update their own contact information. The Directory would provide users the functionality to create profiles that would automatically forward notices to their Fax or E-mail address based on their selection criteria. It would allow the tracking of traffic to the website and would facilitate merging of contacts with other entities.

- *Translation Software:* This would facilitate the direct translation of documents.

6.7 LESSONS LEARNED

Exhibit 6-3 presents key lessons learned from the demonstration project as reported from project participants. Overall, participants stated that:

- Building border health data infrastructure is a slow process,
- More resources, both financial resources and people, are needed to make improvements,
- More technological resources and tools are needed to facilitate effective binational communication,
- There must be a commitment to training that coincides with the improvements in technology, and
- Efforts to improve binational communication require active participation and commitment from both countries.

6.8 FUTURE OPPORTUNITIES

Perhaps if the County of San Diego had chosen to pursue its initial scope of work for this project more accurately, a more formal vehicle for communication would now be in place. The lack of the more formal "people infrastructure" as evidenced by specific workgroups or networks may hinder further developments and compromise the success of this project in the near future. Regretfully, most public health professionals are not in the best of positions to devote the time that it takes to develop a healthy and functional group process dynamic. Demands on their time pull them in many directions and good intentions are often suborned to daily crises. However, future developments will hinge on strong leadership and commitment.

The most tangible outcome from this project has been the technological linkages established between demonstration project principals. Now that basic technology and equipment are in place, the remaining project objectives are even more critical. Development of a formal network of border public health professional with structured protocols, and training on hardware and software still need to be done. The work conducted in the February 1998 Strategic Planning Meeting must continue to be built upon. Specifically, the self-managing work teams must be fully implemented.

A continuum of effort is required to bring the border area through the 20th century and into the 21st century. Although efforts have been made since the 1998 Strategic Planning Meeting (e.g., see Appendices Q and R), additional resources and personal commitment will be required to make further progress. As a demonstration project, this effort has shown that there is a will and an interest on the parts of both binational partners. Now the effort needs to be implemented on a scale that will have deeper impact.

EXHIBIT 6-3

LESSONS LEARNED: PARTICIPANTS' VIEWPOINTS

Building border health data infrastructure is a slow process

- Data Infrastructure building is like a career, you have to do it one step at a time.
- I learned EPI-INFO little by little, and used it primarily to document and track HIV/AIDS. I began to suspect an outbreak of Brucelosis. When I had 16 patients my superiors questioned whether this was truly an outbreak. I was scolded and my job was threatened, but before it was contained, we had documented 500 cases. We all need to be listening to the Epidemiologists. Now I apply what I learned about HIV/AIDS tracking to Brucelosis.

More resources, both financial resources and people, are needed to make improvements

- It is very difficult to separate the current Data Infrastructure Project from earlier projects such as the TB elimination project as they share parallel objectives and problems. These projects bring small amounts of money to the table and we must be creative and make them work on all fronts.
- We have come to learn that we need brigades of health professionals to combat the challenges of the border. It is time that we realized that the mother is not the only vehicle for education of the family. Community health workers are a must if we are to create significant change along the border.
- We need help in actually capturing the data. Then we need to be able to provide feedback to the data sources to show how the data has been helpful.
- We need sources for laboratory confirmation of the presence of disease when we suspect an outbreak. Normally we have to rely on observation alone.

More technological resources and tools are needed to facilitate effective binational communication

- Success of almost all types of communication efforts is dependent upon having the equipment and the telephone lines. Right now the telephone and computer and fax machines are all hooked up on the same line. We have a big traffic jam. There is no such thing as a dedicated line. Everything is saturated. A partial solution that we have developed is to schedule the use of the line for each function at different times of the day.
- It is important to include anti-virus software, we had a major problem and our data was infected seriously. We have the computers and the software now, but no printers to print out reports, either to share or to archive. In addition to the limitations of telephone lines, it is important to know that sometimes this computer is the only computer in the office, and it gets siphoned off for use as a word processor.
- We desperately need a maintenance agreement and insurance coverage for the equipment.
- To be an epidemiologist is to document data and analyze it and disperse the information in an intelligible way to professionals. My degree is relatively new, I graduated from medical school in 1980, but this stuff is hard to learn. An epidemiologist has to be 1,000 things. He has to be gathering data and analyzing data and developing and implementing interventions. Now, in my career, I spend 90 % of my time doing other projects and 10% of my time doing data analysis. It should be 80% data and 20% other projects. We cannot rise to the occasion with out the right tools.

EXHIBIT 6-3

LESSONS LEARNED (CONTINUED)

There must be a commitment to training that coincides with the improvements in technology

- We have some additional equipment, yes, but now we need training. We are groping our way through that process. It is a miracle that we have not deleted something critical on the hardware by accident.
- We need to find a way to teach Epidemiologists how to use software such as Map Info, EPI-INFO, EPI-MORDI, SUAVE and EPI- CAN (Cancer).

Efforts to improve binational communication require active participation and commitment from both countries

- In Mexico, we need an internal program developer to work on development of interventions in response to identified outbreaks. The amount of money that actually made it to the border was not enough to make a real difference. We would have rather seen the REAL money spent here on the border.
- The issue of how to spend domestic monies on the Mexican Border is a major issue. One needs to be able to function on a reality basis. A binational project is not binational if it is one sided.
- Perhaps HRSA should not be trying to deal with data infrastructure that MUST be a binational effort. Perhaps HRSA should limit itself to strictly domestic issues and solutions and work with a federal agency that is authorized to work on an international basis.

7. OTHER U.S. MEXICO BORDER HEALTH DATA INFRASTRUCTURE ACTIVITES

7. OTHER U.S. MEXICO BORDER HEALTH DATA INFRASTRUCTURE ACTIVITES

7.1 INTRODUCTION

This chapter describes three additional major activities that were completed under the U.S-Mexico Border Health Data Infrastructure Improvement Project contract, each of which crossed over state borders to enhance concurrent demonstration projects. These activities include a study of pediatric blood lead levels along the border region, the development of an environmental yellow pages directory of key contacts in the U.S. border states, and the creation of HRSA's Border Health Internet Web Page. Each of these activities is described in the following sections.

7.2 STUDY OF PEDIATRIC BLOOD LEAD LEVELS ALONG THE BORDER

As part of the U.S.-Mexico Border Health Data Infrastructure Improvement Project, the Centers for Disease Control and Prevention (CDC) collaborated with HRSA to provide supplemental funding to address environmental health issues related to data infrastructure improvements along the border. As part of this collaboration, a study was conducted to assess the extent of pediatric lead exposure in this region. This study was developed in response to the La Paz Agreement and the Border XXI Framework Document, in which Mexico and the United States agreed to work cooperatively to address this issue. The Pan American Health Organization (PAHO) served as a subcontractor to CHPS to coordinate this study and to facilitate binational collaboration and participation. PAHO's involvement helped to insure that the resulting environmental health data improvements:

- Were developed with participation from Border area public and private health officials,
- Built upon and were compatible with existing reporting systems and procedures in contiguous U.S. and Mexican border states, and
- Were consistent with and contributed to the integration of such border health information into county and statewide surveillance and the health care systems in U.S. and Mexican states.

PAHOs involvement also helped provide for necessary binational consultation and contributions to the data infrastructure demonstration developments.

7.2.1 Study Objectives

Childhood lead poisoning is an international problem. It is not isolated to one just one country or area of the world. Moreover, the U.S.-Mexico Border is essentially an artificial border with regards to its population as well as the environment. The border population is extremely mobile, as are the major sources of lead exposure in this area. Lead is present in the atmosphere in many forms, and it can accumulate in bones, blood, and soft tissues. This is a problem for children and fetuses especially, because even low dose exposure to lead can lead makes them susceptible to central nervous system damage.

Lead exposure in the border population has never been well defined. The purpose of this study was to determine current blood lead levels (BLLs)[1] in children living and attending school in several communities on the US-Mexico border. In addition, the study sought to identify the possible sources of pediatric lead exposure in these areas.

The study's final report is presented in Appendix S (due in June 1999).

7.2.2 Material and Methods

BLLs were measured for a total of 1,400 children who were six years old or younger, who either lived or attended school in the New Mexico-Chihuahua border area. Additionally, an environmental sampling was conducted on a subset of homes to determine potential exposure pathways.

The distribution of BLLs among age groups often reflects the pathway of exposure. For example, if lead-laden paint is the primary source of exposure, then two to four year-old children may be the most highly exposed, because of the hand-to-mouth behavior that is exhibited in this group. On the other hand, if industrial emissions are the primary sources of exposure, older children, who spend more time playing outdoors or who are exposed to a complex interaction of exposure pathways, may be the most highly contaminated age group. It is believed that leaded gasoline, industrial emissions, and leaded ceramic pottery are the three greatest sources of childhood lead exposure in the region. For this reason, the sample was designed to study children who were aged six or younger since they are most likely to be impacted by these sources. Additionally, blood hemoglobin, an index of anemia, was also measured in the sample population since iron deficiency is the most common cause of anemia in young children, and anemic children are more vulnerable to adverse effects of lead exposure. Children were sampled in kindergartens and in health clinics. Sites were selected in collaboration with Mexican co-investigators so that they were likely to be located near possible exposure sources.

Information sheets, consent forms, and questionnaires were refined in collaboration with Mexican and New Mexico state co-investigators. These forms were translated into Spanish and then translated back into English for content verification. The co-investigators distributed these forms to all eligible children during the week before the arrival of the investigation team.

CDC provided all sample collection supplies including single use lancets and blood collection vials. Actual sample collection was carried out by CDC-trained personnel, and blood samples were analyzed on-site using state-of-the-art portable technology. Results were recorded on a log sheet that were left with local health authorities.

At the time of sample collection, CDC provided co-investigators with Spanish translation of age-specific CDC guidelines and recommendations for interpreting BLLs. CDC field investigators also discussed these materials at length in order to ensure that when the BLL results are provided to Mexican health officials, the infrastructure for interpreting these results will be in place.

[1] Exposure to lead and lead poisoning are most often described in terms of BLLs.

Basic demographic information was collected for participants including age, gender, address, school attended, and parents smoking status and occupation. This questionnaire also queried for specific use of home remedies and type of cooking utensils.

7.2.3 Findings

Study findings will be released in mid-April, after final analysis of the survey and laboratory findings. All collaborators will contribute to any recommendations that may result. If local health officials accept the study results and recommendations, they may use them to establish, refine or revalidate effective and appropriate guidelines, policies and strategies for reducing lead contamination of children.

7.2.4 Collaborators

In addition to HRSA, CHPS, CDC and PAHO, the New Mexico Department of Health and the Secretaria de Salubridad y Asistencia in Chihuahua, Mexico were other primary collaborators for the project. CDC took the lead in conducting the study, including field implementation, data collection, training of local data collectors, data analysis, and report writing.

7.3 US - MEXICO BORDER ENVIRONMENTAL HEALTH YELLOW PAGES

Another activity supported under this contract was the development of a directory of contacts for environmental events along the border. This activity was conducted across the U.S.-Mexico border states on the United States side of the border, and it was coordinated through the New Mexico Environment Department (NMED). The U.S. Department of Health and Human Services, Office of International and Refugee Health also helped to facilitate this work. The document that resulted from this activity, *The U.S.-Mexico Border Environmental Health Yellow Pages, Spring 1999*, is presented in Appendix T. Appendix U presents the report that documents this effort, which was prepared by Ken Smith from NMED and Liam O'Fallon from the Office of International and Refugee Health. The following paragraphs summarize key points from this report.

7.3.1 Purpose

A border-specific directory was needed to help individuals and organizations along the border area to identify the appropriate agency with jurisdiction over a particular environmental media or environmental health issue. There are a number of situations in which the document may be used. For example:

- Local sanitarians may use it to learn how an environmental situation is handled in another locale,
- District Health Officers could use the directory to notify the appropriate jurisdictions of pending environmental health issues,
- Policy or regulation writers can use it to inquire about laws and regulations in effect in similar jurisdictions,
- Epidemiologists can use it to find the agency that has data on a specific media issue, and
- Residents in border communities could use the yellow pages to inform the appropriate agency of environmental problems in their neighborhood.

The Yellow Pages were organized by environmental media and geographical jurisdiction. The document catalogs governmental agencies (federal, state, county, and city) that deal with a specific environmental topic of interest (i.e., Underground Storage Tanks, Food-Borne Illness). When possible, the directory identifies the closest agency to the border with jurisdiction over a given problem.

7.3.2 Developmental Process

A small team of State environmental and health workers worked together to complete the yellow pages document under the coordination of the NMED. First, the team developed a list of possible environmental incidents that are dealt with in the environmental health arena. As the list grew, it was organized into general categories by media type. In the end, subcategories were added to reflect different types of incidents associated with that media.

Once the categories and subcategories were determined, a database was created to facilitate data collection. The team agreed upon the data fields that would be filled out by each state. Information was sought at the agency and office level rather than for specific individuals. The NMED designed the database and drafted the instructions for use. Each State representative then hired a student to compile the data and submit it weekly to the NMED where all data was assembled into one document. Students were hired as consultants to CHPS to work on this project. The data were then organized into the actual Environmental Health Yellow Pages. The first draft was passed out to the group for comments, which were incorporated where appropriate.

The hard copy document was distributed to participants at the U.S.-Mexico Data Infrastructure Improvement Project's closeout meeting in El Paso, Texas in February 1999. Meeting participants included state and Federal health officials from both sides of the border. The document is also being distributed to other health officials in the border states via mail.

7.3.3 Benefits

The directory is considered a good beginning in identifying the various agencies in the different states that manage specific environmental matters. In addition, it lends insight into how the different state health and environmental agencies are jurisdictionally structured. This factor is extremely important for understanding what agencies need to be involved in the decision making process for specific environmental issues along the border, since historically, there has been a certain amount of frustration when all the appropriate people are not included in these discussions. The yellow pages may aid in the identification of which agencies should be included in such discussions. When expansion of this project to the Mexican side of the border is considered, this benefit becomes even more valuable.

7.3.4 Lessons Learned

There were a number of lessons learned during the process of developing the yellow page document that may be transferable to other multi-state projects along the border. They include the following:

- A single data base (as opposed to four separate state-specific databases) allowed for a uniform set of entries that were structured in a standardized manner;
- A central coordinator for the project was critical to ensure uniformity across states;
- By having each state making its own entries, provincial understanding of each state's agency structure was maintained;
- Hiring students as consultants to CHPS facilitated the project's expeditious completion because it precluded the need to contract with each of the four states;
- It was important to narrowly define the criteria for category entries to make the database most meaningful and useful;
- By not making the entries "person oriented", the accuracy and life of the document should be more stable.

7.3.5 Future Directions and Opportunities

Project collaborators felt that the following items should be addressed in future development of the yellow pages:

- The make-up of each category and subcategory should be re-examined and clearly defined.
- Federal, state, and local agencies should be organized more distinctly;
- A Federal partner should be enlisted for Federal entries;
- Websites should be included in each entry;
- The database should be cleaned-up; and
- Mexico should be included in the directory.

Now that the Yellow Pages are complete for the four U.S. border states, the Yellow Page group believes the document could be improved by making it a binational effort. It is hoped that participation can be gained from Mexico so that contact information may be added to the Yellow Pages.

In addition, project collaborators plan to post the directory to a website so it could be accessible to a larger population. The Yellow Pages will be placed on the Environmental Health Workgroup website where it will be easy to update, and where there is a continued sense of document ownership. The group will look at various avenues for marketing the product and encouraging other websites to create links to the yellow pages.

7.4 BORDER HEALTH WEB PAGE

Another effort supported by the border health data infrastructure improvement project was the development of a HRSA Border Health website. CHPS' subcontractor, the National Center for Farmworker Health (NCFH), developed and implemented the website in August 1996. The initial purpose of the website was to provide a venue for identifying key health officials in each of the four US and six Mexican border states as well as for accessing information on HRSA border health projects and strategies. NCFH was a good match for developing and implementing the website, given the organization's recent experience in providing similar support to the HRSA

Migrant Health Program. Once the website was functional, PAHO and the HRSA Bureau of Primary Health Care took over responsibility for certain portions of it.

The website's current URL is <http://www.bphc.hrsa.dhhs.gov/borderhealth>. Examples of information that are accessible from the Border Health home page are provided in Appendix V. The home page currently provides nine content areas from which users can access additional information, which include:

- **Demographics and Statistics** related to border health;
- **State and County Contacts** in each of the four U.S. border states (there are plans to include contacts from Mexico as well);
- **Border Health Links** to other pertinent sites, including those of U.S. Federal Agencies, the Mexican Government, and other sites;
- **Background** on HRSA's Border Health Initiative, including a staff directory for the Border Health Program Priority Unit;
- **Reports and Publications** related border health, including newsletters for the Border VISION Fronteriza project;
- **Surveys** to get feedback on content, how users are using the information accessed, and other ideas for the site;
- **HRSA Border Health Projects**, which currently covers the data infrastructure project and Border VISION Fronteriza;
- **Job Openings on the Border**, including vacancies at Community and Migrant Health Centers in the four U.S. border states; and
- A **Site Map**, which presents the website in an outline format.

More than 3,500 visitors accessed the website between August 1, 1996 and March 31, 1999.

8. CONCLUSIONS

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8.1 INTRODUCTION

Previous chapters describe the experiences and outcomes from individual demonstrations and other activities that were supported under the U.S.-Mexico Border Health Data Infrastructure Improvement Project. There are several important conclusions that may be drawn from all of these efforts, which are summarized in this chapter. The next section presents overall strengths that have been fostered along the border, which is followed by a discussion of lessons learned across demonstrations. The chapter ends with an overview of future opportunities for project expansion and replication.

Many of these conclusions were developed during an interactive session at the project's closeout meeting in El Paso, Texas on February 11-12, 1999. Local demonstration project principals identified five general areas for which there were issues that were common to all projects. These areas included:

- Communication (including cross-state, cross-border, intra-state, and interagency),
- Binational Cooperation,
- Resources,
- Training, and
- Data Exchange.

Key strengths, challenges, and opportunities were discussed for each of these issue areas. The text that follows reflects major points from this discussion.

8.2 SUMMARY OF PROJECT STRENGTHS

There are a number of strengths that were either developed or enhanced through the data infrastructure improvement project, which crossed over state lines. These cross-cutting strengths include:

- People- project principals on both sides of the border,
- Organizations- State and Federal agencies, border health offices,
- Federal climate,
- Use of technology,
- Collaborations- synergistic projects and efforts, and
- Process for project development.

One of the biggest strengths across projects was the involvement and commitment of people on both sides of the border to facilitate data infrastructure improvements. This includes project principals who headed specific efforts as well as the networking relationships that were developed or enhanced through project involvement. These individuals had the will and desire

to improve health data infrastructure as well as common goals for, concerns about, and ownership of improvements.

In addition to the efforts of individuals, the commitment from specific organizations was also a major strength across projects. This included the efforts of HRSA and the state Border Health offices as well as the involvement and facilitation of binational organizations, including USMBHA, PAHO, and the U.S.- Mexico Border Health Commission. The development of the Environmental Yellow Pages across all four states is an example of how state officials were able to collaborate effectively for common border health data infrastructure improvements.

Collaborations with Federal entities such as the Environmental Protection Agency and the Centers for Disease Control also helped to strengthen efforts. It was generally felt that the federal climate in both the U.S. and Mexico added to the success of project efforts. A related strength was that there were synergies created from other concurrent or previous binational efforts that facilitated health data infrastructure improvements, including Border XXI, NADBANK, BIDS, and Mexico Cities Abroad.

The use of technology was another important strength that helped facilitate demonstration project activities. All four state demonstration projects, as well as the three other activities supported under this contract, utilized technology as appropriate to improve health data infrastructure along the border. In many cases, this included using the Internet, and in the New Mexico Demonstration, it specifically included using facsimile technology to transmit notifications on outbreaks. In addition to the technology itself, it was felt that there was also good availability and accessibility of technical knowledge along the border.

A final strength that was cited across project efforts was the process that was used for demonstration project development and implementation. Key project principals on both sides of the border were enabled to collaborate and choose demonstration project focus as well as implement efforts on the local level.

8.3 CHALLENGES ACROSS DEMONSTRATIONS

There were also a number of challenges that were faced in trying to implement data infrastructure improvements, and in many instances are still being faced, across projects. These cross-cutting challenges include:

- Cultural differences,
- Geography,
- Lack of common goals,
- Resources,
- Continuity of efforts,
- Public relations,
- Technology,
- Process for project development, and
- Training needs.

One challenge that had to be worked through was the cultural differences that exist along the border areas, especially between Mexico and the United States. Project principals felt that such differences, including differences in language as well as relative prioritization of issues, required a significant time investment to work through. Language differences sometimes resulted in miscommunication and misinformation. Different values on issues such as patient confidentiality had to be understood and respected before data infrastructure improvements could be fully implemented. Some also felt that there was a tendency towards unilateral thinking on either side of the border, which had to be overcome.

Geographic differences also had to be considered. These included travel times between localities for meetings, especially given the distance between state capitals in the U.S. and their contiguous Mexican States. Additionally, there were also different issues and priorities that existed between rural areas, urban areas, and more industrial areas.

It was also felt that there was a lack of common goals between some of the organizations involved, including between:

- Different Federal agencies (on either side of the border),
- State, local, and Federal agencies,
- Agencies in different localities (east to west) along the border, and
- U.S. and Mexican Agencies.

Different goals also translated to challenges regarding jurisdictional control, political power, and general bureaucracy. Additionally, there were different health data infrastructure systems and structures among these organizations that had to be considered. Project principals were ultimately successful because they respected each other's differences and worked within existing constraints.

A serious and ongoing challenge is that of finding the resources to continue needed data infrastructure improvements. Overall, projects resulted in positive changes, but unless efforts are sustained or continued, many of these improvements may be lost. Different national economies compound this issue. Across projects, the inequity of resources available on both sides of the border to implement data infrastructure changes manifested itself in a number of ways. For example, lack of multiple, reliable telephone lines for demonstration collaborators in Mexico translated to communication difficulties with the Epi-Fax system in New Mexico and in using the Internet at SAHO.

Another resource issue was the time that it took to make data infrastructure improvements. Principals felt that both the relationships that were necessary for successful projects as well as the binational work itself took more time than anticipated to cultivate and develop. Such time requirements were especially challenging with the level of personnel turnover that was experienced. Project principals felt that dedicated staff were needed to successfully implement projects. Without such staff, continuity of efforts may be very difficult.

It was also felt that public relations and the media remain a challenge along the border. Misinformation and hype about health and environmental issues is a problem for which good data (and data infrastructure) is continually needed. The Arizona demonstration was initially developed in response to such media concerns, and it subsequently produced useful studies regarding its population and involved the community in its work. However, it takes continued resources to both develop a solid data infrastructure as well as to disseminate information that results from it. Demonstration project principals agreed that companies that conduct work along the border must demonstrate corporate responsibility in a number of ways, including disseminating good information, providing resources to build health data infrastructure, as well as in contributing to a safe environment.

Technology was a moving target during the period of the demonstration contract. For example, in the fall of 1995, local access to internet providers was spotty in rural areas on the U.S. side, and absent on the Mexican side of the border. By 1998, local telephone internet access or 800 number access was universal on the U.S. side and nearly so on the Mexican side.

It is interesting to note that some of the challenges that were cited by project principals were also listed as strengths, including technology and the process for project development. This underscores that although inroads have been made to overcome these challenges, there is still a need to work on these issues.

8.4 FUTURE OPPORTUNITIES

Previous chapters discussed expansion and replication opportunities for each of the state demonstration projects. Individual efforts were evaluated regarding their sustainability as well as the potential to duplicate specific models elsewhere along the border. This section focuses, instead, on global opportunities that may exist across the border states that have resulted, at least in part, from the U.S. Mexico Border Health Data Infrastructure Improvement Project and other efforts that have been conducted in concert with the project.

Future opportunities that project principals identified at the project's closeout meeting included:

- Opportunities with EPA, CDC and other Federal agencies,
- Fostering relationships,
- Building on momentum,
- Technological dissemination,
- Encouraging corporate responsibility, and
- Training opportunities.

Individuals from several U.S. Federal agencies attended the contract's closeout meeting in El Paso, TX to hear about project outcomes and to consider future opportunities to capitalize and expand on specific efforts. In addition to HRSA, there were participants from the Environmental Protection Agency (EPA), the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), and the National Center for Health Statistics (NCHS). Hal Zenick

from EPA participated via conference call to extend an offer to all of the state health department officials to fund improvements in environmental health data along the border. States are currently working to respond to this offer.

Additionally, future efforts to build and improve border health data infrastructure exist due to the relationships that have been fostered in and among demonstration project principals, state and federal agencies, non-governmental organizations, and binational organizations. These relationships and the momentum that has built over the past three years should result in additional opportunities. Existing collaborations should facilitate this process so that organizations will be aligned with potential funding sources that have like-objectives.

There are also opportunities for further dissemination of technological expertise along the border. The relationships that have been fostered under this contract, as well as the provision of e-mail and Internet access across the border, should facilitate and encourage further communication and data exchange. Electronic interchange provides a communication mechanism for which there is no border. Individuals can have meaningful dialogue, exchange ideas, network, and ask questions with colleagues across the border in a cost-effective manner.

Additionally, project principals felt that corporations that conduct business along the border represent a potential rich and untapped source of funds for future health data infrastructure improvements. They felt that efforts should be made to encourage these corporations to contribute to future projects.

Finally, project principals identified a number of opportunities for knowledge transfer along the border, as there are a number of individuals in the border area who have expertise that would be valuable to colleagues on both sides of the border. It was felt that these individuals must market and share their expertise and that there must be resources available to facilitate such sharing. Specific training needs include:

- Technical training related to health data interchange,
- Epidemiology,
- Basic health care,
- Training on health data interchange specific to the environment, food, and agriculture,
- Train-the-trainer programs to encourage further dissemination of expertise,
- Education on available scholarships and educational opportunities, and
- Education for policy makers/legislators regarding border issues.