

Infectious Diseases-Q

Assignment Description:

This position will be located in El Paso Texas, assigned to the United States-Mexico Unit (USMU) of the CDC Division of Global Migration and Quarantine (DGMQ). The Epidemiology Surveillance and Response Section of the El Paso City Department of Public Health (El Paso DOH) will be a co-sponsor. The fellow will spend 50% of their time at each location.

The US-MX border is the largest international land border crossing in the world, with over 300 million north bound legal border crossings, 30 million of them through the El Paso port of entry sector. The U.S. admits approximately 80,000 new immigrants from Mexico every year and the majority enter through El Paso Ports of Entry.

DGMQ is a CDC Division of the National Center for Emerging and Zoonotic Infectious Diseases. The mission of DGMQ is to improve and promote the health of binational migrant and other mobile populations and prevent the introduction and spread of diseases of public health importance in the North America region through science, partnerships, policy preparedness and response. In keeping with this mission, the USMU through its El Paso QS is responsible for conducting coordinated Public Health actions in the border region and at all international land ports of entry in Southwest Texas and the state of New Mexico. This includes epidemiologic research, disease surveillance and response, health promotion, public health preparedness, and bioterrorism response. The DGMQ USMU serves as CDC's official liaison with the Mexico Secretariat of Health and a medical officer position is being placed with the National Epidemiology Directorate in Mexico City.

The El Paso Department of Public Health promotes, ensures, and improves the health and wellbeing of its 800,000 citizens through a variety of programs, including immunizations, preparedness, laboratory, epidemiology, communicable disease control, food inspections, and health promotion. During the last fiscal year, the epidemiology section received 4,471 disease reports and investigated 13 disease outbreaks. The El Paso HD manages the Rio Grande Region Public Health Information Center and receives over 84,000 information calls. Its level 3 laboratory is a component of the Texas Laboratory Response Network. The El Paso HD and CDC El Paso USMU collaborate extensively with three neighboring Public Health Jurisdictions in Texas, New Mexico, and Cd Juarez Mexico and with two locally based international health agencies, the Pan American Health Organization Border field office, and the U.S. Mexico Border Health Commission.

El Paso enjoys great weather and ample opportunities for outdoor recreation. There are multiple local / state parks, 4 national parks and mountain ski resorts, all within less than 6 hours' drive. El Paso has consistently been ranked as the No. #1 safest US city over 500,000 (CQ Press) for most of the last 15 years and No. #1 in quality of life improvements (Newsweek magazine, September 2011).

Day-to-Day Activities:

The CSTE Fellow will be integrated into the USMU QS disease surveillance and response activities, and with mentor support, manage all aspects epidemiological data surveillance, analysis and evaluation. The work at both the El Paso HD and QS will provide the fellow with ample opportunity to work among several passive, active, and syndromic surveillance programs that emphasize PH Preparedness and binational, state, and local infectious disease surveillance and response. Fellow will have ample opportunity to participate actively in state, local, and CDC Epi aid outbreak response investigations and assist in core Quarantine duties.

The El Paso UMU Medical Officer (primary mentor) and the El Paso Health Department Lead Epidemiologist (secondary mentor) will provide close technical support, mentorship and staffing oversight. Our geographic jurisdiction includes the City of El Paso, the Paso Del Norte Region of West Texas and Southern New Mexico, and international air, sea, and land ports of entry in the south and west Texas and New Mexico. There will be ample opportunity for extensive project collaboration with our sister USMU DGMQ San Diego QS, and the Binational Infectious Disease Surveillance (BIDS) Project.

Potential Projects:

Evaluating Outcomes of New Immigrants Who Arrived Into the US from Mexico with a Tuberculosis Medical Condition:

There are over 80,000 new immigrants from Mexico admitted into the US every year. As part of immigrations requirements, immigrants must undergo an overseas medical exam which includes TB medical screening. Approximately 3,600 (4.5 %) of these immigrants have a TB medical condition that requires PH follow up. A majority of these immigrants re-settle in the border states of California and Texas. An epidemiologic analysis is needed to evaluate the effectiveness of referral and medical follow up of these immigrants. These findings will have important policy implications for TB control efforts in the US.

Descriptive Analysis of Tuberculosis Patients Treated Bi-nationally, US-Texas Border, 1993 – 2012:

The large volume of southern land border traffic and large number of shared tuberculosis patients pose important obstacles to effective border TB efforts. Binational TB Project Juntos (Together) was established in 1991 to improve cross-border TB treatment and control in El Paso TX-Juarez MX. Through its 21 year trajectory, project Juntos has maintained a data base of over 1400 bi-national patients treated binationally through project Juntos. The data base contains variables on socio-demographics, drug resistance patterns, TB treatment completion rates, and co-morbid conditions such as HIV and Diabetes. An epidemiologic data analysis is needed to describe the number of patients by year and demographics: sex and mean age and frequency of treatment outcome by year. This would be followed by a logistic regression to determine predictors of treatment outcome using the following covariates: age, sex, AFAB smear, culture, resistance, Directly Observed Therapy DOT/non DOT, type of patient previous treatment, and medical comorbidity. Findings from this extensive Juntos data base would have important implications for binational TB control efforts in both the U.S. and Mexico.

A System for Detecting TB Patients Lost to Follow up at The U.S. - Mexico Land Border, 2007 – 2012:

In 2007 CDC implemented a public health travel restrictions tool to prevent commercial air travel by infectious patients who pose a public health threat to fellow travelers. As an added security measure, this tool allows customs inspectors to detect infectious travelers at international ports of entry. This "Do not Board/Border Lookout (DNB/LO) maintains an active data base containing clinical and outcome variables for patients placed on this list. This tool was primarily designed to prevent travel by infectious patients, but the CDC US-MX Unit adapted this tool to help find lost infectious TB patients who travel through the U.S.-Mexico land border. An epidemiologic analysis is needed to evaluate if the DNB/LO tool has been useful for timely detection and referral of border crossers with TB. Findings of this study have important policy implications for improving TB treatment completion rates of mobile TB patients.

Surveillance for Dengue and other Arthropod-borne Viral Disease in El Paso, Texas:

Dengue has been endemic in Mexico since the 1980's and with the circulation of four serotypes in recent years, severe dengue outbreaks occur regularly. Outbreaks were documented in Laredo Texas in 1999 and Brownsville/Matamoros in 2005. While higher socioeconomic conditions, air conditioning, and screened housing in the U.S. appears lower the risk of Dengue infection, recent West Nile Virus resurgence in Texas, the local presence of *Aedes aegypti*, a known carrier of Dengue, has raised concerns about the possible emergence of dengue in the West Texas border region. Even though dengue was made a nationally notifiable disease in 2010, current surveillance for Dengue in the U.S. is entirely passive and most Dengue infections are asymptomatic or may only cause an acute febrile illness with other signs and symptoms. Better surveillance and diagnosis of acute febrile illnesses and hemorrhagic fevers in this region is needed to assist in the differential diagnosis of febrile syndromes which could be linked to Dengue and other vector borne diseases. The US-MX unit will be collaborating with the University of Texas El Paso to conduct a survey for antibodies in El Paso to determine if humans are being infected with dengue viruses, and possibly other arboviruses. A phase 2 study would identify undifferentiated acute febrile illness patients suspected of having dengue fever and possibly other arboviral diseases will be implemented at one or more major clinical sites in El Paso. This would be followed by a questionnaire and blood sampling to determine whether the patient experienced a primary or secondary dengue virus infection.

Border Enteric Surveillance and Testing (BEST) Project:

Infectious enteric diseases are known to cause a large burden of morbidity and mortality around the world. Currently, there are various efforts nationwide to improve foodborne disease surveillance through the implementation of systems such as the Electronic Foodborne Outbreak Reporting System, Pulse Net, and Food Net. The success of such systems relies heavily on the cooperation of physicians, laboratories and local/state health departments. However, few well-documented sites occur along the border between the U.S. and Mexico. The goal of the Border Enteric Surveillance and Testing (BEST) project is to characterize the health burden of enteric disease using enhanced sentinel surveillance in select sites along the US border with Mexico. The CDC USMU will collaborate with the Texas Department of State Health Services (DSHS), to conduct sentinel enhanced surveillance for infectious enteric diseases including campylobacteriosis, salmonellosis, shiga toxin-producing *E. coli* infections, and shigellosis.

Evaluation of the Effectiveness of Novel TB Educational Interventions at Ports of Entry:

There are over 80,000 new immigrants from Mexico admitted into the US every year. As part of immigration application requirements, immigrants must undergo an overseas medical exam which includes TB medical screening. Approximately 3,600 (4.5 %) of these immigrants have a TB medical condition that requires PH follow up at local or state health department clinic. While considerable efforts have improved the rate of TB follow up, there is need for considerable improvement. USMU proposes to implement a novel Spanish language education intervention through the use of comic book "foto novela" emphasizing the importance of TB follow up. This educational tool will be issued to immigrants admitted with TB medical conditions by CBP officers. Data will be collected and analyzed to determine the effectiveness of this strategy for TB follow up.

Evaluation of the Effectiveness of Public Health Messaging Interventions at Ports of Entry:

Land border traffic across the US-MX land borders ports of entry is the busiest in the world with over 300,000 border crossing every year. At pedestrian port of entry processing areas, travelers entering the US from Mexico have to wait for long periods of time before they are cleared for entry into the US. This is especially true during the holiday season, which co-indices with the start of influenza season. This passive audience provides a valuable opportunity to evaluate mass public health education

interventions, such as posters and electronic messaging. Previous port of entry educational outreach activities by trained Texas A&M “promotoras” (community health outreach workers) appeared to be successful, but there is need to evaluate if sustained automated messaging might prove to be a useful strategy. The CDC USMU proposes to conduct a pilot study to document the effectiveness of this educational intervention during seasonal influenza

Evaluation of School Based Absenteeism Surveillance Project:

School absenteeism can be a useful tool for early detection of community acquired infectious diseases and other important medical conditions. The El Paso Health Department has collaborated with the Texas Association of Health Officials to implement an active school based infectious diseases and asthma surveillance system in area schools. Data will be collected, analyzed, and used to evaluate the utility of this system for early detection of infectious conditions in the community.

Evaluation of Border Sentinel site Influenza-like Illness Surveillance:

During seasonal influenza, the border ILI-Net surveillance program tracks weekly seasonal influenza reports from sentinel sites along both sides of the US-MX border. This type of surveillance proved crucial during early detection of the first two sentinel cases of novel 2009 H1N1 pandemic influenza at the US-MX border. A comprehensive evaluation is needed to determine the usefulness of this system for tracking seasonal and novel influenza activity at the US-MX border.

US Mexico Unit Internal Binational Notification Pilot Protocol:

The CDC US-MX Unit is collaborating with Mexico’s National Epidemiologic Directorate and CSTE to implement a pilot protocol for reporting key binational infectious diseases across local and state public health jurisdictions on both sides of the border. Evaluation of this surveillance system will be used to design formal binational reporting procedures in accordance with the US-MX the Guidelines for US-Mexico Coordination on Epidemiologic Events of Mutual Interest. The Guidelines document was signed by Health Secretaries of both US and MX on May 2012.

Preparedness Role:

The Fellow will be expected to participate in one or more of the following:

- Work with the CDC QS Officer in charge and emergency preparedness staff of the El Paso Department of Public Health to develop and implement a functional table top exercise. This in order to evaluate regional public health capacity to respond to natural and bioterrorism infectious disease threats.
- Participate in Texas state trainings and public health preparedness exercises.
- Assist in CDC Epi-Aid outbreak investigations at the local or state level.
- Assist in Texas, New Mexico state / local health department outbreak investigations.
- Available to deploy during emergency disasters and natural events such as flooding or mass displacement of persons.

Assignment Location: El Paso, Texas

Primary Mentor: Miguel Escobedo, MD, MPH
Medical Officer
CDC Division of Global Migration and Quarantine

Secondary Mentor: Gonzalez Fernando, MD, MPH

Lead Epidemiologist
El Paso Department of Public Health