

## **Infectious Diseases, Infectious Diseases**

### **Cook County Department of Public Health, Communicable Disease Prevention and Control**

Forest Park, Illinois

#### **Assignment Description**

The CSTE Fellow will be assigned to the Communicable Disease Prevention and Control Unit and will work across the unit in programs that fit with the Fellow's unique talents and interests. Although we cover a large area and nearly 2.4 million residents, our unit is small and close-knit. The CD Unit is responsible for investigations, cluster and outbreak detection, and routine surveillance activities covering more than 65 communicable diseases and conditions, as well as emerging infections and conditions that can be monitored through syndromic surveillance. Our unit is dynamic, and we strive for excellence, innovation and transparency with an emphasis on teamwork.

#### **Day-to-Day Activities**

The Fellow's day-to-day activities will include investigating communicable diseases reported through the Illinois-National Disease Surveillance System, assisting in the investigation of outbreaks as they arise, working as part of a team on various quality improvement projects in the CD Unit, assisting the program manager responsible for syndromic surveillance and informatics in data analysis and cluster detection, and the production of weekly and other periodic surveillance reports. The Fellow may also conduct ad-hoc research projects to advance public health practice in the CD Unit and interface with staff at hospitals, provider practices, and long term care facilities to provide education and outreach.

## **Potential Projects**

### **Surveillance      Weekly, Quarterly, Annual Surveillance Reports Activity**

The CSTE Fellow will assist in the investigation of reportable diseases and conditions on the front-end, and on the back-end, help to clean, analyze, interpret the data collected, then disseminate surveillance reports, including, but not limited to, weekly influenza surveillance reports during influenza season and weekly West Nile Virus surveillance reports in the opposite period. The Fellow will also prepare and assemble quarterly counts of selected communicable diseases, and assist in the preparation of annual surveillance reports for dissemination to the public. Several of CD's programs do not produce annual surveillance reports, so with leadership from the CSTE Fellow, he or she will have an opportunity to make an impact on how surveillance reports are produced and disseminated.

### **Surveillance      STI Surveillance and Field Operations Evaluation**

The United States is in the midst of a large increase in syphilis, after years of steady declines, and suburban Cook County is no exception. Between 2014 and 2015, primary and secondary syphilis cases increased 112% and an additional 29% from 2015-2016.

We have begun to address our syphilis surveillance in two phases. The first phase was to put in place mechanisms to track records of syphilis investigation field records, in order for managers to have situational awareness and to track cases electronically. The second phase of this surveillance project has begun but is still in its infancy. The first set of goals are to establish programmatic baselines for timeliness and quality and then to begin working with STI staff to encourage program improvements and enhancements. The second set of goals would be to monitor progress to help reverse the upward trajectory in syphilis incidence observed in recent years in suburban Cook County. The CSTE Fellow would be a vital part of this surveillance and quality improvement effort. The fellow would perform data entry, design queries and reports using MS Access and SQL, and help coordinate quality improvement efforts and suggest changes to the way these surveillance data are collected with help from the Director, STI/HIV Program manager and line staff.

## **Major Project    Data Visualization: Development, Design and Utility**

Throughout the years, the CD Unit has produced regular surveillance reports for Tuberculosis, STI/HIV, influenza and West Nile Virus. These reports are typically static and put together as PDFs and posted to our website and distributed via email list-serves. While we anticipate this practice will remain, we also want to move to interactive and dynamic formats -- and we want the CSTE Fellow to be a part of that push.

We anticipate the CSTE Fellow, who will have a major role in the nuts and bolts of CD investigation, also to work with those data and aid in the design of applications for two audiences: the first would be a 'portal' or application to allow interested members of the public to query data on the web without the need for a formal data request. We see this is the public-facing aspect of the project. But we also see the need for a parallel system that is available for persons internally but without the data constraints required for sets of public facing data. This second parallel system would allow for real-time sharing of maps during outbreaks, dashboard-like data, and eventually would incorporate role-based performance metric data from which new quality-improvement projects would originate. We see both projects as intermediate to long-term projects that will have strong data visualization, data mining and translational informatics effects to help us better understand the data we produce and how to harness it to improve public health.

### **Surveillance    CRE/NDM/HAIs Activity**

As time and interest allow, the CSTE Fellow will work with Infection Prevention & General Communicable Diseases Program Managers and the Assistant CD Unit Director to develop facility-specific surveillance reports on CRE and other HAIs in long-term care settings and educate stakeholders in each facility with their own data and how it fits in the larger context. Goals are to educate and improve uptake/expand use of the Illinois' Department of Public Health XDRO registry to improve identification, isolation and monitoring of these pathogens. This project combines surveillance, outreach and education, and quality improvement.

### **Surveillance    Syndromic Surveillance: Creation and Validation of Syndrome Categories Activity**

CCDPH is actively involved in the syndromic surveillance community and frequently monitors emergency department activity for emerging communicable diseases or other conditions of interest using internally developed queries. Again, as time and interest allow, the CSTE Fellow will conduct data analysis to validate the accuracy of these queries by comparing trends to those identified in other data sets (e.g. hospital discharge data). Queries may also be compared and validated against trends detected by an alternate syndromic surveillance system. Topics of interest include rabies, influenza, opioid overdoses, and gun violence, among others.

### **Preparedness Role**

The CSTE fellow would take part in Emergency preparedness exercises and would be encouraged to take appropriate NIMS courses for an equivalent FTE in the same position in the CD Unit (typically an upper-level epidemiologist). In addition, the CD Unit has begun coordinating table top exercises with staff from the Emergency Preparedness and Response Unit, and the Fellow would be a player and later in his or her tenure, a planner/facilitator.

### **Additional Activities**

Depending on the interests and skills of the CSTE Fellow, we can tailor projects, ranging from leading outbreak investigations, attending local meetings (Chicago Technical Advisory Group meetings, Cook-DuPage TAG meetings) as well as bi-monthly regional meetings with the Northern Illinois Public Health Consortium, presenting his or her work at those meetings as appropriate, and writing and publishing his or her work whenever the opportunity arises.

### **Mentors**

<b>Primary</b>	Demian Christiansen DSc, MPH Unit Director, Communicable Diseases Prevention & Control (CD)
<b>Secondary</b>	Kelley Bemis MPH Manager, Enhanced Surveillance and Informatics, CD Unit