

## **Infectious Diseases, Substance Abuse**

### **Kentucky Department for Public Health, Division of Epidemiology and Health Planning**

Frankfort, Kentucky

#### **Assignment Description**

The CSTE Fellow will work at the Kentucky Department for Public Health (KDPH) in the Division of Epidemiology and Health Planning, which encompasses infectious diseases, HIV/AIDS, Vital Statistics and a large portion of public health preparedness activities. The Fellow will sit organizationally in the Division Director's Office but will most likely physically sit within the Infectious Disease Branch, which covers all infectious diseases except HIV/AIDS.

The fellow will have the opportunity to choose from a variety of epidemiologic activities, spanning the gamut of infectious disease outbreaks, to substance abuse-related public health initiatives, to surveillance activities, to public health responses, to data analysis. The fellow is encouraged to develop projects in their particular areas of interest during their assignment in Kentucky. We have identified a menu of key initiatives from which the fellow can select projects to give the widest exposure to applied public health and epidemiology (see "Potential Fellow Projects" description boxes below) but also match the fellow's areas of interest and career goals. We want to promote maximum flexibility for the fellow in choosing projects, and which projects to engage in more deeply. We believe this flexibility facilitates epidemiology competency development that will be competitive for future employment in applied public health roles.

Some of the more pressing initiatives the Division is engaged in currently include responding to the epidemic of hepatitis C related to injection drug use in Kentucky, facilitating implementation of syringe exchange programs across the state, making naloxone available to prevent opioid overdose deaths, conducting surveillance on opioid and other drug overdose morbidity and mortality, completing implementation of our statewide immunization registry, pursuing electronic case reporting, and transitioning our infectious disease investigation capabilities to the advent of whole genome sequencing techniques in the lab.

All of the primary activities and projects for the CSTE Fellow would entail "hands-on" public health activities involving KDPH, other public health agencies, hospitals, and other external partners. Activities and projects will include the full spectrum of program planning, organization, administration, and reporting of these activities or projects. The effective CSTE Fellow in this position will carry parts or all of initiatives and projects from the idea stage through the planning process to the implementation phase, have the opportunity for evaluation, and finally, work on reporting of results depending on the timing of the project and the fellow's tenure in Kentucky.

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

A typical day for the Fellow might start with a quick catch-up on email before joining (most likely leading) a planning meeting for one of their projects. Meetings typically last about an hour and focusing on action items to move projects ahead is an emphasis we try to pursue. The Fellow might next be on a call along with Reportable Disease Section staff to guide a local health department on the investigation of an infectious disease outbreak, learning about and assisting with the essentials of the outbreak as they are able. Next, they might visit some other epi's or Division staff in follow-up of some of the action items from the first meeting of the day. Back to their desk to do some research on another of their projects, then lunch, and off to the State Health Operations Center (SHOC) for a CDC webinar on the disease threat of the day (most recently, pandemic H1N1, Ebola, then Zika), and a follow-up briefing on what Kentucky is doing to respond to the situation. Back at their desk, a call may come in for the Fellow to address regarding another project they are working on, and then the Fellow briefs the State Epi and Deputy State Epi on the outbreak call and the additional call taken in the afternoon. Finally, it is time to try to catch up with email, work on other project items, and then make the trek home.

During actual public health responses, which do occur regularly in Kentucky, the Fellow may spend a majority of their time on that response. "Normal" activities usually involve frequent desk work, meetings, informal sessions with colleagues, mentors, supervisors, and project participants, as well as site visits, off-site meetings, road trips to partner agencies, university classes, community meetings or trainings/presentations at local health departments.

## **Potential Projects**

### **Surveillance      Pneumoconiosis Surveillance System Implementation Activity**

Coal was a major economic driver in Kentucky until recent times. Thousands of coal miners were exposed to excess levels of coal particulates and the subsequent numbers of miners developing "coal miner's lung" or "black lung disease" is high. This is primarily in the Appalachian Region where poverty is rampant due to the demise of the coal mining industry and the rural healthcare network can be sparse. Pneumoconiosis is a reportable disease by law, but we recently discovered this data was no longer being collected from healthcare facilities and there is no available mechanism to collect it currently. Previous surveillance was through a 2-decade old agreement with a university. Recently, cases of severe, early-onset pneumoconiosis have arisen and this brought awareness of the lack of surveillance data. Working with partners to quickly build a system to gather reports on cases of pneumoconiosis is a priority for KDPH. The Fellow could lead or participate heavily in this effort with the full support and resources of the Department for Public Health.

### **Surveillance      Evaluation of Electronic Laboratory Reporting Evaluation**

The Kentucky Reportable Disease Surveillance Regulation mandates electronic laboratory reporting for several infectious diseases beginning Oct 1, 2016. In Kentucky, these electronic lab reports (ELR) are routed directly through the Kentucky Health Information Exchange (KHIE) to the National Electronic Disease Surveillance System (NEDSS) to open disease case reports automatically. ELRs will serve as the foundation for reportable disease surveillance as healthcare systems and public health become more digitally connected. We would like to evaluate the accuracy, completeness, and efficiency of the new ELR surveillance system as it operates now. Additionally, most of these diseases were not reportable in Kentucky prior to 2016, so the assessment could include a descriptive analysis of disease reports for 2017, the first full calendar year of ELR reporting, and compare the changes in amount and accuracy of reporting 2016 and earlier to present reporting.

### **Major Project    Epidemiologic Analyses of Syndemics Surrounding Substance Abuse**

Syndemics are when two or more disease epidemics with biological interactions exacerbate or increase the burden of disease synergistically. We see many disease processes circulating around substance abuse including opioid abuse itself, HIV infection, viral hepatitis, sexually transmitted diseases and tuberculosis, not to mention other direct effects such as endocarditis, drug overdoses, and overdose mortality. A potential groundbreaking project would be to examine the simultaneous biological interactions between Kentucky populations that experience infections and/or diseases caused by opioid abuse, HIV Infection, viral hepatitis, sexually transmitted diseases, and tuberculosis. The project and multiple possible subprojects could be to determine the similarities and differences in geographical location, demographic characteristics, risk factors, and immunization status of those affected and to look at interventions and prevention strategies.

### **Major Project    Perinatal Hepatitis B and C**

The substance abuse epidemic in Kentucky centers on the 20-39 year age group. Kentucky has witnessed a sharp increase in the past decade of the incidence of women who are pregnant who test positive for hepatitis C virus (HCV). Reporting of both HBV and HCV in pregnant women, of children born to women who are positive for either HBV or HCV, and children 5 and under who test positive is mandatory. Comparison of perinatal cases reported for hepatitis B with those reported for hepatitis C to determine the differences in geographical location, demographic characteristics, risk factors, and immunization status would be beneficial to target prevention strategies and encourage greater testing among providers.

### **Additional        Harm Reduction/Syringe Exchange Issues Project**

Syringe exchange programs were legalized in Kentucky in late 2015 and can only be operated by local health departments. Over 40 harm reduction/syringe exchange programs (HRSEPs) have been approved since legalization with over 30 operational as of October, 2017. Kentucky has taken an integrated approach to all of its HRSEP activities. We promote using HRSEPs to reach the drug using population not only to reduce transmission of illness by providing clean needles, but for prevention education, testing for HIV and hepatitis C, connecting drug users to health care coverage, healthcare access, and substance abuse treatment programs, and making naloxone available, with training, among other things. During these points of contact with drug users there is the opportunity to collect information that policymakers are seeking, such as what are the common pathways to addiction, where can we intervene, and what would encourage more engagement in treatment and prevention programs. Developing standardized methods of collecting this information and putting it to use could be an exciting project for the Fellow.

### **Preparedness Role**

Incoming fellows will be able to engage in preparedness projects and activities throughout the tenure of their fellowship and are encouraged to participate in emergency public health response activities. In recent history, Kentucky has experienced several large-scale natural disasters and outbreak investigations requiring public health response, Zika-virus most recently, and the ongoing hepatitis C epidemic currently. Previous fellows have been integrated into all aspects of emergency public health response ranging from pre-event planning to training to fulfilling Emergency Operations Center roles to field data collection during actual responses (e.g. 2009 KY Ice Storm), planned mass gatherings (e.g. 2010 World Equestrian Games and annual NASCAR Sprint Cup events), and training exercises (e.g., Ebola patient transfer exercise in 2016, and USPHS Training Missions in 2010). The CSTE Fellow may also participate with local health department preparedness operations for annually-scheduled large scale events (e.g., the Kentucky Derby in Louisville). The Fellow's role in emergency preparedness can be as large or as small as the fellow desires.

### **Additional Activities**

There are a myriad of proposed projects that the fellow could engage in. The fellow could deploy to hospitals or long-term care facilities to assist with HAI outbreak investigations. We would value descriptive and analytical work on STDs, TB, Pertussis and Mumps, all of which are diseases of concern in our public health operations. An analysis of vaccine handling and storage practices comparing the most recent to the previous 5 years when new policies were implemented would be valuable for public health operations. Evaluation of human papillomavirus (HPV) vaccine administration in Kentucky counties with the highest incidence of cervical cancer versus HPV vaccine administration in counties with the lowest incidence of cervical cancer is another potential project of interest. The Fellow is encouraged to explore the many possibilities for projects of interest in Kentucky and focus on opportunities that most engage the fellow and move them toward their career goals.

### **Mentors**

<b>Primary</b>	Doug Thoroughman PhD, MS, BA CDC Career Epidemiology Field Officer/Deputy State Epidemiologist
<b>Secondary</b>	Robert Brawley MD, MPH Infectious Disease Branch Chief