Infectious Diseases

Public Health - Seattle & King County, Prevention Division/Communicable Disease Epidemiology & Immunization Section/Analytics & Informatics
Seattle, Washington

Assignment Description

The Fellow will work as a member of PHSKC’s Communicable Disease Epidemiology and Immunization Section (CD-EPI), which is mandated by law to monitor, investigate, and control the spread of over 65 notifiable conditions legally reportable to the Section, including foodborne, waterborne, and enteric infections, vaccine-preventable diseases, zoonotic and emerging diseases, acute and chronic viral hepatitis, perinatal hepatitis B, healthcare associated infections (HAI), and rare diseases of public health significance. CD-Imms is also responsible for conducting clinical immunization practice quality assurance visits, assessment and education visits with healthcare providers enrolled in the Vaccines for Children (VFC) program, and for promoting immunizations to increase immunization rates in King County, using evidence based strategies.

The Fellow will be assigned to the CD-Imms Analytics & Informatics Team. This team is responsible for data acquisition and integration; improving disease surveillance infrastructures; developing analyses and reports based on complex data systems; monitoring and ensuring data integrity; and interpreting and presenting data. The team approaches public health data problems with an informatics lens, leveraging innovative strategies so that resources can be used efficiently and effectively.

Day-to-Day Activities

The Fellow will work as an integrated member of the CD-Imms Section. The Fellow will meet regularly with mentors to discuss the status of current projects, ideas for future projects, and determine if any additional resources are required to meet fellowship objectives.

The Fellow will have an opportunity to work with on various projects, depending on his/her interests. The day-to-day work will primarily focus on supporting analytics and informatics projects, but given the evolving nature of our work and need for 24/7 support, the Fellow may have the opportunity to help staff with disease and outbreak investigations as well.

Potential Projects

Surveillance Activity

Hepatitis C Test and Cure (HCV TAC) data analysis

The HCV-TAC project receives quarterly clinical and laboratory data from coalition partners on HCV patients as they move through the continuum of care from diagnosis to evaluation, treatment and cure. The Fellow will have the opportunity to work closely with other members of the HCV-TAC team to analyze data, create data visualizations and reports, and develop manuscripts for submission to peer-reviewed journals. The Fellow would also have the opportunity to work on matching records and integrating data from external databases (e.g., death records from vital statistics) with the local surveillance database.
The HCV TAC project collects robust, longitudinal data on patients, including lab testing and healthcare visits, risk factor information, vaccination coverage, co-infections, co-morbidities, insurance status, and treatment. Below are a few examples of potential projects; the Fellow will be able to explore the data and pursue a research or evaluation project that interests them.

- Impact of comorbidities on HCV outcomes
- Evaluation of factors associated with achieving cure after HCV treatment
- Analysis of HCV treatment between partner sites and non-partner sites using HCV-TAC data and Medicaid claims data
- Develop models of the HCV continuum of care to determine the time to treatment and cure after diagnosis of patients with a range of characteristics in a variety of healthcare settings.

Surveillance    Syndromic surveillance system evaluation
Evaluation

CD-Imms established a syndromic surveillance system in 1999. The system is used by PHSKC to assist with case-finding for notifiable conditions, support outbreak investigations, and for situational awareness of events and illnesses of public health importance, including seasonal and pandemic influenza surveillance. PHSKC receives electronic data on an automated, daily basis from emergency departments in King County. Data are analyzed locally using "home-grown" programs, which are SAS-based. The Washington State Health Department (WA DOH) has been developing its own syndromic surveillance program, which may eventually replace PHSKC’s local system. The Fellow will have the opportunity to conduct a program evaluation comparing the performance of the two systems; results from the evaluation will be used to determine the feasibility for PHSKC to transition syndromic surveillance operations to the state’s system.

Major Project    Adoption of a new web-based notifiable condition reporting system

The Washington State DOH has recently transitioned to a new web-based notifiable condition reporting database, the Washington Disease Reporting System (WDRS). This transition presents an opportunity for informatics innovation, as the section intends to streamline reporting to a single system instead of operating a duplicative local database for disease reporting. The Analytics & Informatics team has plans to develop an interactive surveillance data visualization system using Tableau to support communicable disease prevention and control efforts. The Fellow will have the opportunity to extract, visualize, analyze, and report on data captured in WDRS; compare data entered into the local vs. state system; and conduct data quality assurance.

Additional Project

Creating a web-based tool for communicable disease reporting

The Analytics & Informatics Team has recently adopted REDCap to support data collection and reporting. The Fellow will have the opportunity to develop various projects in REDCap, including a web-based form for healthcare providers the public to report notifiable conditions to Public Health, as well as outbreak-specific supplemental data collection forms to support disease investigation. The project will include developing analyses and reports based on data captured via REDCap.
**Surveillance Activity**

The Fellow will receive training on case and outbreak investigations, and conduct disease investigations with the section. CD-EPI investigates all cases and outbreaks of reportable diseases, with the exception of HIV, STDs, and tuberculosis. The Fellow will have ample opportunity to perform a surveillance activity on outbreaks of healthcare-associated infections, foodborne and enteric illnesses, vaccine-preventable diseases, and many other incidents of public health importance that occur during the fellowship. The Fellow will routinely participate in the section’s daily morning report, a review of open investigations. The Fellow will also have the opportunity to work with a public health nurse to support hepatitis C case management, including linkage to care.

**Preparedness Role**

CD-Imms is responsible for monitoring and responding to biological emergencies and non-communicable disease related acute population health conditions that require investigation and coordination of healthcare system responses (e.g., carbon monoxide poisoning, illness after natural disaster, biological terrorism) and public communication, in partnership with Public Health’s Preparedness Section. Projects can be arranged to facilitate collaboration with Emergency Preparedness, depending on the Fellow's interests. The Fellow will have the opportunity to improve Preparedness response by helping CD-Imms assess 24/7 response capacity, and by working to improve a database used to communicate health alerts to healthcare providers.

**Additional Activities**

The Fellow will have the opportunity to work with the Immunizations Team to respond to routine data requests, and to create interactive visualizations and maps of immunizations data. The fellow can also examine the immunization registry to examine changes in vaccination coverage over time and among different populations. Another potential project is to examine immunization data from previous years to see if high-profile outbreaks of VPDs, such as mumps, measles or pertussis, resulted in increases in vaccination coverage.

The fellow may also have an opportunity to collaborate with other PHSKC programs in the Prevention Division, including the TB, STD, HIV, and Medical Examiner programs, all of which may benefit from additional informatics and analytics support.

**Mentors**

**Primary**

Atar Baer PhD, MPH  
Program Manager

**Secondary**

Meagan Kay DVM, MPVM  
Deputy Chief/Medical Epidemiologist/Program Administrator