ID: 34938423
Infectious Diseases - Host Site Description
Public Health - Seattle & King County

Assignment Location: Seattle, US-WA
Public Health - Seattle & King County
Communicable Disease Epidemiology and Immunizations

Primary Mentor: Sargis Pogosjans, MPH - Epidemiology & Biostatistics
Analytics & Informatics Director
Public Health - Seattle & King County

Secondary Mentor: Meaghan Fagalde, MPH
Epidemiologist
Public Health - Seattle & King County

Work Environment
Hybrid

Assignment Description

The Fellow will work as a member of PHSKC's Communicable Disease Epidemiology and Immunization Section (CD-Imms). The Fellow will collaborate on projects with various teams within the CD-Imms program, including the Analytics & Informatics team, Investigations team, Healthcare Associated Infections team, and the Immunizations team. The fellow will have the opportunity to interact with a variety of divisions within the health department, potentially including the HIV and STD programs, TB program, Emergency Medical Services, Medical Examiner's Office, Emergency Preparedness, and the Assessment, Policy Development and Evaluation Unit.

The section will aim to provide the fellow with a broad range of experiences and growth opportunities, tailored to their interests and skill sets. The fellow will gain knowledge and skills in applied epidemiology and informatics.

In the first couple of months, the fellow can expect to participate in onboarding, training on data systems, and meeting with key staff to understand section workflows and routine operations. The section is committed to incorporating equity and social justice (ESJ) principles in all aspects of its work, consistent with the County's ESJ Strategic Plan. The fellow will be encouraged to participate in ESJ training opportunities and then incorporate these principles into practice.

The fellow will be immersed in the daily disease control and prevention activities of the section, including case and outbreak investigations. The Fellow will routinely participate in the section's daily morning report, a review of open investigations. After gaining experience in case and outbreak investigations, the fellow will be encouraged to identify in-depth projects of interest.

Day-to-day, the fellow will work with mentors and colleagues to:
- Develop analysis plans; conduct epidemiological and statistical analyses
- Respond to ad-hoc and outbreak-related data requests
- Assist in the conduct of data quality assurance
- Design and create data visualizations and dashboards
- Generate disease surveillance summaries and reports
- Expand our public health informatics capacity by design or improving infrastructures, tools, and methodologies for collecting communicable disease and immunizations data

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Describe Statistical and Data Analysis Support, Such as Databases, Software, and Surveillance Systems Available to the Fellow

Databases, surveillance systems, and data sets:
- Local communicable disease database for recording notifiable condition and outbreak reports (a SQL-server database)
- Washington State Disease Reporting System (an off-the-shelf product developed by Maven/Consilience)
- Washington State Electronic Lab Reporting System (WELRS)
- Local databases developed in REDCap to support COVID investigations and response
- Washington State system for COVID case investigation and contact tracing (CREST)
- Washington State Immunization Information System
- Syndromic surveillance database
- Collective Medical Technology
- Perinatal hepatitis B database
- Medicaid claims data
- Washington State hospital discharge data
- Washington State vital statistics data
- CDC NREVSS influenza testing data

Software
- SAS
- R
- SaTScan
- Tableau
- REDCap
- ArcGIS
- Microsoft SQL Server Management Studio
- Microsoft SQL Server Reporting Services
- Microsoft Access
- Gephi

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Projects

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Surveillance Activity Title: Communicable Disease Case and Outbreak Investigations

Surveillance Activity Description:
The fellow will be trained on conducting communicable disease case and outbreak investigations, including COVID, enteric and foodborne illnesses, viral hepatitis, vaccine-preventable diseases, zoonotic and emerging infections, and healthcare associated infections. The fellow will routinely participate in the section's daily huddles and update reports.

Surveillance Activity Objectives:
This project will aim to improve communicable disease surveillance at a local public health agency. The fellow would be expected to learn how various disease investigations are conducted, the information gathered, and how a cluster/outbreak is identified.

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The fellow would be expected to conduct outbreak surveillance summaries and communicate epidemiological trends to internal audiences. These would be conducted through statistical programs (R, SAS, SQL) and data visualization tools (Tableau, R).

Surveillance Activity Impact:
Enable Public Health - Seattle & King County to respond and identify emerging communicable disease threats.

Surveillance System Evaluation Title: Enhance COVID-19 Data Collection, Data Quality, and Reporting

Surveillance System Evaluation Description:
The fellow will analyze data from various data sources to describe the quality of COVID-19 reporting. These data sources include the Washington Disease Reporting System, data from electronic laboratory reporting, and syndromic surveillance data sources, as well as supplemental data collected in REDCap surveys. The fellow will assess completeness and timeliness of reporting by healthcare providers and laboratories, and will provide recommendations for improving surveillance. The fellow will also have the opportunity to create new databases (e.g., in REDCap) to track emerging concerns related to COVID, including but not limited to vaccine adverse events and school-based outbreaks.

Surveillance System Objectives:
The primary objective would be review reporting gaps - particularly, highlighting health disparities, timeliness of outbreak reporting, and timeliness of public health actions. The deliverables would be a systematic review of how the PHSKC surveillance systems are meeting core competencies on reporting and timeliness.

Surveillance System Impact:
The results of the work will add to advocacy for improvements to our surveillance systems, staffing, and funding to the group overall. The findings will also help change prioritization/focus of the team to key needs. The enhances made to our surveillance systems will also ensure that PHSKC is prepared to respond to future surges of COVID-19 in a timeliness and accurate manner.

Major Project Title: Analyze COVID-19 Data

Major Project Description:
The fellow will analyze data from the Washington Disease Reporting System to describe the epidemiology of COVID-19, and will identify special topics that are of interest to the public health community (e.g., reinfection, breakthrough cases, variants of concern, the epidemiology of COVID-19 infections among children, and outbreak summaries in healthcare or community settings). The fellow may create dashboards in Tableau to visualize the data and will summarize trends for internal and external audiences to help support resource allocation. A focus of these analyses will be to identify sociodemographic factors associated with the incidence or severity of COVID-19, to help guide allocation of resources and public health decision-making aimed at addressing health disparities.

Major Project Objectives:
Internal reports to public health leadership, disease investigation staff, epidemiologists and program managers. The fellow will develop or contribute to the development of public facing data dashboards highlighting trends. The primary objective would be to further disseminate new and meaningful data to internal and external audiences; provide data for policy decision making, risk assessment, and data transparency.
Major Project Impact:
As we continue with COVID-19 response, analyzing our trends and the disease impact to our community will be foundational to public policy decision making. The fellow will contribute to ongoing and new analyzes that will help shape the county's response to the pandemic.

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Additional Project #1 Title: Evaluation of Diagnosis and Treatment of Latent Tuberculosis Infection
Project #1 Type: Major Project

Project #1 Description:
In collaboration with the Tuberculosis Control Program, the fellow would collect and analyze data gathered through community healthcare organizations on diagnosis and treatment of latent tuberculosis infection (LTBI). The fellow will work with community healthcare organizations to develop a strategy to report needed data elements and will support implementation of the strategy. The fellow will map the data to a Microsoft Dynamics database and develop reports to both conduct quality assurance on the data and to explore opportunities to intervene in the care cascade from LTBI evaluation to treatment completion.

Project #1 Objectives and Expected Deliverables:
A report will be developed, and the findings will be shared back in presentations and infographics to the community healthcare organizations and their patient populations.

Project #1 Impact:
The findings of this project will help target future funding and recommendations for best practices on diagnosis and treatment of latent tuberculosis infection.

Additional Project #2 Title: Using Syndromic Surveillance Data to Conduct Routine Communicable Disease Surveillance
Project #2 Type: Surveillance Activity

Project #2 Description:
The CD-Imms Section uses Washington State's syndromic surveillance system to monitor trends in emergency department visits. 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 surveillance. The fellow will be trained on how to monitor syndromic surveillance data and respond to data requests, and will use the data to examine trends in COVID-19, influenza, and other diseases of public health importance. In addition, the fellow will improve on the current system of visualizing and reporting on the data by creating interactive dashboards using Tableau. Public health staff will use these visualizations to enhance outbreak detection and situational awareness. The fellow will also have the opportunity to examine how temporal trends in school absenteeism correspond with COVID-19 incidence by geography and demographic characteristics.

Project #2 Objectives and Expected Deliverables:
Create signals and alerts for communicable disease trends using the syndromic surveillance systems available to PHSKC. The fellow will create dashboards and reports to share with internal audiences.

Project #2 Impact:
This will provide an additional process for PHSKC to improve timeliness of identifying emerging public health trends of concern.

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Please Describe the Fellow's Anticipated Role in Preparedness and Response Efforts – Include Activities and Time Allocation (Required Competency of Fellowship)

The fellow will participate in preparedness and response efforts as part of the Communicable Disease Epidemiology & Immunizations (CD-Imms) section. CD-Imms is responsible for monitoring and responding to communicable disease events as well as biological emergencies and non-communicable disease related acute conditions that require investigation and coordination of healthcare system responses (e.g., carbon monoxide poisoning, illness after natural disaster, biological terrorism, severe weather events). Over the last two years, the section has responded to measles, hepatitis A, COVID-19 and severe weather events. The CD-Imms section works closely with Public Health's Preparedness Section to respond to and manage these events. The fellow will participate in Incident Command System (ICS) and National Incident Management System (NIMS) trainings. The fellow will also have the opportunity to plan for how to coordinate shelter surveillance in the event of an emergency, including developing web-based data collection instruments in REDCap, and creating accompanying dashboards in Tableau to support disaster surveillance and response. The fellow will have opportunities to collaborate with the Emergency Medical Services (EMS) division in response to smoke, cold and heat related events. Time allocation will vary depending on activation of our command center - though the fellow should expect a minimum of 4-10 hours a month related to preparedness planning.

Please Describe the Fellow's Anticipated Role in Cluster and Outbreak Investigations – Include Activities and Time Allocation (Required Competency of Fellowship)

A core component of the fellowship will include participating in cluster and outbreak investigations; collecting, analyzing and summarizing data. The fellow would have opportunities to conduct case investigations, but the primary role would be analytic focused. As our team covers 60+ reported conditions, the fellow should anticipate spending 10-20 hours a week on cluster/outbreak investigation related activities.

Please Describe the Fellow's Anticipated Role in the COVID-19 Response – Include Activities and Time Allocation

The fellow will work on enhancing the COVID-19 surveillance systems; particularly as the current COVID-19 response and mitigation strategies adapt over the next two years. We anticipate that new data systems will need to be created, new data sources will become available, and future policies will need to be evaluated. The fellow would contribute to the ongoing shifts as the county and the nation transition from a pandemic response to an endemic/seasonal response.

Please Describe Opportunities for Fellows to Work in Health Equity as well as Incorporating Diversity, Equity, and Inclusion into their Work

Public Health - Seattle & King County declared racism as a public health crisis in May 2020. Before and after this declaration, the CD-Epi section holds multiple caucuses, anti-racism workgroups and seminars, as well as participates with numerous community groups to ensure data and PH practices is responsive to community needs. As a fellow within the Analytics & Informatics team, the fellow will conduct analyses centered around addressing health disparities. The fellow will also contribute to ongoing advocacy for enhancements to surveillance systems to ensure better data collection.