ID: 59714140
Infectious Diseases, Infectious Diseases - COVID-19 - Host Site Description
Kent County Health Department

Assignment Location: Grand Rapids, US-MI
Kent County Health Department
Administration/Communicable Disease Section

Primary Mentor: Karla Black, BS Chemistry, BS Biology, PhD Molecular Virology
Deputy Administrative Health Officer
Kent County Health Department

Secondary Mentor: Julie Payne, MPH
Public Health Epidemiologist
Kent County Health Department

Work Environment
Hybrid

Assignment Description

The fellow will work closely with the Communicable Disease Epidemiologist, Julie Payne. The Communicable Disease Unit processes cases reported to the Kent County Health Department from the Michigan Communicable Disease List. The Unit is comprised of three communicable disease RNs and one communicable disease epidemiologist, who work collaboratively on disease investigations.

The fellow will assist the Communicable Disease Epidemiologist with surveillance activities, reports and analysis which must be conducted on certain diseases at certain times of the year and ad hoc. For instance, the Communicable Disease Epidemiologist, released STEC Surveillance Reports, a Respiratory Surveillance Report (Flu, RSV, Covid), and a Lyme Disease Surveillance Report in response to rising cases in Kent County. A report analyzing the leading diseases of concern in our county is produced annually.

We have a project that we would like the fellow to work on involving in our communicable disease data dashboard. We anticipate that the job could be accomplished in a hybrid fashion at home or work. Their day-to-day activities would include coding with Python, R, SAS or other data management software, and using Power Bi for data visualizations. The fellow will participate in outbreak investigations as needs arise, and they will be included in other in-person and virtual health department meetings.

Other work assignments might involve meetings at work or virtual meetings. Some outbreak work can occur at home, some may need to occur in the office if any mentoring is needed.

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

The fellow will be provided with all necessary software to conduct their work. We have the Microsoft Office Suite, Power Bi, Epi Info, Arc GIS, Ucinet, and IBM SPPS Software. The fellow will have access to the Michigan Disease Surveillance System and the Michigan Syndromic Surveillance System. There may be other data systems that could be accessed such as the Michigan Care Improvement Registry or MI Celerity Drug Poisoning data systems as they become necessary for our project.

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The fellow will have access to our Information Technology Staff that can provide support at home or work. We have two Information Technology Departments, one at the Kent County Health Department and a larger central office Information Technology Department at the County's central office in downtown Grand Rapids, Michigan. Both offices have a help desk and the ability to provide additional support for projects.

Projects

Surveillance Activity Title: Improving Local Surveillance and Response with Spatial Epidemiology

Surveillance Activity Description:
Spatial epidemiology refers to the analysis and description of variations in diseases/conditions across geographic locations. According to WHO, "the health of humans, domestic and wild animals, plants, and the wider environment (including Ecosystems) are closely linked and interdependent".

Divisions within the Kent County Health Department collect, and store surveillance data related to their respective division goals. In this surveillance activity project, the fellow will learn and assess GIS mapping with surveillance data from environment/behavioral/other health indicators to better understand and predict disease outbreaks in the community.

Lessons learned from the project will not only inform the development of advanced GIS mapping in Kent County, but also will support further intradepartmental data interoperability, ultimately leading to more collaboration across health department divisions and timelier public health response.

Surveillance Activity Objectives:
Objective 1: The fellow will become familiar with spatial epidemiology methods and their application in local public health surveillance.

Deliverable 1a: The fellow will conduct a written literature review of spatial epidemiology applications in local public health.

Deliverable 1b: The fellow will produce a written list of communicable diseases most appropriate for GIS mapping in Kent County, with recommendations for their respective visualizations.

Deliverable 1c: The fellow will produce GIS maps for each recommended disease/condition (goal of at least 5 maps) to be added to the fellow's main project disease surveillance dashboard.

Surveillance Activity Impact:
The application of GIS mapping and other spatial epidemiological methods will promote the transition of surveillance data into actionable insight in the Kent County Health Department. In addition, the availability of GIS maps will enhance collaboration across health department divisions by highlighting relationships across diseases and conditions across the county, as described in the WHO's One Health framework.

Surveillance System Evaluation Title: Survey of Kent County Health Care Provider Community to Evaluate Data Management Software for Data Visualizations

Surveillance System Evaluation Description:
The surveillance system evaluation will not evaluate the Michigan Disease Surveillance System. The project has already been undertaken by new staff working on data modernization efforts.

Instead, the fellow will evaluate their own data automation and dashboarding deliverables as extensions of the surveillance system, in the context of the end goal of providing better communicable disease data to Kent County staff and a subset of health care provider community that typically receives report.

We anticipate that the fellow will find gaps in MDSS useability and timeliness for local health department stakeholders, and we anticipate that the fellow's data automation and dashboarding deliverables may help fill those gaps. If so, the fellow's deliverables may be generalized for use by other local health departments in Michigan.

The project will meet the priority of the Data Modernization Initiative by helping Kent County accelerate data into action. Additionally, it meets the goal of modernization of the public health work force by bringing people to our department that have outstanding data skills that can share them with local health department staff.

The intern will refer to the CDC Guidelines for Evaluation of Surveillance Systems. Klaucke, M.D.J et. al CDC MMWR, 1988.

Surveillance System Objectives:
Objective 1: Assess MDSS with a particular focus on local health department useability and acceptability.
Deliverable 1a: Produce a written report describing strengths and barriers of the MDSS, with recommendations for improvement.

Objective 2: Assess the Kent County data dashboarding and automation tools' ability to fill MDSS gaps.

Deliverable 2a: Give a presentation of Kent County dashboarding and automation tools to data end-users, i.e., internal staff, local conferences.

Deliverable 2b: Conduct a survey to be filled out by key community stakeholders to provide feedback on the data dashboarding and automation tools. The survey will address the simplicity, flexibility, acceptability, sensitivity, and representativeness of the tools in the context of the local community.

Surveillance System Impact:
The dashboarding and data automation tools are expected to help address gaps in the surveillance of diseases in Michigan by improving local health department capability to provide data expediently to the provider community for data driven decision making.

These work products support Kent County's Capability 6 of CDCs Public Health Emergency Preparedness and Response Capabilities: Information Sharing (CDC, 2018). Information sharing is the ability to exchange health-related information and situational awareness between levels of government and private stakeholders. This involves routine information sharing with, and alerting of, public health stakeholders in preparation and response to communicable disease events of importance.

Specifically, the automated data management pipeline and disease report have already demonstrated a significant potential decrease in event reporting time by eliminating manual data management overhead. Potential disease events include unusual clusters of illness which threaten closure of institutional settings, heightened disease burden on specific populations, or other illness burdens which may overwhelm available resources.

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Major Project Title: Supporting Data-driven Decision-making in Public Health through the use of Data Automation and Dashboarding Deliverables

Major Project Description:
Public health surveillance is the "ongoing systematic collection, analysis, essential to planning, implementation and evaluation of public health practice" (CDC,2014).

This proposed project focuses on the analysis and interpretation of surveillance data collected from the statewide surveillance system MDSS(MDSS). MDSS is a web-based system that allows for the electronic capture of disease tracking and case management of communicable disease data. Physician and laboratory records can be reported directly into the system.

The fellow will explore new strategies consistent with CDC's Public Health Data Strategy goal 2 to improve access to analytic and automated solutions to support public health investigations, and goal 3 to effectively visualize and share insights to inform public health action. The fellow will explore local-level solutions in data automation, processing, and visualization through tools such as Power BI, Tableau, Python, R, SAS, etc.

This project will serve not only as the fellow's main project, but also as a foundation onto which the fellow's other projects will build.

This is a continuation of work completed by a former graduate intern at the Kent County Health Department. The intern responded to a proposal by the Communicable Disease Epidemiologist to automate her data duties with the end goal of creating a Power Bi data dashboard. A graduate MPH epidemiology student with a data science background responded. She created an automated data management tool that queries MDSS and preprocesses data, effectively saving the Communicable Disease Epidemiologist 10-12 hours per month of manual, repetitive data management during the monthly communicable disease reporting process. The graduate intern also developed a prototype of a front-facing data dashboard for rapid delivery of information to stakeholders in the community.

The tool, started by the graduate intern, have the potential to deliver significant cost-savings to the Communicable Disease Unit in Kent County yet require significantly more development before they can be effectively implemented. The incoming CSTE fellow will continue to develop these deliverables before they can be development before they can be effectively implemented. The incoming CSTE fellow will continue to develop these deliverables and similar solutions to enhance buy-in in the county health department and advance the county on goals 2 and 3 of the CDC Data Strategy.

The Kent County Health Department wishes to continue their relationship with this former graduate intern, who is graduating in Spring 2024 and who has applied to be a CSTE fellow.

Major Project Objectives:
Objective 1: Complete a website-ready data dashboard to deliver surveillance insights to community stakeholders.

Deliverable 1a: Write surveillance data processing code automating demographic breakdowns e.g., age, sex, race, and ethnicity (if the numbers are large enough) of the top 20 diseases of concern in Kent County

Deliverable 1b: Add a page in the data dashboard with visualizations of the top 20 diseases of concern by demographic variables previously described.

Deliverable 1c: Produce text on the website that briefly describes how cases can change status throughout a month's time from suspect to confirmed in a particular disease category.

Deliverable 1d: Produce a plain language report describing the data in the dashboard, including case definitions and how cases change status throughout a month's time in a particular disease category.

Deliverable 1e: Write an abstract, and produce a report with a background, methods, results, and a conclusion for potential publication. The information contained in the report will be utilized for a presentation at a CSTE conference.

Additional potential project tasks: Update the Foodborne Epi-Info program and collaborating with health department epidemiologist in other units to incorporate their data indicators into the dashboard.

Major Project Impact:
Kent County will publish a professional, public-ready data dashboard on its website to quickly share insights with stakeholders to inform public health mitigation strategies. Data reporting efficacy will be improved, with more health department time and resources becoming available to better serve the community.

Additional Project #1 Title: Study of Syndromic Indicators of Disease in Local Public Health
Project #1 Type: Surveillance Activity

Project #1 Description:
The county has established relationships with two local universities to conduct county wastewater surveillance in partnership with the statewide Wastewater Evaluation and Reporting Network in Michigan. Norovirus and RSV were recently added as surveillance targets under the current funding. This newly available data presents an exciting opportunity to research wastewater surveillance as indicators for disease activity at the local level.

Project #1 Objectives and Expected Deliverables:
Objective 1: Assess the relationship between pathogen detection in wastewater and disease activity within the detection-area zip codes.
Deliverable 1a: Written report describing the viability of wastewater surveillance as an indicator for disease activity.
Deliverable 1b: Inclusion of viable indicators on the fellow's main project disease surveillance dashboard.

Project #1 Impact:
This project will help accelerate data into action by automatically providing data to the Kent County community to gain a better understanding of unknown disease activity and implement infection control precautions.

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

We currently have an emergency preparedness team called the WATCH Team that meets monthly and ad hoc. The fellow will be able to attend meetings every month if they are interested. These meetings are typically an hour long. The fellow will be able to participate in Emergency Response training exercises depending on interest level as time allows. They will also be exposed to our FEMA training materials and go through FEMA training modules to get certified.

The health department expects that the fellow's work products will support emergency preparedness by facilitating faster reporting of and response to disease events which threaten the closure of institutions and overwhelm available county resources. The fellow will present these deliverables to the WATCH Team, which may lead to further collaboration in this area.

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

The Fellow will be able to participate in our cluster and outbreak investigations. Kent County often has a variety of clusters and outbreaks occurring at any given time due to the size of our population. Our Communicable Disease RNs often investigate clusters of two or more similar illnesses that are associated with a common exposure but have no identifiable food, animal, venue, or experience in common.

The Communicable Disease Epidemiologist anticipates there may be at least one or more larger scale food or waterborne outbreaks while they are here at the Health Department that they can be involved in. They can be involved in everything from questionnaire development and processing of data to running odds and risks ratios and tests of statistical significance. The Communicable Disease Epidemiologist can teach the fellow how to write an epidemiological paper as she has written an article for the MMWR. Time allocation can be determined. We would want the fellow to gain the knowledge from these experiences but balance that with their primary fellowship deliverable dashboard duties.

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

The fellow will have the opportunity to learn about the Covid-19 response. We still have a few remaining teams from our Covid-19 response. We still have a Kent County Covid School Team and a Kent County Covid Long-Term Care Team that the intern can meet with and learn what they are doing. I anticipate meeting with each team would take less an hour for each team. We can discuss other learning opportunities they can participate in as they arise.

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

There are opportunities for the fellow to work on our Kent County Health Equity Council. We also have a Department of Diversity, Equity and Inclusion. There are regular Cultural Insight council In-services that the fellow can attend. The state also sponsors a number of virtual and in-person events.