Hamilton County Public Health

Assignment location:
Cincinnati, OH

Hamilton County Public Health
Epidemiology

Primary Mentor: Anne Arble, MPH
Director of Epidemiology
Hamilton County Public Health

Secondary Mentor: Sara Cannon, MPH
Senior Epidemiologist
Hamilton County Public Health

Work Environment: Hybrid

Assignment Description

Agency Description:
Hamilton County Public Health (HCPH) is a diverse, inclusive, data driven agency with a commitment to protecting and improving the health of our community through education, service, surveillance, and collaboration. HCPH is composed of two branches: Community Health Services and Environmental Health Services. The epidemiology division is a part of Community Health Services. HCPH’s Health Commissioner, Greg Kesterman, oversees both branches of the agency. Jackie Lindner, MPH, BSN, RN is the Assistant Health Commissioner leading the Community Health Services branch. Anne Arble, MPH is the Director of Epidemiology responsible for oversight of all program areas within the division. These programs consist of infectious disease surveillance, injury surveillance, and maternal and child health. Sara Cannon, MPH, a-IPC, is the Senior Epidemiologist and leads the injury surveillance program. Anne and Sara will provide administrative and technical support to the project.

HCPH’s commitment to innovation includes staying abreast of advancing technologies and communication systems. The Epidemiology Division continues to pursue opportunities to improve program processes, surveillance, reports, and dissemination to community health partners. One aspect of process improvement includes support for employee growth. The division encourages Epidemiologists to learn new skills and technologies. The division provides training for certifications in analytical programs such as SAS and Tableau and encourages collaboration between the three program
Once a month the division hosts an all staff meeting to discuss each program area’s projects, successes, and opportunities for growth.

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

HCPH utilizes several software programs for statistical and data analysis, including SAS, Tableau, ArcGIS, REDCap, and Excel. The fellow will have access to hospital data from regional hospitals and health partners including electronic medical records (EMR) and emergency department surveillance data from EpiCenter. They will also have data from law enforcement, first response agencies, and coroner’s office. Additional data are obtained from the state via the Ohio Disease Reporting System (ODRS). Lab data is reported to our agency via HCCO.

The fellow would have access to each of these tools to conduct their daily work. They would work in a collaborative environment with other Epidemiologists who can provide assistance and support if/when needed. If needed we will provide official training in SAS and Tableau, as well as python or SQL (dependent upon several factors, such as integration of languages with other programs already in use).

Any additional information about the placement:

The Epidemiology Division space consists of one large room with twelve cubicles, two smaller offices, and a storage/specimen room. After a probationary period, HCPH offers a hybrid work schedule. Three days a week, employees are required to work in office; two days a week employees can request to work from home if they prefer to do so. Each division manages their own work from home schedule.

Describe the Preferred Background and Skills the Ideal Fellow For This Site Would Have:

The ideal fellow for this project would have a strong background in the collection and statistical analysis of public health data. Familiarity with data analytics using SAS and Tableau would be ideal; use of SQL and/or other data management software would be helpful.

Projects

Project 1 Title: Establishing a Quantitative and Qualitative Framework for Overdose Spike Alerting

Project objectives and expected deliverables: The fellow’s primary project will be the research and development of a new overdose surveillance spike alert system. Since HCPH began the overdose surveillance program in 2015 our methods of data collection and reporting have changed, but our spike alert system has not been updated to account for these differences. Our current spike alert system is based on Poisson regression analysis, where counts flag an alert if above the 99th percentile. This system worked well when we were seeing higher incidence of overdose, but as incidence has reduced over time we are seeing more flags from exceeding this threshold. These flags are not truly indicative of spikes in overdoses, they are false alarms due to the fluctuation in small overall total counts. The main goal of this project will be to research different methods of alerting and testing them to determine
which will provide the most accuracy. Our team has conducted preliminary research and analysis on improving our spike alert system. The most promising method for quality improvement we have found is basing the threshold on greater than 2 standard deviations from the mean. We also want to create a consistent and streamlined process for disseminating spike alerts to both internal and external partners. We have identified some inconsistencies in our current alerting process we would like to address. Our goal is to establish a new process that will facilitate more effective and timely communication between key stakeholders as well as for dissemination of information to the public.

Step-wise deliverables throughout project:

- Detailed analysis of current spike alert system and current data sources
- Documented research of new and different approaches to identifying spike alerts within the greater public health community
- Development of a statistical analysis plan to test possible methods identified through this research
- Determine methods for inclusion of qualitative data in spike alerts

Final deliverables at project completion:

- Completed spike alert surveillance system in place, updated to the most accurate method for our data given the current scope/climate/etc
- Creation of a core team of partners for spike alert response who will review alerts and determine appropriate next steps based on a defined process
- Defined process and outlined procedures for response team mobilization after a spike alert is identified
  - Who gets notified and how (individuals, which partner organizations, who is their representative)?
  - How do we ensure the creation and dissemination of messaging is equitable?
  - How are next steps determined?
  - How is appropriate messaging developed and distributed?
  - Who is responsible for information dissemination?
  - Is there a review process post alert to identify areas of improvement?
  - Who organizes it?
  - Who is involved (individuals, organization representatives, etc)?
  - What questions are asked? Who is responsible for making changes?
  - Who is responsible for documenting those changing?
  - Who is responsible for ensuring they are completed in a timely manner?

*Expected public health impact from this project:* There are a number of anticipated public health impacts that may result from this project. Creating a new spike alert system will increase the accuracy of identifying true alerts, which will in turn reduce alert fatigue among regional health departments and community health partners. Knowing that any alert issued is a true alert and cause for action will inspire mobilization among regional health and community outreach partners, fostering more robust communication and increased engagement between these partners in response to the alert. An anticipated benefit from this increased communication and engagement is the ability to provide
qualitative alerts. This would arise from engaging partners in the development of more efficient and consistent messaging and a formal dissemination process. Developing this standard practice will increase our ability to inform the public with better and more accurate information when there is heightened risk to the community. Additionally, better engagement between partners will allow us to add new or more detailed preliminary data sources, possibly including more detailed EOS data as well as new or more informative lab data. The addition of new data sources would increase our ability to identify novel and emerging substances.

Project 2 Title: Developing a Surveillance Process to Incorporate Analysis of EMS/Healthcare Linked Dataset

Project objectives and expected deliverables: This project will leverage existing collaborations between HCPH, EMS providers, and healthcare facilities to access more detailed data and develop an enhanced linked dataset. We will use this dataset to provide epidemiological support through management, analysis, and reporting of the data. We will identify key metrics to develop new surveillance dashboards in Tableau (either internal, public, or both) to report findings to health partners. Additional support will be provided to identify ways this data could be incorporated into internal and/or external publications.

Anticipated deliverables:

- Data analysis plan for newly shared data
- Development of a linked dataset incorporating information from both EMS providers and healthcare facilities
- Expanded capability to monitor for novel and emerging substances
- Dashboard(s) reporting key metrics to inform evidence-based decisions and program strategies
- Analytic data products with the potential for publication

Expected public health impact from this project: Surveillance activities utilizing the enhanced EMS/Healthcare linked dataset will allow HCPH to provide more detailed information to both internal and external partners. This data will increase our ability to make educated, evidence-based decisions and recommendations to inform program strategies. Our increased understanding of the interaction between overdose cases, EMS response, and ED/hospital arrival and treatment will allow us to identify both strengths and gaps that impact patient outcomes. Ultimately, we hope this project will help improve the care individuals experiencing overdose receive.