ID: 48561562
Infectious Diseases - Host Site Description
Massachusetts Department of Public Health

Assignment Location: Boston, US-MA
Massachusetts Department of Public Health
Office of Health Care Strategy and Planning

Primary Mentor: Chiara S. Moore, MPH
Assistant Director of Health Care Strategy and Planning
Office of Health Care Strategy and Planning

Secondary Mentor: Elizabeth Mello, Ph.D., MPH, RN-BC
Preparedness Data Systems Epidemiologist/ Epidemiologist II
Office of Health Care Strategy and Planning

Work Environment
Hybrid

Assignment Description

The fellow will be a member of the Office of Health Care Strategy and Planning (OHCSP) team, in which Mrs. Moore and Dr. Fillo supervise. The fellow will also work closely with the Office of Preparedness and Emergency Management staff. OHCSP Administration and Finance will process all administrative and financial documents and funds related to the CSTE AEF fellowship. OHCSP leadership provides guidance to guides all staff regarding telework, office space, and required training. Dr. Fillo will work with OHCSP supervisors to facilitate the onboarding process. OHCSP staff will facilitate providing the fellow with a laptop computer, iPhone, and access to MA DPH email, VPN, Microsoft TEAMS, the cloud-based SAS Enterprise System, and other necessary software, servers, and appropriate data sources.

The fellow will work with their mentors to create a schedule and timeline for the main projects. The fellow's weekly schedule will include dedicated time to focus on fellowship projects, attend regularly scheduled meetings within MA DPH and with external partners, and protected professional development time.

The fellow will meet weekly with their mentors throughout the fellowship. The fellow will also actively participate in routine ongoing meetings such as our hospital capacity weekly check-ins, weekly health care workforce center meetings, monthly meetings on hospital data modernization, and more. Externally, the fellow will attend meetings with our regional Health and Medical Coordinating Coalitions (HMCC) and other stakeholders described in the partnerships section as appropriate. The fellow will be invited to attend monthly in-person OHCSP meetings and virtual MA DPH all-staff and Commissioner's Office meetings. Additional virtual and in-person chats foster community development in the hybrid work environment. Based on their interests, the fellow may also attend additional meetings with internal and external partners, as described above in "Descriptions of Partnerships and Collaborative Efforts."

This position will have different daily responsibilities based on needs. Days will include data cleaning and analysis in SAS Enterprise, outputting and formatting data for a variety of audiences, conducting literature reviews for best practices in health system delivery, communicating findings to various stakeholders using appropriate modes of communication (data briefs, presentations, dashboards), and peer learning with other early career epidemiologists on the team.

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

Using SAS Enterprise, Snowflake, and Tableau, this fellow will develop processes to uniquely connect many data sets at the facility level to represent health system capacity and utilization in near real time.

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MA DPH uses Snowflake to host its Enterprise Data Platform to ingest, store, and share data across the agency. Fellows with an interest in informatics can be given access to help load and manage data in Snowflake. They can also help design workflows that integrate multiple data sets and clean data in Snowflake.

The fellow will use the health care facility licensure data as their primary source to build additional data connections. Hospital capacity data will be connected through MA's automated hospital capacity reporting platform. Nursing home data can be connected from CDC's National Healthcare Safety Network, CMS's Minimum Data Set, and associated reports. Ambulance data can be connected from eLX (ambulance licensure) and the Massachusetts Ambulance Trip Record Information System (MATRIS). Additional data from Massachusetts Syndromic Surveillance, hospital claims data, Emergency Department boarding, and the MA trauma registry may be available. The fellow will also be invited to propose additional data sets or health care settings that may be useful to incorporate.

The fellow will be provided with an account to use the cloud-based SAS Enterprise system. MA DPH offers several SAS training courses (for example, SAS Programming 2: Data Manipulation Techniques, SAS Macro Language 1: Essentials, and Multivariate Statistics for understanding complex data) on an ongoing basis. Besides Microsoft 365 software the fellow will have access to Tableau, PowerBI, and ArcGIS - with additional software available based on demonstrated need. MA DPH has several resource groups that the fellow will have access to, including a Community of Practice (CoP) for epidemiologists, a SAS Users group, a Tableau learning cohort, and a GIS Users group.

Additionally, there is a Boston area SAS users group that hosts free quarterly meetings.

Projects

Surveillance Activity Title: Syndromic Surveillance to Inform Health System Staffing

Surveillance Activity Description:
The fellow will monitor hospital utilization using near real-time data from syndromic surveillance and WebEOC. Syndromic surveillance will inform why patients seek care in the ED and the percentage admitted for inpatient care. Real-time monitoring is crucial in respiratory illness season to monitor the impact of virus circulation on care -seeking in the Commonwealth. WebEOC data includes staffed and occupied beds by service line. Analyzing these two sources together will support recommendations for load balancing throughout health service regions and allocating supportive staffing resources to utilize existing licensed physical space fully. The fellow will develop methodology proposals as to how syndromic surveillance can be used as a leading indicator of hospital utilization and support the development of respiratory illness planning and response (such as developing criteria for recommending outpatient management centers that can be co-located at hospitals to prevent ED overcrowding and support home-based symptom management as appropriate).

Surveillance Activity Objectives:
Objective: Using near real-time data to develop recommendations for and implement acute care hospital surveillance during respiratory illness surges.

Deliverables: The fellow will report every week throughout respiratory illness season on ED utilization patterns and changes, as well as hospital staffing and availability by service line. These (reports, data, or findings) will be presented internally at the DPH health system capacity meeting. The fellow will also recommend criteria for implementing additional outpatient management, deployment of supplemental staffing resources, and waiver of prior authorization for discharge to post-acute settings to ameliorate prior observed strains on hospital capacity.

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Surveillance Activity Impact:
This project will support the statewide response to respiratory illness surges. This project will facilitate hospital resource management so that hospitals are not overburdened and overcrowded during respiratory illness surges, and can continue to provide critical care.

Surveillance System Evaluation Title: Evaluating the Accuracy of Syndromic Surveillance in Massachusetts

Surveillance System Evaluation Description:
The fellow will develop and execute an evaluation plan that compares key metrics from the Massachusetts Syndromic Surveillance system (SyS) - which provides timely data on Emergency Department Visits - to the Case Mix Emergency Discharge Data - which is a cleaner, but less timely data source. They will evaluate the similarities and differences between key metrics in these two data sources and propose changes to SyS practices to increase the validity of these key metrics. Metrics could include: average daily census, average length of stay (for discharges and admissions), percent of visits admitted, and common reasons for visits.

Surveillance System Objectives:
Objective: Compare and evaluate key metrics between two data sets: Syndromic Surveillance and Case Mix Hospital Discharge Data.
Deliverables: The fellow will submit an evaluation plan. They will conduct the evaluation and prepare a report of findings. The report will include recommendations for improving the validity of the Syndromic Surveillance data.

Surveillance System Impact:
This project will support the state in developing timely and accurate reporting of ED capacity, operations, and common conditions to facilitate improved health care planning.

Major Project Title: Preparing for Climate Risks to Healthcare Facilities

Major Project Description:
The fellow with help the Office of Preparedness and Emergency Management predict and prepare for climate risks, such as wildfires and floods, to healthcare facilities in Massachusetts and the potential disruption of care. We are interested in the healthcare landscape of high-risk areas and what the impact could be if a facility needed to be closed or evacuated. We are also interested in setting up some data streams and resources for tracking ongoing event and their proximity to healthcare facilities.

Major Project Objectives:
Objective: The objective of this project is twofold. First, the fellow will compile a report on the predicted climate risks to the healthcare facilities in Massachusetts, highlighting particular areas that are vulnerable to being left with out essential services. Second, the fellow will find and establish connections to data sources that will allow for the monitoring of these severe events and their proximity to healthcare facilities. The fellow will develop an interactive tool, such as a dashboard or web map, to do this.
Deliverable:

- A report with maps that outline climate risks to MA healthcare facilities, highlighting area that could be left without services if there was a disruption.
- An interactive tool that allows for the tracking of wildfires and floods and their proximity to healthcare facilities.

Major Project Impact:
With this project the fellow's research will inform prepared planning for severe weather and they will develop tools that will be used within OPEM and disseminated to partners during severe events.

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Additional Project #1 Title: Infection Control Assessment and Response (ICAR)
Project #1 Type: Surveillance Activity

Project #1 Description:
The fellow will go onsite to a skilled nursing facility or other healthcare facility with a public health nurse and epidemiologist. They will observe infection control practices in the facility, guided by a standardized CDC assessment tool. They will observe things like hand hygiene, PPE use, environmental cleaning and disinfection, wound care, point of care (POC) blood glucose testing, vaccine storage, sink hygiene, etc. and provide feedback and coaching to the facility staff. They will review with administrators and facility infection preventionists the facility's infection prevention and control policies and practices. They will collaboratively prepare a comprehensive report to provide to facility leadership with resources and recommendations for improvement.

Project #1 Objectives and Expected Deliverables:
Objective: By participating in an ICAR, the fellow will gain real life experience in infection control and prevention.
Deliverable: The fellow will collaboratively develop a comprehensive report for facility leadership, which includes resources and recommendations for improvement

Project #1 Impact:
Through this project the fellow will support DPH in their prevention of healthcare associated infection outbreaks.

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

The fellow will be co-mentored by the Office of Preparedness and Emergency Management (OPEM), and as such, emergency preparedness and response will be a key part of their role. The primary project for this section will be streamlining and automating the reporting from OPEM's FRISBEE tool, a tool where hospitals can self-report facility impact during events such as severe weather and integrate it with other data sources.

Additionally, the fellow will assist in OPEM's analysis of their COVID-19 test distribution. OPEM manages an emergency warehouse that distributes COVID-19 tests during periods of high respiratory illness. The OPEM team would like an analysis of requests for these tests and their association with other data to help us better predict need and stock the warehouse.

Further, this fellow will support the OPEM Data Team during the Boston Marathon, severe storms, and other responses to ensure timely reporting and status updates.

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

In the OHCSP, we have a team of public health nurses who closely collaborate with our Healthcare Associated Infection team and support our Emergency Assistance shelter system. They investigate clusters and outbreaks within health care settings and among families experiencing housing insecurity - including migrants to Massachusetts. The fellow will have the opportunity to observe and participate in at least one investigation. This can include data entry and phone follow up with facility administrators or infection preventionists, as well as on-site investigations if the fellow is available and interested. They will be a core team member as part of the respiratory illness season monitoring and response team.