Host site: State of New Hampshire Department of Health and Human Services, Division of Public Health Services

Assignment Location: Concord, NH

Primary Mentor: Chiahui Chawla, M.S./M.A

Secondary Mentor: Katrina Hansen, MPH

Agency Description:

The New Hampshire (NH) Division of Public Health Services (DPHS) is part of the Department of Health and Human Services (DHHS), which serves as the main health department for the state. NH DPHS is a responsive, expert leadership organization with core values of leadership, equity, excellence, collaboration and accountability that protects, promotes and improves the health and the well-being of all people in New Hampshire. The services NH DPHS provide include community services, infectious disease control, public and environment health protection, public health system and policy, laboratory testing, health data collection and statistics, and state epidemiology. DPHS uses subject matter expertise, technical tools and assistance, and resources based on science and best public health practice to meet the needs of our residents. DPHS believes that the division staff are the greatest resource and recognize each other’s skill, competence, and unique contributions. We treat each other with respect and understand that our individual diversity creates a stronger organization. As stewards of state and federal funds, we carry out our work using evidence-based, cost-effective methods to ensure resources are used effectively and efficiently to improve health outcomes. Our work depends on collaboration between our many public health system partners, both internal and external. The APHIF Fellow will be working primarily with two DPHS bureaus, the Bureau of Public Health Statistics and Informatics (BPHSI) and the Bureau of Infectious Disease Control (BIDC). Within BIDC the Fellow will be situated in our Infectious Disease Surveillance Section (IDSS), which conducts surveillance and investigation of infectious disease and is the home of NH’s traditional reportable disease system as well as syndromic surveillance systems. DPHS co-leads the Enterprise Business Intelligence (EBI) in the department which is a high priority to enhance the information and data system and governance.

Assignment Description:

The prospective APHIF Fellow would be organizationally placed in DPHS’s BPHSI, our Informatics Bureau, and would work closely with colleagues in BIDC, our Bureau of Infectious Disease Control, particularly in the Infectious Disease Surveillance Section (IDSS). Due to this dual placement, they would interact with colleagues who are both Informatics and Epidemiology-focused, which will provide a helpful set of perspectives for their training. They would receive Informatics training and provide project support in
both settings, because both BPHSI and IDSS staff participate in activities such as system testing, provider onboarding, and data quality monitoring. The Fellow will conduct Informatics activities specific to their projects, such as onboarding medical providers, monitoring the quality of new and established data feeds, and testing data system setup and function. They will also work on projects involving data sharing with partners, such as CDC’s NSSP and community partners. In addition to project work, the Fellow would participate in meetings specific to their work, such as technical calls with colleagues and external partners who submit data to NH, as well as DPHS and Bureau meetings where they can interact more generally with colleagues and learn about work in a State health department. The Fellow would also interact with their Mentors to design and implement their training and work plan. Finally, the Fellow would have access to additional training opportunities, such as online training via Coursera and State trainings.

Preferred Background & Skills:

The ideal Fellow would have informatics training and experience, including Health Level Seven (HL7) Standards and ELR. They would be trained or interested in Data Science, Syndromic Surveillance, and Infectious Disease. Training in Epidemiology and/or R analytical software for health statistics and data analysis would be beneficial as well.

What can the fellow expect to gain from 2 years at this host site?

At the end of 2 years, the Fellow will be experienced in ELR, Syndromic Surveillance, data analysis and reporting; have a greater understanding of Data Science and Governance, and Syndromic Surveillance, ELR and EBI data; and have greater hands-on experience with Health Level Seven (HL7) formatting and validation, COVID-19 and Infectious Disease, Epidemiology, statistics analysis and reporting, and informatics in general.

Potential Projects include:

*Host sites have listed up to 5 projects*

**Project 1: Syndromic Surveillance Systems and Activities**

IDSS’s Syndromic Surveillance (SyS) Project Manager (PM) has developed and managed our SyS systems for 20 years. As he transitions to retirement, we are planning for the sustainability of this program. The APHIF Fellow would be an ideal candidate to learn and conduct SyS Informatics activities. This would provide excellent training as well as the opportunity for the Fellow to meaningfully contribute to the growth and strategic direction of NH’s SyS program. Objectives 1) Learn current SyS systems, activities, protocols, and procedures from the SyS PM. The Fellow will shadow the SyS PM and use documentation created by them to learn the range of activities conducted, become familiar with the systems used, and connect with relevant contacts. The Fellow will review existing documentation regarding SyS tasks and
ensure that documentation is sufficient for performing required tasks.  2) Conduct SyS informatics tasks. As the Fellow becomes comfortable with SyS tasks, they will work with the PM, as well as BPHSI and IDSS managers, to transition into a lead role for certain tasks. The best fit tasks will depend on the Fellow’s background and interests, but options include onboarding providers who send electronic case and laboratory data to our SyS systems, working with IT partners to improve SyS system design and implementation, and conducting system testing. The Fellow will work closely with individuals who take on other components of the NH SyS program during this staffing transition. 3) Implement projects recommended by the SyS PM. The SyS PM has documented a number of recommendations for improvement to NH’s SyS systems. Once comfortable with the current state of the SyS program, the Fellow will review these recommendations and identify priority recommendations. The Fellow will then work with BPHSI, IDSS, and IT partners to determine the recommendations which are feasible and a good match for the Fellow’s skillset, and work to implement these recommendations. 4) Develop improved and standardized methods for identifying cases of SyS interest. The Fellow will work with the NSSP Community of Practice (CoP) and SyS users (both DHPS and community partners) to optimize and standardize queries used to identify cases of interest in SyS systems. These queries can be used for NH’s Automated Hospital Emergency Department Data (AHEDD) system, NSSP and NH’s local instance ESSENCE, but could also be broadened working with NSSP jurisdictional and CDC partners. The Fellow will also participate in the development and application of other tools for identifying events of SyS interest, such as spatio-temporal cluster alert detection tools (See Project 2)

Deliverables

An understanding of NH’s Sys program, including the systems, activities, policies, and people involved.
A complete set of documentation for NH’s SyS tasks.
The ability to conduct specific Informatics tasks related to SyS
A project to implement a recommended improvement to NH’s SyS capabilities.
Improved tools for identifying occurrences of SyS interest.

This work will provide critical support as NH works to sustain and improve its SyS activities during a major staffing transition. Having an effective SyS system allows NH to identify events of public health interest and respond to them, meeting our mission to improve and protect the people of NH.

Project 2: Develop spatio-temporal cluster alerts and associated tools enabling partner response

This project is a continuation of NH’s Data Science Team Training (DSTT) program project, which adapted the SatScan spatio-temporal cluster detection algorithm to detect clusters of opioid overdoses in NH. The DSTT team also worked with opioid response partners to determine what information about a potential cluster is most useful for their prevention efforts, and the Fellow will continue those activities too.

Objectives
1) Validate SatScan method for cluster detection using additional conditions: The Fellow, working with members of the original DSTT team, will validate and further explore the SatScan method using data for two additional conditions: COVID-19 and Legionnaire’s disease. These are data-rich health conditions with different epidemiologic patterns from opioid overdoses and each other. Comparing these three conditions will allow robust exploration of the parameters of SatScan’s spatio-temporal cluster detection algorithm. Having a thorough understanding of SatScan will allow NH to incorporate it as a standard part of our surveillance toolkit. This validated tool will also help NH contribute to national development of standard cluster detection practices through working with national partners such as the NSSP Community of Practice.

2) Develop improved methods for sharing results of the cluster detection algorithm with stakeholders. This will include determining both what information is shared (what information do response partners need to plan an effective response for each of these conditions?) and how it is shared (once the relevant information is identified, what output formats are most helpful to partners? Stakeholder meetings held during the DSTT project identified that partners are eager for spatial data visualization tools, which will be explored by the Fellow.)

3) Train DHPS staff on SatScan and stakeholder sharing: The Fellow and members of the original DSTT team will conduct trainings with other staff in DPHS to share the SatScan and stakeholder communication methods they develop.

Deliverables

Spatio-temporal cluster alert detection queries that are linkable to response action(s) for opioid overdose, COVID-19, and Legionella.

Visualizations and other tools enabling NH to share results with internal and external partners.

Documentation and training materials to assist other programs in developing their own cluster detection tools linked to response partner actions.

Written cluster detection best practices and a standardized process for doing this work.

This project will make the SatScan cluster detection algorithm an actionable tool for NH’s surveillance program. By developing and validating the method with three very different health conditions, we will learn about its strengths and how best to apply the tool. We will also develop the tools partners need to act based on the information, which will increase the ability of our data to improve health outcomes for NH residents. Training additional staff in these methods and contributing to the national conversation around cluster detection will expand the impact of this project beyond NH and these initial three conditions.

Project 3: Electronic data quality monitoring and improvement
Setting up electronic data feeds, such as of case or laboratory data, is an important first step, but ongoing monitoring of the feeds is critical for maximizing their public health impact. NH is developing systems for automated feed monitoring, and the Fellow will participate in and expand these activities.

Objectives

Identify and synthesize key data quality or feed monitoring gaps. Some gaps have already been identified by program and Informatics staff, so this objective will involve meeting with stakeholders to gather information, identifying and additional issues, then synthesizing the needs into addressable groups or priorities.

Work with internal stakeholders including BHSHI, IT, and program staff to prioritize gaps for remediation.

Become familiar with the log monitoring (LM) system we are developing to handle automated feed monitoring (eg. whether reporting entities have sent data in the expected timeframe and volume). This is currently in the development phase and being piloted with one of our SyS systems. The Fellow will participate in meetings about the LM system and assist in incorporating monitoring needs of other systems.

Implement two data quality improvement projects

Deliverables

A prioritized inventory of data quality and monitoring needs.

A log monitoring system capable of automated monitoring for at least two of our electronic data systems.

Two additional data quality improvements.

Ensuring our electronic data feeds are functional and providing high-quality data is critical to our ability to understand the health status of the NH population and provide actionable information to response partners. This project will contribute immensely to our confidence in our data feeds.

Additional information about the placement:

Several Informatics projects are ongoing, and we are in the hiring process for additional Informatics staff. The status of these activities at the time the Fellow starts may influence the projects the Fellow engages in. We will also work with the Fellow to identify additional projects that align with the Fellow’s specific interests and training goals.