Host site: Nebraska Department of Health and Human Services Epidemiology and Informatics Unit, Division of Public Health

Assignment Location: Lincoln, NE

Primary Mentor: Samir Koirala, MBBS, MSc

Secondary Mentor: Kevin Cueto, MS Computer Science

Agency Description:

The Nebraska Department of Health and Human Services (DHHS) is comprised of five Divisions: Children and Family Services, Behavioral Health, Medicaid and Long Term Care, Development Disabilities, and Public Health. DHHS is tasked by state statute to protect the health and safety of persons living and working in Nebraska. The mission of DHHS is "Helping people live better lives," which provides motivation to effectively and efficiently provide public health services and make a difference in the lives of Nebraska’s 1.96 million constituents. The Division of Public Health (DPH) serves as the state public health department, and partners with local health departments and other public health partners to ensure statewide access to the ten essential public health services.

The Division of Public Health is split into three sections: Community Health, Health Data, and Health Licensure. The Division Director and Chief Medical Officer serves the Governor and utilizes three Deputy Directors who provide oversight to each respective Section. The Health Data Section includes two Units: Epidemiology and Informatics and Vital Records. The Community Health Section includes four units: Preparedness and Emergency Response, Community and Rural Health Planning, Health Promotion, and Lifespan Health Services. The Health Licensure Section includes three units: Investigations, Licensure, and Environmental Health.

The DPH is responsible for a breadth of public health services including preventive and community health programs, the regulation and licensure of professions, occupations, and facilities. The DPH also performs activities such as maintaining vital records, tobacco cessation, health promotion, disease screening and intervention, HIV counseling and testing, drinking water safety, and investigating disease outbreaks.

The DPH achieved national public health accreditation through the Public Health Accreditation Board (PHAB) in 2016, and continues to meet the public health standards and measures. The current DPH Strategic Plan includes six priorities: Data, Equity, Workforce, Performance, Culture and Policy. Our focus on workforce is complementary to our Governor’s priority to ‘Grow Nebraska’ and has supported intentional workforce development activities. With a focus growing and keeping competent and happy employees, the current Workforce Plan has a focus on retention and succession planning. The DPH has a track record of supporting the public health workforce by mentoring fellows, students, interns, and
associates. A strong relationship with local colleges and universities allows frequent and routine opportunities to increase exposure to public health and increase professional capacity. Additionally, the DPH has hosted many CDC based interns, associates, fellows and residents over the years, many of which have chosen to stay on as employees.

Assignment Description:

NDHHS has unique working environment where epidemiology and public health informatics reside under the same unit. The Fellow will organizationally be located within the Division of Public Health - Epidemiology and Informatics Unit. The Fellow will be protected from clerical and routine work, and will be expected to remain highly focused on specific informatics projects.

The Fellow will receive an overview of the Nebraska Electronic Disease Surveillance System (NEDSS) used to capture ELR data; the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) system, used to capture syndromic surveillance data; and Nebraska State Immunization Information System (NESIIS), used to capture immunization data. The Fellow will also have access to these systems. This will allow the Fellow to understand the day-to-day processes of these systems and the importance of the projects that the Fellow will be engaged in.

The Fellow will work closely with both the epidemiologists and the informatics team. All team members will be at the disposal of the Fellow to provide expertise in selected aspects of epidemiology and programmatic activities. The training and skill development of the Fellow will be the primary responsibility of the primary mentor.

The Fellow’s anticipated day-to-day activities will include:

- Develop an understanding of and familiarity with our surveillance systems (NEDSS), ESSENCE, and NESIIS
- Getting familiarity with and use of Research Electronic Data Capture (REDCap), a secure locally installed web application for building and managing Internet-based questionnaires and databases
- Developing an understanding of ELR process
- Developing an understanding of and familiarity with electronic case reporting (eCR) process and Reportable Conditions Knowledge Management System (RCKMS)
- Working with informatics team looking into feasibility of interfacing two separate data systems and working on setting up a process to transfer data/information from one system to another
- Assisting epidemiologists with authoring of reportable conditions in RCKMS and informatics team with eCR (e.g. looking at messages and providing quality feedback, integrating messages into surveillance system)

Preferred Background & Skills:
Masters in public health with experience in data science and/or knowledge of ELR/eCR preferred but not required.

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

At the completion of the fellowship, the Fellow will function as a well-qualified Tier 2, public health informatician with an in-depth knowledge of ELR, HL7 messaging and eCR; will gain knowledge and skills on developing an infrastructure on receiving lab reports as ELR and case investigation as eCR; and integrating eCR messages into the surveillance system. The Fellow will also have knowledge and understanding of our surveillance systems (NEDSS and ESSENCE) and how they function and be able to interface two different systems for data transfer/exchange.

**Potential Projects include:**

*Host sites have listed up to 5 projects*

**Project 1:** Develop a project in REDCap for collecting international and domestic traveler-related data with capability of active monitoring and importing REDCap data into NEDSS as a case report form

Objectives: 1) Create a questionnaire in REDCap to collect basic information on domestic and international travelers with capability to do active monitoring. 2) Obtain travelers information from CDC DGMQ. 3) Import REDCap data into NEDSS as electronic case report.

Deliverables: 1) Creating a template to upload the travelers list obtained from DGMQ in REDCap without manual entry. 2) A questionnaire in REDCap capable of sending an automated email or text messages to travelers for collecting demographic and exposure information; able to send out daily automated email or text message for active monitoring; and able to send notifications to travelers on testing, isolation and quarantine recommendations, and provide education. 3) Automated messaging of data collected in REDCap into NEDSS as electronic case report.

With the priority of investigating COVID-19 positive cases and contact tracing with limited workforce, there has been less focus on monitoring of travelers. Creating this infrastructure will help in reaching domestic and international travelers and provide them with timely notifications, recommendations, and education in a way that is more efficient. This will not only help for COVID, but this infrastructure will be helpful for other future emerging infectious diseases too.

**Project 2:** Develop an interface between Nebraska Electronic Disease Surveillance System (NEDSS) and Nebraska State Immunization Information System (NESIIS) for transferring immunization records from NESIIS to NEDSS

Objectives: 1) Work with the immunization team to assess the feasibility of interfacing NESIIS and NEDSS. 2) Create an interface between NEDSS and NESIIS. Deliverables: 1) Summary report on feasibility
assessment findings. 2) Successful interface between NEDSS and NESIIS with seamless flow of immunization data from NESIIS into NEDSS

Having immunization information into case investigation data will help provide timely and appropriate recommendations on isolation and quarantine, and testing.

Project 3: Develop an infrastructure to receive test results as electronic laboratory report (ELR) from Veterinary Diagnostic Laboratory – University of Nebraska, Lincoln (UNL VDC) into NEDSS

Objectives: Develop an infrastructure to receive SARS-CoV-2 laboratory test results on animals from UNL-VDC into NEDSS as an ELR. Deliverables: 1) Work with UNL-VDC IT team and NDHHS IT team to assess the feasibility of developing infrastructure to receive test results on animals as ELR. 2) Develop infrastructure to receive animal test results from UNL-VDC into NEDSS system via ELR mechanism

Having an infrastructure in place to receive animal tests results from UNL-VDC into NEDSS as ELR will help NDHHS to identify potential animal reservoirs for SARS-CoV-2 and zoonotic transmission. This system will also support surveillance for other emerging zoonotic pathogens.

Project 4: Develop an infrastructure for timely reporting of Antibiotic Resistance (AR) data to submitting facilities, states or local public health laboratories, epidemiologists, regional AR prevention partners, and CDC for all funded AR testing

Objectives: Develop an infrastructure for timely reporting of AR test result data to state and local HAI/AR program, local partners and CDC. Deliverables: 1) Implementing or improving Laboratory Information Management System (LIMS) in the jurisdiction laboratory to connect instruments to electronic databases. 2) Ensuring adequate infrastructure for electronic reporting of test results to state and local HAI/AR programs, submitters, and CDC.

Having an infrastructure in place will help HAI program with more efficient case investigation, track treatments, timely reporting to local partners and CDC, and provide timely recommendations.

Project 5: Develop an interface between Prescription Drug Monitoring Program (PDMP) database and Nebraska Electronic Disease Surveillance System (NEDSS) and Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) system

Objectives: Assess the feasibility of interfacing PDMP database with NEDSS and ESSENCE. Deliverables: A summary report on the feasibility of interfacing PDMP database with NEDSS and ESSENCE databases

This will allow more efficient case investigation given ready access to treatment information from PDMP database, particularly important for program areas like TB, STDS that need to track treatments.

Additional information about the placement:

The Fellow will be working with a wide array of staff including epidemiologists, IT personnel, statisticians, business analysts, EIS officer, CSTE fellow, PHAP, etc. The Fellow will be exposed to
variety of thought processes and approaches, and develop an appreciation and understanding of a well-established epidemiology and informatics program at the State level.