

ID: 35993856

Infectious Diseases, Infectious Diseases - COVID-19 - Host Site Description

Florida Department of Health in Polk County

Assignment Location: Bartow, US-FL
Florida Department of Health in Polk County
Epidemiology

Primary Mentor: Gregory Danyluk, PhD, MPH, MS
Epidemiology Program Manager
Florida Department of Health in Polk County

Secondary Mentor: Bernhard Kloppenburg, MPH
COVID-19 Response Manager
Florida Department of Health in Polk County

Work Environment

100% In-person

Assignment Description

The fellow will be placed within the FDOH-Polk Epidemiology Program and be a member of the Epidemiology team. The Epidemiology Program is responsible for receiving and investigating cases of notifiable diseases, and for providing prevention information to clients at risk for acquiring or transmitting a communicable disease. The fellow's day-to-day activities will vary as opportunities arise, but can be expected to involve case investigations and surveillance to some extent as described below.

Case Investigations: In order to gain an appreciation of the case investigation process, as well as the strengths and limitations of notifiable disease data, the fellow initially will work for a brief period with other members of the Epidemiology team on conducting a variety of case investigations; the fellow also will be called upon to investigate or assist in the investigation of less common notifiable disease cases as they arise. The fellow also will participate in disease outbreak investigations, initially as a member of the team, and with the expectation that he/she will serve as team lead during future investigations.

Surveillance: The Epidemiology Program uses the state surveillance system, "Merlin", to report and track notifiable diseases, and to conduct basic analyses of the data including calculating frequencies, epidemic curves, and rates. Additionally, all five hospital emergency departments in Polk County participate in the statewide syndromic surveillance system known as "Electronic Surveillance System for the Early Notification of Community-based Epidemics" (ESSENCE-FL), through which they provide de-identified visit data. ESSENCE-FL data are reviewed daily by the Epidemiology team to detect unusual activity based on chief complaint and/or discharge diagnosis that might require further investigation; these can include identifying clusters of visits related to a certain disease category, such as influenza-like illnesses or food poisoning, or individual notifiable disease cases, such as hepatitis A or varicella (chickenpox). The fellow will be responsible for routine monitoring of Merlin and ESSENCE-FL data for aberrations, and for performing additional analyses and investigations as necessary.

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

The fellow will have access to the following databases and surveillance systems:

Merlin: the FDOH communicable disease reporting database
FDOH Vital Statistics

ID: 35993856

Infectious Diseases, Infectious Diseases - COVID-19 - Host Site Description

Florida Department of Health in Polk County

ESSENCE-FL: the syndromic surveillance database used by FDOH for hospital emergency department and select urgent care center visits, and which also includes de-identified data from Merlin, Vital Statistics, Florida Poison Information Center, emergency medical services pre-hospital transports, and local National Weather Service station data.

The following software will be made available:

SAS

R

Epi Info

ArcGIS

SaTScan

Data analysis support will be provided by the primary and secondary supervisors.

Projects

Surveillance Activity Title: Candida auris Surveillance

Surveillance Activity Description:

C. auris will become a reportable disease in Florida. Currently, the Bureau of Epidemiology does not have a streamlined, electronic process for consuming C. auris labs, requiring a manual entry of lab data and case creation. Due to this, not all C. auris lab reports make it into Merlin timely, and which makes data analysis difficult. During the fellow's time at FDOH-Polk, they will work with the FDOH Bureau of Epidemiology's Healthcare-Acquired Infection (HAI) team and Surveillance Section to learn and assist in the development of an electronic, automated process for lab consumption and case creation. Additionally, as data become electronic and more complete, the fellow will help to develop and design a dashboard that will display these data and give the HAI team and epidemiologists quick access for in-depth analyses.

Surveillance Activity Objectives:

The project objective is for the fellow to actively participate as a member of a team in the creation and troubleshooting of an automated C. auris surveillance system and a subsequent data dashboard. The expected deliverables will include the completion of the surveillance system and a dashboard that will aid in data analysis and linkages to outbreak investigations for C. auris.

Surveillance Activity Impact:

The expected public health impact will be a more timely notification of C. auris cases to the HAI team that will result in prompt investigation and instituting of control measures to prevent spread. The dashboard will allow HAI team members and local health department epidemiologists to more easily analyze C. auris surveillance data and monitor trends in incidence.

Surveillance System Evaluation Title: Norovirus Surveillance System Evaluation

Surveillance System Evaluation Description:

Although disease due to norovirus is generally self-limiting and individual cases are not reportable, the virus is frequently the causative agent in foodborne illness outbreaks due to its high transmissibility. Of particular concern however are person-to-person outbreaks within long-term care facilities (LTCF) where the virus is more likely to result in more severe outcomes, including hospitalization and death. FDOH-Polk uses multiple sources of surveillance data for monitoring local norovirus activity, including laboratory results, syndromic surveillance, and foodborne illness reports. When increasing activity is identified, that information is shared with infection prevention staff in the 65 LTCFs within Polk County, together with guidance on prevention and control measures, so that they can be better prepared for possible

ID: 35993856

Infectious Diseases, Infectious Diseases - COVID-19 - Host Site Description

Florida Department of Health in Polk County

outbreaks. The fellow will work on creating a model based on existing data sources that will identify an optimal signal that would necessitate alerting LTCFs to increasing community activity, while minimizing the likelihood of unnecessarily notifying those facilities due to a false signal and consequently reducing the effectiveness of subsequent alerts.

Surveillance System Objectives:

The fellow will review the current literature on norovirus surveillance methods and identify consensus components that optimize the ability to provide a consistent indicator of increasing activity. The fellow will compare results of the literature review to those of available norovirus data sources collected by FDOH-Polk, and analyze the data trends with respect to one another. An initial deliverable will be to validate syndromic surveillance data based on hospital discharge diagnoses for norovirus in ESSENCE-FL with reported hospital laboratory results. The primary deliverable will be to develop a model that identifies which source or combination of sources provides the most historically reliable indicator of increasing norovirus activity.

Surveillance System Impact:

The impact will be to produce an indicator that can be used reliably to alert LTCF staff of increasing community norovirus activity and allow more timely sharing of prevention and control guidance for their facilities before outbreaks are identified in those settings.

Major Project Title: Use of COVID-19 Case and Death Certificate Data to Identify Variability in Comorbidities and Demographics by Census Tract in Polk County, Florida

Major Project Description:

The volume of data collected during COVID-19 case investigations provides a rare opportunity to examine larger underlying health issues affecting communities within Polk County, particularly from data collected during the first several months of the pandemic. The major project will be to use GIS to identify census tracts within Polk County whose residents were disproportionately affected by COVID-19, and to identify comorbidities, healthcare visits, and demographic variables among case-patients as recorded in the Merlin surveillance database. Comorbidity data in Merlin was collected less frequently over time, so analyses will be restricted to cases with an onset during 2020. Because healthcare-seeking behavior may be a confounder in case ascertainment and/or the ability to conduct an extended interview with the patient recorded in Merlin, death certificates where COVID-19 was listed as a cause or underlying cause will also be reviewed for contributing conditions and compared with data for cases where death was not an outcome.

Major Project Objectives:

Objectives:

- 1) Briefly, the fellow will obtain a line list of reported COVID-19 cases during 2020 in Polk County through Merlin, geocode the cases by residence, and select those where a match is available to the point or street address level. Cases where the patient had been identified as living in a group setting will be excluded. The remaining geocoded cases will be sorted by census tract and per capita incident case numbers for each will be calculated using 2020 US Census data by total population and for select demographic variables.
- 2) Cases where any responses for underlying conditions were recorded will be selected separately, and raw and age-adjusted per capita case counts for each comorbidity will be calculated for each census tract.
- 3) The geocoding process and data analyses will be repeated using death certificate data for Polk County residents where COVID-19 was listed as a cause or underlying cause, but where contributing causes will be grouped under 113 Causes of Death; raw and age-adjusted per capita case counts for leading contributing cause of death categories will be calculated for each.
- 4) The fellow will compare the raw and age-adjusted per capita results from Merlin case data analysis with the results of death data analysis in Polk County and demonstrate the degree of agreement or lack thereof between the

ID: 35993856

Infectious Diseases, Infectious Diseases - COVID-19 - Host Site Description

Florida Department of Health in Polk County

two. Results from the two sets of data will also be compared with Social Vulnerability Indices (SVI) for each census tract for correlation between incidence rates and SVI.

The primary deliverable will be to share the results of case and comorbidity distribution by census tract with the DOH-Polk Division of Public Health Planning (DPHP) to help identify specific neighborhoods within Polk County whose residents are disproportionately affected by comorbidities, including neighborhoods whose residents have significantly elevated, but modifiable, risk factors for disease; e.g., neighborhoods with high numbers of residents with elevated type 2 diabetes that may have been missed through earlier surveys, and which may point to areas where the built environment may not allow for sufficient outdoor activities and/or food deserts. An additional deliverable would be the preparation of a completed manuscript for publication describing the methods, results, and conclusions of the analyses at an aggregate level.

Major Project Impact:

The public health impact will depend on the results of the analyses, but are expected to demonstrate differences in COVID-19 and comorbidity distribution at the census tract level, and continued challenges related to health equity in Polk County. The results should help guide future efforts by DOH-Polk DPHP and community partner organizations at addressing health disparities at the census tract and neighborhood level.

Additional Project #1 Title: Using Syndromic Surveillance to Explore Factors Contributing to Disproportionate Access to COVID-19 Treatment.

Project #1 Type: Major Project

Project #1 Description:

Approximately 4,000 visits to Polk County emergency departments related to monoclonal antibody (mAb) therapy for COVID-19 were identified through ESSENCE-FL during 2021. A preliminary review of the data identified a pronounced disparity among those presenting for mAb therapy by race. The fellow will review the data in more detail to determine whether race, residence, or other demographic variables may have played a role in access to mAb therapy.

Project #1 Objectives and Expected Deliverables:

Objectives:

- 1) The fellow will review ESSENCE-FL data for evidence of associations among patients who sought COVID-19 mAb therapy at a Polk County emergency department and the patients' demographics and SVI of residence by zip code, and by approximate catchment area of the respective emergency departments. The results will be compared with analyses of historic demographic and zip code distribution by emergency department for other conditions, including select respiratory illnesses; raw and age-adjusted per capita visit numbers will be calculated using 2020 zip code tabulation areas by total population and for select demographic variables.
- 2) Results of demographic analyses will be compared to those obtained in the Major Project, "Use of COVID-19 case and death certificate data to identify variability in comorbidities and demographics by census tract in Polk County, Florida" to determine whether correlations exist within approximate catchment areas of the hospitals.

Project #1 Impact:

The primary deliverable will be to share the results of the analyses with the DOH-Polk Division of Public Health Planning (DPHP) to further identify locations within Polk County where residents may have been disproportionately unable to access mAB therapy, and which may point to underlying challenges in access to health care and/or health seeking behavior, and barriers to achieving health equity. Depending on the results obtained, an additional deliverable would be to include those as part of a completed manuscript for publication on the Major Project, "Use of COVID-19 case and death certificate data to identify variability in comorbidities and demographics by census tract in Polk County, Florida",

ID: 35993856

Infectious Diseases, Infectious Diseases - COVID-19 - Host Site Description

Florida Department of Health in Polk County

or as a separate manuscript on the usefulness of syndromic surveillance data in examining health disparity at the local level.

Additional Project #2 Title: Delayed Mortality from COVID-19 Infections

Project #2 Type: Surveillance Activity

Project #2 Description:

The current case definition of death due to COVID-19 used by the Florida Department of Health includes a limit of 30 days from the time when a patient initially tested positive for the virus until the date the patient died. However, post-acute sequelae may have contributed to deaths beyond that date. The project will involve examining deaths in Polk County among reported COVID-19 cases that occurred beyond 30 days from a positive test that were not due to trauma, and identifying the frequency of causes and underlying causes listed on the death certificates by demographic variables.

Project #2 Objectives and Expected Deliverables:

The fellow will match death certificates of Polk County decedents beginning in 2020 to reported cases of COVID-19 among Polk County residents by name and date of birth, excluding cases that had previously met the definition of death due to COVID-19. Matched death certificates will be reviewed for causes and underlying causes of death, and those will be further reviewed to exclude those deaths where a more likely cause has been identified, such as trauma. The cases will be further characterized by demographic variables, time from the initial positive test date until death, and cause and underlying causes of death. The deliverable will be the preparation of a completed manuscript for publication describing the methods, results, and conclusions of the analyses.

Project #2 Impact:

The public health impact will be to add to the knowledge base on post-COVID conditions.

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

The potential impact of hurricanes is a perennial threat in Polk County, which has seen four hurricanes cross the county since 2004. The fellow will have multiple opportunities to attend trainings and meetings with Polk County Emergency Operations Center staff. The fellow also will take part in DOH-Polk's obligation to open, staff, and operate Special Needs Shelters (SpNS) for individuals requiring additional attention related to their medical conditions, such as access to uninterrupted electricity for powering medical devices (e.g., continuous positive airway pressure machines). The fellow will attend SpNS training with other DOH-Polk staff, and be assigned to assist with its operation during an emergency, particularly in coordinating and conducting surveillance for communicable diseases within shelters. The time allocated for this portion of the activity is approximately two weeks for trainings and meetings, and an estimate of an additional two weeks if shelters are opened.

The fellow will also be trained in using ESSENCE-FL for syndromic surveillance of diseases and conditions following a hurricane or tropical storm. Most notably, following Hurricane Irma in 2017, Polk County had the second highest incidence of reported cases of carbon monoxide poisoning, mainly due to improper use of generators; while CO poisoning is reportable by licensed healthcare practitioners, cases were almost exclusively identified by searching ESSENCE-FL for specific chief complaints and/or discharge diagnoses. Time spent on this activity will be considered to be part of regular training on the use of ESSENCE-FL.

ID: 35993856

Infectious Diseases, Infectious Diseases - COVID-19 - Host Site Description

Florida Department of Health in Polk County

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

The fellow will participate in disease outbreak investigations, initially as a member of the Epidemiology team, and with the expectation that he/she will serve as team lead during future investigations. Because most of the more challenging outbreaks investigated by FDOH-Polk historically have involved foodborne pathogens, the fellow will participate in CDC's online Environmental Assessment Training Series. The fellow also will be trained in the use of CDC's Epi Info software for the creation, administration, and analysis of outbreak surveys, and consequently will be responsible for writing subsequent summary reports with assistance from other Epidemiology team members. The anticipated time spent on the trainings is two weeks. Participation in outbreak investigations and report writing will depend on the number and complexity of incidents, but could be estimated to take a total of an additional two to four weeks.

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

While the priorities during COVID-19 response have frequently changed, the disease is certain to remain a serious concern for residents of long-term care and other congregate living facilities. The fellow will have opportunities to work with the team of epidemiologists who assist those facilities with regular consultations on COVID-19 control and prevention, and who conduct outbreak investigations, infection prevention and control assessments (ICARs), and regular surveillance for cases among residents and staff. Activities would include meeting and shadowing team members, assisting with outbreak investigations and case interviews, and participating in ICARs. The anticipated time for all of the activities would be two weeks, although the fellow may be called upon for additional assistance in the event of an unanticipated surge in COVID-19 activity, and which may last an additional four weeks.

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

Both the Major Project and Additional Project #1 center around health equity. The fellow also will have opportunities to work closely with the Lead Poisoning Prevention epidemiologist on his GIS work involving identifying neighborhoods where children are at elevated risk for lead poisoning, and in identifying locations where access to screening has been limited. As noted elsewhere, Polk County is an ideal location for developing and conducting epidemiological studies to respond to the needs of populations that can range from impoverished individuals who have limited access to health care, to professionals who commute to larger cities.