**Project Name:**

Geospatial Analysis, Surveillance, and Cluster Detection for Select Enteric Diseases in New York State

**Project Description:**

Problem Statement: Many reportable enteric diseases do not routinely undergo advanced molecular characterization by public health laboratories to identify genetically linked clusters of cases (such as shigella, yersinia, cryptosporidia, giardia) which pose challenges in identifying clusters. Additionally, the use of culture independent diagnostic testing has caused an increase in the number of reported cases of these diseases over the past several years, making robust surveillance even more important for public health.

Proposed Methods: The project will provide geospatial analyses of cases to monitor for clusters using a multi-faceted approach: 1) highlight geographic areas that are seeing a higher number of cases than expected compared to previous years case counts; 2) identify emerging trends across the state (e.g. increase in numbers but not a specific area); 3) add layers for exposures of interest that could flag a cluster or trend (e.g. men who have sex with men for shigella, or camp attendee for shigella); and 4) use the map layers to identify nearby features that could be linked to cases (e.g. nearby water source for giardia or farmland for yersinia and cryptosporidia). This will be achieved by using SAS datasets from the New York State Communicable Disease Electronic Surveillance System (CDESS) which stores case data, a Python script to code what variables the maps will include, GIS to depict interactive maps with different layers of interest depending on the disease, and R to create a report to readily disseminate information to partners when a cluster of interest is identified. This schema will be prioritized for shigella and yersinia initially and then implemented to other diseases as time allows.

Expected Outcomes: Given the near real-time data from the CDESS, these interactive maps will be reviewed daily by epidemiologists to quickly analyze and interpret whether additional investigation may be warranted and assist in identifying potential control measures. Epidemiologists will have the ability to adjust the parameters of the maps in real time to fit any scenario and continually improve the system. The number of clusters detected and investigated is expected to increase compared to current methods.

**Team Members:**

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