

Environmental Health- Waterborne

Assignment Description:

The Great Lakes shoreline of Pennsylvania is limited to approximately 63 miles of Erie County, and it is anticipated that the Fellow would in particular collaborate on projects involving the Erie County Department of Health which conducts beach water sampling, algae monitoring, and other environmental activities from within their own department. The Erie County shoreline includes Presque Isle State Park located on a peninsula jutting into Lake Erie with approximately 7 miles of swimming beaches, marshes, and other public-use areas. Many other State Parks in Pennsylvania's extensive system encompass recreational areas at man-made lakes, some of which are quite large such as Raystown Lake with a shoreline of 110 miles and Pymatuning Lake with a shoreline of 70 miles. Pennsylvania State Parks are estimated to attract more than 38 million visitors annually.

Day-to-Day Activities:

The fellow will fully participate in the day-to-day activities conducted by IDE staff, including participating in disease investigations, conference calls with federal, local and regional partners, and attending departmental meetings as well as local, regional and national conferences. Additionally, the fellow will have to opportunity to present at monthly Journal Clubs, epi seminars and webinars, and all-day Quarterly Epidemiology meetings attended by 50-100 statewide epidemiology personnel.

Additional day-to-day activities might also include human case surveillance of water borne disease pathogens as well the design, analysis, and interpretation of studies using previously collected data. The Fellow will have the opportunity to report waterborne outbreaks into CDC's National Outbreak Reporting System (NORS). Although the majority of the Fellow's time will be spent at the home office, the Fellow will have the opportunity to conduct field investigations including site visits, questionnaire development, patient interviews, database creation and outbreak report generation. There is also potential for the Fellow, depending upon background and interests, to participate in foodborne illness or other outbreak investigations.

The fellow will have the opportunity to partner with other agencies including the Department of Environmental Protection and Pennsylvania Emergency Management Agency to provide outreach and education materials associated with waterborne diseases and response efforts following flooding or other natural disasters.

Potential Projects:

1. Examples of potential projects that demonstrate opportunities for data analysis, outbreak field investigations, and opportunities to work on interdisciplinary teams

- A. Title of Project: Review of outbreaks of Cryptosporidiosis and other pathogens with high potential to cause outbreaks associated with recreational water use

Pennsylvania has occasionally experienced large outbreaks of Cryptosporidiosis (most often associated with chlorinated swimming pools) such as during 2007. Other outbreaks seen in some past years have involved Shigella and E.coli O157 associated with swimming at beaches in State Park lakes.

The Fellow could review statewide surveillance data collection and reporting as well as the promotion of the “Healthy Swimming” message including education of the public and relevant clinicians (such as pediatricians and family practice physicians).

- B. Title of Project: Impact of flooding on infectious and non-infectious diseases in Pennsylvania

Pennsylvania is one of the most flood-prone States in the nation, as a home to three major river basins (the Susquehanna, Delaware and Ohio); Pennsylvania has more miles of running water (45,000) than it has of state roads (43,000) and the vast majority of communities are considered at risk of flooding according to the U.S. Geologic Survey.

The Fellow could review existing surveillance and other datasets for information on infectious and non-infectious diseases as they relate to flooding in Pennsylvania, and develop better tools to monitor the impact of flooding on health. This project would necessarily involve interaction with Pennsylvania State Agencies that routinely plan for and respond to floods, such as the Pennsylvania Emergency Management Agency and the Department of Environmental Protection.

2. Program or surveillance system evaluation component:

- A. Title of Project: Evaluation of Waterborne Reporting in Pennsylvania

Waterborne infections (both individual cases and clusters or outbreaks) in Pennsylvania are underrecognized and underreported. This problem includes insufficient data collection during routine interviews of newly identified cases of legally reportable conditions in Pennsylvania (such as *Campylobacter*, *E.coli* O157, etc). The routine questions currently included in enteric interviews by public health nurses in Pennsylvania do address source of drinking water, and recreational water exposures including travel, but may not be consistently used by interviewers and are not always adequately reviewed.

The Fellow could review existing surveillance and investigation data and conduct analyses to describe the patterns of exposure among cases of enteric illness with waterborne risk factors. Additionally, data could be stratified by various demographic categories to better understand characteristics of risk factors across populations.

- B. Title of Project: Illness when elevated coliform counts are detected during monitoring of recreational or municipal water

State Park and some other swimming beaches across Pennsylvania routinely monitor coliform counts, and shut down swimming areas when elevations occur. In addition, several times per year the Department learns of Boil Water Advisories due to coliform contamination of municipal water supplies.

The Fellow could explore the question of whether we can better identify any illnesses that might be associated with these typically transient elevations of coliforms. This project could include review of syndromic surveillance data (the RODS system) currently collected from Pennsylvania emergency departments and pharmacies.

Preparedness Role

There are several opportunities for involvement in emergency preparedness depending on the interest and expertise of the Fellow. As part of the department's Emergency Preparedness Planning, each division has designated emergency preparedness coordinators. The coordinators work with all staff in their respective divisions to provide training and opportunities to volunteer for specialized response efforts. The Fellow could participate in these activities, in activities related to coordinating emergency preparedness with sovereign nations, extending emergency preparedness plans to specialized populations such as pregnant women, infants or children with special health care needs, or other activities.

Assignment Location: Harrisburg, PA

Primary Mentor: Andre Weltman, MD, MSc
Public Health Physician
Pennsylvania Department of Health

Secondary Mentor: Allison Longenberger, PhD, MPT
Epidemiologist
Pennsylvania Department of Health