Assignment Description

The Fellow would be placed in DSI on the Foodborne Disease Epidemiology Team (FDET). The FDET is responsible for statewide surveillance, investigation, and prevention of enteric diseases and partnering with the Regional and District Epidemiologists who conduct routine case investigations. The Fellow would become a member of the FDET, which is currently comprised of three employees: the FDET Coordinator, the Assistant Foodborne Disease Epidemiologist (a MPH-level position), and the OutbreakNet Enhanced (OBNE) Epidemiologist, who assists with OBNE, NoroSTAT, and NORS. The FDET collaborates with CDC on foodborne related issues or programs, including the Norovirus Sentinel Testing and Tracking (NoroSTAT), OBNE, the Vibrio Work Group, National Outbreak Reporting System (NORS), and WGS cluster calls. We regularly partner with neighboring health departments, including those in Washington, D.C., Maryland, North Carolina, West Virginia, and the Tennessee Integrated Food Safety Center of Excellence. Internally, we collaborate with partners in OEHS to investigate outbreaks related to restaurants and manage our on-line foodborne illness complaint system, My Meal Detective.

The Fellow will become a critical member of our team. We will train the Fellow to be proficient in foodborne disease surveillance and investigation procedures, as well as the state and federal data systems that we use. The Fellow will learn all facets of the program from how WGS clusters are reported, evaluated, and investigated to outbreak reporting in the Virginia Outbreak Surveillance System and NORS. The Fellow will learn how to partner and collaborate with the health districts, DCLS, RRT, other teams within DSI, and other divisions within OEPI. The Fellow will be integrated into the FDET and DSI so that if one of the team members is away, the Fellow can assist. Projects will focus on program evaluation, surveillance, analysis, and conducting investigations. The Fellow will also be expected to assist with the public health response to any emerging infectious disease challenge that arises during the assignment.

We will encourage participation in outbreaks whenever possible and will provide shadowing opportunities with local health district epidemiologists. We will also provide opportunities for the Fellow to coordinate with other programs or divisions on special projects or responses that are of interest.

Day-to-Day Activities

The Fellow’s day-to-day activities will involve active participation as a team member of the FDET. With appropriate training and support from staff, the Fellow will work on investigating WGS clusters, communicating with health districts, analyzing and evaluating data to determine patterns, assisting with outbreak investigations and outbreak reporting, and assisting with various projects determined to be of public health importance in Virginia. This work may include collecting and analyzing epidemiologic data and reporting findings, working to improve surveillance systems, developing information for the public and healthcare providers or guidance for health departments, and giving presentations. Because of the nature of enteric disease epidemiology, every day will be different. Although there are lots of enteric
disease reports and investigations in the summer and fall, during the winter, there is a dramatic increase in norovirus, which we also investigate. The Fellow will participate in weekly FDET meeting, investigation, and RRT meetings, monthly statewide epidemiology conference calls and partner program calls with CDC, and training events.

Potential Projects

**Surveillance Activity**  
**Social Media Data Mining for Foodborne Disease Outbreaks**

Social Media Data Mining for foodborne illness: We are interested in accessing social media to identify foodborne disease outbreaks. Foodborne illness disease complaints in Virginia are captured in My Meal Detective, which is an on-line foodborne illness complaint system created by the FDET and OEHS. This system captures complaints of illness that are then shared with the relevant health districts. If more than one complaint for a specific restaurant is received within a certain timeframe, the health department conducts a complaint inspection. Several outbreaks have been identified through the system, but we suspect that more outbreaks could be identified if the public had greater awareness of this tool. It is on the VDH website, but we know many citizens will still go to the more well-known sites i.e.: IWasPoisoned.com, to file a complaint. In addition, many ill persons will comment on a restaurant’s social media pages, YELP or other similar sites, or on their own personal social media pages. We have researched other state health department’s methods for capturing social media foodborne illness complaints but have not yet found one that works for VDH. The Fellow would create a method to easily and electronically conduct surveillance on social media to identify foodborne illness complaints that we can respond to and redirect the complainant to the My Meal Detective site so that data can be captured systematically, and outbreaks identified more frequently and rapidly. This project would entail collaborating with VDH’s Office of Communications in addition to other offices.

**Surveillance Evaluation**  
**Virginia Outbreak Surveillance System Evaluation for Enteric Disease Outbreaks**

The FDET is responsible for ensuring that foodborne disease outbreak investigations are investigated and documented in the Virginia Outbreak Surveillance System (VOSS). VOSS is an outbreak surveillance system that captures outbreak data throughout the course of the investigation. When an outbreak is suspected, initial data reported by the health district are entered into the system by the Regional Epidemiologist. An alert is then e-mailed to all who have access to the system, allowing for statewide awareness and collaboration. An alert is also sent to DCLS so they can be prepared for specimen submission and testing and to OEHS, so they are aware if a facility that they regulate is involved. As more outbreak information is gathered, VOSS is updated; at the end of the investigation, a NORS report is completed and attached to the outbreak in VOSS and uploaded to NORS. This system has been upgraded and enhanced over the last few years. The Fellow would evaluate the system for foodborne outbreaks and NORS uploads. We have identified some inconsistencies in how data fields are interpreted. We want to better understand the issues involved so that we can ultimately develop data entry guidance and implement quality assurance measures to improve data quality. Subsequently, we would like to have guidance created for entering data into the system.
**Major Project  WGS Data Integration and Management**

In the last year, we have transitioned our Pulsed-Field Gel Electrophoresis (PFGE) and Whole Genome Sequencing (WGS) cluster database from ACCESS to REDCap, which is more flexible and useful and allows us to streamline cluster tracking, investigation, and reporting. Currently, we receive data electronically in a flat file from DCLS, which is not part of VDH and hence we do not share systems. When the data are received from DCLS, they must be manually entered into REDCap, which is time consuming and leads to the possibility of errors. To investigate a cluster, we contact the local health district and request that staff fax or scan the relevant case report forms and then most of those data are entered into the REDCap database. These procedures are inefficient and could be improved. The Fellow would work with DCLS and our IT team to find a way to upload data from DCLS into REDCap. The Fellow would also collaborate with the health districts to enter data directly into REDCap as opposed to faxing, scanning and then manually entering these data.

**Additional Project  NEARS**

OEHS is beginning to implement CDC's National Environmental Assessment Reporting System (NEARS) in a limited capacity. Because of multiple issues, it has been difficult to implement this program as quickly as desired. The Fellow would become knowledgeable on the system and would be available to train OEHS staff on how to enter data and use the system. The Fellow would also perform quality assurance on the data to ensure that the appropriate information is captured and can be linked to the NORS reports. Having someone who is knowledgeable on the whole system and who can assist with its systematic implementation would benefit the FDET and OEHS.

**Preparedness Role**

OEPI plays a predominant role in emergency preparedness and response activities. DSI is responsible for leading the surveillance and investigation components in Virginia for CDC’s Public Health Emergency Preparedness Cooperative Agreement. Staff work closely with the VDH Office of Emergency Preparedness to conduct a wide range of activities that the Fellow will have an opportunity to participate in, including: emergency preparedness exercises and drills, developing emergency response plans, creating educational resources and materials (e.g., fact sheets and provider guidance) for biological, chemical and radiological emergencies, and responding to public health emergencies. The Fellow may choose to join a local chapter of the Medical Reserve Corps, which will offer additional exposure to emergency preparedness trainings and exercises. For example, past Fellows have had the opportunity to research, develop, and lead table top exercises involving biological and chemical threats. These exercises were conducted with both internal and external partners, including local and state police, FBI, and fire and school personnel.
**Additional Activities**

Opportunities will also exist for the Fellow to work on projects with other divisions within the OEPI, other VDH offices, or VDH partners. The Fellow will have opportunities to work with the OEHS to learn about restaurant and facility inspections, with DCLS to learn about enteric disease testing, and VDACS to learn about sampling and testing of products. Within the Division of Immunization, the Fellow can work on vaccine-preventable diseases, such as pertussis, measles, and varicella. The Fellow can also work on hepatitis A infections for which both the Division of Immunization and the FDET share responsibility. The Fellow may have the opportunity to work with the Healthcare-Associated Infections and Antimicrobial Resistance team, Lead Team or Tuberculosis (TB) Control Program, depending on the needs and interests of the Fellow. These opportunities will provide the Fellow with extensive practical experience and skills, a good understanding of the roles and responsibilities of state and local health departments, and access to significant projects related to the Fellow’s interests and career goals.

Overall, it is expected that the Fellow will acquire a range of practical public health skills and experiences useful in a wide variety of career paths. These activities may lead to presentations, conference abstracts, or peer-reviewed publications. We expect that the Fellow will have the time and autonomy to develop projects of interest, while participation in the OEPI’s many activities will provide opportunities to acquire a broad range of skills and experiences.

**Mentors**

**Primary**

Caroline Holsinger, DrPH, CPH  
Director, Division of Surveillance and Investigation

**Secondary**

Katherine McCombs, MPH  
Foodborne Disease Epidemiology Program Coordinator