Assignment Description

The CDC/CSTE Applied Epidemiology Fellow will be assigned to Communicable Diseases Epidemiology Section (CDES) within the Bureau of Communicable Diseases (BCD). BCD is responsible for the prevention and control of communicable diseases in Wisconsin. The Bureau provides surveillance and epidemiological follow-up of more than 80 reportable communicable diseases.

The Fellow’s assigned section, CDES, is responsible for maintaining and improving surveillance for all communicable diseases other than AIDS/HIV, sexually transmitted diseases, and vaccine preventable diseases. CDES’s responsibilities include the epidemiologic investigation and response to: foodborne, waterborne and vectorborne diseases, zoonotic diseases, most communicable disease outbreaks, influenza, tuberculosis and other respiratory diseases, and emerging and re-emerging diseases among others. It also provides infection control consultation to the health care provider community as part of the healthcare acquired infections prevention program and is home to the refugee health program.

The personality of the section is professional and friendly, emphasizing a willingness to share ideas and resources for collaborative activities. Expertise within the section and available from other DPH programs includes epidemiologists, veterinarians, toxicologists, outreach and education specialists, evaluation specialists, GIS analysts, infection control practitioners, health informatics professionals, and nurses, among others. The Bureau hosts monthly communicable disease webinars available to partners across the state and within the bureau. Additionally, there are several cross-cutting groups of epidemiologists and staff working in multiple bureaus who meet to share projects and discuss methods for better data analysis, mapping, data visualization and clear communication. The Fellow would be encouraged to participate in these groups.

Day-to-Day Activities

The Fellow will be assigned physical space in CDES near both mentors and a majority of time will be spent in the office. Field work opportunities most commonly occur during outbreak situations. When appropriate, every effort will be made to facilitate the Fellow’s participation in on-site assessments or environmental sampling which are conducted as part of an investigation. Attendance at off-site meetings and conferences is encouraged.

Daily activities in BCD, particularly early in the Fellowship, will be related to the Fellow’s surveillance evaluation and major projects, and learning the basics of enteric disease surveillance. With the mentors’ guidance, the Fellow will develop an in-depth understanding of communicable disease follow-up. While the Fellow’s primary duty is not patient interviewing (most interviewing is conducted by local public health) it will be important that they conduct some patient interviews using existing interview tools to become familiar with this important component of surveillance. The Fellow will also have the opportunity to help conduct interviews during outbreak investigations. When the Fellow has become
familiar with the surveillance system, they will be encouraged to review campylobacteriosis case reports in real-time to identify clusters of illness and work with the mentor and local health department staff to investigate suspected outbreaks.

With progressive gains in expertise, the Fellow will be encouraged to identify additional projects of interest. The Fellow will be expected to attend and participate in bi-weekly communicable disease meetings with the other program areas in the CDES, weekly conference calls with the Wisconsin State Laboratory of Hygiene, and bi-monthly interagency animal health meetings. While both mentors are available at any time and would expect routine contact with the Fellow, weekly meetings will be scheduled to review progress, discuss the work plan, and make sure any needs are being addressed.

While there are multiple resources and experts readily available to guide the Fellow’s activities, the Fellow is expected to develop a reasonable amount of independence and initiative to identify areas of interest, seek out additional resources as needed, and complete tasks.

**Potential Projects**

**Surveillance Activity Surveillance of Campylobacter Infections**

The burden of illness associated with Campylobacter infections among Wisconsin residents is significant. In Wisconsin during 2014-2018, the median annual number of reported cases of campylobacteriosis was 1693, and there were eight Campylobacter outbreaks reported. Case data are submitted from laboratories and clinicians throughout the state. Patients diagnosed with campylobacteriosis are interviewed by local public health staff regarding their exposures and clinical specimens are forwarded to the Wisconsin State Laboratory of Hygiene for confirmation and subtyping. This data is reported to the Wisconsin Electronic Disease Surveillance System (WEDSS).

The Fellow will work with the enteric disease epidemiologists to learn all aspects of enteric disease surveillance. This will include conducting routine surveillance activities aimed at identifying clusters for further investigation or individual cases requiring additional follow-up or interventions by local public health. These surveillance activities provide essential experience for understanding the roles of local and state agencies. The Fellow will also have the opportunity to work with staff at the Department of Agriculture, Trade, and Consumer Protection (DATCP) to gain an understanding of the regulatory and environmental health components of food safety and outbreak investigations.

The Fellow will complete a 10-year surveillance summary of campylobacteriosis data to describe burden and demographic, temporal, or exposure trends. In addition to writing a surveillance report there will be opportunities to share these findings in multiple forums as appropriate. These opportunities may include presenting on a state communicable disease webinar for local public health, presenting at a national conference, or developing written or web materials using clear communication principals to effectively present and share public health data and education with the public.
Surveillance Evaluation Evaluation of Animal Bite and Rabies Surveillance Data

Animal bites, from domestic and wild animals, are an important public health problem due to the risk of rabies virus exposure, as well as concerns for other bite-associated infections, and bite-associated injuries and deaths. An estimated 4.5 million people each year in the U.S. are bit by dogs alone. The number of bites that occur in Wisconsin annually is poorly characterized because animal bites are not designated as reportable by state statute. Although not explicitly reportable, reporting of dog and cat bites is implied and routinely occurs to allow for law enforcement or public health to administer the State’s rabies control statutes. Some, but not all, jurisdictions use WEDSS to manage animal bite reports.

An evaluation of WEDSS animal bite data will be completed to describe and characterize the current use of this system. This will include evaluation of reports entered in WEDSS, a survey of local health and law enforcement agencies, and a review of surveillance systems in other states. Additionally, the Fellow will identify, analyze, and summarize animal bite data available from multiple data systems outside of WEDSS in order to better describe the burden of animal bites in the State. Potential sources of data for this piece of the evaluation may include vital records, the Wisconsin Immunization Registry, hospital discharge, EMS and emergency department data. This portion of the project will be data rich and provide the Fellow with ample opportunity to improve their analytic skills using software such as SAS or ArcGIS. They will have access to and work with multiple data systems and search using both ICD10 codes and key word searches.

Upon completion of this evaluation, we would expect recommendations on system improvement and the Fellow will play a role in revising the WEDSS Animal Bite interface. The Fellow will be asked to share the findings and resulting recommendations in varying formats with key One Health partners. These may include Wisconsin local public health agencies, human health providers, law enforcement, animal control agencies, animal health organizations, wildlife organizations, as well as with the public. The Fellow will have the opportunity to work with communication specialists and their Mentor to develop new outreach and educational materials for the public informed by the findings of the project and may consider preparing a manuscript for publication.

Major Project Develop a Zoonotic Disease and One Health Toolkit

The One Health term has been in use for more than 15 years and the concept itself for longer, but there is still a need to educate partners and the public about this idea, and within DPH to build new and enhance existing One Health activities and partnerships. The Applied Epidemiology Fellow will work with the State Public Health Veterinarian (SPHV) to develop a One Health and zoonotic disease toolkit. This will require an initial needs assessment to determine what is currently available and identify what resources or activities should be prioritized.

Based on the needs assessment the Fellow will work with the SPHV and other relevant internal and external partners to develop outreach and training materials for the public, local health departments and One Health partners. The specific avenues where these materials will be disseminated may include informational webinars and trainings that may be given live and then archived for later viewing, in-person presentations, websites, fact sheets or newsletters. Possible topics to consider are Influenza and zoonotic disease education for youth in agriculture, rabies prevention, safe husbandry of backyard poultry, and safety education about animals in public settings such as fairs or petting zoos. Additional work will focus on big picture One Health education, but as needs and interests align, may also include a...
variety of other One Health topics such as antimicrobial stewardship, vectorborne diseases, and waterborne diseases. Developing and disseminating these resources will be collaborative with opportunities to work across agencies, including public and private partners.

In addition, the Fellow will work with the SPHV to explore the need and possible goals of a formal One Health workgroup. While collaboration across state agencies and with other non-governmental organizations routinely occurs, a formal One Health workgroup is not established. The Fellow will have the opportunity to attend and contribute during interagency meetings to better understand the existing One Health work that is occurring. The Fellow will be encouraged to learn about One Health initiatives in other states and consider CDC’s One Health Zoonotic Disease Prioritization workshops as a potential model for assessment in Wisconsin.

Additional Project  Assessment of a New Public Facing Complaint System

A new statewide web-based public complaint system for reporting of possible food and waterborne disease outbreaks has been developed by the Enteric Diseases Program in collaboration with the Department of Agriculture, Trade and Consumer Protection. A single web interface has been developed where members of the public can report an illness that they believe is linked to a restaurant, pool, or other venue. The platform will receive complaints related to restaurants or other implicated facilities from across the state and has an alerting system to notify the appropriate local jurisdiction for follow-up. The new website will be piloted in several local jurisdictions beginning in winter 2019 and will be launched statewide before summer 2020. The goal of the system is to provide a convenient platform to report illnesses, with the results improving both the number and speed of illnesses and outbreaks detected. The new tool will be launched to the public using a variety of media platforms intended to reach a wide audience.

The Fellow will be responsible for reviewing and summarizing data from complaints received during the first 12 months of use. This will be an important quality improvement project necessary for assessing the system’s early performance and will inform decisions to adjust processes or outreach activities. This project would be completed during the second year of the fellowship to allow for a full year of data collection into the system.

Additional Project  Outbreak and Cluster Investigations

The Fellow’s placement within the Communicable Diseases Epidemiology Section (CDES) assures they will have ample opportunity to gain experience conducting effective outbreak investigations from experienced epidemiologists. One important responsibility of the section is to respond to acute health events. It is important that all Fellows placed in CDES have the opportunity to learn these important skills. The Enterics Program in particular investigates dozens of outbreaks (large and small) each year and the waterborne disease program routinely investigates multiple outbreaks of legionellosis. In recent years the section has also investigated outbreaks of leptospirosis, toxoplasmosis, blastomycosis, histoplasmosis, adenovirus, and hospital acquired infections among others.

The Fellow’s campylobacter surveillance responsibilities will connect them with the Enterics Program where they will learn to identify and investigate disease clusters and outbreaks, and the Fellow will also be participating in any zoonotic disease outbreaks. They will have the opportunity to participate in all aspects of an investigation from generating a hypothesis and developing a questionnaire and database,
to interviewing cases, conducting data analysis, and writing the outbreak report. Depending on what occurs during the placement, and the particular interest of the Fellow, opportunities for participating in disease investigations outside of enteric and zoonotic program areas may be available. These could include Hepatitis A, healthcare acquired infections, respiratory diseases, or others. The Fellow should anticipate participating in, and leading, multiple cluster or outbreak investigations during their fellowship.

**Preparedness Role**

The state’s emergency preparedness program is located in the Office of Preparedness and Emergency Health Care. This office works closely with staff in the BCD and funds staff in many areas of public health including the SPHV. CDES regularly collaborates with and participates in preparedness activities. The Fellow will have the opportunity to meet with these staff to learn more about the program and will be encouraged to complete ICS trainings and other trainings as they are available. The SPHV is one of the BCD staff responsible for Ebola and select agent response planning and will be able to identify opportunities for the Fellow to participate in simulations and table-top exercises. If actual events occur requiring activation of emergency preparedness plans, the Fellow would likely be an active participant in a response.

**Additional Activities**

The Fellow will be encouraged, as they become familiar with other topic areas within DPH, and among our partners, to seek out projects that they are both interested in pursuing and for which there is a need. One Health focused opportunities will be encouraged. Topic areas to explore, and for whom natural partners already exist, include antibiotic resistance, vectorborne diseases, food safety, and education and outreach to the agriculture industry.

One specific opportunity in CDES to consider is working with the Antibiotic Stewardship Coordinator to implement One Health approaches to stewardship. They may also consider working with the healthcare associated infections (HAI) prevention program and the existing HAI data. The Fellow will be encouraged to learn about our external partners. New initiatives aimed at working with agriculture partners are in the early stages of development. These will have the primary goal of promoting education and outreach to the agriculture industry about zoonoses, with a focus on youth in agriculture. The Wisconsin State Laboratory of Hygiene is one of CDC’s regional labs in the Antibiotic Resistance Network (ARLN) and Wisconsin is the site of CDC’s Midwest Center of Excellence for Vectorborne Disease. The Center is headquartered at the University of Wisconsin-Madison and works closely with the vectorborne program in the CDES.
Mentors

Primary    Rachel Klos DVM, MPH  
           State Public Health Veterinarian

Secondary  Jordan Mason DVM, MPH  
           Enteric and Waterborne Diseases Unit Supervisor