Infectious Disease

Assignment Description

The Fellow will be an integrated member of the zoonoses group, which is part of the Foodborne, Vectorborne, and Zoonotic Disease Unit of the Acute Disease Investigation and Control Section (ADIC). ADIC is part of the Infectious Disease Epidemiology, Prevention and Control Division of the Minnesota Department of Health

Day-to-Day Activities

Our Fellow will participate in the day-to-day work of the unit including surveillance of zoonotic diseases, outbreak investigations of zoonotic and foodborne illness, service and outreach to the public, prevention of zoonoses, and zoonotic influenza planning. While the majority of the Fellow's time would be spent in the zoonotic disease area, there will be many opportunities to work in the foodborne area on foodborne illness outbreaks and a variety of projects. The Fellow will be taught a step-by-step approach to cluster/outbreak investigation of zoonotic and foodborne diseases, including questionnaire development, interviewing skills, hypothesis development, database creation, data analysis, working with outside agencies, keeping involved parties informed, interaction with the public and media, and finally, writing outbreak investigation reports. In addition, publication opportunities are frequent at MDH, and they will likewise be made available to our Fellow.

Potential Projects

There are several major projects that our CSTE Fellow might choose to undertake:

1. Salmonella in Pocket Pets Project: Although most human Salmonella infections are acquired through consumption of contaminated food, many cases are associated with contact with animals or their environments. Most recently, contact with pet rodents or rodents purchased for use as reptile food has been associated with outbreaks of salmonellosis in humans. The extent of the problem in the pet industry, or what might be described as the background rate of salmonellosis in retail pocket pets is currently unknown. The objective of this project would be to estimate the prevalence of Salmonella enterica in rodents on display for retail sale in pet stores in the Minneapolis-St. Paul metropolitan area. Background research on the pocket pet supply industry would also be performed and incorporated into the study results.

2. Petting Zoo Disease Prevention Project: Our fellow would develop a multi-media educational campaign to reduce enteric illness among visitors to petting zoos, county fairs, apple orchards, and other venues where the public has contact with animals. Materials designed for the public would include brochures, posters, and buttons about handwashing and safe animal interactions. Materials designed for venue operators and staff would include educational PowerPoint presentations or videos, information on animal management, layout of the facility, and information on setting up handwashing stations. A study to determine the effectiveness of the outreach (in terms of the percentage of visitors washing their hands, for example) could be incorporated into the project.

3. Veterinary Infection Control Survey: The 2003 African monkeypox infection outbreak in the United States, in which 18 of 71 (25.4%) infected individuals were veterinary personnel, highlighted the risk of occupational exposure to zoonotic pathogens in veterinary medicine and the need for infection control

guidelines for veterinary personnel. The Compendium of Veterinary Standard Precautions for Zoonotic Disease Prevention in Veterinary Personnel (JAVMA, 2008) was the first such guidance published for veterinary personnel in private practice. This project would assess how and if veterinary infection control topics are incorporated into veterinary school curricula in the 28 U.S. veterinary schools. In other words, now that published infection control guidance is available, is it being used to train future veterinarians?

4. Occupational injury, zoonotic infections, and infection control practices survey of Minnesota veterinarians and veterinary technicians: The authors of the last published survey of Minnesota and Wisconsin veterinarians [J of Trauma. 1988; 28 (8)], reported that 65% of 995 respondents had sustained a major animal-related injury during their careers, and 17% had been hospitalized within the previous year. Self treatment of injuries and infections was common. In this project, our Fellow would collect similar information to assess a change in behavior over time. In addition, our study population would include veterinary technicians, and focus on attitudes and practices regarding prevention.

5. Approximately 3-4% of the bats we test for rabies are positive; these bats generally have had encounters with humans or are behaving strangely. This project would involve testing bats captured by bat-control specialists or by naturalists to estimate what percentage of bats in nature might carry the virus. In addition, the Fellow could develop an educational campaign to prevent bat-transmitted rabies.

6. Opportunity to develop and overhaul the MDH zoonoses website, which is out-of-date.

There are several small projects that may be of interest to a CSTE Fellow:

1. In the last few years, MDH has identified several outbreaks of rodent-associated Salmonella Typhimurium infections; many of the rodents had been purchased as food for pet reptiles. This project involves searching our database of reptile-associated cases of Salmonella Typhimurium for rodent contact.
2. Create educational materials for daycare providers on preventing diarrheal illness and on safe interactions with animals.
3. Produce an educational DVD in collaboration with the Minnesota Board of Animal Health on animal bites and rabies risk for Minnesota law enforcement. The rabies rules are currently being updated, and this would be an efficient method to disseminate new information.

Surveillance System Evaluation Component :

The Fellow could evaluate our surveillance systems for sporadic cases of infection with bioterrorism agents such as tularemia, brucellosis, or Q fever. In addition, there are other surveillance systems that would benefit from evaluation. Some of these include veterinary and human surveillance for blastomycosis, surveillance for human infection with zoonotic influenza viruses, and surveillance for laboratory-acquired infections in Minnesota. MDH participates in CDC's Emerging Infections Program (EIP) Clostridium difficile surveillance system to detect both hospital and community acquired infections. Our fellow could choose to participate in the expansion of this surveillance system to the 7-county Minneapolis/St. Paul metro area, and perform an early evaluation of it. In addition, MDH is conducting a household environmental study of C. difficile. The Fellow could choose to participate in the household enrollment, interview of enrollees, and household environmental specimen collection.

Preparedness Role

Working with the ADIC bioterrorism epidemiologist, the Fellow will participate in bioterrorism and emergency preparedness and response activities, including case investigation of zoonotic diseases associated with bioterrorism agents, and ongoing swine and avian influenza planning activities. Working with the State Public Health Veterinarian, who serves as a liaison between MDH and Minnesota animal agencies regarding human health issues associated with agriculture or animals, the Fellow will participate in zoonotic infectious disease planning and response.

Assignment Location:	St. Paul, Minnesota
Primary Mentor:	Joni Scheftel, DVM, MPH State Public Health Veterinarian Minnesota Department of Health
Secondary Mentor:	Kirk Smith, DVM, MS, PhD Supervisor, Foodborne, Vectorborne, and Zoonotic Diseases Unit Minnesota Department of Health