When Zoonotic Disease O'Curd in Wisconsin, It Was Nothing to Monkey Around With: Public Health Responds to an Emerging Infectious Disease

A Case Study in Policy Development
Mid-America Regional Public Health Leadership Institute Year 12 Fellows

Dan Hopfensperger (Mentor)
Judy Aubey, BS, MS
Melody Bockenfeld, BSN, MPH
Vicki Evenson, BS, MS
Dawn Roznowski, BS
Jim Ryder, MPH, BS, RS
Gail Scott, RN, BSN
Mary Young, BS, MSEd

The world is getting smaller; increasing the potential for global spread of new infectious diseases as well as re-emerging old infections. Since the 1960s, more than 30 new infectious diseases have been classified as "emerging" (Institute of Medicine, 1992). Successful public health intervention will require accurate surveillance, development of newer control and prevention strategies, enhanced communication with traditional partners and the development of linkages to non-traditional partners. Emerging infectious disease outbreaks will likely involve multiple states and cross local governmental boundaries. Federal, state and local public health agencies all have a role to play in the prevention, detection, investigation and control of emerging infectious disease outbreaks. When an outbreak involves animal to human transmission, multiple federal and state agencies may have jurisdictional responsibilities, further increasing the complexity of the event. An effective and coordinated response at each level requires clear policies that guide communication, define roles and address jurisdictional issues.

This case study describes the events during the initial three weeks, May 24, 2003 to June 16, 2003, of a monkeypox outbreak, which originated in Holstein County. The initial report to Holstein County involved an ill animal, however the index human case resided in neighboring Guernsey County. The hospital that treated the index case and identified the virus was located in Angus County, which also borders Holstein County. Holstein, Guernsey and Angus are rural counties with populations of approximately 126,000, 34,000 and 75,000 respectively. By June 16th, the outbreak involved a total of 41 confirmed and suspected cases within the state, involving multiple counties as well as a large metropolitan area around Cream City. The outbreak garnered intense statewide and national media attention.

The policy development core function calls for public health to promote and protect the health of the community through the development of comprehensive public health policies. The related essential services are: (1) informing, educating and empowering people about health issues, (2) mobilizing community partnerships to identify and solve health problems, and (3) developing policies and plans that support individual and community health efforts (Turnock, 2001). This case study describes the fluid nature of an evolving outbreak, the need for consistent policies on investigation and control when a communicable disease is caused by a new pathogen, the need to provide health information to the public, and the importance of communication. This last point was underscored by the Institute of Medicine: "The role of communication in public health practice cannot be underestimated. It is crucial for the successful performance of public health's core functions and essential services. Governmental public health agencies must communicate effectively internally as well as externally with other governmental agencies and nongovernmental stakeholders and partners" (Institute of Medicine, 2003).

Case Body

May 10, 2003 was a sunny Saturday morning. Animal lovers flocked to Holstein County to attend a pet swap, which featured many exotic animals. One family purchased a prairie dog. On May 15, 2003 the prairie dog, which was showing signs of illness, bit a young child. By May 19, 2003 the child had a fever and was subsequently hospitalized at Cowfield Clinic. In late May, the prairie dog was taken to a veterinarian**.**

On Saturday, May 24, 2003, the veterinarian called the health officer of Holstein County to report that an animal he had treated in his office might have tularemia or smallpox. The animal was noted to have enlarged lymph nodes, so the veterinarian submitted lymph node specimens to Cowfield Clinic. The Holstein County Health Officer conducted an investigation and determined the connection between the child and the animal's illness. She contacted an infectious disease specialist, Dr. Kildare, at the Cowfield Clinic and was informed that preliminary tests on the lymph node specimen had ruled out plague, but not tularemia. It was also discovered that a vet tech from the veterinarian's office had been bitten by the same prairie dog. The Holstein County health officer contacted the vet tech and learned that she was experiencing signs of illness.

The Holstein County health officer called the state health department's emergency line and consulted with Dr. Joe Epi. Dr. Epi recommended that a definitive diagnosis from the hospitalized child was needed as soon as possible to determine how to proceed. The pet-swap and the veterinarian's office were located in Holstein County. The sick child lived in Guernsey County, and the vet tech resided in Jersey County. At this point, however, the Holstein County health officer was the only local health officer involved in the investigation.

Wisconsin public health statutes specify "Every local health officer, upon the appearance of any communicable disease in his or her territory, shall immediately investigate all the circumstances and make a full report…" "The local health officer shall promptly take all measures necessary to prevent, suppress and control communicable diseases…" (Wis. Statutes 252) The state statutes and department's administrative rules did not specifically address multi-jursidictional issues.

Six days later, Friday, May 30, 2003, Dr. Kildare notified the Holstein County health officer that the laboratory findings indicated a virus which was morphologically consistent with a poxvirus. On Monday, June 2, 2003, the health officer notified the state health department of the laboratory findings. On the same day, a physician in Cream City reported a possible case of tularemia.

The state health department issued a health alert via email and fax to all health departments in the state on Thursday, June 5, 2004. The health alert stated that they were investigating illnesses in 12 individuals throughout the state who had recent exposure to prairie dogs. The reported symptoms included fever, cough, rash and swollen lymph nodes. The exact cause of the illness was not known. Although the state health department had been consulting with individual health departments involved in the investigation, this alert was the first notification to all health departments in the state. Prior to this event, the state health department did not have a policy for determining under what circumstances all health departments should receive notification of an outbreak.

The state-generated health alert described the outbreak, how the diagnosis was made, signs and symptoms of illness, information on general prevention methods, clinical diagnosis, infection control measures for health care providers and veterinarians, reporting requirements, and guidelines for submission of specimens. The alert indicated that all victims had reported direct or close contact with prairie dogs sold at pet-swaps. A Cream City animal distributor had obtained the prairie dogs and a Gambian giant rat that was ill from a distributor in another state.

The Department of Cows undertook an investigation to locate all prairie dogs sold at the pet-swaps and trace back the source of the infected prairie dogs and the Gambian giant rat.

On Friday, June 6, 2003, the Centers for Disease Control and Prevention (CDC) in conjunction with the state health department, held a teleconference with a select group of public health officials in Wisconsin to discuss management of the outbreak, however some health officials who were involved in the investigation were not included in the call.

On June 7, 2003 the CDC activated their Emergency Operations Center and issued a health alert. It noted that further testing of patients' specimens

performed at the Centers for Disease Control and Prevention suggested that the causative agent was most closely related to monkeypox virus, a member of the orthopoxvirus family of viruses. The alert described human monkeypox as a rare zoonotic viral disease that occurs primarily in the rain forest countries of central and West Africa. By this date, the outbreak involved three states. Seventeen cases had been reported among Wisconsin residents. All had reported direct or close contact with prairie dogs, most of which were sick. Illness in prairie dogs was frequently described as conjunctivitis, progressing to nodular lesions in some cases. The state health department did not activate their Emergency Operations Center, nor did it identify a public information officer. Cream City and a neighboring health department opened a joint Emergency Operations Center and took the lead in disseminating information in their area.

The Cream City Health Department established an 800 number on June 8, 2003, to provide information on the monkeypox outbreak to concerned citizens. The state health department released a second official health alert for local health departments and infection control practitioners. They encouraged local health departments to share the alert with local providers. The state health alerts were informative and timely. The number of confirmed and suspect cases was provided on a statewide basis, the number of cases in individual counties was not publicly distributed.

By June 9, 2003, new suspect cases were being reported in multiple counties. The state health department sponsored a large teleconference with all involved counties. The teleconference started with a lengthy process of confirming case numbers with each county individually. Several participants expressed frustration that precious time was spent confirming data that could have been accomplished prior to the call. The first version of the questionnaire for case follow-up was presented. Many counties expressed confusion regarding who was conducting follow-up with their residents who worked or were diagnosed in other counties. Some of the counties with reported cases had not previously been included in communication regarding the investigation. As the number of involved counties grew, the state health department was overwhelmed by calls for consultation from local health department staff. The state was unable to provide a consistent contact person to each local health department.

The Department of Cows was successful in its investigation related to the sales of prairie dogs from the infected shipment. They released to the media a list of counties where the prairie dog owners resided. Multiple county health departments were deluged with calls from the media asking for information on the location of the prairie dog owners. Because the owners were being evaluated as possible cases, health departments were reluctant to provide specific information to the media. Many reporters found this to be evasive, inconsistent with the Department of Cows policy, and not in the public's interest.

On June 10, 2003, the state health department issued media talking points to all local health departments to assist them in fielding media calls.

Infection control measures, including isolation guidelines, had been distributed in the state's health alerts. Public health staff from the Guernsey County Health Department consulted with the state health department on June 10, 2003 regarding isolation of a symptomatic individual. The health department provided the individual with isolation instructions, however the individual's physician, Dr. N. Competent disagreed with the recommendation and instructed the patient to resume normal activities.

On June 11, 2003, the CDC published interim guidance for use of smallpox vaccine, cidofovir and vaccinia immune globulin for the purposes of monkeypox outbreak control. On the same day, the state health department released a statement indicating it was reviewing the CDC recommendations. However, the state's response to the outbreak would continue to be identification and treatment of cases and prompt action to limit spread of the disease. Smallpox vaccine would not be offered until final guidance was provided.

The state health department**,** with the Department of Cows issued an emergency order on June 12, 2003. The order delineated specific prohibitions related to prairie dogs and other mammals known to be in contact with prairie dogs. The prohibitions were related to importation, sale, release into the wild and prairie dog contact with the public. Local health departments needed to assure that pet stores and petting zoos within their jurisdictions were in compliance with the order. Over the next several days, local animal dealers called local health departments complaining that the order to quarantine asymptomatic animals was detrimental to business. They demanded to know who could lift the order.

On Friday, June 13, 2003 the state health department recommended smallpox vaccination for the prevention of monkeypox. Specific guidelines for who would be offered the vaccine were delineated. Vaccination clinics were scheduled to begin the next day. State Department of Health staff had implemented smallpox vaccination programs for state and local public health staff, as well as hospital and clinic health care providers the preceding March and April. The pre-event vaccination program had exercised both state and local staff, and enabled them to mobilize quickly when vaccination was recommended in this outbreak.

The clinics were concluded by June 16, fewer than 10 people were vaccinated.

Closing

In the aftermath of September 11th and the anthrax scares that followed, public health has embarked on a process of increasing its capacity to respond to all types of emergencies. Funding in unprecedented amounts has been made

available to enable the public health system to prepare for and respond to bioterrorism, infectious disease outbreaks and other public health emergencies.

Over the past several years, the public health system has seen the development of the Health Alert Network, increased epidemiology capacity and increased laboratory capacity. It is clear that these improvements enhanced the state and local response to the monkeypox outbreak. Despite this enhanced infrastructure, the statewide response was impaired by the lack of clear lines of command, control and communication between federal, state, and local health agencies, as well as between state health and state animal control agencies. Existing communicable disease control policies did not address multi-jurisdictional issues. Additionally, the lack of coordinated and comprehensive federal and state laws governing the exotic pet trade make it likely that similar outbreaks will continue to occur, placing more demands on limited public health resources.

References:

Institute of Medicine. 1992. Emerging Infections: Microbial Threats to Health in the United States. National Academy Press, Washington, D.C.

Institute of Medicine, Committee on Assuring the Health of the Public in the 21st Century. 2003. The Future of the Public's Health in the 21st Century. National Academy Press, Washington, D.C.

Turnock, Bernard J., 2001. Public Health – What it is and How it Works. 2nd edition. Aspen Publishers, Inc. Gaithersburg, MD.

Wisconsin Statutes, 93-94. Chapter 252, Communicable Diseases.

Study Guide:

1. How would implementation of an Incident Command Structure by the state health department have impacted the coordination of participating agencies?

2. At what point might an incident command structure have been implemented?

3. How can communication with multiple partners be enhanced during rapidly evolving communicable disease outbreaks? Give specific examples.

4. What factors do state and local public health officials need to consider when balancing the public's need to be informed of health issues with individual privacy rights?

5. How can local public health agencies work together to perform cross-jurisdictional communicable disease investigations?

6. How did the "dual use" philosophy of preparedness funding improve the response to this outbreak?