

Submission Type Breakout/Quick/Lightning/Poster
ID [8432](#)

Abstract Type Breakout

Abstract Title Abstract A Human Sentinel for an Animal Disease Problem: A Multiagency Investigation of Swine Brucellosis in New York State

BACKGROUND: Swine brucellosis is caused by infection with *Brucella suis*. In swine, brucellosis causes economically important reproductive losses. A national eradication program exists. The organism is zoonotic and can be maintained in both domestic and feral swine. The disease has been eradicated in commercial swine. In New York (NY), *B. suis* had not been detected in swine since the 1980's, and no feral swine sightings were reported in the prior two years. We report the public health and agricultural response to a human case of brucellosis caused by *B. suis* resulting from contact with infected NY swine.

METHODS: Following confirmation of *B. suis* in a blood culture isolate from NY resident, an investigation was conducted to determine the source of infection. The NY State Department of Agriculture and Markets (NYSDAM) with assistance from the USDA-APHIS-VS conducted testing of swine on the case's farm and traceback and traceforward of swine sourced into and out of the herd; these agencies coordinated management of infected herds. Serologic monitoring of humans exposed to infected swine was recommended to monitor for sub-clinical or emergent infections.

RESULTS: In April 2016, the Wadsworth Center confirmed *B. suis* in a blood culture isolate from a woman aged 68 years. The woman had been ill with bronchitis and had recovered with antibiotic therapy. She reported contact with approximately 30 head of swine on her farm. NYSDAM was notified; testing by the USDA NVSL revealed *B. suis* infection of the herd. The herd was depopulated. No feral swine sightings were reported on this farm. Herd tracing revealed that a number of other small farms had exchanged animals with the index farm. These herds were quarantined and tested. Six positive herds in NY were depopulated; premises were cleaned and disinfected prior to the reintroduction of swine. Positive swine in NY were prohibited from being slaughtered for food. Persons who had direct contact with infected herds (e.g., farmers, farmhands, and veterinarians) or the human isolate (i.e., laboratory staff) were offered combinations of symptom monitoring, serologic monitoring, and antibiotic postexposure prophylaxis, depending on level of exposure. No further human illnesses were reported, but one exposed farmer seroconverted over the course of the monitoring period.

CONCLUSIONS: An extensive public health and agricultural response was conducted following the diagnosis of a human case of *B. suis*. Evidence suggested that *B. suis* had been circulating among NY transitional swine herds for at least the past several years.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Zoonotic Disease; Veterinary Public Health; One Health

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [7929](#)

Abstract Type Breakout

Abstract Title
Abstract Early Adoption of the 2016 Animal Rabies Compendium at a Local Public Health Agency: Outcomes on Pets Potentially Exposed to Rabies — Denver Metropolitan Area, 2016

BACKGROUND: Rabies is a fatal viral infection transmitted through bites from infected animals that can be prevented by vaccination. Local public health agencies ensure that pets potentially exposed to rabies undergo correct quarantine or euthanasia. The updated 2016 Compendium of Animal Rabies Prevention and Control included substantial changes in recommendations for pets overdue for a rabies vaccine booster. We evaluated effects of the new Compendium regarding pet outcomes after known or possible rabies exposure.

METHODS: We examined potential rabies exposures reported to Tri-County Health Department (TCHD) for 8 months after implementing the 2016 Compendium recommendations. Pet exposure data was stratified by risk for rabies exposure, vaccination status, rabies testing results, and pet management. Exposures resulting in a different course of action on the basis of the new guidelines were compared with historical practices.

RESULTS: One-hundred four potential pet rabies exposures were reported to TCHD during May–December 2016; however, 36 (35%) events were excluded due to negative rabies testing. Among 68 remaining pets, management under the new Compendium differed for 24 (35%) pets with known or possible contact with a rabies reservoir species and no rabies testing to confirm exposure. Four of 24 (17%) pets were unvaccinated and placed in a 4-month strict quarantine, compared with the prior recommendation of a 6-month strict quarantine or euthanasia. The remaining 20 (83%) were overdue for a rabies vaccine booster and placed in a 45-day (n = 17) or 4-month (n = 3) home observation. In comparison, before May 2016, TCHD would have implemented a 90-day home quarantine for these 20 overdue pets. Management of 44 (65% of 68) pets was unchanged with the new Compendium, including pets exposed to a laboratory-confirmed rabid animal (45-day home observation for vaccinated or euthanasia for unvaccinated pets, n = 13); and pets exposed to a rabies reservoir species and up-to-date on rabies vaccination (45-day home observation, n = 25), unvaccinated (euthanasia or 6-month quarantine, n = 5), or overdue for rabies booster vaccination (euthanasia, n = 1). No pets placed under observation or quarantine experienced rabies.

CONCLUSIONS: Early adoption of the 2016 Rabies Compendium recommendations notably changed public health management of pets potentially exposed to rabies. Successful outcomes were achieved by using less stringent requirements for home observation or quarantine in accordance with the Compendium and reduced the number of pets euthanized. We recommend that public health agencies consider aligning rabies policies with the Compendium.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Veterinary Public Health; One Health; Zoonotic Disease

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [7481](#)

Abstract Type Breakout

Abstract Title Findings of Animal Rabies Testing and Human Exposure Management—Nebraska, 2006–2015
Abstract

BACKGROUND: Rabid bats are increasingly implicated as an important wildlife reservoir of rabies in Nebraska; transmission can occur from minor, underappreciated or unrecognized bites. Wild terrestrial carnivores are also an important rabies reservoir among which skunks have historically been found as most often infected in Nebraska.

METHODS: The Nebraska Department of Health and Human Services issues Rabies Approval (RA) numbers and pays for testing of animals involved in potential human rabies exposures if criteria are met to establish risk as specified by the state’s Rabies Control Program. To define the epidemiology of rabies among animal species in Nebraska and to characterize human exposure events and outcomes, we performed descriptive analysis of all laboratory test result data and exposure data from 2006 through 2015.

RESULTS: During 2006–2015, 10,438 animals from Nebraska were tested for rabies of which 429 (4.1%) were positive. Of 5,904 bats; 1,884 cats; 1,157 dogs; 391 cattle; 340 raccoons; 296 skunks; and 115 horses submitted for testing, 109 (1.8%); 33 (1.8%); 6 (0.5%); 42 (10.7%); 2 (0.6%); 215 (72.6%); and 16 (13.9%) tested positive, respectively. The median number of bats and skunks testing positive per year was 11.5 (range, 3–16) and 16 (range, 7–53), respectively. During 2006–2015, NDHHS paid for 4,402 tests for exposure events with established human risk (median/year, 445.5; range 371–477). Of these, 4,219 (95.8%) were negative (median/year, 428; range 354–461 [95.4%–96.6%]); risk of rabies was ruled out and costly post-exposure prophylaxis could be avoided among exposed persons. Of the remaining 183 exposure events, 109 (2.5%) were positive (median/year, 11; range 7–16 [1.6–4.1%]) and 74 (1.7%) were not testable and reported as unsuitable (median/year, 7.5; range 4–10 [0.9–2.3%]); post-exposure prophylaxis (PEP) was necessary for potentially exposed, at-risk persons.

CONCLUSIONS: Skunks and bats remain the two primary wildlife reservoirs for the rabies virus in Nebraska. Given ongoing presence of this disease in these reservoir species, rabies remains a potentially serious threat to public health in Nebraska. On the basis of test results from animals associated with potential human exposures, medical professionals and public health officials are able to make well-informed decisions and recommendations for the exposed person(s) regarding need for PEP — an extremely effective intervention to prevent human rabies when administered appropriately. When test results are negative, such findings allow exposed persons to avoid expensive and time-intensive PEP.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Zoonotic Disease; Surveillance; One Health

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8634](#)

Abstract Type Breakout

Abstract Title Impact of Invalid Salmonella Laboratory Testing Methods on Global Public Health
Abstract

BACKGROUND: In 2015, the Centers for Disease Control and Prevention (CDC) received a report of a child who developed a *Salmonella* gallbladder abscess following contact with a small turtle (shell length <4 inches) purchased at a flea market; a federal ban prohibits sale of small turtles in the United States. Federal regulators visited the flea market and interviewed the turtle vendor who reported obtaining turtles from Turtle Farm X in Louisiana (LA). In 2015, Turtle Farm X and other LA turtle farms exported turtles internationally. *Salmonella* illnesses linked to small pet turtles were reported to the CDC by countries importing turtles from Turtle Farm X.

METHODS: At the time of these reports, LA state law required *Salmonella* -negative test results before export. Additionally, some countries importing turtles from the United States required a *Salmonella*- negative test result and a signed US Department of Agriculture health certificate for imported turtles. We investigated *Salmonella* testing practices and results for turtles exported from Turtle Farm X.

RESULTS: We discovered that Turtle Farm X utilized Laboratory Z, exclusively, for *Salmonella* testing. Laboratory Z was not registered as a business in LA. Examination of Laboratory Z's official reports revealed that the laboratory's name in the heading of the reports included the word "Diagnostic," misspelled as "Diganostic." This error raised suspicion that Laboratory Z might not be a legitimate laboratory. The authority overseeing the LA turtle industry found that testing methods utilized by Laboratory Z were outdated and inadequate to detect *Salmonella* . When valid testing methods were used at accredited veterinary laboratories, *Salmonella* was isolated from turtles exported from LA. Louisiana law required negative test results as a condition of export; therefore, turtles could not be exported. In April 2016, <6 months after the outbreak investigation was initiated, an emergency change of LA administrative rules was issued eliminating testing of turtles for *Salmonella* as a condition of export unless required by the importing country.

CONCLUSIONS: Invalid laboratory methods and reports certifying that animals tested negative for *Salmonella* has contributed to illnesses in the United States and other countries. When contaminated food products are exported and cause illnesses, recalls occur and countries might cease product imports. Small turtles are often linked to illnesses and cannot be rendered *Salmonella* -free, and their sale is therefore banned in the United States. Allowing exports of small turtles puts purchasers in other countries, especially children, at a risk deemed unacceptable in this country.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Veterinary Public Health; Zoonotic Disease

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8036](#)

Abstract Type Breakout

Abstract Title Investigation of a Zika Patient with No Known Risk Factors, Utah 2016
Abstract

BACKGROUND: In July 2016, the Utah Department of Health was notified of a Zika case (A1) that had no known risk factors for Zika virus (travel to an area with ongoing Zika virus transmission, sexual contact with a person who recently traveled, blood transfusion, or organ transplant). The Zika case had provided care to a 73- year-old man (Index Case) who had recently passed away with an extremely high Zika viremia.

METHODS: Federal, state, and local health departments partnered with the hospital and mosquito abatement districts to assess the potential for person-to-person and/or vector transmission. Family contacts of the Index Case were interviewed to identify symptoms and opportunities for exposure. All family contacts were asked to submit specimens for testing. Healthcare workers that cared for the Index Case were given a questionnaire to assess patient care activities; those with direct contact submitted serum samples for testing. 111 healthcare workers that were not exposed to the Index Case submitted serum samples as controls. Lapses in infection prevention practices were assessed. A community serosurvey was conducted within a 200 meter radius of where the Index Case had resided before being hospitalized. Residents were asked about symptoms and exposure to mosquitoes; they were also asked to provide specimens for testing. Local and federal mosquito abatement teams placed traps at the three residences where A1 and the Index Case resided in order to identify, pool, and test the mosquitoes for Zika virus.

RESULTS: Out of the 19 family contacts that were interviewed and tested, no other family contacts tested positive for Zika virus. A total of 132 potentially exposed healthcare workers were identified; 98 were interviewed and 86 provided a blood specimen for testing. All healthcare workers and controls tested negative for Zika virus. A total of 238 households were approached in the community serosurvey, and 37% of households had at least one family member submit a specimen. All of the 123 individuals that submitted specimens tested negative for Zika virus. Active vector surveillance revealed no invasive *Aedes* species mosquitoes. All 5,875 mosquito specimens trapped as part of this investigation tested negative for Zika virus by RT-PCR.

CONCLUSIONS: This investigation was the first in the U.S. designed to identify transmission of Zika virus to a person with no known risk factors. Although the mode of transmission is still unknown, the findings suggest that A1 was infected by a rare person-to-person transmission event.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Vectorborne Disease; Zoonotic Disease

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [7600](#)

Abstract Type Breakout

Abstract Title Outbreak of Shiga Toxin-Producing *Escherichia coli* Among Visitors to a Dairy Goat Farm, Connecticut, 2016
Abstract

BACKGROUND: On March 24, 2016, the Connecticut Department of Public Health (CDPH) identified a cluster of seven culture-confirmed Shiga toxin-producing *Escherichia coli* (STEC) infections. Six of the first seven patients reported visiting the same dairy goat farm. A joint investigation involving the CDPH, Centers for Disease Control and Prevention, Connecticut Department of Agriculture, and the local health district was initiated.

METHODS: : A case was defined as a laboratory-confirmed *E. coli* O157 infection in an individual with the outbreak pulsed-field gel electrophoresis (PFGE) strains or someone with hemolytic uremic syndrome (HUS) during March - May 2016, with an epidemiologic link to the goat farm. Active case-finding was conducted, and all identified case-patients were interviewed by telephone using a standard questionnaire. Environmental and goat fecal samples were collected and tested at the CDPH State Public Health Laboratory. PFGE and whole genome sequencing were performed on isolates recovered from case-patient, animal, and environmental samples.

RESULTS: A total of 51 confirmed *E. coli* O157 cases were linked to the outbreak with onset dates ranging from 3/7/2016 to 5/14/2016. All case-patients were interviewed, 39 (76%) visited the same goat farm or had contact with goats originating from the farm, and 6 (12%) had contact with someone who visited the farm. Case-patients ranged in age from 10 months to 50 years; 55% were ≤ 5 years of age. Eleven (22%) case-patients were hospitalized and 3 (6%) developed HUS. Forty-one (84%) O157 clinical isolates yielded primary outbreak PFGE patterns; the remaining isolates demonstrated closely-related patterns. Among 61 environmental samples collected, 28 (46%) yielded STEC isolates including 18 O157, 9 O103, and 1 O-undetermined. Among the 17 goat fecal pellet samples/swabs collected, 16 (94%) yielded STEC isolates including 11 O157 and 7 O103. All sequenced human, environment, animal STEC O157 isolates were highly related differing by 0-6 single nucleotide polymorphisms.

CONCLUSIONS: *E. coli* O157 is known to colonize the gastrointestinal tract of healthy ruminants, and STEC illness resulting from direct contact with shedding animals or their environment has been reported. In this outbreak, greater than half of the case-patients were 5 years of age or younger. This age group is at increased risk for severe illness. Restricting young children's (<5 years) access to ruminants should be considered in the future to minimize risk to this vulnerable population.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Outbreaks; Zoonotic Disease; Enteric Infectious Diseases

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [7822](#)

Abstract Type Breakout

Abstract Title
Abstract Yellow Fever Outbreak in the Kongo Central Province, Democratic Republic of the Congo, August 2016: Update Epidemiology and Border Issues

BACKGROUND: On April 23, 2016, the Democratic Republic of the Congo (DRC) officially declared a yellow fever (YF) outbreak. Half of the DRC YF cases were recorded in the Kongo Central Province (KCP), which borders Angola; Angola reported YF since December 2015. This report provides an update on the epidemiology of YF outbreak in KCP.

METHODS: We used KCP yellow fever surveillance data from January through August 2016. We visited selected KCP hospitals and border ports of entry and met with YF surveillance stakeholders. Persons with fever and jaundice were suspected YF cases. A laboratory-confirmed YF case was defined as a YF suspect case with detection of YF-specific immunoglobulin M and YF-specific neutralizing antibodies, or YF virus genes in the blood via the polymerase chain reaction.

RESULTS: There were 410 suspected YF cases in KCP, of which 393 (95.8%) had specimens tested; 37 (9%) were laboratory-confirmed. The median age of laboratory-confirmed YF cases was 31 years; 86.4% were male, and the case-fatality rate was 21.6%. Of the laboratory-confirmed YF cases, 35 (95%) were imported from Angola, of which 23 (66%) crossed the DRC-Angola border and business city of Lufu. Up to 40,000 travelers used this port of entry on market days, and only 4 health professionals were assigned for the screening. The highest incidence of laboratory-confirmed YF cases among the 31 health zones in KCP was in Nsona-mpangu health zone (13 cases per 100,000 population).

CONCLUSIONS: Laboratory-confirmed YF cases in KCP were mainly imported from Angola through the Lufu border. This YF outbreak was associated with high population mobility across a porous border with ineffective health screening. Strategies should be reviewed to address border issues.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Border / International Health; Epidemiology; Outbreaks

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8647](#)

Abstract Type Breakout

Abstract Title Zika Virus Infections in New York City: A Summary of the First Year of Surveillance Data
Abstract

BACKGROUND: Zika virus (ZIKV) is a mosquito-borne flavivirus that can cause severe congenital birth defects in infants. Following an initial outbreak in Brazil in 2015, ZIKV spread rapidly through the Americas. Because New York City (NYC) is home to a large international community, imported ZIKV infections are a concern.

METHODS: The NYC Department of Health and Mental Hygiene (DOHMH) began surveillance activities for ZIKV starting January 1, 2016. Diagnostic testing was performed for symptomatic non-pregnant individuals and all pregnant patients with a history of exposure. Demographic and clinical characteristics were summarized for laboratory-positive patients, defined as either (1) positive ZIKV nucleic acid amplification test or (2) ZIKV IgM serology with a positive ZIKV plaque reduction neutralization test. All pregnant women with laboratory evidence of infection were monitored until delivery, at which time placental tissue and infant specimens were collected for ZIKV testing.

RESULTS: During January–October 2016, DOHMH identified 945 laboratory-positive patients diagnosed with ZIKV. The median age was 33 years (range: 0–78), 749 (79%) were female, (35%) resided in the Bronx, and 322 (34%) were pregnant at the time of infection. The large majority (96%) of patients acquired infection abroad, with a small proportion acquired congenitally or through sexual contact with a partner who traveled. The Dominican Republic (47%), Jamaica (11%), and Puerto Rico (8%) were the most common sources of travel-related cases. Patients reported traveling to countries with local ZIKV transmission most commonly to visit friends and relatives (67%) and for tourism/vacation/recreation purposes (22%). Almost all adult male and non-pregnant adult female patients were symptomatic (99%, 506/513), as testing criteria required symptoms. Among pregnant or post-partum patients, 31% (99/322) had symptoms consistent with Zika-like illness. Among symptomatic patients, common symptoms included rash (91%, 630/689), arthralgia (68%, 466/684), myalgia (64%, 394/613), fever (58%, 400/685), and conjunctivitis (47%, 323/677). Six patients (0.6%) with Guillain-Barré Syndrome were identified. Pregnant women were most often exposed to ZIKV in multiple trimesters (47%, 151/321) or exclusively in the first trimester (24%, 78/321). Among 230 completed pregnancies, DOHMH identified 207 (90%) live births and 23 (10%) elective terminations or spontaneous losses. Among the live births, 5 (2%) infants have conditions consistent with congenital Zika syndrome.

CONCLUSIONS: ZIKV infections in NYC to date are most notably from Caribbean countries and territories. Imported cases, including many pregnant women, represent a substantial burden to the healthcare system of NYC.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Vectorborne Disease; Infectious Diseases

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [7728](#)

Abstract Type Lightning

Abstract Title Abstract Assessing Rabies Knowledge in the Washington, DC Human and Veterinary Medical Communities – a One Health Approach

BACKGROUND: In 2010, the Advisory Committee on Immunization Practices updated rabies post exposure prophylaxis (PEP) recommendations, reducing them from a five vaccine series to four. In 2016, the National Association of State Public Health Veterinarians updated quarantine guidelines for animals potentially exposed to rabies, no longer classifying animals receiving a late rabies vaccine booster the same as those never vaccinated. As rabies remains endemic throughout the US and the District of Columbia (DC), we surveyed medical professionals in DC to identify knowledge gaps in implementing the new guidelines.

METHODS: A 15-question survey was developed to assess rabies knowledge in human and veterinary medical providers. All licensed Doctors of Medicine (MD), Doctors of Osteopathic Medicine (DO), and Doctors of Veterinary Medicine (DVM), licensed in DC (n = 11,442) were contacted via email to complete an online survey (SurveyMonkey). Data collection occurred from December 2, 2016 to January 3, 2017. Analyses were performed using SAS 9.4.

RESULTS: Approximately 10% (n = 1,213) of DC licensed medical professionals completed the survey; 82.1% practiced clinically on a weekly basis. Among licensed physicians (n = 1077), 37.4% were aware of the four vaccine PEP series, 79.2% knew to administer human rabies immunoglobulin and vaccine as soon as possible after exposure (day 0), and 46.9% identified the correct anatomic site for PEP administration. Among licensed veterinarians (n = 136), 71.3% identified proper quarantine protocols when a vaccinated domestic animal bites a human and 19.8% when an unvaccinated domestic animal is exposed to high risk wildlife. Among all respondents, 73.2% recommended PEP when a bat was found in the room with a sleeping child and 85.6% knew a person with previous vaccination should receive PEP when exposed. While > 75% recognized bats and raccoons as vectors, 4% incorrectly identified pigeons. Unusual aggression was identified as a clinical sign in animals by 96.2% of respondents; however, approximately 13% incorrectly selected alopecia or hypothermia. Although 98.7% recognized that transmission occurs to a human via animal bites, only 49.5% recognized a scratch from a feral cat as a risk.

CONCLUSIONS: The survey identified major rabies knowledge gaps in both the human and veterinary medical communities, including the current PEP recommendations. These findings indicate health professionals need education on rabies epidemiology, risk factors, and common vectors, and will help direct Department of Health educational outreach to better prepare our medical community to monitor and control this persistent public health threat.

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Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Zoonotic Disease; One Health; Infectious Diseases

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Submission Type Breakout/Quick/Lightning/Poster
ID [7473](#)

Abstract Type Lightning

Abstract Title Knowledge, Attitudes, and Practices of Women of Childbearing Age Testing Negative for Zika Virus in Kentucky, 2016
Abstract

BACKGROUND: Because infection with Zika virus during pregnancy can cause microcephaly and other birth defects, women of childbearing age are an important population for targeting of Zika-related public health messaging. In February 2016, the Kentucky Department for Public Health began efforts to educate the public about the risks and prevention of Zika infection. To improve Zika-related communication and outreach in Kentucky, we conducted a survey to assess Zika knowledge, attitudes, and practices (KAP) among women of childbearing age who received a negative Zika test result from the state public health laboratory.

METHODS: In October and November 2016, we conducted a phone-based survey of women ages 18–49 years who received a negative Zika test result in Kentucky during February–July 2016. Women who travelled to a Zika-affected area who were pregnant and/or experienced Zika symptoms were eligible to receive testing. The survey instrument was designed to assess KAP related to Zika virus and prevention of infection. The survey was pre-tested and conducted in English and Spanish.

RESULTS: Fifty-five of 99 eligible women completed the survey (response rate=56%); the most frequently reported reason for travel to a Zika-affected area was vacation (56%). Nearly two thirds (64%; 35/55) of the respondents reported taking action to prevent Zika infection while travelling or living in a Zika-affected area; use of mosquito repellent was the most frequently reported method of prevention (53%; 29/55), followed by wearing protective clothing (18%; 10/55). Of the 20 women who took no action, 15 (75%) were unaware of Zika virus or of local Zika transmission at the time of travelling to or living in an affected area. Although >90% of the 55 respondents knew the virus could be transmitted by mosquitoes and caused birth defects, and 84% (46/55) knew the infection could be asymptomatic, just 56% (31/55) knew the virus could be sexually transmitted. The internet was the most frequently reported source of Zika knowledge (76%; 42/55); 35% (19/55) of women got Zika information from their primary care provider.

CONCLUSIONS: These findings underscore the importance of continued efforts by CDC and state and local health departments to educate female travelers of childbearing age about risks for and prevention of Zika virus infection, particularly online. The low level of awareness of sexual transmission of the virus highlights the need for additional public health messaging emphasizing use of condoms and abstinence to prevent transmission between potentially Zika-exposed individuals and their sexual partners.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Vectorborne Disease; Infectious Diseases; Emerging Infections

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8084](#)

Abstract Type Lightning

Abstract Title Lyme Disease Surveillance Data: How Can We Maximize Its Utility?
Abstract

BACKGROUND: Lyme disease can affect multiple organ systems and range in clinical course from asymptomatic to fatal. Cases that qualify as confirmed or probable Lyme disease are reported to CDC through the National Notifiable Diseases Surveillance System (NNDSS). In the decades since Lyme disease became nationally notifiable, public health surveillance has provided the foundational knowledge of the geographic distribution and magnitude of the condition. Since 1991, Lyme disease has had an associated “extended record” that contains clinical and laboratory fields in addition to the core variables transmitted for all notifiable conditions. However, the content or format of those disease-specific fields has never been updated.

METHODS: We summarize data from the Lyme disease-specific extended record as received in CDC’s Lyme disease program during 2008-2015.

RESULTS: During 2008-2015, 208,834 confirmed and 66,755 probable cases of Lyme disease were reported to CDC. Approximately 60% of confirmed case records contained indication of ≥ 1 clinical feature implicit in confirmed case status such as EM rash, arthritis or facial palsy. Approximately 3% of probable case records also contained indication of a confirmatory clinical feature, which could indicate data transmission incompatibility. While transmitted successfully for some records, for others extended record fields contained mixtures of letters, numbers, or symbols; most are blank.

CONCLUSIONS: While public health practitioners devote extensive time and resources to capture detailed clinical, laboratory, and travel information as part of surveillance, the incomplete nature of these data as currently transmitted through traditional messages limits our ability to use these data for public health action. Despite informatics challenges, the sheer volume of Lyme disease cases captured by national surveillance provides unparalleled opportunity to: 1) better describe sub-populations at-risk of rarer, more severe, manifestations of Lyme disease; 2) summarize the broad clinical spectrum associated with probable cases; 3) assess secondary prevention; and 4) evaluate positive laboratory test patterns on a national scale, more important than ever, with additional testing algorithms on the horizon. A more creative and collaborative approach to summarizing characteristics of Lyme disease cases could maximize the utility of important data generated by public health practitioners across the country.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Vectorborne Disease; NNDSS; Data Sharing

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8390](#)

Abstract Type Lightning

Abstract Title Multistate Outbreak of *Cryptosporidium* Among People Who Purchased Goats from a Farm — Indiana, 2016
Abstract

BACKGROUND: Zoonotic *Cryptosporidium* transmission is commonly associated with pre-weaned calf contact, but outbreaks associated only with goat contact have not been previously documented in the United States. In March 2016, the Indiana State Department of Health (ISDH) received a complaint regarding *Cryptosporidium* in goats purchased from an Indiana farm. In April and May, the ISDH identified two people with laboratory-confirmed *Cryptosporidium* from different households, both of which had purchased goats from the same farm.

METHODS: An environmental inspection was performed at the farm in April. Sales records from February 1 to May 5 were provided by the farmer. The ISDH administered a questionnaire and offered *Cryptosporidium* testing to members of households that purchased goats during this period. A confirmed case was defined as a patient with diarrhea, at least one additional symptom, and a positive laboratory test for *Cryptosporidium*; a probable case had diarrhea and at least one additional symptom; and a suspect case had diarrhea with no other symptoms.

RESULTS: Twenty-seven buyers were identified from the sales records in addition to the two index cases. The ISDH successfully contacted 14 (48%) households comprising 46 people. Among these, a total of 92 goats were purchased; the median number per household was three (range: 2–43) and the median age at purchase was three weeks (range: 1–168 weeks). Ten (71%) households reported illness among purchased goats; of these, five (50%) reported that goats were ill on the date of purchase. Twenty (43%) case patients were identified (three confirmed, 12 probable, and five suspect). All 20 (100%) case patients lived in a household that bought goats that were ill on or after the date of purchase. Illness onsets occurred within 2–12 days after purchase of the goats and occurred over an eight-week period from March to April. The attack rate was 43% among individuals and 36% among households. The farmer reported diarrhea in the herd, but did not have space available to isolate sick animals.

CONCLUSIONS: This is the first documented outbreak of zoonotic cryptosporidiosis associated only with goat contact in the United States. A strong association was observed between human illness and exposure to sick goats purchased from the farm. The incubation period and range of onset dates suggest zoonotic *Cryptosporidium* transmission in the case patients and ongoing transmission among the goats at the farm. Recommendations to the farmer included isolating sick animals, improving goat housing conditions, and not selling visibly sick goats.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Outbreaks; Zoonotic Disease; One Health

Consider for Different Presentation? Yes

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Submission Type ID	Breakout/Quick/Lightning/Poster 7950
Abstract Type	Poster
Abstract Title Abstract	Awareness of Zika Virus Disease Outcomes, Transmission, and Prevention Among Attendees at a Community Health Fair — Indiana, 2016

BACKGROUND: Zika virus (ZIKV) is an emerging pathogen with current epidemic transmission in the Western Hemisphere. Almost half (47%) of Indiana's 52 ZIKV cases in 2015 and 2016 were associated with travel to the Caribbean. ZIKV is most commonly transmitted through the bite of an infected mosquito, but can also be passed from a pregnant woman to her baby and from an infected person to his or her sex partners. ZIKV can cause severe neurologic birth defects in children born to infected mothers. We conducted a survey to assess the knowledge of Indiana residents.

METHODS: A five-question survey was administered to a convenience sample at a community health fair that was sponsored by the local professional football team. Participants were asked to identify potential health outcomes, transmission routes, geographic areas of current transmission, and prevention measures for ZIKV infection. After survey completion, participants were provided with an informational pamphlet on ZIKV.

RESULTS: A total of 165 participants completed the survey. Nearly all participants correctly responded that the bite of an infected mosquito could result in ZIKV infection (159; 95%) and that avoiding mosquito bites could prevent ZIKV infection (151; 92%). Most (133; 81%) also correctly identified birth defects as possible consequences of ZIKV infection. Less than half (73; 44%) of participants responded that ZIKV could be transmitted through sexual activity, and 75 (46%) also responded that practicing safe sex could prevent ZIKV infection. Less than half (63; 38%) knew that ZIKV transmission was currently occurring in the Caribbean. The most commonly reported sources of information regarding ZIKV were news media (104; 64%) and social media (82; 50%).

CONCLUSIONS: Survey participants were aware that ZIKV is a mosquito-borne disease and that it can cause birth defects, suggesting that public health messaging on these topics has been successful. Fewer participants were aware that ZIKV can be transmitted through sexual activity, indicating that additional messaging on transmission routes is needed. The lack of awareness of ZIKV transmission in the Caribbean is troubling, given that half of Indiana's cases have been associated with travel to this region. Future public educational campaigns on ZIKV should target news and social media outlets with focused messaging on transmission routes and the current geographical distribution of ZIKV transmission.

Submission Complete? Yes

Committee	Infectious Disease
Topic	Vectorborne & Zoonotic Diseases
Keywords	Emerging Infections; Infectious Diseases; Zoonotic Disease
Consider for Different Presentation?	Yes

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Submission Type ID	Breakout/Quick/Lightning/Poster 8247
Abstract Type	Poster
Abstract Title Abstract	Community Members' Perceptions of Risk, Knowledge of Zika, Exposure to Communications, Trusted Sources of Information about Zika, and Opinions about Selected Vector Control Strategies BACKGROUND: The 2015 Zika virus outbreak in Brazil has been in the spotlight because of observed dangers to newborns in the affected areas. The United States has addressed this outbreak in Texas, Florida, Puerto Rico, and the U. S. Virgin Islands (USVI). The Virgin Islands Department of Health (VIDOH) collaborated with the Centers for Disease Control and Prevention (CDC) in an effort to assess the knowledge and perception of the Zika virus in the USVI. The CDC deployed a behavioral assessment team to train and assist VIDOH staff with the assessment protocol and execution. METHODS: We conducted randomized in-person intercept interviews throughout St. Croix, St. Thomas and St. John using the Epi Info application on Samsung Galaxy 8.0 Tablets. Respondents completed open- and close-ended questionnaires assessing general Zika knowledge and perceptions, protective measures, and opinions on potential VIDOH driven vector control responses. RESULTS: Of 148 in-person interviews, 15 (10%) respondents recognized symptoms, 78 (53%) considered Zika a serious personal health concern, while 120 (81%) considered Zika a serious community health concern. Regarding personal protective practices and perceptions, 70 (47%) respondents utilized mosquito repellent as a form of protection, and 86 (58%) considered themselves unlikely to be infected with the Zika virus. When asked about pesticide application for vector control purposes, 111 (75%) voiced support for backpack spraying, 135 (91%) voiced support for mosquito traps, 96 (65%) indicated they would support spraying from trucks, and only 36 (24%) indicated they would support spraying from airplanes. CONCLUSIONS: The VIDOH will use the results of this assessment as a guide to effective public health communication and response to the Zika outbreak in the US Virgin Islands. Through identification of misconceptions and limited knowledge areas, the focus can be changed to at-risk populations. Additional education may be needed to convince the general populace of the benefits of vector control approaches.
Submission Complete?	Yes
Committee Topic Keywords	Infectious Disease Vectorborne & Zoonotic Diseases Emerging Infections; Evaluation; Vectorborne Disease
Consider for Different Presentation?	Yes
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Submission Type Breakout/Quick/Lightning/Poster
ID [8584](#)

Abstract Type Poster

Abstract Title Abstract Demographics of Zika Positive Patients: Symptomatic, Asymptomatic & Pregnant Individuals

BACKGROUND: Since January 2016, the mosquito-borne Zika virus (ZIKV) emerged in the U.S. Virgin Islands (USVI). As of December 13th, 2016, 3,179 individuals have been tested for ZIKV territory-wide. The U.S. Virgin Islands Department of Health (VIDOH) is providing free ZIKV testing for all individuals symptomatic for ZIKV and for asymptomatic pregnant women.

METHODS: Free testing for ZIKV has been offered at clinics across the territory and at VIDOH locations. When specimens are collected, a report form is completed asking for demographic information and symptom history. The testing method included blood draws as well urine collection. Urine collection was only obtained for those who were symptomatic for less than fourteen days.

RESULTS: As of December 13, 2016, there have been 1,848 reported cases, with 841 (46%) testing positive. There have been 1,331 pregnant women tested, with 103 (7%) testing positive. Among all cases testing positive for ZIKV, 124 (15%) were less than 20 years of age, 325 (39%) were aged 20-39, 266 (32%) were aged 40-59, 87 (10%) were 60 or older, and 39 (5%) had unknown ages. In total, 552 (66%) females tested positive and 282 (34%) males tested positive.

CONCLUSIONS: The demographic that had the leading cases of positive results were pregnant females between the ages of 20-39. Only 20% of patients who are infected with Zika are symptomatic. This highlights the need for asymptomatic individuals to get tested for Zika virus. We conclude that the VIDOH had a majority of pregnant women getting tested for Zika at least once during pregnancy, and this large capture rate may be due to the testing available free of charge.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Vectorborne Disease; Epidemiology; Maternal and Child Health

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8200](#)

Abstract Type Poster

Abstract Title Epidemiology of Tularemia in the United States 2006-2015
Abstract

BACKGROUND: Tularemia is a zoonosis caused by the bacterium *Francisella tularensis*, a tier-1 agent with multiple modes of transmission and potential for use as a bioweapon. Clinical illness varies with route of infection and ranges from mild to life-threatening.

METHODS: In addition to core variables transmitted via the National Notifiable Diseases Surveillance System (NNDSS), states voluntarily provide supplemental information on symptoms, likely exposures, and severity of illness for tularemia cases.

RESULTS: We reviewed supplemental information for 593 tularemia cases from 40 states during 2006-2015, accounting for 37% of total cases reported during this period. Most cases with supplemental information were laboratory confirmed (419, 71%) and occurred among males (389, 66%), similar to cases reported to NNDSS. Median age among supplemental records was slightly higher than in NNDSS (51 years vs. 46 years). Records for 548 cases (92%) had a defined primary clinical presentation; the most common was ulceroglandular (302, 55%) followed by pneumonic (83, 15%), glandular (81, 15%), and typhoidal (61, 11%); oculoglandular and oropharyngeal presentations were rare. Most patients reported general symptoms of fever or chills (516, 89%); fewer reported gastrointestinal symptoms (203, 35%). Subtype was available for 246 cases; 63% of these were type A and 37% were type B. Of 534 cases with exposure information, 47% reported a tick or deerfly bite, 43% participated in aerosol-generating activities such as mowing or landscaping, 23% reported contact with a sick or dead animal, and 11% experienced an animal bite or scratch. The proportion of cases lacking identifiable exposure did not differ by clinical presentation. Among ulceroglandular cases, 54% had documented arthropod exposure, although direct animal contact was also common (40%). Aerosol-generating activities were reported for a majority of patients with pneumonic (82%) and typhoidal (66%) presentations. Overall, 59% of patients were hospitalized; hospitalization occurred most frequently among those with pneumonic tularemia (67, 83%) but was also common among persons with typhoidal (41, 68%), ulceroglandular (153, 52%), and glandular (34, 43%) manifestations. Frequency of hospitalization was similar between infecting subtypes. Illness outcome was available for 477 cases (80%); 61% recovered without complications, 35% recovered with complications, and 4% died.

CONCLUSIONS: Supplemental surveillance data provide important insights into the epidemiology of tularemia, including typical modes of transmission. The ability to detect unusual patterns and potential intentional events is linked to the robustness of baseline data and dependent on data sharing. Informatics improvements should streamline sharing of detailed case information.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Zoonotic Disease; Surveillance; Vectorborne Disease

Consider for Different Presentation? Yes

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Submission Type ID	Breakout/Quick/Lightning/Poster 7921
Abstract Type	Poster
Abstract Title Abstract	Hantavirus Infection in College Students Working with Wild Rodents in Wildlife Ecology Research Settings — Indiana, 2015–2016
BACKGROUND: Hantavirus is a rodent-associated human pathogen that can cause Hantavirus Pulmonary Syndrome (HPS), a severe respiratory illness with a 38% case fatality rate. Hantavirus infection is rare in Indiana, with only two cases reported from 1993–2014. While occupational exposure to wild rodents is a theoretical risk for hantavirus infection, previous serosurveys of people with such exposures revealed low seroconversion rates ($\leq 0.5\%$). The Indiana State Department of Health (ISDH) was notified of positive commercial laboratory test results for hantavirus in two university students in the same wildlife ecology laboratory in July 2015 and May 2016. METHODS: Medical records were reviewed to obtain clinical information. Both patients were interviewed to identify risk factors for hantavirus exposure. Acute and convalescent specimens were tested by RT-PCR and IgM and IgG enzyme-linked immunosorbent assay (ELISA) at the Centers for Disease Control and Prevention (CDC). The wildlife ecology laboratory’s research protocols were audited and reviewed for potential occupational risk factors. RESULTS: Patient A presented with HPS requiring hospitalization, but survived. Patient B presented with mild influenza-like illness and did not require hospitalization. Patient A had both field and laboratory exposure to deer mice and white-footed mice, while patient B had only field exposure to these species. Both patients reported inconsistent use of personal protective equipment (PPE) and being bitten and scratched by mice while performing research activities. Both patients had laboratory evidence for hantavirus by RT-PCR, IgM ELISA, and IgG ELISA when tested at CDC. The university had a standard operating procedure (SOP) for handling rodents in the laboratory, but did not have one for handling rodents in the field. CONCLUSIONS: The two cases in this investigation represent a two-fold increase in Indiana’s all-time hantavirus case count in a one-year period. The occurrence of two cases in the same occupational setting is unexpected, given the low rate of seroconversion in comparable populations. The ISDH provided interim recommendations for the prevention of hantavirus infection among workers in the wildlife ecology laboratory, including specific recommendations for handling rodents in the field. Universities and other research institutions that perform field and laboratory work with wild rodents should ensure that proper safety measures are followed by students and staff in order to avoid occupational exposures to hantavirus. The ISDH will conduct a serosurvey of other workers in the same laboratory in early 2017 to identify risk factors for seroconversion and develop further recommendations for prevention of hantavirus infection in this population.	
Submission Complete?	Yes
Committee Topic Keywords	Infectious Disease Vectorborne & Zoonotic Diseases Zoonotic Disease; Emerging Infections; One Health
Consider for Different Presentation?	Yes
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Submission Type Breakout/Quick/Lightning/Poster
ID [7841](#)

Abstract Type Poster

Abstract Title Idaho's Pet Plague
Abstract

BACKGROUND: Plague is caused by gram-negative zoonotic bacteria called *Yersinia pestis*. *Y. pestis* occurs in an enzootic cycle of infection between rodents and fleas, which both act as long-term reservoirs. These vectors can infect household pets. The objective of this study was to discover why a globally endemic illness is infecting Americans for the first time in sixty years.

METHODS: Idaho's Health Department submitted specimens to the Idaho Bureau of Laboratories for *Y. pestis* testing. Veterinary staff and pet owners were interviewed. Veterinarians performed necropsies when able. Blood, liver, spleen, and lymph node specimens were tested using polymerase chain reaction and confirmed by phage lysis and cultures

RESULTS: From 1947-1996 in the United States, 390 cases of plague were reported. Over 90% of these cases were in New Mexico, Colorado, California, and Arizona and stemmed from secondary exposure via domestic cats. From May 30-July 26, 2016, twelve domestic cats were suspected to be infected with plague. *Y. pestis* was isolated from 50% of the cats (6/12). 5/6 infected cats were from southwest Idaho where dead squirrels with confirmed *Y. pestis* were reported in May 2016. Cats ranged in age from 1-15 years (median = 4 years). 67% were male and 83% resided both indoors and outdoors. 100% of infected cats were domestic shorthair breed. Fever and lymphadenopathy were the most commonly reported symptoms. None of the felines experienced respiratory issues. 50% of the cats were treated with appropriate antibiotics. Two survived and one was euthanized. The remaining 50% died or were euthanized. All six cats had contact with squirrels and other wild rodents before becoming ill.

CONCLUSIONS: Domestic cats have transmitted plague in U.S. since 1977. Cats are more susceptible to plague than dogs and can transmit the illness through bites, scratches, and respiratory droplets. Brush, rock piles, and cluttered wood should be removed from homes in the western U.S. to inhibit potential harboring of infected vectors. Gloves should be worn when touching or skinning an animal that may be infectious. Pets should be treated with a flea control product, and they should not be allowed to sleep indoors if they roam freely outdoors. Even though plague is not an illness currently associated with a high-level of threat, it is still one of the most historically infectious diseases known to man.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Vectorborne Disease; Emerging Infections; Veterinary Public Health

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8262](#)

Abstract Type Poster

Abstract Title Measuring Initial Zika Outreach Efforts: Informational Gap Identification during the U.S. Virgin Islands 2016 Zika Outbreak.
Abstract

BACKGROUND: In January 2016, the U.S. Virgin Islands (USVI) detected its first case of Zika on the island of St. Croix. Beginning in February 2016, the U.S. Virgin Islands Department of Health (VIDOH), with assistance from the Centers for Disease Control and Prevention (CDC), established the local Emergency Operations Center in St. Croix to coordinate the outbreak response in the territory, including educational outreach efforts to the public. VIDOH/CDC has conducted 368 total outreach presentations. Staff conducted 191 outreach presentations in the St. Croix district, and 177 in the St. Thomas/St. John/Water Island district. The recipient institutions encompassed: 15 churches, 8 community-based organizations, 55 presentations to clinical facilities, 10 groups of pregnant women and mothers, 6 groups of seniors, 76 public events, 2 public health agencies, 80 presentations to schools (students, staff, and parents), 57 presentations to private and public sector employees, and 11 presentations to various media outlets (television, radio, and print news). To assess the impact of the VIDOH/CDC outreach efforts in the community, VIDOH and CDC carried out a behavioral assessment to gather insights from local community leaders.

METHODS: We surveyed a sample of community member intercepts ≥ 18 years to assess their general knowledge about the current Zika outbreak and obtain insights about informational gaps that may be present.

RESULTS:

A total of 92 out of 143 respondents provided answers regarding what information they would like to receive about Zika. The most common type of information request was prevention techniques ($n=16$); followed by symptoms ($n=14$), treatment, cure or vaccine information ($n=11$); local epidemiology ($n=8$); and general information about Zika ($n=8$). Of note, 8 individuals indicated that they do not believe in current mainstream information. The most common additional questions respondents had, out of 143 respondents, were related to symptoms of Zika ($n=14$); transmission information ($n=11$); origins and history of Zika ($n=9$); treatment, cure, or vaccine information ($n=9$); and birth defects ($n=7$).

CONCLUSIONS: Collectively, these data are indicative of limited knowledge gaps. However, the sample of respondents that did show knowledge gaps suggest that there is a need for outreach and targeted messaging to certain sectors of the community and is subject analysis. Media through which we can extend outreach are social media and VIDOH website. We can also form a group of representatives from community based organizations that would disseminate Zika education to their stakeholders.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Vectorborne Disease; Evaluation; Risk Communication

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [7839](#)

Abstract Type Poster

Abstract Title Plague Resurgence
Abstract

BACKGROUND: : Plague is caused by gram-negative zoonotic bacteria called *Yersinia pestis*. *Y. pestis* occurs in an enzootic cycle of infection between rodents and fleas, which both act as long-term reservoirs. The objective of this study was to discover why a globally endemic illness is infecting Americans for the first time in sixty years.

METHODS: Information was gathered retrospectively from PubMed regarding incidences of illness in the U.S. since May of 2015. Source of spread from felines originated in Centers for Disease Control and Prevention's Morbidity and Mortality Weekly.

RESULTS: From 1947-1996 in the United States, 390 cases of plague were reported, with 84% being bubonic, 13% septicemic, and 2% pneumonic. The pneumonic cases experienced the highest fatality ratio of 57%, while bubonic was 14% and septicemic was 22%. Over 90% of these cases were in New Mexico, Colorado, California, and Arizona and stemmed from secondary exposure via domestic cats. In May, 2015 there was an outbreak of pneumonic plague in rural Colorado where four human cases originated from an infected two-year-old Pit Bull. The illness was transferred to the close-contact by the dog's owner. This is unorthodox for many reasons; numerous patients are infected, there was human-to-human transmission for the first time since 1924, and also due to the fact that the index animal was a household pet.

CONCLUSIONS: Long-term surveillance of animal hosts needs to be implemented. Brush, rock piles, and cluttered wood should be removed from homes located in the western U.S. Education about such topics should be made available to homeowners living in at-risk communities. Gloves should be worn when touching or skinning an animal that may be infectious. When hiking or camping; repellent that contains diethyltoluamide (DEET) should be administered. Pets should be treated with a flea control product, and they should not be allowed to sleep indoors if they roam freely outdoors. Even though plague is not an illness currently associated with a high-level of threat, it is still one of the most historically infectious diseases known to man.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Zoonotic Disease; Vectorborne Disease; Veterinary Public Health

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8385](#)

Abstract Type Poster

Abstract Title Predictors of West Nile Virus (WNV) Cases in a Large Urban Setting - Chicago, 2012-2016
Abstract

BACKGROUND: Since the first human cases of West Nile virus (WNV) infection in Chicago were diagnosed in 2002, vector control initiatives have been implemented and annual case counts have dramatically decreased. However, cases continue to occur each season. Identifying factors that predict residential locations of cases would be useful for prevention efforts. In this exploratory analysis, we evaluate whether demographic, socioeconomic, or built-environment factors are predictive of where cases reside in a large urban center.

METHODS: From 2012 to 2016, the Chicago Department of Public Health (CDPH) received 173 reports of human cases of WNV in Chicago through the Illinois National Electronic Disease Surveillance System (I-NEDSS). Address at diagnosis for each case was geocoded to obtain the cumulative number of cases within each census tract. Descriptive information about each census tract was acquired from the American Community Survey (ACS). Potential predictors of WNV case rates were selected, including age, sex, race/ethnicity, income, education, insurance status, nationality, and housing factors. A multivariable Poisson regression model was developed to identify significant predictors and compare expected case rates based on census tract attributes.

RESULTS: Age, race/ethnicity, and housing factors were found to be significantly associated with case rates at the census tract level; income, education, insurance status and nationality were not. According to the Poisson regression model, expected rates of reported cases were greater for census tracts with a higher median age (relative risk [RR], 1.48, 95% confidence interval [CI]: 1.14-1.93, for each 10 year increase) and a higher percentage of Non-Hispanic (NH) white persons (RR, 1.17, 95% CI: 1.10-1.24, for each 10 percentage point increase). Each 10 percentage point increase in proportion of housing structures with 20 or more units in a census tract was associated with a twenty-four percent decrease in case rate (RR, 0.76, 95% CI: 0.69-0.84). Additionally, each 10 percentage point increase in proportion of housing units vacant was associated with a thirty-four percent increase in case rate (RR, 1.34, 95% CI: 1.08-1.67), after adjustment for other factors.

CONCLUSIONS: Vacant housing and housing structures with fewer units are predictive of higher reported WNV case rates within census tracts. Further research is necessary to determine whether large structures in urban areas influence weather patterns (e.g., wind) or limit mosquito breeding locations and whether the presence of vacant housing creates more ideal conditions for mosquito proliferation. These findings will help to inform vector control interventions and public awareness campaigns.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Infectious Diseases; Population; Vectorborne Disease

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8306](#)

Abstract Type Poster

Abstract Title Unusual Pathogen Associated with Nonbiting Flies in a Person with Bacteremia — Washington State, 2016
Abstract

BACKGROUND: *Wohlfahrtiimonas chitiniclastica* is a rarely reported cause of bacterial infection associated with skin lesions and sepsis. It has been isolated in nonbiting flies that can cause myiasis (fly larvae infestation); however, it has neither been isolated from fly larvae on patients with *W. chitiniclastica* infection, nor from insects in the Americas. In August 2016, a man was hospitalized in Washington State with necrosis of the foot, myiasis, and *Wohlfahrtiimonas* spp. bacteremia. We investigated to determine exposure source.

METHODS: We attempted to collect live and dead insects (including fly eggs and larvae) from the patient and patient's home and culture them for *Wohlfahrtiimonas* spp. at different lifecycle phases. Pulsed-field gel electrophoresis (PFGE) was performed on isolates to assess relatedness. Recent patient travel history was obtained through proxy interviews.

RESULTS: We collected 8 insect species from inside the patient's home. Although larvae present on the patient when hospitalized were unavailable for testing, *Wohlfahrtiimonas* spp. was isolated from larvae collected from the carpet where the patient was found by emergency responders. These larvae were not taxonomically identified. *Wohlfahrtiimonas* spp. was also isolated from larvae hatched from eggs of a green bottle fly (*Lucilia sericata*) caught inside the home. PFGE results are pending. No travel outside of Washington was reported.

CONCLUSIONS: We report the first isolation of *Wohlfahrtiimonas* spp. in insects in the Americas and a previously undescribed vector, the green bottle fly. Our investigation provides further evidence of fly larvae as vectors for human infection. Green bottle fly larvae are a common cause of myiasis; patients with myiasis should be considered at risk for *Wohlfahrtiimonas* spp. infection.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Vectorborne Disease; Zoonotic Disease

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8354](#)

Abstract Type Poster

Abstract Title Using Temperature Degree Day Models to Predict High Risk Human West Nile Virus Transmission Periods in Nebraska, 2011-2015
Abstract

BACKGROUND: Temperature is one of the most important factors in determining West Nile virus (WNV) transmission risk to humans and is readily accessible. Therefore using temperature data would be useful to determine potential high risk WNV transmission periods particularly in areas where mosquito or bird surveillance data is lacking. This study compared two simple temperature degree day (DD) threshold models that were created to determine high risk periods of human WNV transmission at the county level in 12 Nebraska counties.

METHODS: Human case data for 2011-2105 was obtained from ArboNet. The ten counties with the most human WNV cases over the five years and at least one county from each of Nebraska's NOAA climate divisions were used in the study. For each county an accumulated 109 DD and 90 DD threshold model was created and compared. Both models used a minimum base temperature for viral replication of 14.3° C. For the 109 DD model, a mosquito extrinsic incubation period (EIP) threshold of 109 accumulated DDs for median virus transmission by *Culex tarsalis* mosquitoes (Nebraska's primary WNV vector) was selected based on Reisen et al. (2006). The 109 DD model was then recalibrated using visual inspection to fit the human case data, lowering the DDs required to reach the mosquito EIP threshold to 90 DDs. A human case was considered correctly predicted if it occurred 2-14 days before the onset date and at least one day during this time accumulated enough DDs to reach the mosquito EIP threshold.

RESULTS: The 109 DD model correctly predicted 79.1% of the human cases occurring during a high risk period from the 12 counties. Individual county results ranged from 38.5%—100.0% with a median of 78.5% of human cases being correctly predicted. Use of the 90 DD model resulted in an increase of accuracy of 92.1% of human cases correctly predicted during high risk periods. Improved accuracy was seen in 10 of the 12 counties with individual county results ranging from 69.2%—100.0% with a median of 93.1%.

CONCLUSIONS: The 109 DD model underestimated the number of WNV high risk transmission days resulting in lower accuracy at predicting human cases. The recalibrated 90 DD model improved overall case accuracy to greater than 90% and improved accuracy in most of the counties observed. This study demonstrates that a simple temperature degree day model can be used to help determine potential high risk human WNV transmission periods.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Vectorborne Disease

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8273](#)

Abstract Type Poster

Abstract Title Zika Information Communication and Public Awareness in the U.S. Virgin Islands
Abstract

BACKGROUND: On January 22nd, 2016, the Centers for Disease Control and Prevention (CDC) activated its Emergency Operations Center (EOC) in response to the 2015-2016 Zika pandemic. The U.S. Virgin Islands Department of Health (VIDOH) has received monthly deployments to the local EOC to assist with epidemiological and communications logistics during 2016. To assess the impact of the VIDOH/CDC efforts in outreach education to the community, VIDOH in conjunction with the CDC, carried out a behavioral science study to gather insights from pregnant women, community leaders, clinicians, and community members from November 10th to December 10th, 2016.

METHODS: During the 2016 calendar year we have monitored outreach target numbers for educational events. In addition, we surveyed randomized community member intercepts ≥18 years during the behavioral evaluation where respondents provided insights to their health information-seeking practices.

RESULTS: A total of 148 individuals responded to surveys conducted from November 16th through November 23rd, 2016 (pending finalized data). The average participant age was 44.8 years (SD 15.0) and the age ranged from 18 to 81, providing a good sampling of the general resident population. The gender distribution of respondents reflected an even number of males (48.6%) and females (51.4%), and most participants were African American. Respondents were asked open-ended questions regarding their Zika information sources, what they perceived as a trustworthy source of information, and which ways would be most effective for them to receive information. A total of 144/148 (97.9%) of participants provided a response. About 50% of respondents gathered their information from at least two or more sources that included media (n=161), community (n=27), and health institutions (n=21). Types of media that respondents got information from included internet/online (n=42), news (unspecified type, n=38), newspapers (n=31), television (n=24), media (n=14), and radio (n=12). Notably, 10 respondents indicated that their online sources of information were Facebook or Google. The organizations that respondents trusted the most were health institutions (n=79), no organization (n=36), and the media (n=13). According to the responses, the most common ways for participants to acquire information is through media (n=62), direct contact (n=25), and community (n=17), while the preferred formats to receive it include pamphlets (n=21), and videos (n=9).

CONCLUSIONS: The desired outcomes of community outreach during the USVI Zika outbreak include a community educated on the Zika virus and its effects, participation of community in protective health behaviors, strong partnerships with VIDOH and community organizations, and community members associating VIDOH with an effective Zika response.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Evaluation; Vectorborne Disease; Enteric Infectious Diseases

Consider for Different Presentation? Yes

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Submission Type ID	Breakout/Quick/Lightning/Poster 8588
Abstract Type	Quick
Abstract Title Abstract	Brucellosis Outbreaks Associated with Domestic Consumption of Legally Imported Unpasteurized Goat Cheese — Dallas County, Texas, 2016 BACKGROUND: <i>Brucella</i> infections associated with travel to endemic countries or imported unpasteurized dairy products continue to present public health challenges in the United States, despite the efficacy of domestic bovine brucellosis eradication programs. Although less than 6 brucellosis cases are typically reported annually in Dallas County, a record of 25 brucellosis cases were diagnosed in 2016, primarily due to large outbreaks from imported unpasteurized cheese. METHODS: All <i>Brucella</i> isolates received from hospital laboratories in 2016 and one isolate from cheese were confirmed as <i>B. melitensis</i> by PCR and biochemical testing in the Dallas County Laboratory Response Network laboratory. Case interviews and medical chart reviews were conducted to determine exposures and illness characteristics. Persons identified as possibly consuming implicated food sources were followed prospectively for development of symptoms. Supplemental questionnaires were administered to assess knowledge and practices relevant to brucellosis and consumption of unpasteurized dairy products. RESULTS: In 2016, 20 confirmed and 5 probable brucellosis cases were reported in Dallas County. Twenty cases, including 2 residents in an adjacent county, were associated with one of 3 separate epidemiologic clusters linked to unpasteurized goat cheese purchased in Mexico, legally imported for personal use, and distributed domestically to friends and relatives. Thirteen of these outbreak cases were identified by public health exposure tracing and active monitoring. Of the 27 cases, all were Hispanic, 22% were less than 18 years of age (median age 39 years), 67% were male, and only 59% had recent international travel. Although 50% of interviewed adults demonstrated an understanding of pasteurization, 67% were unaware that the consumed cheese was unpasteurized, and 92% were unaware of any health risks associated with consuming unpasteurized cheese. All adults stated they planned not to consume unpasteurized dairy products in the future, citing economic consequences of their illness, with 91% missing work (median 31 days) and incurring significant medical costs (median \$4,000). CONCLUSIONS: These findings highlight the need to improve awareness about the health risks associated with consuming unpasteurized dairy products. Public health and healthcare providers should consider that brucellosis can occur in persons who are unaware that they consumed unpasteurized food. Active public health follow-up conducted for these brucellosis clusters ensured: education of exposed persons with low English literacy rates, prompt referral of symptomatic patients to clinical care, and notification of evaluating clinicians and laboratories of a suspected diagnosis.
Submission Complete?	Yes
Committee Topic Keywords	Infectious Disease Vectorborne & Zoonotic Diseases Foodborne Disease; Outbreaks; Zoonotic Disease
Consider for Different Presentation?	Yes
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Submission Type Breakout/Quick/Lightning/Poster
ID [8011](#)

Abstract Type Quick

Abstract Title Case-Based Reporting of Rabies Postexposure Prophylaxis Compared with Syndromic Surveillance — Indiana, 2015
Abstract

BACKGROUND: Rabies postexposure prophylaxis (rPEP) is administered to prevent mortality after exposure to an animal with known or suspected rabies. In 2011, 1 of 2 manufacturers of human rabies vaccine reported supply limitations. Because rabies is fatal, rPEP supply disruptions have grave consequences. Understanding how much rPEP has been used can help to predict how much is needed in the future. Indiana law requires reporting of rPEP in the Indiana National Electronic Disease Surveillance System (I-NEDSS), which is managed solely by local health departments. We evaluated the ability of I-NEDSS to report rPEP administration.

METHODS: I-NEDSS was compared with the Indiana Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE), a syndromic surveillance system using emergency department (ED) visits. By using data during January 1–December 31, 2015, animal bites with rPEP reported in I-NEDSS were matched with ESSENCE records. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) were calculated.

RESULTS: In 2015, rPEP was documented for 198 persons in I-NEDSS, and rabies exposure was the chief complaint for 265 persons in ESSENCE. Eighty-three persons had ESSENCE reports, but no rPEP report in I-NEDSS. We identified 106 persons with reports in both I-NEDSS and ESSENCE. By using matched records, I-NEDSS had 76.3% sensitivity, 100% specificity, 100% PPV, and 62.5% NPV.

CONCLUSIONS: Because rPEP supply fluctuates, monitoring rPEP administration allows public health departments to anticipate future needs by knowing how much rPEP is currently being administered. On the basis of this analysis, all ED-administered rPEP events are not being reported into I-NEDSS. Case-based reporting might be improved by allowing the ED to report rabies PEP administration directly into I-NEDSS.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Data Collection; Zoonotic Disease

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [7867](#)

Abstract Type Quick

Abstract Title Abstract
Cryptosporidium Outbreak on an Agritourism Farm: Handwashing Is Not Enough!

BACKGROUND: In May 2016, the Minnesota Department of Health (MDH) identified two cases of cryptosporidiosis. The cases reported visiting the same agritourism farm with different school field-trips, and that additional field-trip attendees were ill.

METHODS: Interviews about illness history, animal contact, and handwashing were conducted with teachers, chaperones and parents of students who visited the farm. A case was defined as a person who visited the farm during May 9-25 and experienced fever and diarrhea (≥ 3 loose stools in a 24-hour period), or diarrhea lasting ≥ 3 days, or had a laboratory-confirmed *Cryptosporidium* infection, within 2 weeks of their farm visit. Stool samples from cases were submitted to MDH for parasite and bacterial testing. MDH investigators visited the farm to assess safety measures and collect animal and environmental samples.

RESULTS: Animals present at the farm included chicks, other poultry, goats, sheep, pigs, a calf and a miniature horse. The farm was clean, did not allow visitors into pens, and signage covered most recommended messages. Adults held animals for children to pet. Other activities included hayrides, a hayloft swing and a playground. The handwashing station was a bathtub retro-fitted with 4 hot-water faucets, soap and paper towels. Hand sanitizer was available. Staff encouraged handwashing, and groups visited the tub as part of their itinerary. Five-hundred-fifty-five (25%) of 2256 visitors were interviewed. Seventy-two cases (13%) were identified; 20 were laboratory-confirmed. The mean age of cases was 13.6 years (range, 5-65); mean age of controls was 7.4 years (range, 3-68) ($p < 0.001$). Cases were 5.5 times more likely to be adults than students (odds ratio [OR], 5.52; 95% confidence interval [CI], 2.86-10.6; $p < 0.001$). Reporting contact with animals was not statistically associated with illness and handwashing was not statistically protective. Cases were 5.8 times more likely to have participated in other activities after interacting with the ruminants, rather than immediately handwashing (OR, 5.83; 95% CI, 1.71-19.9; $p = 0.002$). The calf, one sheep and one pig tested positive for *Cryptosporidium parvum* which matched the *C. parvum* found in human cases (GP60 subgenotype IIaA15G2R1). The calf had scours 2-3 days before the field-trip season started.

CONCLUSIONS: This outbreak demonstrates that animal contact illnesses can occur even if handwashing facilities are adequate and staff promote their use. The critical factor was likely the prolonged time for some visitors between animal contact and handwashing. This emphasizes the need for handwashing immediately and a facility designed to promote this behavior.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Zoonotic Disease; Disease Prevention; Outbreaks

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [7749](#)

Abstract Type Quick

Abstract Title Evaluation of a Quality Management System for Strengthening Public Health Response to Rabies
Abstract

BACKGROUND: Quality management plays a critical role in public health laboratories. An effective quality management system ensures that public health laboratories produce accurate and reliable test results that are indispensable in a clinical or public health setting. The CDC Rabies Laboratory is a designated World Organization for Animal Health (OIE) Reference Laboratory for Rabies and a WHO Collaborating Center for Research and Reference on Rabies.

METHODS: We have designed and implemented a unique monitoring system to manage rabies testing throughout the pre-analytic, analytic, and post-analytic processes, including the initial receipt of specimen, sample analysis and reporting of test results. Major test methods used for rabies diagnosis are direct fluorescent antibody test (DFA), reverse transcription polymerase chain reaction (RT-PCR), real time RT-PCR, indirect fluorescence assay (IFA), and the rapid fluorescent focus inhibition test (RFFIT).

RESULTS: A standardized rabies testing work process and working group were established to ensure quality rabies testing and timely reporting of accurate results. We assessed the effectiveness of the quality management system established in compliance with the Clinical Laboratory Improvement Amendment (CLIA), which regulates the examination of human samples in the United States. A 100% accuracy of human rabies diagnosis has been achieved with a turnaround time less than 3 days.

CONCLUSIONS: This quality management system successfully ensured rapid and accurate diagnosis of rabies and strengthened public health response to prevent rabies.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Vaccine-Preventable Diseases; Evaluation; Prevention

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8519](#)

Abstract Type Quick

Abstract Title Evaluation of the Case Definition for Suspected Yellow Fever Deaths in an Outbreak Setting — Angola, 2016
Abstract

BACKGROUND: Starting in December 2015, Angola experienced an unprecedented outbreak of yellow fever (YF). Early in the outbreak, many suspected cases were reported, but true burden of YF was unclear as clinical diagnosis relied on nonspecific symptoms of fever and jaundice. Accurate YF diagnosis is challenging in settings such as Angola, where endemic diseases have similar clinical presentation (e.g., malaria) and there is limited laboratory capacity. To more fully understand true YF burden in Angola, we evaluated clinically-diagnosed YF deaths to assess feasibility of excluding patients positive for other infections from the surveillance case definition.

METHODS: In March 2016, we abstracted charts for clinically-diagnosed YF deaths from 5 tertiary hospitals in Luanda Province to determine if the case met World Health Organization's (WHO) suspected YF case definition of fever and jaundice <14 days of symptom onset. We cross-referenced infectious disease testing results in hospital and Ministry of Health laboratory databases.

RESULTS: Of all 101 clinically-diagnosed YF deaths, 86 (85%) met WHO's suspected YF case definition. Only 9 of 86 patients (10%) had YF testing; 3 (33%) were confirmed positive. Forty-eight patients were tested for malaria by smear or rapid diagnostic test; 26 (54%) were positive for malaria, and 2 were also Widal positive for typhoid. Two of 3 laboratory-confirmed YF patients were also positive for malaria.

CONCLUSIONS: Applying a more specific case definition excluding deaths laboratory-positive for other infections would have excluded confirmed YF cases from consideration as suspected cases. YF deaths with coinfections would also be missed. To capture all possible YF cases to guide outbreak response, we recommended continued use of existing WHO case definition, improved diagnostic capacity and increased YF testing.

Submission Complete? Yes

Committee Infectious Disease
Topic Vectorborne & Zoonotic Diseases
Keywords Outbreaks; Vaccine-Preventable Diseases; Vectorborne Disease

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [7860](#)

Abstract Type Quick

Abstract Title Investigation of Patients Being Treated for Babesiosis and Lyme Disease Co-Infection — Indiana, 2016
Abstract

BACKGROUND: The causative agents of babesiosis (*Babesia microti*) and Lyme disease (*Borrelia burgdorferi*) are transmitted by the same tick species (*Ixodes scapularis*), which is present in most Indiana counties. Indiana is classified as a low-incidence state for Lyme disease (1.3 cases/100,000 persons from 2011–2015) and babesiosis is rare, with only one probable case reported during the same period. In June 2016, the Indiana State Department of Health (ISDH) was notified of approximately 120 patients in northwestern Indiana being treated for babesiosis and Lyme disease co-infection.

METHODS: Symptoms among 14 patients with reportedly representative clinical presentations were compared with the clinical criteria specified in the national surveillance case definitions for babesiosis and Lyme disease. Blood specimens were collected during June 27–29, 2016 for reference testing at the Centers for Disease Control and Prevention. Babesiosis testing included light microscopy of blood smears, polymerase chain reaction, and indirect fluorescent antibody testing (IFA). Lyme disease testing included whole cell sonicate and C6 peptide enzyme immunoassays followed by IgM and IgG Western blots.

RESULTS: Illness onsets ranged from July 2015 to June 2016, with 12 (86%) patients having onset more than one month prior to laboratory testing. Subjective clinical criteria consistent with babesiosis and/or Lyme disease included fatigue (86%); myalgia (86%); sweats (57%); headache (43%); and arthralgia (43%). Objective clinical criteria for babesiosis were rarely reported (fever, 7%; anemia, 7%). Objective clinical criteria for Lyme disease (dermatologic, rheumatologic, neurologic or cardiac abnormalities) were not reported. The median number of antimicrobial medications reported for each patient was three (range: 1–6). Two (14%) patients had low levels of *B. microti* antibodies detected by IFA; however, none of the patients had laboratory evidence supporting diagnoses of active babesiosis or Lyme disease at the time of testing.

CONCLUSIONS: This investigation did not reveal evidence of a cluster of babesiosis or Lyme disease in northwestern Indiana, though this group of patients was receiving multiple medications for these diagnoses. Most patients did not have acute illnesses or objective clinical criteria for either disease. Babesiosis and Lyme disease are best considered as differential diagnoses for patients with possible tick exposure who have recent acute illnesses compatible with these diseases. In low-incidence states, it is especially important to obtain robust laboratory results using an accredited laboratory. Patients for whom these diseases are suspected should be diagnosed and treated according to existing recommendations promulgated by the Infectious Diseases Society of America.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Vectorborne Disease; Surveillance; Emerging Infections

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8472](#)

Abstract Type Quick

Abstract Title Postflooding Leptospirosis — Louisiana, 2016
Abstract

BACKGROUND: Leptospirosis is an acute febrile illness caused by infection with *Leptospira* species, a bacteria increasingly prevalent in Louisiana deer and feral swine. Infected animals can transmit *Leptospira* species to humans through urine-contaminated water, often during flooding. In August 2016, Louisiana experienced widespread flooding; hospital laboratories subsequently reported 2 initial leptospirosis cases in patients with flood-water exposure. We investigated to determine the burden of flood-related leptospirosis in Louisiana.

METHODS: We queried the Louisiana Early Events Detection System (LEEDS), a state-wide syndromic surveillance system, to identify patients with chief complaints or diagnoses clinically compatible with leptospirosis from flooded areas from 2 days after flooding onset to 30 days after water recession. We performed medical record reviews and applied the Council of State and Territorial Epidemiologists' (CSTE) case definition; patients with laboratory evidence supporting an alternate diagnosis were excluded. Patients were interviewed to determine floodwater exposure. Blood and urine specimens were tested for leptospirosis with polymerase chain reaction (PCR); serum was tested by microscopic agglutination test (MAT) for initial cases and patients from LEEDS with floodwater exposure.

RESULTS: LEEDS query yielded 69 patients warranting medical record review. Of 18 patients meeting the CSTE case definition, 13 were interviewed; 4 reported floodwater exposure and submitted blood and urine specimens; however, MAT and PCR were negative for *Leptospira* infection. Both initial cases were confirmed by MAT; urine PCR in 1 case identified *Leptospira kirschneri* as the infecting species.

CONCLUSIONS: No additional confirmed cases of postflooding leptospirosis were identified. However, *Leptospira* species endemicity in Louisiana wildlife and 2 laboratory-confirmed cases of leptospirosis postflooding warrants a high index of suspicion for leptospirosis in patients with compatible symptoms and exposure to untreated water, especially during flooding.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Syndromic Surveillance; Outbreaks; Zoonotic Disease

Consider for Different Presentation? Yes

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Submission Type Breakout/Quick/Lightning/Poster
ID [8413](#)

Abstract Type Quick

Abstract Title Public Health Response to an Imported Case of Canine Melioidosis – New York, 2016
Abstract

BACKGROUND: Melioidosis is caused by infection with *Burkholderia pseudomallei*, a federal select agent and soil saprophyte typically found in the tropics and subtropics and particularly in Southeast Asia and northern Australia. Infections are caused by contact with contaminated water and soil. Disease, which can be severe, occurs in humans and many animal species. Cases in the United States, which are very rare, are typically associated with travel or immigration. Importations of canine melioidosis to the U.S. have not been reported since the Vietnam War era. We report the public health response to a case of imported canine melioidosis.

METHODS: In April 2016, the Wadsworth Center Laboratories confirmed the presence of *B. pseudomallei* in the urine of a dog that had recently been imported from Thailand. A coordinated investigation was initiated by two county health departments, a veterinary hospital, the New York State Department of Health, and the CDC. All persons and animals that had contacted the dog, its urine, or urine cultures were assessed for exposure risk and variably recommended for and offered chemoprophylaxis, serologic monitoring, and fever/symptom monitoring, depending on level of exposure and personal medical history.

RESULTS: The dog had been adopted between animal rescue organizations in Thailand and New York. The dog had visited a veterinary hospital twice for evaluation of a pre-existing spinal injury; no other signs of illness were apparent. Nineteen persons had variable exposure to *B. pseudomallei*, including two who had high-risk exposures based on underlying medical conditions. None of the exposed persons became ill or seroconverted. The rescue organization in New York held >130 animals including cats, dogs, and livestock; because the dog had been held in isolation and cared for using adequate biosecurity precautions, no animals were considered exposed. Given the lack of effective treatment regimens and the potential for ongoing risk to humans and animals, the dog was euthanized. Because *B. pseudomallei* is a select agent, the dog's remains were disposed by alkaline hydrolysis.

CONCLUSIONS: As a select agent, *B. pseudomallei* has the potential to pose a severe threat to both human and animal health. Fortunately, this introduction did not cause further spread to animals or people, and soil contamination was avoided. The medical, veterinary medical, and public health communities should be aware that rare diseases may be imported into the U.S. in companion animals.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords Zoonotic Disease; Border / International Health; One Health

Consider for Different Presentation? Yes

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Submission Type Roundtable
ID [8575](#)

Abstract Type Roundtable

Abstract Title Abstract One Health: Wisconsin Public Health and Agriculture Collaborations in Responding to Tuberculosis

Key Objectives:

- Identify challenges to implementing a One Health approach during human and animal tuberculosis case investigations.
- Discuss processes and methods to improve state agency collaborations during human and animal tuberculosis case investigations.

Brief Summary:

Many mycobacterial diseases, especially tuberculosis (TB) caused by *M. bovis* or *M. tuberculosis*, have the recognized zoonotic potential to infect humans, domestic livestock and wildlife. The lengthy incubation period of mycobacterial disease and potential delay in diagnosis of TB can complicate source and contact investigations. Routine interactions between livestock and humans in agricultural settings pose an elevated risk of transmission. However, until recently, the Wisconsin Division of Public Health (DPH) and Wisconsin Division of Animal Health (DAH) lacked a collaborative response plan to cases of TB identified in livestock workers. Challenges associated with a partnered response included complying with health record privacy laws, coordinating response with local health departments and field veterinary staff, communicating with farm workers and owners, and identifying funding sources for response and case management. A response plan was drafted in 2014 that included flow charts, scenarios, communication processes, and considerations for future enhancements. A joint DAH-DPH brochure designed to increase livestock worker awareness about bovine TB in animals and humans was produced in 2016. Recognizing that the health of humans is connected to the health of animals and the environment, this presentation summarizes experiences using the multi-agency response plan and communications tools in a “One Health” approach to zoonotic disease investigations. We are especially interested in discussing similar situations encountered by other states and suggestions for advancing One Health approaches in public health.

Submission Complete? Yes

Committee Infectious Disease

Topic Vectorborne & Zoonotic Diseases

Keywords One Health; Rural Health; Zoonotic Disease

Consider for Different Presentation? Yes

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