

## **Section 4**

# **Notable Outbreaks and Case Investigations**



## Notable Outbreaks and Case Investigations

In Florida, any disease outbreak in a community, hospital or institution, as well as any grouping or clustering of patients having similar disease, symptoms, syndromes or etiological agents that may indicate the presence of an outbreak is reportable as per *Florida Administrative Code*, Chapter 64D-3. Selected outbreaks or case investigations of public health importance that occurred in 2012 are briefly summarized in this section.

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## Bacterial Diseases

### ***Bordetella pertussis*: Outbreak in a Daycare, Collier County**

**Background:** On May 14, 2012, the Epidemiology Program at the Florida Department of Health in Collier County (DOH-Collier) received a positive *Bordetella pertussis* polymerase chain reaction (PCR) electronic laboratory report for a 3-month old infant. The infant attended daycare in a rural community.

**Methods:** DOH-Collier contacted family members and staff at the daycare facility to identify close contacts. Close contacts were defined as people having direct face-to-face contact with the infant or people within three feet of the infant for more than six hours a day. Immunization records were reviewed for all close contacts. All infants in the classroom were evaluated at a local clinic and area medical providers were notified that a child in the community had pertussis.

**Results:** All 10 infants in the classroom were up-to-date on vaccinations. Thirty-two close contacts received antibiotic prophylaxis including parents, siblings, classmates, teachers and medical providers. Two symptomatic classmates were excluded and DTaP/Tdap vaccine was administered to close contacts per the American Academy of Pediatrics recommendations, including 24 caregivers at the daycare facility. On May 21, seven days after the investigation started, secondary transmission of pertussis was confirmed. A local pediatrician reported a 15-month-old child tested positive for pertussis by PCR. Investigation determined the child was in the same daycare classroom as the index case. Antibiotic prophylaxis was recommended for four close contacts.

**Conclusions and Recommendations:** All children and staff in daycare should maintain up-to-date immunization against pertussis. Symptomatic attendees and staff should be excluded from daycare centers. Local medical providers in the community should order appropriate testing (PCR) when pertussis is suspected.

### ***Bordetella pertussis*: Pertussis and Tuberculosis Co-Infection, Seminole County**

**Background:** On July 26, 2012, a 19-year-old man presented to Florida Department of Health in Seminole County (DOH-Seminole) Epidemiology Program with a nonspecific cough with duration of one week. The patient was identified as a contact to a recent pertussis cluster of four cases within a family. During the epidemiology interview, the patient recalled coughing up blood during the previous year, weight loss of 10 to 12 pounds and night sweats; consequently the patient was immediately referred to the DOH-Seminole tuberculosis clinic for evaluation and was diagnosed as a case of active tuberculosis.

**Methods:** Nasopharyngeal (NP) and sputum specimens were collected and tested for pertussis and tuberculosis, respectively, by the Bureau of Public Health Laboratories in Jacksonville.

**Results:** The NP specimen tested positive for pertussis by polymerase chain reaction (PCR), while the sputum specimen tested positive for tuberculosis, initially as an acid-fast bacillus smear, and later by PCR and culture. No additional epidemiologically-linked pertussis cases were identified. On July 30, the patient began the standard rifampin, isoniazid, pyrazinamide and ethambutol treatment regimen for tuberculosis. Tuberculin skin tests were administered to 16 contacts, and five were identified as positive for latent tuberculosis infection (LTBI). No additional active tuberculosis cases were identified.

**Conclusions and Recommendations:** An active tuberculosis case was identified as part of a pertussis cluster investigation. Antibiotic prophylaxis was recommended to high-risk pertussis contacts

regardless of immunization status. Information on pertussis vaccination was distributed to households within the neighborhood where the family cluster was identified. The five people identified with LTBI began prophylactic treatment with isoniazid.

### ***Brucella melitensis*: A Case of Brucellosis With Laboratory Exposures, Miami-Dade County**

**Background:** On Sunday, May 20, 2012, the Florida Department of Health in Miami-Dade County (DOH-Miami-Dade) was notified of laboratory personnel potentially exposed to suspect *Brucella* blood culture isolates from a local hospital. Brucellosis was not suspected at the time of exposure. The following day, the hospital infection preventionists (IP) notified DOH-Miami-Dade Epidemiology Disease Control and Immunization Services of a suspected case of brucellosis in a 21-year-old man. A collaborative investigation with the IP, hospital laboratory, Bureau of Public Health Laboratories (BPHL) in Miami and Jacksonville and DOH-Miami-Dade was initiated. The patient was admitted on May 10 for rectal bleeding and severe back pain that was present for more than six weeks. Other symptoms included night sweats and nausea. The patient reported going deer and pig hunting without the use of proper protective clothing when handling the animals. He also confirmed recent travel to Mexico and consumption of soft cheeses. The patient was treated with rifampin and doxycycline and advised to follow up with an infectious disease physician. On June 1, 2012, laboratorians at BPHL in Jacksonville identified the infecting organism as *Brucella melitensis*.

**Methods:** Potentially exposed laboratory personnel were assessed utilizing Centers for Disease Control and Prevention (CDC) guidelines. The hospital worked with the BPHL in Miami to collect and submit serology samples from exposed people collected on day 0 (baseline) and 6, 12, 18 and 24 weeks post-exposure. Samples were then sent to CDC for *Brucella* microagglutination testing (MAT).

**Results:** A total of nine laboratorians were identified as exposed; four (44%) high-risk exposures and five (56%) low-risk exposures. Fever watch for six months was recommended for all those exposed. Eight of the exposed people accepted post-exposure prophylaxis (PEP). One person with high-risk exposures refused PEP and subsequently developed a detectable *Brucella* MAT titer (1:40 inconclusive), although no clinical illness developed. No other laboratorians developed detectable *Brucella* MAT titers and none of the exposed laboratorians developed symptoms of brucellosis.

**Conclusions and Recommendations:** The patient was most likely infected by consumption of contaminated soft cheeses in Mexico. Education was provided to the hospital on proper laboratory safety precautions. Clinicians should remember to ask animal contact and travel history questions, especially when assessing patients with fever of unknown origin. Laboratory personnel should be informed when submitting samples from suspect cases of brucellosis.

### ***Burkholderia pseudomallei*: Fatal Melioidosis Infection in a Resident With Travel to Trinidad, Orange County**

**Background:** On October 18, 2012, the Florida Department of Health in Orange County (DOH-Orange) Epidemiology Program received notification of a blood culture isolate that tested positive for *Burkholderia pseudomallei* by polymerase chain reaction (PCR) at the Bureau of Public Health Laboratories (BPHL) in Tampa. The patient, a 58-year-old man residing in Orange County, was hospitalized locally following illness onset in Trinidad. DOH-Orange requested the patient's medical records and contacted the hospital laboratory management to assess laboratorian exposure to clinical specimens.

**Methods:** DOH-Orange provided the facility with Centers for Disease Control and Prevention (CDC) guidance on assessment of exposed laboratory workers. A line list of exposed laboratory workers was

requested. Sixteen laboratory workers were designated as low or high risk, depending on type of exposure and co-morbidities. All exposed laboratory workers were instructed to self-monitor for fever for 21 days and to submit serum samples for *B. pseudomallei* indirect hemagglutination assay at CDC. Prophylactic antibiotic treatment was recommended for all people in the high-risk exposure category.

**Results:** The patient's family reported that he had been undergoing cancer-related chemotherapy before traveling to Trinidad on September 25, where the patient became ill on October 2. The patient continued to deteriorate and expired on October 18. *B. pseudomallei* confirmation of the isolate by CDC was received on October 22. Follow-up with laboratory management identified a lack of adherence to the CDC exposure evaluation guidelines. Employee exposures were re-evaluated and eight workers were identified as having been exposed to the patient's clinical specimens.

**Conclusions and Recommendations:** Six of eight laboratory workers were identified as being at high risk and were prescribed doxycycline as post-exposure prophylaxis. Three serology results were inconclusive, although none demonstrated an antibody titer indicative of a recent infection. All remaining specimens tested negative (<1:40 antibody titer) and no secondary illness was identified among the laboratory employees.

### ***Capnocytophaga canimorsus*: Resident With Sepsis, Duval County**

**Background:** *Capnocytophaga canimorsus* are bacteria found in the normal oral cavity flora of dogs and cats. This organism can be difficult to culture and speciate, and can cause septicemia, meningitis, endocarditis and ocular infections in at-risk people. Populations at risk for infection include people who are asplenic, over 50 years of age or who have a history of alcohol abuse or other underlying disease conditions. Infection typically is associated with animal bites or licking and other animal exposures. This case report describes an infection of *C. canimorsus* in a 29-year-old man, reported on April 16, 2012, to the Florida Department of Health in Duval County (DOH-Duval) Epidemiology Program as a suspect case of meningococcal disease.

**Methods:** DOH-Duval initiated an investigation and coordinated information and updates through the infection preventionist and the infectious disease physician at the hospital. Risk factor information was obtained from interviewing the patient's parent. The Bureau of Public Health Laboratories (BPHL) in Tampa performed speciation of the isolate.

**Results:** The patient was transported to the emergency department via emergency medical services on April 15 with a one-day history of bizarre behavior, altered mental status, nausea and vomiting. Upon arrival, the patient was intubated and admitted to the intensive care unit with overwhelming sepsis, multiple organ system failure and disseminated intravascular coagulation. On April 17, a preliminary blood culture from the patient identified Gram negative bacilli. On May 15, BPHL in Tampa identified *C. canimorsus*. An interview with the patient's parents found that the patient had six dogs; however no animal bites were reported. No underlying risk factors for infection were identified. As a result of this infection, the patient had bilateral below-the-knee amputation and bilateral hand amputation from gangrene, and may require plastic surgery. The patient was hospitalized for 67 days and received additional inpatient rehabilitation treatment for 20 days.

**Conclusions and Recommendations:** This serious infection is uncommon but may be underreported due to challenges in isolation and speciation of this organism. Health care providers should routinely obtain animal contact information from patients with a disease of unknown etiology, and also be aware that this particular zoonotic pathogen can occasionally cause illness in those without the usual risk factors. Having public health laboratory capacity is important for accurate speciation of uncommon pathogens.

### ***Klebsiella pneumoniae*: Outbreak of Carbapenem-Resistant *Klebsiella pneumoniae* Infection in an Acute-Care Hospital, Charlotte County**

**Background:** Carbapenem-resistant *Klebsiella pneumoniae* (CRKP) is an emerging threat in medical facilities. *Klebsiella pneumoniae*, a member of the Enterobacteriaceae family, is found in the normal flora of the mouth, skin and intestines. It is a common cause of opportunistic infections. The treatment options for CRKP are limited and those infected have an increased risk of severe outcomes, including death. In October 2012, eight CRKP infections detected in September were reported to the Florida Department of Health in Charlotte County by an acute-care hospital. The hospital had not previously detected CRKP. An investigation was initiated to enhance surveillance, characterize the outbreak and develop specific infection prevention recommendations.

**Methods:** A case was defined as a patient with CRKP identified by culture. Active case finding was performed by reviewing microbiology records from September 2011 to February 2013. Active surveillance culture (ASC) of rectal swabs was initiated in November 2012; first from all inpatients, then biweekly among patients on the unit (28 beds) where infected or colonized patients were cohorted. Pulsed-field gel electrophoresis (PFGE) was performed for available CRKP isolates at the Bureau of Public Health Laboratories. Interventions to prevent transmission included contact isolation, cohorting of cases along with dedicated nursing staff and medical equipment, repeated staff education, evaluations of procedures common among cases and monitoring of isolation precautions.

**Results:** From September 2012 to February 2013, 22 cases were detected by clinical culture (17) or ASC (5). The initial positive clinical culture sites include urine (10), respiratory sites (6) and an abscess (1). Three patients had CRKP detected in the blood. Seven (40%) of the 17 patients with positive clinical cultures died. Common factors identified among the 22 cases included being older than 60 years (20); undergoing endoscope procedures (18); being a woman (14) and having coronary heart disease (10), hypertension (9) or renal failure (7). Eighteen of 22 CRKP isolates were indistinguishable by PFGE. CRKP prevalence in the cohort unit was reduced from 21% in November 2012 to 9% in February 2013. Retrospective review of microbiology records identified three additional patients with CRKP identified from clinical cultures in May and June of 2012, but these cases were not associated with the initial outbreak.

**Conclusions and Recommendations:** The implementation of enhanced infection control interventions and active surveillance cultures successfully controlled this outbreak. Enhanced surveillance through 2013 has continued to identify sporadic CRKP cases and the hospital has continued to respond aggressively, including implementing strict contact precautions, educating employees, screening epidemiologically-linked patients and communicating within the facility. Routine laboratory-based surveillance for carbapenem-resistant Enterobacteriaceae and coordination between clinical and laboratory staff is essential to ensure prompt recognition and appropriate infection control measures are applied.

### ***Mycobacterium fortuitum*: Cluster of *Mycobacterium fortuitum* Infections Following Injections by an Unlicensed Practitioner, Palm Beach County**

**Background:** On December 3, 2012, the Florida Department of Health in Palm Beach (DOH-Palm Beach) was notified of two patients hospitalized in one facility with gluteal abscesses. *Mycobacterium fortuitum* was cultured from both wounds. *M. fortuitum*, a species of rapidly growing mycobacteria, are found world-wide in soil, dust, rivers, lakes and tap water. These organisms can cause human infections such as local skin disease, osteomyelitis, joint infections and eye infections. Both patients had similar histories of being given injections in the buttocks with silicone for cosmetic purposes. The injections were given by an unlicensed medical practitioner operating out of a local hotel.



**Methods:** Active surveillance at area hospitals was initiated to identify additional cases. Patients were interviewed and medical records reviewed. Findings were shared with a joint task force comprised of the DOH Medical Quality Assurance Non-Licensed Practitioner Unit and local law enforcement.

**Results:** Two additional cases were identified at other hospitals; both patients had similar histories and positive wound cultures for *M. fortuitum*. Ages ranged from 29 to 31 years old; two were women and two were men. The length of hospital stays ranged from 24 to 47 days. Patients reported painful, bleeding, oozing wounds and swollen lymph nodes. All were treated with antibiotics, drainage and surgery. Post-hospital care follow-up consisted of daily wound care services. Three of four patients were interviewed by law enforcement. All had found the practitioner by word of mouth. Multiple injections were received over a period of weeks. Identifying information for the practitioner was obtained, including several aliases and disguises.

**Conclusions and Recommendations:** The joint task force investigation resulted in the apprehension and arrest of the unlicensed practitioner. He later pleaded guilty and was sentenced to eight years in prison. Information was distributed in the community about risks associated with use of unlicensed practitioners. Breaches in infection control are more likely outside of licensed health care facilities.

### ***Mycobacterium leprae*: Hansen's Disease in a Resident Without Significant Travel, Osceola County**

**Background:** Hansen's disease, or leprosy, is a chronic infection of the skin, peripheral nerves and upper airways caused by the bacterium *Mycobacterium leprae*. Approximately 95% of humans are not susceptible to infection and transmission requires prolonged contact with an infected person. The disease is considered to be of low endemicity in the U.S., although Florida has many migrants from high-endemicity countries in South America, Africa and Asia. In 2011, a strain of *M. leprae* was reported in both people and nine-banded armadillos in the southeastern U.S. On February 17, 2012, the Florida Department of Health in Osceola County (DOH-Osceola) received a call from a local organization reporting suspected Hansen's disease in one of their employees.

**Methods:** DOH-Osceola interviewed the patient and communicated frequently with the National Hansen's Disease Clinical Center (NHDCC) for guidance and treatment options. Histologic examination and polymerase chain reaction (PCR) testing was provided by the NHDCC.

**Results:** The patient was a 61-year-old white man who was seen by a dermatologist due to skin lesions of 10 months duration on his trunk, arms, legs and back. A biopsy from a lesion was collected, and the patient was referred to an infectious disease physician. The man was an avid hunter who hunted mainly in Florida, but also in Georgia. He noted multiple exposures to armadillos including urine, feces and blood while hunting in Florida. There was no recent international travel reported. The biopsy identified moderately large numbers of acid-fast organisms within histiocytes consistent with borderline lepromatous Hansen's disease. A skin lesion smear showed acid-fast bacilli and blood tested using the QuantiFERON® TB Gold Test was negative. The patient was evaluated by an infectious disease doctor at DOH-Osceola, and continued to receive medication for treatment of Hansen's disease. DOH-Osceola coordinated an educational session with NHDCC for the patient's co-workers along with answers to frequently asked questions. On March 15, PCR testing was positive for *M. leprae* DNA.

**Conclusions:** Early diagnosis and treatment of Hansen's disease is recommended to prevent severe clinical manifestations and limit further spread. Hunters should use impermeable gloves and other protective clothing to prevent direct contact with bodily fluids of wild game to prevent exposure to infectious agents that animals may harbor.

### ***Neisseria meningitidis*: Characterization of a W135 Meningococcal Disease Outbreak, Miami-Dade County**

**Background:** *Neisseria meningitidis* bacteria can cause severe infections, including meningitis and bloodstream infections. Historically in Florida and the U.S., the most common *Neisseria meningitidis* serogroups have been B, C and Y. In 2007, only two of the 67 Florida meningococcal disease cases were serogroup W135. Meningococcal disease in Miami-Dade County was characterized by a predominance of serogroup B until the end of 2008. Starting in December 2008, cases caused by serogroup W135 increased substantially and one clone has become predominant in the county. In 2012, 17 laboratory-confirmed meningococcal disease cases were reported to the Florida Department of Health in Miami-Dade County (DOH-Miami-Dade); 13 (76%) were identified as serogroup W135. A review of cases infected with serogroup W135 reported in 2012 was undertaken to clinically and epidemiologically characterize the outbreak.

**Methods:** Medical histories were reviewed and analyzed by demographic, behavioral, clinical and epidemiological characteristics. Case-based surveillance information from the Bureau of Epidemiology web-based reporting system database (Merlin) and DOH-Miami-Dade Epidemiology, Disease Control and Immunization Services case investigation spreadsheets were compared. A confirmed case was defined as a clinically compatible person with isolation of *N. meningitidis* serogroup W135 from a normally sterile site or from skin scrapings of purpuric lesions in accordance with DOH surveillance case definitions.

**Results:** Of the 13 confirmed cases infected with serogroup W135, four (31%) occurred in winter months. Ages ranged from 0 to 82 years old, with more cases among 20 to 30-year-olds and people over 70 years of age. Eight cases (62%) were in women and eight (62%) were in white Hispanics. Cases were clustered in the northeast region of the county and most did not work, were retired or disabled. Five people (39%) reported smoking and four (31%) reported marijuana use. For all 13 cases, *N. meningitidis* was isolated from blood; no one presented with meningeal signs, and 10 people (77%) had atypical symptoms. Fever was the most common sign among the cases.

**Conclusions and Recommendations:** Health care providers should consider meningococcal disease during initial assessment of febrile illness regardless of accompanying symptoms. Future changes to vaccine recommendations should take into consideration the continued dominance of this serogroup in Miami-Dade County.

### ***Salmonella* Serotype Javiana: A Foodborne *Salmonella* Serotype Javiana Outbreak Associated With a Birthday Party Celebration, Lake County**

**Background:** On October 28, 2012, the Florida Department of Health in Lake County was notified by an emergency department of 10 people who presented with severe diarrhea, fever, nausea and vomiting and were admitted for treatment. All people had attended a private birthday party on October 27, consuming a variety of foods and drinks. An outbreak investigation team was assembled with epidemiology, environmental health and laboratory personnel from local and state resources.

**Methods:** A customized questionnaire was administered to all people who attended the birthday party or consumed leftovers. A case was defined as a person with laboratory confirmation of *Salmonella* or who experienced diarrhea or vomiting within 48 hours of consuming food from the birthday party. Environmental health and epidemiology team members interviewed the two food preparers to collect data on source and methods of preparing, transporting and serving food. Leftover chicken and rice were collected and submitted to the Bureau of Public Health Laboratories (BPHL) for pathogen analysis. The treating hospitals collected stool samples for analysis and shipped isolates to BPHL for pulsed-field gel electrophoresis (PFGE).

**Results:** Forty-three (96%) of the 45 people who attended the birthday party or consumed leftovers met the case definition. Onset dates ranged from October 27-29. Forty cases (93%) were hospitalized from one to five days (median three days). Clinical samples and leftover chicken and rice yielded *Salmonella* Javiana with indistinguishable PFGE patterns. Bivariate statistical analysis indicated that chicken, potato salad, rice and beans were associated with illness. Five (12%) of the 43 ill people only ate leftover chicken prior to illness. During the investigation, the food preparers reported chicken preparation procedures that could have been conducive to the growth of pathogenic bacteria such as *Salmonella*. However, without knowing the actual temperatures and amount of time chicken was kept at those temperatures during the lengthy cooking, transportation and holding process described, it is not possible to determine precisely where the breach of safe time and temperature practices occurred.

**Conclusions and Recommendations:** The reported preparation procedures of the chicken could have led to this outbreak. Pathogens causing foodborne disease outbreaks can be controlled by basic food preparation and handling measures recommended for eating establishments. Potentially hazardous foods must be maintained at prescribed temperatures for established time periods to prevent the growth and harboring of pathogenic bacteria during periods of preparation, storage and display.

### ***Salmonella* Serotype Newport: Cluster of Salmonellosis Cases Associated With a Cultural Festival, Sarasota County**

**Background:** The Florida Department of Health in Sarasota County (DOH-Sarasota) identified an increase in reported salmonellosis cases in March 2012. Interviews identified a common exposure at the Venice Italian-American Festival which was held from February 23-26. In response to this increase in cases, an outbreak investigation was initiated to identify additional cases, assess the food handling practices of the implicated vendor and control the outbreak.

**Methods:** The Tri-Agency Foodborne Illness Survey/Complaint Form was used to interview patients with salmonellosis and other ill people. DOH-Sarasota environmental staff attempted to identify and interview the implicated vendor regarding food handling practices. *Salmonella* isolates were forwarded to the Bureau of Public Health Laboratories (BPHL) for pulsed-field gel electrophoresis (PFGE). A case was defined as a person who attended the cultural festival from February 23-26 and became ill with vomiting, diarrhea or both after eating from the Greek food stand.

**Results:** Eight people met the case definition. Onset dates ranged from February 27-28. Three cases (38%) were hospitalized and one (13%) visited an emergency room. Five cases (63%) were in women, and ages ranged from 37 to 80 years old with a median of 60.5 years. Five clinical samples were positive for *Salmonella* serogroup C2; three of these isolates were forwarded to the BPHL and were identified as *Salmonella* serotype Newport with indistinguishable PFGE patterns. DOH-Sarasota environmental staff interviewed the vendor and identified improper practices for thawing and cooking chicken. The vendor reported cooking chicken to a temperature of 150°F instead of 165°F for 15 seconds.

**Conclusions and Recommendations:** Based on the epidemiological and environmental assessment, this cluster of *Salmonella* cases was most likely associated with consuming undercooked chicken from a single food vendor at the festival. To prevent future outbreaks, vendors should follow prescribed food safety practices and procedures to reduce the risk of foodborne disease. Frequent hand washing and cooking food to the proper temperatures is recommended.

### ***Shigella flexneri*: *Shigella flexneri* Infections Among HIV-Positive Men, Duval County**

**Background:** In March 2012, the Florida Department of Health in Duval County identified three cases of *Shigella flexneri* infections with similar risk factors and demographics. These were all reported in 25 to 30-year-old black HIV-positive men. A study was undertaken to determine risk factors and the prevalence of *S. flexneri* infections among men who have sex with men (MSM).

**Methods:** Risk factors, exposure data and length of hospitalization were gathered through interviews and medical chart reviews of reported cases. Specimens were submitted to the Bureau of Public Health Laboratories for pulsed-field gel electrophoresis (PFGE) and one isolate was sent to the Centers for Disease Control and Prevention (CDC) for serotyping.

**Results:** By the end of 2012, 18 *Shigella* confirmed infections were reported, 13 (72%) of which were *S. flexneri*. Of the 13 people infected with *S. flexneri*, 10 (77%) were black and 11 (85%) were men. Ages ranged from two to 47 years old with nine (69%) 18 to 35 years old. Only two cases were reported in children, a 2-year-old girl and a 3-year-old girl. Ten cases (77%) were in men with a history of either HIV infection or MSM. PFGE was conducted on six specimens collected from four adult men (three isolates from 2012 and one isolate from January 2013) and two children; all PFGE patterns matched. CDC testing on the January 2013 isolate determined the isolate was serotype 2a (11:3,4). The 3-year-old girl had contact with a sick uncle and was presumed to be a secondary case; no other epidemiologic links were identified during the investigation.

**Conclusions and Recommendations:** Cases of shigellosis in this cluster were primarily among young African American males with a history of HIV infection or MSM who required hospitalization for their symptoms. No epidemiologic link could be determined through the interviews. Future activities include investigating whether chronic carriage is a factor and whether detailed interviews conducted by an experienced STD investigator might result in epidemiologic links.

### ***Shigella sonnei*: Community-Wide Shigellosis Outbreak, St. Lucie County**

**Background:** The Florida Department of Health in St. Lucie County Epidemiology Division identified and investigated a substantial community-wide increase in reported shigellosis cases from January through August 2012.

**Methods:** All shigellosis cases were investigated; increased surveillance efforts were continued during and after the noted increase of shigellosis.

**Results:** From January 1 to August 31, 2012, a total of 185 shigellosis cases were reported, investigated and interviewed. All positive laboratory results identified *Shigella sonnei*. Two schools and 13 daycare centers were investigated due to reported increases in gastrointestinal illness, absenteeism and laboratory-confirmed shigellosis cases. Epidemiological links were found among multiple household settings, elementary schools and daycare centers. Many of the school attendees were also household contacts of daycare center attendees or staff. Transmission among household members, daycares, after care programs and elementary schools was followed by secondary transmission to other facilities (e.g. food service, patient care).

**Conclusions and Recommendations:** Community-wide increases in shigellosis tend to be cyclic, occurring every two to three years, and difficult to control in part due to the short incubation period and hand-to-mouth behavioral practices of small children. Information on disease control and prevention was provided to people using various methods, including presentations, posting resources on websites and e-mails. Collaboration with community partners was essential for the implementation and reinforcement of prevention and control measures. Enforcing prevention and control measures

(including exclusion criteria) can be challenging during an outbreak or in sensitive situations. Collaborating with community partners and sharing information via different methods can assist with efficiently disseminating important disease prevention messages and recommendations during an outbreak situation.

## Parasitic or Mycotic Diseases

### ***Cryptosporidium* species: Household Outbreak of *Cryptosporidium* and Suspected Shiga Toxin-Producing *Escherichia coli* Associated With Ill Calves, Citrus County**

**Background:** On October 10, 2012, the Florida Department of Health in Citrus County received a report of three laboratory-confirmed cryptosporidiosis cases in one family from a local hospital. An investigation was initiated to verify the existence of an outbreak, identify the source of the infection and prevent additional illnesses.

**Methods:** Interviews were conducted with family members and a veterinarian. Stool specimens were sent to the Bureau of Public Health Laboratories (BPHL) and the Centers for Disease Control and Prevention (CDC).

**Results:** The family received a pair of 1-week-old calves on September 26. Two days later, both calves had onset of diarrhea; cryptosporidiosis was suspected by the veterinarian and treatment was initiated, but the calves subsequently died. From October 4-8, all family members (two adults and two children) had onset of diarrhea, vomiting and fever. Stool specimens were collected for culture and ova and parasite testing. *Cryptosporidium* was detected in specimens from three family members (mother and children). In addition, both children also tested positive for Shiga toxin by enzyme immunoassay, which was confirmed by BPHL. Cultures were negative for Shiga toxin-producing *E. coli* at the CDC. The 27-year-old mother was admitted to the hospital for dehydration. The infections were treated with metronidazole and nitazoxanide.

**Conclusions and Recommendations:** This outbreak was caused by direct contact with ill calves and lapses in routine prevention measures. Cryptosporidiosis is a common infection in calves and contact with pre-weaned calves is a known risk factor for human illness. Co-infections with other potential zoonotic enteric pathogens can also occur, as suspected in this case. Recommendations for infection prevention and environmental cleaning and disinfection were provided. As a result of this outbreak, Florida Department of Health is coordinating with the Florida Department of Agriculture and Consumer Services to develop outreach materials for organizations involved with selling young calves.

### ***Exserohilum rostratum*: Nationwide Outbreak of Fungal Infections Associated With Contaminated Methylprednisolone Injections, Epidemiology in Florida**

**Background:** On September 28, 2012, the Centers for Disease Control and Prevention (CDC) notified the Florida Department of Health (DOH) that eight clinics in five counties had received preservative-free methylprednisolone acetate (pf-MPA) from the New England Compounding Center that was ultimately implicated as the cause of a national outbreak with 749 cases of fungal infection in 20 states, including meningitis; spinal, paraspinal and joint infections; and stroke. DOH cooperated with CDC, the Food and Drug Administration (FDA) and DOH Medical Quality Assurance in investigating and controlling the outbreak in Florida.

**Methods:** The CDC outbreak case definition was used. Medical records from clinics receiving implicated product were reviewed for people who were exposed to pf-MPA and who were symptomatic in order to evaluate their case status. The pf-MPA manufacturer and lot number used

during each procedure was not normally documented in the clinics' medical records; therefore, exposure was determined by comparing patient treatment dates with the shipment dates of the implicated pf-MPA lots. Active and passive surveillance was implemented to identify all exposed patients and cases of fungal infection. An incident command structure was activated with DOH as the lead agency. Clinical specimens from probable cases were sent to the CDC for laboratory analysis via the Bureau of Public Health Laboratories.

**Results:** In Florida, 1,055 people were potentially exposed to contaminated pf-MPA. Twenty-five cases were identified, with an attack rate of 2.4%. Eighteen cases (72%) were exposed in Marion County and seven (28%) in Escambia County. Six cases (24%) were laboratory-confirmed as fungal infections; two were *Exserohilum rostratum*, one was a *Cladosporium* species, one was a *Coelomyces* species and two had immunohistochemical evidence of fungi in clinical specimens. Twenty additional cases met the probable case definition. Thirteen cases (52%) were in women. Ages ranged from 28 to 87 years old (median age was 64 years). The median time from last injection with pf-MPA to symptom onset was 17 days (the range was 0 to 197 days). Primary symptoms at onset were headache (88%), stiff neck (64%), and fever (36%). Comorbidities were common. Three cases (12%) also had a stroke. Seven deaths (28%) occurred among cases, three of which were attributed to fungal meningitis. All cases that died received an epidural injection with implicated pf-MPA. Long-term sequelae and late illness onset from this type of infection and exposure are unknown.

**Conclusions and Recommendations:** Compounding pharmacies are not regulated by the FDA and this investigation adds to the abundance of published literature on outbreaks associated with contaminated medication from such pharmacies. Comprehensive medical record documentation, including the lot numbers of medication given, is necessary to ensure the safety of injectable medications.

## Viral Diseases

### Hepatitis B Virus: Perinatal Transmission of Hepatitis B Infection, Polk County

**Background:** Hepatitis B virus (HBV) causes an infection of the liver that increases the risk of chronic liver disease and hepatocellular carcinoma. When transmitted to an infant during birth, the risk of chronic infections and resulting liver damage is increased. As a result of the use of effective screening and post-exposure prophylaxis, perinatal transmission of HBV from infected mothers is rare in Florida and the U.S. On May 9, 2011, a pregnant woman who was positive for hepatitis B surface antigen (HBsAg) was reported to the Florida Department of Health in Polk County (DOH-Polk). An investigation was conducted to provide prevention education and ensure post-exposure prophylaxis was administered to the newborn.

**Methods:** The investigation included medical record reviews and interviews with the mother and medical providers.

**Results:** During prenatal care screening, the mother tested positive for HBsAg, and it was learned that she was diagnosed with HBV as a child. DOH-Polk notified the birthing facility to ensure that prophylaxis would be given following delivery and according to recommended guidelines. The mother was educated regarding transmission, prevention and treatment, and was given a list of physicians who could provide follow-up care for her chronic HBV infection. As recommended, the infant received hepatitis B immune globulin (HBIG) and HBV vaccine within 12 hours of birth, and two additional doses of HBV vaccine at one and six months of age. Post-vaccination testing obtained at nine and 11 months of age was positive for HBsAg, confirming a perinatal HBV infection.

**Conclusions and Recommendations:** A major cause of unsuccessful immunoprophylaxis is intra-uterine infection before HBIG and HBV vaccine can be administered, as suspected in this case. A high level of HBV DNA in pregnant women is the main risk factor for intra-uterine infection. The mother had not received follow-up care from a liver specialist to quantify HBV DNA and determine if she was an appropriate candidate for anti-viral treatment. When managed by a practitioner skilled in treating HBV, intra-uterine transmission of HBV may be prevented.

### **Herpes B Virus: Macaque Monkey Bite, Martin County**

**Background:** Martin County Animal Control reported to the Florida Department of Health in Martin County (DOH-Martin) that a pet macaque monkey attacked his owner on August 15, 2012. The victim sustained extensive wounds and was transported to the emergency room for treatment. Macaque monkeys have a high prevalence of herpes B virus infection. This herpes virus generally causes no or mild symptoms in macaques, but has an 80% mortality rate in people if untreated. Herpes B virus is shed intermittently in bodily secretions from infected macaques, and is most likely to be shed during times of stress. It is not possible to conclusively determine that a macaque is not infected with herpes B virus.

**Methods:** DOH-Martin conducted patient interviews, provided national guidelines for management of people potentially exposed to herpes B virus to the hospital and arranged sample submission to Bureau of Public Health Laboratories-Miami for rabies testing.

**Results:** The victim stated that the 9-year-old male macaque monkey was raised as a family pet. However, he was recently caged at home as a result of increasingly aggressive behavior. On August 15, the monkey escaped from his cage and ran towards his owner who was working outside. A friend who was with the victim was forced to shoot and kill the animal in order to get him to release the victim. The patient was brought to the local emergency room for evaluation and treatment of extensive injuries to the wrist, leg and buttocks. Blood was drawn for herpes B virus serology and antivirals were initiated. The patient was then transferred to another hospital for several surgeries to repair tendon and soft tissue damage to his hand. Antivirals were continued during and after discharge from the hospital and herpes B virus serology was repeated after the antivirals were completed. Rabies testing for the monkey was negative. Both serology samples from the victim were negative for herpes B virus. The patient received extensive therapy to restore movement to his arm.

**Conclusions and Recommendations:** Macaque monkeys do not make suitable pets. Any bite by a macaque monkey should be considered a medical emergency. Good wound cleaning and antivirals should begin immediately. Baseline and post-treatment serology is also recommended.

### **Influenza Virus: A Cluster of Influenza A 2009 H1N1 Cases at a County Jail, Duval County**

**Background:** In January 2012, the Florida Department of Health in Duval County (DOH-Duval) received a report of a resident at a local jail that was positive by polymerase chain reaction (PCR) for Influenza A, H1N1 2009. The jail nurse reported two residents had entered from the community with symptoms of an influenza-like illness (ILI). Within two days, additional cases of ILI occurred and an investigation was initiated.

**Methods:** DOH-Duval requested a line list of ill patients. ILI was defined as a patient having fever greater than 100.4°F plus cough or sore throat. A probable case was defined as a resident of the facility with ILI onset from January 1 to February 14. A confirmed case was defined as a probable case with PCR-confirmed influenza.

**Results:** Ten people out of 2,818 in this facility met the criteria for ILI, representing an attack rate of 0.35%. Onset dates ranged from January 27 to February 5 and the average duration of illness was 3.5 days. All cases were in men 19 to 39 years old with a median age of 25 years. Nine (90%) of the cases were positive for influenza A by PCR. Seven (78%) of those nine were positive for H1N1 2009. All were treated with Tamiflu®. No residents were hospitalized and all patients were immediately placed on isolation until they had no fever for 24 hours and minimal cough. None of the patients were considered high risk for complications and none had been vaccinated for influenza by the facility.

**Conclusions and Recommendations:** This cluster originated from community-associated cases of influenza. Jails often have frequent turnover and budget restrictions that limit their ability to provide residents with influenza vaccinations. Health departments should work with jails in their jurisdictions to ensure procedures for prevention are in place, including those to detect and isolate cases of ILI quickly.

### **Influenza Virus: Respiratory Illness Among International Travel Groups, Orange County**

**Background:** On July 12, 2012, the Florida Department of Health in Orange County (DOH-Orange) received a report that approximately 100 of 600 adolescent international travelers had experienced influenza-like illness (ILI). The teenagers travelled by air in three groups from Paraguay to the Bahamas via Miami on July 2, 4 and 5. The groups later traveled separately to Orlando to lodge at the same resort until July 16, 18 and 19, when they returned to Paraguay.

**Methods:** DOH-Orange initiated an investigation to describe and control the outbreak and determine the etiology. An ILI case was defined as a member of the traveling group with symptoms of fever, cough, sore throat and dizziness. A line list of the travelers was provided on July 20.

**Results:** Initial symptom onset was July 10, 2012. Thirty-two people met the ILI case definition and 128 people sought medical care. Tamiflu® was prescribed and completed by all ill people seen at the urgent care center. Two travelers suffered illness serious enough to warrant observation in an urgent care facility and both were positive for influenza A via rapid tests; however, clinical samples were not available to send to the Bureau of Public Health Laboratories (BPHL) for confirmatory analyses. Twelve nasopharyngeal specimens were collected from 11 travelers and submitted to BPHL in Jacksonville for further subtyping. All 12 were confirmed influenza A (H3) by polymerase chain reaction and isolates were forwarded to the Centers for Disease Control and Prevention (CDC). On November 9, 2012, DOH-Orange received results for five of the specimens sent to the CDC; all five were characterized as influenza A H3N2.

**Conclusions and Recommendations:** The source of the outbreak could not be determined but was caused by influenza A H3N2. DOH recommends a yearly influenza vaccine as the first and most important step in protection against influenza viruses. People who do become ill should limit contact with others to prevent spreading infection and should practice good hand hygiene and respiratory etiquette (cover nose or mouth when sneezing or coughing). Antiviral drugs, such as Tamiflu®, are most effective early in the course of illness (within the first two days) and can shorten the duration of infection and help prevent serious complications.

### **Norovirus: Foodborne Outbreak Associated With a Country Club Tennis Tournament Utilizing a Caterer, Palm Beach County**

**Background:** On January 19, 2012, the Florida Department of Health in Palm Beach County (DOH-Palm Beach) was notified of a foodborne illness complaint from a Broward County resident who experienced a gastrointestinal illness after eating a meal catered by a Palm Beach County restaurant



that delivered a luncheon to a country club after a weekly tennis tournament. Other tennis tournament team members that had eaten at various tournament sites catered by the same restaurant on January 17-18 had become ill with similar symptoms. DOH-Broward, the Department of Business and Professional Regulation (DBPR) and the Regional Environmental Epidemiologist were notified and an outbreak investigation was initiated.

**Methods:** A customized questionnaire was administered to tennis team members. A case was defined as a person who ate foods at or catered by restaurant “A” on January 17-19 and became ill with diarrhea or vomiting within 43 hours after eating. Stool specimens were requested from ill people for analysis at the Bureau of Public Health Laboratories. An environmental assessment of the restaurant was conducted by DOH-Palm Beach and DBPR on January 20 and 25.

**Results:** Of 180 people exposed, 141 (78%) met the case definition. Incubation periods ranged from 16 to 43 hours. Ages ranged from 17 to 72 years old. Two stool specimens were submitted and subsequently tested positive for norovirus GI. No specific food vehicle was identified. The environmental assessment indicated that food handlers were not utilizing gloves appropriately, hand washing was lacking and one food preparer reported being ill during January 17-19 with similar symptoms.

**Conclusions and Recommendations:** This outbreak was linked to restaurant “A” in Palm Beach County that catered several tennis events from January 17-19. The most likely cause of the outbreak was exposure to norovirus GI as a result of poor food handling practices. Restaurants should follow proper hand hygiene protocols and exclude ill food handlers.

### **Norovirus: Foodborne Outbreak at a Local Restaurant, Manatee County**

**Background:** The Florida Department of Health in Manatee County (DOH-Manatee) was notified on November 27, 2012, of a possible foodborne illness outbreak associated with a local restaurant. Early information identified several different families from the same neighborhood dining at the same restaurant on November 19 that became ill with gastrointestinal symptoms approximately 24 to 72 hours later. In response to this report, an outbreak investigation was initiated to identify the source, the causative agent and to prevent additional cases.

**Methods:** A standard questionnaire was administered to restaurant guests and staff. A joint environmental assessment of the restaurant was conducted by DOH-Manatee and the Department of Business and Professional Regulation on November 28. Stool specimens were requested for analysis by the Bureau of Public Health Laboratories (BPHL). A case was defined as anyone who consumed food items served at the restaurant on November 19 from 4:00 p.m. to 8:30 p.m. and reported diarrhea or vomiting from November 20-22.

**Results:** Twenty-one (88%) of 24 identified restaurant attendees met the case definition. Onset of symptoms ranged from 11 to 72 hours after dining at the restaurant. Eleven cases (52%) were women and the average age of cases was 75 years. Ill people did not report any commonalities other than the restaurant exposure and a case-control study did not identify statistically significant food items. Four stool specimens tested positive for norovirus GII by polymerase chain reaction at BPHL. The environmental assessment identified several food items stored at improper temperatures and eight food handlers who were ill with gastrointestinal symptoms; however the onsets of their illnesses were after case onsets.

**Conclusions and Recommendations:** A foodborne outbreak occurred in association with attendance at a local restaurant in Bradenton on November 19, 2012, with laboratory results positive for norovirus GII. The case-control study did not identify any statistically significant food items to confirm the outbreak source. Ill food handlers should be excluded while symptomatic. Proper hand hygiene and proper food preparation practices should be followed to prevent foodborne illnesses.

### **Norovirus: Gastrointestinal Outbreak at a Medical Training Facility, Hillsborough County**

**Background:** On April 5, 2012, The Florida Department of Health in Hillsborough County (DOH-Hillsborough) Epidemiology Program was notified of a gastrointestinal outbreak in a group attending a three-day training program at a medical facility in Tampa. Ill people reported diarrhea, vomiting, nausea, abdominal cramping, headache and chills.

**Methods:** DOH-Hillsborough developed a survey that was e-mailed to all 68 people attending this training with instructions to return the completed surveys via fax. Risk ratios were calculated in an effort to determine the source of the outbreak.

**Results:** Of the 68 people surveyed, 38 (56%) responded. Of the 38 respondents, 23 (61%) experienced diarrhea or vomiting from April 3-8. The ill reported experiencing symptoms lasting one to three days. Only one stool specimen was collected, but norovirus testing was not done. The risk ratio for people serving themselves ice at the training facility was 2.0 ( $p=0.04$ , one tail Fisher exact test) indicating that among respondents, those who consumed ice had twice the risk of experiencing diarrhea or vomiting as compared to those who did not. Additionally, interviews indicated that several of the medical training center employees suffered a gastrointestinal illness just prior to the outbreak among this group.

**Conclusions and Recommendations:** This outbreak was likely caused by norovirus based on the symptoms of the ill, duration of illness, and the fact that norovirus was circulating in Hillsborough County at this time. The reports of ill employees at the facility prior to this outbreak, coupled with the elevated risk of illness among those who consumed ice during the training, suggest that ice or ice serving utensils may have been contaminated. Contaminated ice has been identified as the source of other norovirus outbreaks. The investigation resulted in the medical training facility revising their terminal cleaning procedures, particularly during periods of high norovirus activity, and discontinuing self-service ice.

### **Puumala Virus: Imported Hantavirus Infection in a Traveler From Germany, Osceola County**

**Background:** On June 10, 2012, the Florida Department of Health in Osceola County (DOH-Osceola) received an electronic laboratory report with positive IgM and IgG antibody titers to hantavirus and a positive IgM and negative IgG antibody titer to Sin Nombre hantavirus from a patient seen at a local hospital. Hantavirus Pulmonary Syndrome (HPS) is a reportable condition in Florida and positive antibody titers do not distinguish between clinical syndromes of Puumala hantavirus and hantavirus pulmonary syndrome. Hantavirus infection is acquired through exposure to feces of infected rodents. It is not endemic to Florida.

**Methods:** Medical records were requested from the hospital and the patient was interviewed by DOH-Osceola epidemiologists. A serum sample collected June 5 was forwarded to the Centers for Disease Control and Prevention (CDC) for confirmatory testing.

**Results:** The patient was a 43-year-old man visiting from Germany who arrived in the U.S. on May 27. He had onset of fever, headache and myalgia on May 28, and later developed thrombocytopenia and acute renal failure. Chest radiographs were normal. The medical records stated that the patient had been working on the rodent-infested rooftop of his farmhouse near Hamburg, Germany. A family member reported that there had been 89 identified cases of hantavirus infection in that region of Germany. She also reported that the patient had handled rodent traps at his home. On June 13, CDC reported that the acute serum sample results were indicative of recent Puumala hantavirus infection with a strongly positive Puumala IgM titer ( $>1:6400$ ) and a weakly positive Puumala IgG response (1:100).

**Conclusions and Recommendations:** The patient's condition had considerably improved prior to his return to Germany on June 8. Although the case did not meet the 2012 Florida HPS case definition, the investigation identified an imported hantavirus infection with hemorrhagic fever and renal syndrome symptoms in a non-U.S. resident. Control measures and strategies to prevent any type of hantavirus infection focus on reducing the risk of exposure to infected rodents and their nests including eliminating food sources and nesting sites, sealing holes in residences and using rodent control.

### **Rabies Virus: Stray Puppy Develops Rabies, Palm Beach County**

**Background:** The Florida Department of Health in Palm Beach County Epidemiology Program received a report of a puppy with clinical symptoms compatible with rabies on February 16, 2012. The puppy was a stray Cairn terrier found by a family at a rest stop on the Florida Turnpike on February 3. The puppy appeared to have normal behavior and was friendly. A veterinarian administered a rabies vaccination to the puppy on February 9. On February 14, the puppy started exhibiting symptoms of drooling, decreased activity and lethargy, but was never aggressive. The puppy was seen again by the veterinarian who suspected rabies and reported this to Palm Beach County Animal Care and Control. A rabies direct fluorescent antibody test performed on the brain by the Bureau of Public Health Laboratories in Jacksonville was positive on February 17.

**Methods:** The animal was euthanized on February 16 due to suspected rabies infection. Starting February 17, interviews were conducted with family members to determine the number of people who were in contact with the rabid puppy during the exposure period, February 4 (10 days prior to symptom onset) to February 16 (the day the animal was euthanized).

**Results:** Scratches from the puppy reportedly broke the skin on a child's face and arms. The parents of the child reported mucous membrane exposure to saliva while caring for the sick animal. On February 4, two other children had exposure to the puppy's saliva while visiting and playing with the animal. Rabies post-exposure prophylaxis was recommended and initiated for these five people. A rabies booster vaccination and 45-day home quarantine was recommended for another dog in the household that was current on its rabies vaccination. The veterinary office that handled the rabid puppy reported no breaches of infection control precautions. None of the personnel at the office had pre-exposure vaccination for rabies.

**Conclusions and Recommendations:** A 60-day rabies alert was issued for central Palm Beach County recommending rabies vaccination for domestic animals and alerting the public to the risk of rabies transmission. Appropriate infection control practices and timely reporting by veterinary staff resulted in rapid public health response and no exposures to the veterinary staff. Rabies pre-exposure vaccination is recommended for animal workers in Florida due to endemic rabies in wildlife.

### **Varicella-Zoster Virus: Varicella Outbreak in Elementary Schools Among Unvaccinated Members of a Religious Group, Alachua County**

**Background:** On February 22, 2012, the Florida Department of Health in Alachua County (DOH-Alachua) received notification of two students with varicella infection from the principal of a private elementary school with predominately unvaccinated students (School 1). An investigation was initiated to determine the existence of an outbreak and prevent additional infections.

**Methods:** Cases were defined according to the DOH surveillance case definition. The outbreak investigation included enhanced surveillance; interviews with parents, school staff and medical providers; and prevention and control guidance. DOH-Alachua issued a public health emergency order to the board of education to exclude all unvaccinated attendees at affected public schools until documented receipt of a varicella vaccination or until 21 days after exposure.

**Results:** From January to May, a total of 77 cases were confirmed, 69 (90%) of which were unvaccinated. Ages ranged from 0 to 41 years old, with an average age of 10 years. Clinical specimens, obtained from one child and one adult, tested positive for varicella by polymerase chain reaction at the Bureau of Public Health Laboratories. School 1 had 26 cases in children and School 2 had 25 cases in children and one in an adult; the remaining 25 cases were identified among five other schools (eight cases), a daycare facility (two cases) and household contacts (15 cases). The index case was determined to be an unvaccinated parent of a School 1 attendee with history of travel to India and a rash onset of January 7.

**Conclusions and Recommendations:** Large social groups of unvaccinated people are at high risk of vaccine-preventable disease outbreaks. During this outbreak, close contact among members of a religious community and the unvaccinated status of many members contributed to sustained disease transmission. The implementation of the exclusion rule likely prevented further disease spread. Wide scale administration of varicella vaccination is the most effective way to reduce the risk of community-wide outbreaks. Vaccination advice for international travel should be emphasized.

## Non-Infectious Agents

### Carbon Monoxide: A Cluster of Suspected Carbon Monoxide (CO) Poisoning in a Recreational Vehicle, Lake County

**Background:** On January 23, 2012, the Florida Department of Health in Lake County (DOH-Lake) Epidemiology Program received notification that the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) had detected a cluster of suspected carbon monoxide (CO) poisoning in Lake County. Four members of a family (father, mother and two teenage sons) visited a local hospital on Saturday, January 21, 2012, with complaints of headache, nausea, vomiting, light-headedness and diarrhea.

**Methods:** All CO poisoning cases are classified based on Florida's surveillance case definition. DOH-Lake contacted the hospital and conducted case interviews to identify possible sources of exposure. Medical records and laboratory results of carboxyhemoglobin (COHb) were used to determine if the patients' levels met the case definition.

**Results:** The investigation identified that four family members were sleeping in a recreational vehicle (RV) with gas-generated heating when they became ill. All reported that symptoms began seven hours prior to reporting to the hospital for treatment. COHb blood levels did not meet the confirmed case definition for any of the four family members; COHb was 4.7% in the 42-year-old father, 2.1% in the 39-year-old mother, 3.0% in the 18-year-old son and 0.7% in the 16-year-old son. All family members were administered 100% oxygen before blood specimens were drawn, which may explain why COHb levels did not meet the confirmed case definition criteria. All family members were symptom-free before being released from the hospital.

**Conclusions and Recommendations:** Poisoning with CO by inappropriate use of RV heating was suspected but could not be confirmed because it was not known how long the patients were given oxygen prior to drawing blood for COHb testing. Factors such as smoking status, pre-existing conditions and timing of COHb testing in relation to administration of 100% oxygen therapy affects COHb levels. Inappropriate use of home heating methods such as indoor use of charcoal grills, portable stoves and space heaters have contributed to CO poisonings seen during winter months in Florida. DOH-Lake used this opportunity to educate emergency department (ED) staff on the importance of drawing labs immediately upon arrival at the ED to ensure a more accurate reading of COHb levels. To avoid such incidents, people should not use unvented combustion heaters in

enclosed spaces, especially sleeping areas. People should not to burn charcoal inside a house, garage, vehicle, tent or fireplace. All recommendations to help prevent CO poisoning are available at <http://www.floridahealth.gov/healthy-environments/carbon-monoxide/index.html>.

### ***Clostridium botulinum*: Infant Botulism Case, Seminole County**

**Background:** Infant botulism occurs when ingested *Clostridium botulinum* bacteria germinate and produce toxin in the gastrointestinal tract of infants. The Florida Department of Health in Orange County (DOH-Orange) was notified on August 16, 2012, of a possible infant botulism case by a hospital. An investigation was initiated to verify the diagnosis, identify the potential source of the botulism and to prevent additional cases.

**Methods:** A standard questionnaire was administered to the family of the infant to determine symptom onset and potential exposures. A stool specimen and infant formula were collected and forwarded to the Centers for Disease Control and Prevention (CDC) for analysis. Following state and national protocol, Baby Botulism Immune Globulin (BabyBIG<sup>®</sup>) was requested from the California Department of Public Health.

**Results:** On August 11, the infant developed difficulty swallowing and poor feeding behavior, and on August 13 was admitted to the hospital for suspected infant botulism. The family reported that the infant was a Seminole County resident who had been exclusively breast-fed until a week prior to onset of symptoms when the infant had been switched to an infant formula. The parents reported the infant hadn't consumed any honey or corn syrup (known high-risk exposures for infants). The father reported working in a dusty warehouse but reported he showered and changed before handling the infant. No other high-risk exposures were noted. The CDC reported the stool specimen was positive for *C. botulinum* toxin type B. The infant formula was tested and found negative. On August 23 and 24, the infant received BabyBIG<sup>®</sup> and recovered.

**Conclusions and Recommendations:** This case of infant botulism was identified and properly treated. No clear source of exposure was identified. The risk factors and vehicles of transmission of *C. botulinum* for most cases remain unclear. *C. botulinum* is found in dust and soil, making case prevention difficult. The bacteria can be found inside homes on floors, carpets and countertops even after cleaning. Consuming honey and corn syrup have been associated with infant botulism and should be avoided for children <1 year old.

### **Detergents: Outbreak of Eye Injuries Sustained During a Foam Party, Collier County**

**Background:** On May 26, 2012, the Florida Department of Health in Collier County was notified by law enforcement and hospital personnel that approximately 40 people had sought care at local emergency departments because of severe eye irritation and pain. Patients indicated that they attended a foam party, an event where foam is sprayed onto a dance floor while participants dance to music.

**Methods:** Surveillance for additional cases was conducted by contacting hospitals and ophthalmology offices in Collier and neighboring counties. A case was defined as a person who experienced eye irritation or pain during or after attending the foam party on May 26, 2012, from 11:00 p.m. to 1:45 a.m. Contact information, clinical results and related event information captured in the medical records were abstracted and interviews were attempted for cases and non-cases that attended the party.

**Results:** Fifty-six cases were identified among 350 estimated attendees, with an approximate attack rate of 16% (complete attendance line lists were not able to be obtained). Of the 56 cases, 46 (82%) were interviewed and 43 (77%) sought medical care. All reported getting foam in their face and 44

(96%) reported direct exposure to their eyes. Symptoms included eye irritation (95%), eye pain (91%), photophobia (71%), decreased visual acuity (81%), chemical conjunctivitis (77%), corneal abrasions (50%) and skin irritation (25%). Onset of symptoms was rapid, with most cases reporting onset between midnight and 3:00 a.m. on the night of the event. The median duration of symptoms was six days (range one hour to 34 days), with seven people still symptomatic at the time of interview (i.e., more than one month after the injury). Of note, 40 interviewed people mentioned a strong soap smell in the air and on their clothes, which in some instances lasted through several cycles of laundering.

**Conclusions and Recommendations:** Due to the limited ability to detect cases that did not seek medical care, the attack rate of 16% likely underestimates the true number of affected people. Based on duration of symptoms and number of people requiring medical attention, injuries sustained at this event were not minor, and in many cases resulted in long-term injury. Taking safety precautions in events where chemicals are used for entertainment, such as foam parties, is important to help prevent these injuries from occurring.

### **Diphenylmethane: Citrus Plant Chemical Incident, Martin County**

**Background:** Routine syndromic surveillance efforts identified a cluster of seven chemical-related calls to the Florida Poison Information Center Network (FPICN) on March 7, 2012. Seven workers from a citrus plant presented at an emergency department reporting inhalation exposure to a fruit disinfectant and complained of cough, dizziness, headache, vomiting, stomach pain, sleepiness, rash, eye irritation and nose irritation. The Florida Department of Health in Martin County (DOH-Martin) was notified and initiated an investigation.

**Methods:** Medical records were reviewed and interviews were conducted with the people identified by FPICN. Information about the exposure and injuries were identified from FPICN calls, medical records and interviews. DOH-Martin worked closely with the Department of Agriculture and Consumer Services (DACS) as they conducted their investigation.

**Results:** The exposure reportedly occurred around 7:00 p.m. to 7:30 p.m. on March 6, and then again, much worse, around 9:30 p.m. The duration of all clinical effects was less than two hours. The patients were women aged 37 to 62 years old. Ethnicity was available for five workers, all of whom were Hispanic. Four of the seven workers completed a questionnaire and stated that fumes are always present, but were extremely strong on this occasion. Personal protective equipment (PPE) was provided after the exposure, but there was not enough for all workers. Two workers stated they would not provide additional evidence because they feared they would lose their job. The chemical was identified as Vortex, containing diphenylmethane and diisocyanates. The DACS investigation determined that the chemicals were used consistent with manufacturer directions and no violations were documented. The company discontinued use of the product after the investigation.

**Conclusions and Recommendations:** Although no violations were detected during the DACS investigation, injuries appeared to have resulted from use of the disinfectant in this occupational setting. It is important to take all precautions possible to protect the health of employees working with chemicals, such as providing appropriate PPE. Investigations among minority populations need to consider potential barriers, such as fear of losing one's job, which can result in underreporting.

### ***Orgyia detrita* (Live Oak Tussock Moth): Possible Caterpillar-Associated Rash Illness Cluster at a Daycare Center, Duval County**

**Background:** On March 21, 2012, a cluster of rash illnesses was reported to the Florida Department of Health (DOH) in Duval County from a daycare facility. The Duval County daycare facility reported caterpillars in the playground area. An investigation was initiated to determine the cause of the cluster.

**Methods:** The facility director was interviewed regarding the children's symptoms, varicella vaccinations and playground exposure. Final diagnosis information was collected from the children's pediatricians. The daycare facility provided a picture of the caterpillars on their playgrounds.

**Results:** Onset dates ranged from February 27 to March 30. Physicians determined the rashes to be caused by varicella, scabies, atopic dermatitis, viral exanthem, insect bites and molluscum contagiosum; the children were treated and excluded accordingly. The rash was mild with flat, pink spots located mostly on the chest and back. The children lacked fever and most recovered overnight. All the affected children had a documented first varicella vaccination. Nineteen symptomatic children were identified among 68 daycare attendees, representing an overall attack rate of 28%. Attack rates varied by playground and age: 63% among children in playground 1, 83% among the one-year-old class, 0% among infants, 25% among the children on playground 2 (exclusively for the two-year-old class), 23% among children on playground 3, 90% among the three-year-old class, 3% among the four-year-old class and 17% of school-aged children. No new cases were reported after the childcare facility was advised to discourage children from having direct contact with the caterpillars. The caterpillars were identified as live oak tussock moths (*Orgyia detrita*).

**Conclusions and Recommendations:** The rash illness cluster appears to have been associated with direct exposure to tussock moth caterpillars, similar to a previously characterized cluster of afebrile rash illnesses associated with white-marked tussock moth caterpillar exposure in Hillsborough County. Seasonal educational reminders should be provided to daycare facilities and physicians regarding afebrile rashes associated with caterpillar exposure to prevent misdiagnosis, unnecessary treatment and exclusions from daycare facilities.

### Other and Unknown Etiology

#### Prion Protein: Notification of a Case of Creutzfeldt-Jakob Disease, Orange and Seminole Counties

**Background:** On April 15, 2012, the Florida Department of Health in Orange County (DOH-Orange) Epidemiology Program received a report of a patient with suspected Creutzfeldt-Jakob disease (CJD) admitted to a local hospital. A hospital pathologist reported that histopathology of tissue samples taken during a brain biopsy on April 12, 2012, was consistent with a diagnosis of CJD. The Centers for Disease Control and Prevention (CDC) was notified and an investigation ensued.

**Methods:** Microbiological and histological analysis of surgical samples was conducted at the hospital laboratory. A cerebrospinal spinal fluid sample was submitted to the National Prion Disease Pathology Surveillance Center (NPDPSC) for testing of the 14–3–3 and tau-proteins.

**Results:** By April 16, 2012, the patient, who was a resident of Seminole County, experienced progressive encephalopathic unresponsiveness and expired on April 22, 2012. Positive laboratory results were reported on April 16, 2012 from the NPDPSC. Investigation found that the surgical instruments were returned to service following routine sterilization. Routine protocols are inadequate to ensure inactivation of prion infectivity. The hospital disposed of the instruments on-site, but they were subsequently reported stolen from the disposal system.

**Conclusions and Recommendations:** The hospital elected to close down the pathology laboratory and neurosurgery operating suite until proper decontamination could be completed per CDC guidelines and NPDPSC recommendations and internal standard operating procedures could be reviewed. No exposures were identified among hospital employees; however, instruments used for the biopsy procedure were possibly used in subsequent surgical procedures of seven patients prior to discovery. A hospital advisory group decided that all seven patients would be notified about their possible exposure to CJD in connection with their surgical procedures.

### **Undetermined: Gastrointestinal Illness Outbreak Associated With a Theme Park Safari Excursion, Orange County**

**Background:** In June 2012, the Florida Department of Health in Orange County received two complaints of gastrointestinal illness following food consumption on the same day at a theme park safari excursion in Central Florida. An investigation was initiated to identify the source, route of transmission and etiologic agent and to prevent additional cases.

**Methods:** A retrospective cohort study was conducted among safari excursion guests, along with on-site environmental health assessments of the food preparation and safari excursion facilities. A case was defined as a staff member or guest of the safari excursion from June 4-11 who experienced diarrhea or vomiting within six days of attending the safari excursion. Stool samples were analyzed by culture, polymerase chain reaction and electron microscopy.

**Results:** Of the 617 guests that attended the safari excursion from June 4-11, 351 (57%) were interviewed; 117 interviewees (33%) met the case definition. The highest attack rate (76%) among guests occurred on June 8. Predominant symptoms included abdominal cramps (81%), mucous-containing/watery diarrhea (80%), and fatigue (37%). The average incubation period was 49.7 hours and average illness duration was 5.1 days. A multivariable logistic regression analysis indicated that consuming jicama (odds ratio=2.3, 95% confidence interval: 1.34-3.93) and melon balls (odds ratio=3.63, 95% confidence interval: 1.05-12.59) were statistically associated with illness. The environmental health assessment identified unsanitary food processing equipment, improper hand washing, no hot water at hand washing sinks and improper use of a hand washing sink. All laboratory assays were negative.

**Conclusions and Recommendations:** Epidemiological and environmental investigations indicated the gastrointestinal illness outbreak was likely transmitted via food and was associated with unsanitary equipment and food handling practices at the theme park safari excursion. Recommendations made to the facility included ill worker exclusion, hand washing education and increased environmental cleaning.

### **Undetermined: Rash Outbreak at a Department Store, Collier County**

**Background:** On February 27, 2012, the Florida Department of Health in Collier County (DOH-Collier) Epidemiology Program was contacted by an employee from a local department store in Naples, Florida, about employees with skin rashes. Two days later, the DOH-Collier was contacted by a local medical provider who evaluated three department store employees for skin rashes.

**Methods:** A case was defined as a person employed at the department store who reported onset of a skin rash from January 1 to April 30, 2012. Questionnaires were sent to all 79 staff employed at the store as of April 11, 2012. The store's corporate office contracted a private industrial hygienist to conduct indoor air quality assessments at the store.

**Results:** A total of 30 employees reported a rash with onset between January and April 2012. Twenty-seven (34%) of the 79 employees completed the questionnaire, 12 (44%) of whom were symptomatic. Rashes were reported by respondent cases on the scalp, neck, arms, back, legs and feet and were described as an itchy red maculopapular rash with burning sensation. Seven (78%) of nine respondent employees who worked in the stockroom reported having rash symptoms compared to only five (28%) of 18 respondents not working in the stockroom ( $p=0.04$ ). Some employees were out of work for days to months due to the severity of the rash; symptoms were severe enough for some employees to seek medical attention. The investigation carried out by the industrial hygienist concluded that particulates and organic compounds in the department store were at or below typical indoor air concentrations, and interior samples collected were at levels well below outside sample levels.



**Conclusions and Recommendations:** Although results show a statistically significant association between rash and working in the stockroom, they do not prove causation. This investigation was unable to determine the specific cause of the rash identified among 30 employees at a department store in Collier County, Florida.

