Notable Outbreaks and Case Investigations

Section 3

Section 3: Notable Outbreaks and Case Investigations

In Florida, any disease outbreak in a community, hospital or institution, and any grouping or clustering of patients having similar disease, symptoms, syndromes or etiological agents that may indicate the presence of an outbreak are reportable as per Florida Administrative Code Chapter 64D-3. Selected outbreaks and case investigations of public health importance that occurred in 2018 are briefly summarized in this section.

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Bacterial Diseases

Summary Report of a Legionellosis Investigation Within a Community, Sarasota County, February 2018

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Background
On February 23, 2018, the Department of Health in Sarasota County (Sarasota County Health Department [CHD]) was notified by a local hospital of five positive *Legionella pneumophila* urine antigen laboratory results for individuals residing within the same Venice, Florida, community. Two of these individuals reported exposure to the community whirlpool spa. In accordance with the FDOH Guidelines for the Surveillance, Investigation and Control of Legionnaires' Disease in Florida, a full investigation was initiated on February 23.

Sarasota CHD's Environmental Health (EH) performed a routine environmental inspection of a whirlpool spa the afternoon of February 23 and found adequate chlorine and pH levels. Due to the investigation, Sarasota CHD's EH closed the whirlpool spa. Once Sarasota CHD EH notified management of the cases within the community, the management chose to close the two community pools.

Methods
Epidemiologic Investigation
A confirmed case of Legionnaires' disease was defined as an individual who was a resident, employee or visitor of the community between February 1, 2018 and February 28, 2018, with X-ray-confirmed pneumonia and a positive urine antigen laboratory result for legionellosis. A probable case of Legionnaires' disease was defined as an individual who was a resident, employee or visitor of the community between February 1, 2018 and February 28, 2018, with X-ray-confirmed pneumonia.

Medical records were requested from the treating hospitals and reviewed by Sarasota CHD epidemiologists. Surveillance included Sarasota CHD working with hospital staff to identify additional residents from the community who may present or have presented with pneumonia symptoms. In addition, resident notification letters were provided to the community management for distribution. On February 27, Sarasota CHD epidemiology and EH personnel attended a town hall meeting in the community event center. Information was provided to the approximately 400 residents and visitors on *Legionella*, Legionnaires' disease and the current outbreak investigation process. A question and answer session followed the information sharing. An Epi-X call for cases was sent out March 2, and an EpiCom was sent out March 5. Additional case notifications were received through March 5, 2018.

The southwest Regional Environmental Epidemiologist (REE) developed an initial survey to assess exposures in the community. Sarasota CHD epidemiologists interviewed cases using a standardized questionnaire. A case-control study was performed to determine possible risk factors. All confirmed and probable cases were included in the study. Two controls per case were randomly selected from community residents. Control interviews were conducted via telephone by Sarasota CHD epidemiology personnel. Data entry and analysis were performed with Epi Info™ .

Laboratory Analysis

Environmental samples were collected by Sarasota CHD and analyzed by the FODH Bureau of Public Health Laboratories (BPHL) in Jacksonville. Clinical specimens were tested at the hospital or private practice where treatment was provided.

Environmental Assessment

On February 27, two EH specialists from Sarasota CHD and the southwest REE conducted an on-site environmental assessment of the community. Upon arrival, the EH specialists and the southwest REE met with the community association Assistant Manager and two community maintenance employees. The providing pool service company's Operations Manager, a repair employee and a pool technician were also in attendance. The assessment included site observations, a facility questionnaire and the collection of four bulk water and four swab samples to test for the presence of *Legionella*. Free chlorine, water temperature and pH were measured and recorded for each water sample collected and additional locations to assess chemical water quality.

Results

Epidemiologic Investigation

There were 20 cases associated with this community, with 13 confirmed cases and seven probable cases. Sixteen of the cases were residents of the community, three were out of state visitors (New York, New Jersey, Illinois) and one was an employee. Cases were 70% male. Ages ranged from 54–82 years old, with a median of 67 years old. Ten (50%) of the reported cases had a preexisting immune condition, which increases the risk of *Legionella* infection. The symptoms that occurred with the highest frequency were pneumonia (100%), fever (95%) and malaise (45%).

The first cases reported dates of onset of February 12 and the last case onset was February 22. The epidemiologic curve demonstrates a point source exposure. Of the 20 cases, 15 were hospitalized, with the longest inpatient hospital stay noted as 27 days. Thirteen cases were urine antigen-positive for *Legionella* serogroup 1. Of the 40 controls, two did not provide their birth date or age. The remaining 38 controls' ages ranged from 54–80 years old, with a median of 67 years old. Twelve potential community exposures among case and control subjects were assessed. Spending time in the resort pool and the whirlpool spa were the only exposures that were statistically significant, with an odds ratio of 30.36 (95% confidence interval 3.64–252.98) and 4.35 (95% confidence interval 1.38–13.71), respectively (Table 1).

Table 1	Cases (n=20)		Controls (n=40)			
	Exposed	Unexposed	Exposed	Unexposed	OR	95% CI
Resort Pool	17	1	14	25	30.36	3.64–252.98
Whirlpool Spa	12	8	10	29	4.35	1.38–13.71
Whirlpool Spa Shower	1	16	2	38	1.19	0.10–14.05
Fitness Center Restrooms	6	12	8	31	1.94	0.55–6.77
Main Clubhouse Restrooms	3	14	9	29	0.69	0.16–2.96
Cabana Restrooms	6	10	12	28	1.4	0.41–4.73
Event Center Restrooms	5	12	12	23	0.8	0.23–2.80
Lap Pool	2	15	3	37	1.64	0.25–10.85
Irrigation Mist Clubhouse	1	15	5	32	0.43	0.05–3.98
Lap Pool Shower	0	18	1	39	N/A	
Resort Pool Shower	2	16	0	40	N/A	
Event Center Kitchen	0	18	3	37	N/A	

During the interview process, multiple residents stated that they reported to management the whirlpool spa was "green and filthy" around February 11, 2018 and February 12, 2018. These residents also reported that they still used the whirlpool spa. The maintenance logs of the whirlpool spa that were collected during the environmental assessment revealed that the automatic disinfectant feed to the whirlpool spa was not working prior to February 13, 2018.

Laboratory Analysis

Eight environmental samples, four one-liter grabs and four swabs, were collected on February 27, 2018, and arrived at BPHL–Jacksonville for analysis on February 28, 2018. One of the samples tested positive for *Legionella pneumophila* serogroup 1. This sample was taken from the fitness center hot water heater, sample number 5. All other samples tested by BPHL were negative for *Legionella* spp. Six grab samples were assessed on site for chemical water quality.

Environmental Assessment

This is a gated community consisting of approximately 1,869 homes, quads and villas. Construction started in 2005, and new homes are still being built. The central area of the community contains a main resort center, which includes a fitness facility, arts and crafts room, a library and offices. There is a resort pool with a central fountain feature and a few bubblers near the zero-entry side of the pool. There is also a whirlpool spa, a lap pool and three outdoor showers. A cabana building with restrooms and an event center building are also located in this main area. The community's source of water is public water from the City of North Port. At the time of the assessment, chlorine was used as the method of disinfection. The facility does not monitor incoming water parameters. The community did not have a water safety plan or a *Legionella* prevention plan.

During the on-site environmental assessment, samples were taken from the whirlpool spa and sand filter, the resort pool shower, the pool feature collection tank, the fitness center hot water heater, the cabana men's restroom and the event center women's restroom. Chemical water quality was also assessed at the whirlpool spa shower, the cabana hot water tank and the resort pool. The hot water temperatures ranged from 87.1°F to 109.6°F, with a median of 96.3°F. Total chlorine ranged from 0.00–8.0 ppm, with a median of 0.8 ppm. During the assessment, recommendations were made to maintenance based on observations, including increasing the temperature of the fitness facility hot water heater and flushing the sinks in the event center restrooms on a periodic basis to reduce stagnant water. Handouts were provided to the community and pool management regarding remediation. Centers for Disease Control and Prevention (CDC), American Society for Heating, Refrigerating, and Air-Conditioning Engineers and FDOH resources were also provided.

After the assessment, Sarasota CHD's EH personnel continued to work with community management to develop a remediation plan for the whirlpool spa and the resort pool.

Conclusions

Based on the epidemiological data and environmental assessment, this outbreak of Legionnaires' disease is most likely associated with exposure to the whirlpool spa located in the community. The odds ratios for the resort pool exposure and the whirlpool spa exposure were both significant. The central decorative fountain in the resort pool was shut down due to maintenance issues from February 7, 2018 to February 27, 2018. The dates of onset of the cases began February 12, 2018 and ended February 22, 2018, which does not match a most likely incubation period of 2 to 10 days from exposure, considering the last potential date of exposure would have been February 6, 2018.

The environmental samples for *Legionella* spp. resulted in a positive sample from the fitness center hot water heater. However, the odds ratio for this exposure was not significant at 1.94 (95% confidence interval 0.55–6.77). The whirlpool spa results were negative for *Legionella* spp., but the chlorine levels were 8.0 ppm. This level of disinfectant is well above the 2.0 ppm concentration in which *Legionella* spp. may be viable but non-culturable.

A follow-up town hall meeting was held on March 13, 2018, in which Sarasota CHD's Epidemiology and EH personnel provided an update on the investigation and the preliminary conclusions. A recommendation letter was also mailed to the community management on March 19, 2018. It was recommended to use the Domestic Hot Water Systems Emergency Management and Best Practices guidelines provided by Sarasota CHD to remediate and maintain the hot water heater system associated with the fitness center hot water heater. It was also recommended to use Point of Use filters for *Legionella pneumophila* on faucets and showers tied to the fitness center hot water heater until remediation can be validated. Additional recommendations were provided along with the below resources.

One limitation of the investigation was the difficulty with recall several weeks after exposure during the case control study. Another limitation was the ability to culture *Legionella* spp. from the whirlpool spa samples in which the chlorine levels were well above 2.0 ppm. The negative laboratory result does not rule out the possibility that *Legionella* spp. were present at the time of exposure.

Resources

1. A New Practical Guide for Developing a Water Management Plan to Reduce Legionella Growth and Spread in Buildings; cdc.gov/legionella/maintenance/wmp-toolkit.html.
2. ASHRAE Guidelines 12-2000 "Minimizing the Risk of Legionellosis Associated with Building Water Systems;" baltimoreaircoil.com.
3. ASHRAE Standard 188-2015: cdc.gov/legionella/health-depts/ashrae-faqs.html; ashrae.org.

References:

1. Florida Department of Health – Guidelines for the Surveillance, Investigation, and Control of Legionnaires' Disease in Florida. November 13, 2014. Retrieved from: http://www.floridahealth.gov/diseases-andconditions/legionnairesdisease/_documents/GSI%20Legionella%20Update%20Final2.pdf
2. Legionella. Centers for Disease Control and Prevention. cdc.gov/legionella/index.html

Section 3: Notable Outbreaks and Case Investigations

Pertussis Outbreak in Three Pinellas County Schools, September, November 2018

Author

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Background

On September 26, 2018, the Pinellas County Health Department (CHD) was notified of a positive polymerase chain reaction (PCR) result for *Bordetella pertussis* by a commercial laboratory. The case (Case A) was a 4-year-old female who attended a local school (School A) and identified a sick household contact who also attended School A while symptomatic three weeks prior. The sick contact was never medically evaluated but met clinical and epidemiological criteria to be reported as a probable case. On October 15, Pinellas CHD was notified of two PCR-positive results for *B. pertussis,* both of which had an association with a local school (School B). On October 23, Pinellas CHD was notified of a PCR-positive result for *B. pertussis* in a child who attended a third local school (School C). Although the three affected schools did not report common activities among their students, some cases identified common community exposures to known cases from other schools. Ongoing transmission within each school then persisted as ill children attended school during their early onset of illness and infectious period.

Methods

Investigations included review of medical records, laboratory results and interviews with cases' parents and parents of any ill contacts to identify exposure history and close contacts. Enhanced surveillance was conducted at all three schools to identify additional cases. A confirmed case was defined as an individual with a cough for at least two weeks, an additional symptom of paroxysmal cough, post-tussive vomiting or whoop, and either a positive PCR result for *B. pertussis* or an epidemiological link to a confirmed case with a positive PCR result. A probable case was defined as an individual with a cough for at least two weeks.

Results

A total of 27 symptomatic individuals were investigated as part of the outbreak from September 26 to November 8, 2018. Three individuals were associated with School A, 14 were associated with School B and 10 were associated with School C. Investigations led to 11 cases meeting the case definition, of which 45% were classified as confirmed and 55% were classified as probable. Cases ranged from 8 months to 7 years of age and included seven males and four females. None of the reported cases had ever received a vaccination for *B. pertussis.*

Conclusions

Pinellas CHD worked closely with affected schools and provided notification letters to attendees alerting symptomatic individuals to seek immediate medical care. Notifications prompted medical evaluation, diagnostic testing and treatment that lessened the duration of illness. However, those who were treated promptly and did not experience at least two weeks of cough did not meet the case definition to be reported as part of the outbreak. As a result, 16 individuals were investigated who had both an exposure to a student who attended an affected school and a positive PCR laboratory result but lacked the duration of illness to be reported accordingly. Such results indicate the limitations of the current case definition to fully capture the scope of the outbreak.

Of note, prior to admittance to or attendance in a public or private school, grades kindergarten through 12, each child should present, or have on file with the school, a certification of immunization for the prevention of communicable diseases for which immunization is required by the Department. These provisions do not apply if there is a religious exemption, a medical exemption (either temporary or permanent) or the school issues a temporary 30-day exemption until records are obtained (F.S. 1003.22).

Section 3: Notable Outbreaks and Case Investigations

Containment of a *Klebsiella pneumoniae* Carbapenemase (KPC)-Producing *Serratia marcescens* Outbreak in a Ventilator-Capable Skilled Nursing Facility (vSNF) Through Collaboration, Miami-Dade County

Authors

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Background

Antibiotic resistance is one of the largest public health challenges. *Klebsiella pneumoniae* carbapenemase (KPC) is one of several mechanisms of resistance through which carbapenem-resistant Enterobacteriaceae confer antibiotic resistance, thereby making infections difficult to treat. On May 15, 2018, the Department of Health in Miami-Dade County was notified by an acute-care hospital (AHC) of three patients with carbapenem-resistant *Serratia marcescens* to be admitted from the same ventilator-capable skilled nursing facility (vSNF). The patients shared common risk factors such as tracheotomies, ventilator and hemodialysis dependence and indwelling catheters.

Methods

In collaboration with the ACH and vSNF, we initiated a containment response that consisted of infection control assessments, point-prevalence surveys (PPS) and retrospective and prospective laboratory surveillance. Infection control assessments were conducted biweekly with assessment of respiratory care, environmental cleaning and adherence to hand hygiene. PPS were collected in the ventilator-capable unit biweekly through rectal swabs and were tested by the Southeast Regional Antibiotic Resistance Laboratory Network (ARLN) in Tennessee. Expanded surveillance was instituted in partnership with the local ACH to identify positive patients who might have been missed by the PPS.

Results

From June 2018 to February 2019, 12 biweekly screenings were conducted, which identified 11 additional patients colonized with KPC-producing *Serratia marcescens*; an additional six cases were identified through surveillance at the ACH. Infection control assessments revealed an overall lack of hand hygiene compliance (62%) with greater reduction in hand hygiene compliance after body fluid exposure (43.8%) and after contact with patient surroundings (40%) (Table 1). Environmental cleaning observations identified a lack of standardized cleaning and disinfection techniques with EPA-registered disinfectant and failure to follow instructions for use.

Table 1: Hand hygiene compliance rate by opportunity (n=63)

Opportunity	Hand hygiene compliance (%)
Before Touching a Patient (n=18)	88.8
Before Clean/Aseptic Procedure (n=2)	100
After Touching a Patient (n=7)	85.7
After Body Fluid Exposure Risk (n=16)	43.8
After Touching Patient Surroundings (n=20)	40

Conclusions

Collaboration is essential for the containment of antibiotic-resistant organism outbreaks. Throughout the course of the investigation, the most concerning issues at the vSNF included lack of hand hygiene, a paucity of adherence to

protective personal equipment when treating patients with multidrug-resistant organisms and gaps in environmental cleaning and disinfection. These deficiencies in infection control led to 20 patients becoming infected or colonized with KPC-producing *S. marcescens* over a nine-month period. Collaboration with the Centers for Disease Control and Prevention, ARLN in Tennessee, the Department, local acute-care hospitals and the vSNF was instrumental for the successful containment of the state's first reported outbreak of *Klebsiella pneumoniae* carbapenemase-producing *Serratia marcescens* in a vSNF.

Three *Listeria monocytogenes* Cases and an Ice Cream Recall, Florida

Author

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Background

On September 12, 2018, the Centers for Disease Control and Prevention (CDC) contacted the Department of Health Food and Waterborne Disease Program (FWDP) regarding three *Listeria monocytogenes* cases that were highly related genetically to each other and to environmental isolates taken from a Florida ice cream manufacturer. The cases' isolation dates ranged from August 17, 2013 to July 23, 2018. The environmental isolates from the facility were collected in August 2017 during a routine facility inspection by the U.S. Food and Drug Administration (FDA).

Methods

Epidemiological records were reviewed for the three cases. Interviews of the cases or guardians were conducted to elicit additional details regarding ice cream products potentially consumed. Invoices were requested for ice cream products consumed during patients' exposure period from the assisted living facilities. Multiple meetings with the FDA, the Florida Department of Agriculture and Consumer Services, CDC and FDOH were conducted to share information on case exposures, historical and current facility inspection results and discuss next steps. The FDA conducted a follow-up inspection of the manufacturing facility from September 25, 2018 through October 15, 2018. All clinical and environmental isolates were analyzed using whole genome sequencing (WGS) methods by the FDA.

Results

The three male cases ranged in age from 88–96 years (median 89 years). All cases were hospitalized and there were no reported deaths. Reported illness onset dates were August 16, 2013, September 6, 2013, and July 22, 2018. All cases resided in assisted living or nursing home facilities prior to their illness onset. Interviews and invoices obtained indicated that the three cases consumed or likely consumed ice cream prior to illness onset that was produced in the same ice cream manufacturing plant in Florida.

During the 2017 FDA inspection, *Listeria*-positive environmental samples from the facility resulted in a product recall and commitments by the firm to implement corrective actions for identified insanitary conditions. The 2018 inspection of the ice cream plant also identified insanitary conditions that could lead to *Listeria* contamination in finished products. Furthermore, the firm did not provide evidence of implementing corrective actions committed to in response to the 2017 inspection and did not have documentation for the firm's food safety plan including developing required written sanitation practices. This plant provided 40% of its products to nursing homes and assisted living facilities.

WGS conducted by the FDA identified that the *Listeria monocytogenes* isolates collected from the three ill cases

were genetically identical to the *Listeria monocytogenes* isolates taken from environmental samples in the implicated facility in 2017 and 2018.

Conclusions

Ice cream manufactured by a single food processing plant was linked to three cases of listeriosis in Florida from August 2013 to July 2018. On October 19, 2018, the FDA used the authority granted under the 2011 FDA Food Safety Modernization Act to suspend the food facility registration of the implicated facility. The facility ceased their operations and voluntarily recalled all ice cream products manufactured from August 29, 2017 to October 11, 2018.

Resources

FDA Food Code: fda.gov/food/fda-food-code/food-code-2017

Viral Diseases

Measles Outbreak in Pinellas County, Florida, August 2018

Authors

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Background

On August 8, 2018, the Pinellas County Health Department (CHD) was notified of a suspected case of measles in a 6-year-old unvaccinated male (Case A). The child had no history of recent travel or known exposure to measles. Samples were collected and tested positive for measles via reverse transcription polymerase chain reaction (RT-PCR). On August 14, Pinellas CHD received a second report of a 2-year-old unvaccinated male (Case B) who tested immunoglobulin M (IgM)-positive for measles. Case B's parent (Case C; 27 years old and unvaccinated) also reported similar symptoms. Specimens were collected from Cases A, B and C and were forwarded to the Centers for Disease Control and Prevention (CDC); all matched the D8 worldwide-circulating genotype. Pinellas CHD initiated outbreak investigation and response activities in coordination with the facilities the cases visited while infectious. Through heightened surveillance and investigation, transmission was identified in a community with a low vaccination rate, with the source case reporting international travel to the Ukraine. By August 28, Pinellas CHD reported seven confirmed measles cases, six of which were locally acquired.

Methods

Epidemiologic Investigation

Following notification of Case A on August 8, Pinellas CHD began an investigation, using the Council of State and Territorial Epidemiologists' and CDC's case definitions. Cases were identified through routine health care provider reporting and contact investigations. Suspected measles cases were interviewed to determine onset dates, collect exposure histories within 21 days prior to rash onset, identify contacts during the infectious period (four days before and four days after rash onset), and recommend measles testing. Contacts were defined as persons who had any shared airspace with cases during their infectious period. Contacts were assessed for immunity to measles over the phone and via medical records. Documented evidence of immunity is classified as being born prior to 1957, having laboratory evidence of measles immunity or infection or being up-to-date on MMR (measles-mumps-rubella) vaccination. High-risk contacts were required to provide documented evidence of immunity, which included

infants, pregnant women, immunocompromised individuals and individuals working in health care settings. Pinellas CHD used the Florida State Health Online Tracking System (Florida SHOTS) immunizations registry to check the vaccination status of high-risk contacts. All exposed individuals received a letter detailing their exposure and were instructed to receive post-exposure prophylaxis (PEP) and self-monitor for symptoms 21 days post-exposure. PEP recommendations consisted of either receiving MMR vaccine within 72 hours of exposure or immune globulin (IG) within six days of exposure.

Laboratory Analysis

Pinellas CHD collected nasopharyngeal swabs and urine samples for RT-PCR or serum from cases for IgM measles testing and sent them to the Department of Health Bureau of Public Health Laboratories. The type of test performed was dependent on whether specimens could be collected within 10 days from each case's symptom onset.

Results

Epidemiologic Investigation

Following notification of Case A on August 8, Pinellas CHD began an investigation. During his incubation period, Case A attended a church camp. On August 23, Pinellas CHD received notification of another church camp attendee (Case D) who experienced symptoms consistent with measles with an onset of July 19 who attended the same church camp while ill. An interview with the case's parent revealed that Case D was exposed to an unvaccinated cousin (Case E) who returned from Ukraine and began experiencing an acute febrile rash illness on July 9. Case D was also in contact with two additional unvaccinated cousins (Cases F and G) who experienced acute febrile rash illnesses on July 30 and August 10, respectively. A serum specimen was collected for Case D on August 24 for IgM serology testing and resulted positive on August 28. Pinellas CHD also discovered that Cases F and G attended the same church camp; however, no additional contacts experiencing measles symptoms were identified. Serum specimens were requested for both cases for IgM and IgG serology, both of which resulted positive on September 10. Pinellas CHD made multiple attempts to interview Case E who was reported to have traveled to Ukraine from June 21 to July 5 and visited a local hospital emergency department on July 7 for an acute febrile rash illness; however, interview attempts were unsuccessful.

Due to the epidemiologic link among patients and clinically compatible symptoms, Case E was reported as a confirmed case of measles and was identified as the source case. A total of 10 contacts received PEP via IG, and 64 susceptible contacts, who did not receive recommended PEP, were contacted daily to assess for symptoms. Over 60 health care workers and daycare attendees who did not have documented evidence of immunity were excluded from work and daycare, informed to stay isolated at home until 21 days post-exposure, and were assessed daily for measles symptoms. On September 30, 2018, enhanced surveillance concluded following two maximum incubation periods from the date Case C was last considered infectious.

Public Health Response

In response to increased measles activity, Pinellas CHD disseminated measles information to health care facilities on May 7 and redistributed following a public health advisory regarding Case A on August 13. Pinellas CHD also reached out to two neighboring counties' hospitals to identify local inventory of IG to ensure susceptible contacts could access PEP. Additional in-person education outreaches were provided at Case A's church and Case C's workplace to assist with answering any questions generated from the notifications of possible exposure.

Conclusions

Measles is considered eliminated in the U.S. since 2000; however, cases are observed every year among unvaccinated people. Pinellas County's measles outbreak had over 1,000 exposed contacts, with only ten (<1%) susceptible contacts receiving PEP by the recommended deadline. The source case was identified as having international travel to Ukraine during the incubation period, a country that was experiencing the largest measles outbreak at the time. Five out of the seven cases were directly associated with the source case and the Epidemiology Program was unable to find a direct connection between the source case and Cases B and C. Nonetheless, the genotype identified from these cases matched, suggesting an epidemiological link to the outbreak. Due to the severity of disease and ease of airborne transmission from person to person, measles case investigations can include a significant amount of contacts and require extensive monitoring and surveillance. Through the implementation of an incident command structure, Pinellas CHD was able to manage the public health response and prevent additional transmission.

Outbreak of Varicella at a Preschool, Palm Beach, February–April 2018

Author

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Background

On Friday, March 2, 2018, the Palm Beach County Health Department (CHD) was notified by a private pre-school that two attendees were physician-diagnosed with varicella. The onset date was February 16, and there were 44 people who could have been exposed between the onset and the date of notification. Control measures were discussed with the facility, including cohorting attendees who developed rash-like illness, excluding symptomatic staff and students until all lesions were crusted over, encouraging good hand hygiene and cough etiquette and appropriate environmental cleaning. The first line list was obtained on Monday, March 5, which indicated that nine attendees were symptomatic with presentation of skin rash. Throughout the investigation, parents were encouraged to seek medical evaluation for their children to aid in confirmation of varicella diagnosis. The outbreak investigation was closed on April 13, 2018.

Methods

Palm Beach CHD placed the affected facility under daily surveillance with the established case definition of "any staff or student who presents with a rash illness starting on or after February 16, 2018, or a positive culture result for varicella." Interviews were conducted for the 16 individuals who were identified through the line lists to determine their illness onset dates, descriptions of rashes and other associated symptoms, last days in attendance at pre-school and to obtain medical records for the children who visited doctors.

Results

This outbreak lasted 56 days. Fifteen children (ages 4–6 years old) and one adult who attended the pre-school were identified to have symptoms consistent with varicella. Two siblings were identified as additional cases through surveillance and interviews, bringing the total number of cases to 18. Inside the daycare there were three classrooms that were affected–the nursery (41% of the cases), classroom A (29.4% of the cases) and classroom B (29.4% of the cases). Descriptions of the rash were 56% vesicular and 43% macular/papular. The mean duration of rash (from onset to crusting) was 8.5 days for those who reported crusting of the rash. Only 25% of the attendees with a rash also reported having a fever. The school had a total census of 44 individuals (37 attendees and seven staff), 16 of whom became ill for an overall attack rate of 36.4%. Although the overall vaccination coverage at the school is unknown, through interviews it was determined that 88.2% of cases were unvaccinated. One case had physician-diagnosed history of disease, and one case had two documented vaccines on schedule.

Conclusions

The index case for this outbreak had an onset date of February 16, 2018, but it was not until 14 days later that the school called to notify the health department of varicella at the school. At that time there were at least six other students who were sick. Florida statute requires that all children entering both public and non-public preschools have an age-appropriate number of varicella vaccine doses. This vaccine requirement can only be waived for medical or religious exemptions or documented history of varicella by the child's health care provider. Considering a portion of the students at the facility were unvaccinated, prompt notification could have allowed the school to provide exclusion guidelines to the facility as well as signs and symptoms that parents should look for in their children. This also would have allowed the health department time to recommend and provide vaccines to the unvaccinated students, reducing their risk of developing the disease.

Non-Infectious Diseases

Pediatric Lead Poisoning From Lead Sinkers, Miami-Dade County, October 2018

Authors

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Background

On October 11, 2018, the Miami-Dade County Health Department (CHD) received an elevated blood lead level (BLL) result of 35 µg/dL from a 4-year-old child. The child was asymptomatic for lead poisoning, had pica and was diagnosed with autism. An investigation was initiated by the Miami CHD to determine the possible source of exposure.

No safe BLLs in children have been identified. Permanent neurologic damage and behavioral disorders are associated with BLLs at or below 5 µg/dL. Although public health efforts have been successful in reducing the prevalence of childhood lead poisoning, lead from innocent sources still pose a risk to children, including ingestion of foreign objects such as lead shot and curtain weights. Ingestion of foreign objects that contain lead can carry additional risk of acute lead poisoning secondary to dissolution and absorption of the ingested lead in the acid environment of the stomach in children.

Methods

Miami CHD initiated an investigation that included reviewing laboratory results, interviewing the caregivers of the child, consulting the Florida Poison Control Network, conducting a site visit and assessing the child's environment.

Results

Miami CHD interviewed the mother of the patient on October 11, 2018 to identify the patient's possible source of exposure. Investigation determined that the child's residence was built in 1970. Living in a home built prior to 1978 increases the risk of exposure to lead from lead-based paint. Additional risk factors included the father's occupation as a mechanic. The father indicated that he worked with radiators and batteries and that the work area contained a large amount of lead dust that contaminates his clothes and shoes. On October 16, 2018, the child experienced severe abdominal pain and vomiting and was admitted to the hospital. Due to the nature of the symptoms and the patient's history of pica, an abdominal X-ray was performed. The X-rays revealed that the patient had ingested a fishing weight. The foreign object was surgically removed via bowel irrigation.

The child's BLLs did not meet the criteria for chelation, so no additional treatment was administered. The child was a Medicaid recipient and was referred to Children's Medical Services and the Women, Infants and Children nutrition program for additional health care services, nutritional education, and counseling. Over the next four months, follow-up lead test results indicated that the child's BLLs continued to decline.

Conclusions

This investigation highlights the importance of lead testing in children with underlying risk factors for lead exposure such as thumb-sucking and pica. Although lead poisoning from an ingested lead-contaminated object is rare, it is still a cause for concern as the absorption of lead is increased from greater retention time of objects in the stomach and intestine. Continued follow-up testing and evaluation is necessary to ensure there is no additional increase in BLLs. Miami CHD provided health education on dietary needs and measures to prevent further exposure to take-home lead.

Investigation of Paralytic Shellfish Poisoning After Clam Consumption, Volusia County, June 2018

Authors

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Background

On June 14, 2018, the Volusia County Health Department (CHD) was notified by the Regional Environmental Epidemiologist about a report from the Florida Poison Information Center Network (FPICN) of a woman suspected to have paralytic shellfish poisoning (PSP). Volusia CHD initiated an investigation upon notification of the suspected case.

Methods

Epidemiologic Investigation

Volusia CHD epidemiology staff requested the report from FPICN and reviewed emergency department (ED) records to determine if the patient had been seen at a local ED. Epidemiology staff interviewed the patient the next day and confirmed she did not seek local medical care. She reported consuming steamed clams at a local restaurant the previous evening. The patient reported numbness all over beginning with her face, tunnel vision, vertigo and loss of speech.

A case was defined as someone who ate shellfish at the local restaurant on June 13, 2018 and experienced signs or symptoms consistent with PSP including tingling or numbness of the tongue or lips that spreads to the face, neck, fingers and toes.

Volusia CHD conducted a retrospective review to identify additional cases, including reviewing the Florida Complaint and Outbreak Reporting System (the statewide foodborne illness complaint log) for similar exposures and monitoring the Electronic Surveillance System for the Early Notification of Community-based Epidemics-Florida (ESSENCE-FL) for reports of similar recent illnesses. A request for meal remnants and specimen collection was made for laboratory analysis.

Environmental Assessment

Volusia CHD Epidemiology and Environmental Health (EH) staff interviewed the case using the Tri-Agency Foodborne Illness Survey/Complaint Form to gather a 72-hour food history and information about potential exposures. On June 20, a joint EH assessment of the restaurant was conducted by Volusia CHD EH and the Florida Department of Business and Professional Regulation.

Results

Epidemiologic Investigation

A single individual met the outbreak case definition. The case was a 50-year-old female Duval County resident who was staying at a local hotel. She consumed the Wednesday night special of steamed clams at the on-site restaurant on June 13. Around 30 minutes after consuming the clams, she began having tingling and numbness in the face, tunnel vision and vertigo, followed by loss of speech. She did not seek medical attention at the time; the symptoms began to subside shortly thereafter and were essentially gone within a couple of hours. She was dining with someone else but stated her dinner partner did not eat the clams and was fine. She contacted the FPICN the following day. Volusia CHD did not receive any other complaints or reports of similar illnesses linked to the implicated restaurant. There were no similar illnesses noted through ESSENCE-FL. A review of the foodborne complaint log did not identify any other recent complaints for this restaurant.

Laboratory Analysis

No meal remnants or specimens were available for analysis.

Environmental Assessment

The joint environmental assessment on June 20 did not identify any discrepancies that would have contributed to this incident of foodborne illness. There were no leftover clams from the batch served on the night of June 13. The steamed clams are not a routine menu item and are only served periodically as a nightly "special." The shellfish tags were retrieved, and the clams were noted to have been harvested in Maquoit Bay, Brunswick, Maine, and were shipped on June 8. The shellfish tags were shared with the Florida Department of Agriculture and Consumer Services for further traceback. Although no harvest area closures were in effect for Maquoit Bay, Maine has a history of PSP in local waters. Restaurant management did not note any other complaints of illness.

Conclusions

The individual involved in this investigation rapidly developed symptoms consistent with PSP after consumption of steamed clams on June 13, 2018. Clams and other bivalve molluscan shellfish such as mussels and oysters are known to potentially contain saxitoxins, which are the cause of PSP.

Saxitoxins are neurotoxic alkaloids produced by dinoflagellates which are found in filter feeding mollusks such as clams, mussels and oysters. The toxins are not destroyed by cooking. Although most victims recover completely within 24 hours, some require immediate medical attention as death can occur through respiratory paralysis.

The strengths of this investigation were the inter-agency coordination required to assess the facility, coordination between Epidemiology and Environmental Health at the Volusia CHD, and the promptness of FPICN in notifying the county health department. A challenge in the investigation was the lack of food product or clinical specimen analysis to confirm the presence of saxitoxins.