Epi Update
A publication of the Florida Department of Health, Bureau of Epidemiology

October 2010

In This Issue

Hepatitis B Outbreak Associated with Home Health Care in South Florida

Sandra Forero, M.P.H., JoEllen Alvarez, R.N., M.P.H., Timothy Doyle, M.P.H.

Introduction

In the past ten years, long-term care facilities have been found to be a common setting for transmission of the hepatitis B virus. A review of the Centers for Disease Control and Prevention (CDC) of all non-hospital healthcare-associated hepatitis B outbreaks reported from 1998 to 2008 showed fifteen such outbreaks in nursing homes and assisted living facilities (ALF). In eight of these outbreaks involving ALFs, the cause of transmission was related to breaches of fundamental principles of infection control by healthcare personnel. The lapses considered responsible for transmission included: shared use of fingerstick devices; shared use of glucometers among diabetic residents without cleaning; failure to wear gloves; and improper storage of used and unused blood glucose monitoring equipment [1].

Between October 30 and the end of December 2009, the Palm Beach County Health Department (CHD) received positive serology test results for acute hepatitis B for three individuals residing at two ALFs. Palm Beach CHD started an outbreak investigation after the first two cases were reported from ALF 1. The third case from ALF 2 was linked to the outbreak investigation because the individual received skilled nursing services from the same home health agency (HHA) that provided care to residents in ALF 1. The purpose of the investigation was to determine the etiology of the outbreak and implement the appropriate control measures.

Materials and Methods

The exposure period for this outbreak was estimated to be between May 1, 2009 and December 31, 2009. This period included the incubation period of the earliest and latest resident tested from

the facility based on onset day or day of laboratory diagnosis. Therefore, all data collected regarding possible risk factors was in reference to this likely exposure period.

Inspection

The outbreak investigation included four site visits to both ALFs between December 2009 and April 2010 to identify potential sources of bloodborne pathogen exposure. Review of policies and procedures for storing and handling medications and equipment, disposing of medical waste, and staff training regarding infection control and diabetes care procedures was performed at ALF 1 and the HHA. Direct observation of patient care, particularly the diabetes care procedures, was conducted at ALFs 1 and 2. Review of the nurses' schedules was completed to determine movement of personnel among the two facilities.

Epidemiological Analysis

A retrospective analysis of risk factors among the cases and non-cases in ALF 1 was conducted to determine the most probable source of hepatitis B transmission in the facility. Relative risks (RRs), 95% confidence intervals (CI) and p-values were calculated for the exposures at ALF 1. If the expected cell count was less than five, Fisher's exact p-values were calculated.

The case definition classified residents according to their hepatitis B markers. Residents were classified as having acute infection, chronic infection, recent acute infection, or as susceptible to HBV. Recent acute infection was considered if the resident tested positive for hepatitis B IgM core antibody (IgM anti-HBc), negative for surface antigen (HBsAg), and positive for the antibody to hepatitis B surface antigen (anti-HBsAg).

To identify risk factors among the residents, we reviewed medical records to identify residents who received diabetes care, podiatry care, and dental care, as well as demographic information, and diagnosis and admission dates. In addition, a behavioral risk factor survey was completed with all the residents on floors one and three of ALF 1, where all the acute hepatitis B cases were located.

At ALF 2, data were abstracted from the medical records of insulin-dependent diabetic residents on blood glucose monitoring. The names of non-diabetic residents at ALF 2 were matched with the Florida reportable diseases database in order to identify any chronic or acute cases of hepatitis B. Transfers of residents among the two facilities were also evaluated.

A survey was conducted of the nurses who were still working for the HHA and had worked for the agency during the exposure period. The purpose of the survey was to identify practices that might lead to possible breaches in infection control during blood glucose monitoring and insulin administration, as well as nurse's hepatitis B vaccination status.

Serologic Testing

Viral hepatitis B testing for case finding was conducted for all residents at ALF 1. At the time of the visits, the facility had already initiated testing using an acute hepatitis panel for some of the residents. Testing of all other residents was completed by the Florida Department of Health (FDOH) using complete hepatitis B markers. All staff members were offered testing, but only a few participated. Testing for viral hepatitis was conducted at ALF 1 between November 2009 and January 2010.

At ALF 2, testing for hepatitis B was conducted on diabetic patients receiving glucose monitoring and insulin administration from the HHA serving both facilities. Testing was also conducted for the roommates of these individuals.

Blood specimens were tested at the FDOH Bureau of Laboratories in Miami and Jacksonville. For individuals who tested positive for HBsAg, specimens were forwarded to the CDC for further molecular viral characterization.

Results

Site Inspection and Review of Diabetes Care Procedures

The ALFs are for-profit, freestanding facilities under the same management. ALF 1 has a capacity of fifty-two residents. ALF 2 has a capacity of ninety-two residents. Skilled nursing services were provided in both facilities by the same HHA. Review of the nurses' schedules showed that some of the nurses provided coverage in both facilities, sometimes on the same day. Certified nursing assistants are hired by each facility. Podiatry care in both facilities is not provided by the same providers. Dental care for the residents is provided by different dentists outside of the facilities.

Some infection control deficiencies were found in ALF 1: improper cleaning of the glucometers and lancing devices; cross-contamination of clean supplies after touching the resident's glucose monitoring equipment; and improper storage in the same cabinet of clean supplies with patient glucose monitoring equipment and in-use sharps containers. Visible traces of blood were found on some of the glucometers and one reusable lancing device. Environmental cleaning of surface areas used for glucose monitoring and insulin administration before or after the procedures was not done. Improper disposal in non-biohazard bags of used gloves and alcohol preps contaminated with blood was observed, as well as improper removal of gloves.

Hepatitis B vaccination was not offered to the healthcare workers at the facility. The facility had no policy or procedures in place for sharps injuries or needle sticks. The last bloodborne pathogen training for the employees was provided in 2007.

ALF 2 generally follows the same procedures to provide glucose monitoring and insulin administration as ALF 1. While observing glucose monitoring procedures in ALF 2, it was noted that the room used did not have a sink easily available. Hand sanitizer was used between patients. One of the nurses was not familiar with how to clean reusable equipment when used with more than one resident.

The HHA policy and procedures for glucose monitoring and insulin administration did not address some key infection control aspects. They did not address decontamination of environmental surfaces, such as glucometers, or the cleaning and disinfecting procedures for glucometers and lancing devices, if they had to be reused for another resident.

Case Identification

Forty-eight residents were tested for viral hepatitis in ALF 1. Five residents were found positive for acute hepatitis B, two showed recent infection with hepatitis B virus and were immune, and one was immune to hepatitis B due to past vaccination. Four residents tested positive for hepatitis C. Six of the positive hepatitis B cases were diabetic and had received glucose monitoring or insulin administration during the exposure period. Only one case was not diabetic, but that person was the sexual partner of one of the cases. All cases had resided at the facility longer than six months prior to testing positive.

At ALF 2, ten diabetic patients receiving insulin or glucose monitoring were tested, as well as seven roommates. From the ten residents, in addition to the initial diabetic acute case already reported, a chronic case was found. Three other residents were immune due to past infection.

Three others were susceptible. One resident was HBsAg negative with a positive total hepatitis B core antibody (total anti-HBc), and an undetermined anti-HBsAg. One resident refused testing. Among the roommates, one had a negative HBsAg, total anti-HBc and IgM anti-HBc positive, and negative anti-HBsAg. This resident was considered as having a recent hepatitis B infection, but had low titers not consistent with immunity. This resident was diabetic and received insulin administration and glucose monitoring between February and June 2009 at ALF 2. The other six roommates were negative for HBV infection. Testing of the roommates of the acute and chronic case showed they were susceptible to hepatitis B.

Specimens from the five acute hepatitis B cases at ALF 1 were submitted to the CDC for viral DNA molecular sequence analysis. The hepatitis B virus in all five positive cases was genotype A2. Genotype A is the most common type in the Southeastern U.S. [2] and among this genotype, five sub genotypes, A1, A2, A3, A4, and A5, have been described [3]. In three of the positive cases with a high viral load, complete molecular genetic sequencing showed that the virus in the three residents was identical. The other two positive individuals had a viral load too low to conduct complete molecular genetic sequencing; sequencing of the S-gene was conducted. The S-gene sequencing in both specimens was identical to that of the other three specimens. These findings suggested that all five acute hepatitis B cases could have a common origin of infection. Complete molecular genetic sequencing from specimens from the two HBsAg-positive residents from ALF 2 showed identical results to that of the ALF 1 residents.

Four ALF 1 staff members were tested. Only one was immune due to vaccination for hepatitis B. The other three individuals were susceptible.

The reportable diseases database for the state of Florida, when cross-referenced with the names of residents who were not tested at ALF 2 and residents who received skilled services from the HHA, identified three additional cases of acute hepatitis B. These three cases occurred prior to our exposure period. They were diabetics and received insulin administration and glucose monitoring during the probable exposure period at ALF 2.

Epidemiological Analysis

The forty-eight residents at ALF 1 were between fifty-four to ninety-one years old and had a median age of 76.5 years. Forty-two percent were male. Ninety percent were white. The remaining 10% included African-Americans, white Hispanics, and other. The median time from admission to the facility was twenty-eight months. Fourteen residents were diabetics (29%). Mental illness was a common diagnosis among the residents, including dementia, depression, and schizophrenia.

Risk factors identified for acute or recent HBV infection among residents at ALF 1 are shown in Table 1. Among the seven residents with acute or recent HBV infection, six were diabetic and had insulin administration and glucose monitoring during the exposure period. Only one case did not have glucose monitoring or insulin administration. That case was the sexual partner of an insulin-dependent diabetic case. Residents who were diabetic were found to be fourteen times more likely than non-diabetics to have evidence of acute or recent HBV infection. Furthermore, residents who received glucose monitoring or insulin injections during the exposure period were twenty-two times more likely than those who did not to have acute or recent HBV infection. The association between diabetes care procedures and HBV infection was statistically significant. Taken together, these findings strongly implicate the diabetes care procedures with HBV transmission within the facility.

Table 1. Association between Exposure Variables and Hepatitis B Infection at ALF 1

Exposure		Acute infection			Acute infection and recent immune		
		Attack rate	RR (95% CI)	P-value*	Rate	RR (95% CI)	P-value*
Diabetes	yes	4/14 = 0.29	9.71 (1.19-79.41)	0.02	6/14 = 0.43	14.57 (1.93-110.22)	<0.01
	no	1/34 = 0.03			1/34 = 0.03		
Insulin injection	yes	4/10 = 0.40	15.2 (1.90-121.38)	<0.01	6/10 = 0.60	22.80 (3.09-168.32)	<0.001
	no	1/38 = 0.03			1/38 = 0.03		
Glucose monitoring	yes	4/10 = 0.40	15.2 (1.90-121.38)	<0.01	6/10 = 0.60	22.80 (3.09-168.32)	<0.001
	no	1/38 = 0.03			1/38 = 0.03		
Sex	male	3/20 = 0.15	2.10 (0.39-11.43)	0.64	5/20 = 0.25	3.50 (0.75-16.26)	0.11
	female	2/28 = 0.07			2/28 = 0.07		
Mental illness	yes	4/32 = 0.12	2.00 (0.24-16.46)	0.65	6/32 = 0.19	3.00 (0.39-22.85)	0.40
	no	1/16 = 0.06			1/16 = 0.06		

** Two-sided Fishers Exact Test*

Other healthcare procedures including dental care, podiatry care, razor use, did not show an association with HBV infection at ALF 1. Sexual activity and intravenous drug use also did not show an association with ALF 1.

Seven nurses who worked for the HHA during the exposure period completed the survey to evaluate possible breaches in infection control during blood glucose monitoring and insulin administration. Sixty-six percent of the nurses reported working at ALF 1 and ALF 2. All nurses reported providing glucose monitoring and insulin administration. Fifty-seven percent of the nurses reported receiving specific training related to blood glucose monitoring, but the training was not provided by the HHA. Eighty-six percent of the nurses reported changing gloves between patients. Twenty-nine percent reported using the same reusable lancing device for more than one client and 43% reported using the same glucometer for more than one client. Only six of the seven nurses were vaccinated for hepatitis B. All the nurses reported cleaning the glucometer and environmental surfaces after use. It is not clear what cleaning procedures were used.

Discussion and Conclusions

The data gathered in the course of the investigation showed that the most probable route of transmission of the hepatitis B virus in ALF 1 was from resident to resident during finger-stick glucose monitoring and/or insulin administration. The HBV DNA sequencing results among residents in ALF 1 supported the hypothesis of transmission within the facility. Matching of viral genomes by itself does not prove that the residents acquired infection from one another. Nevertheless, in the presence of the statistically significant epidemiological data showing the increased risk among the diabetic residents receiving insulin monitoring and/or insulin administration and acute hepatitis B, the identical viral genomes strongly suggested that all five acute hepatitis B cases had a common origin of infection. These conclusions were also supported by infection control deficiencies found at ALF 1 and the results from the survey conducted with the nurses that provided skilled nursing services during the exposure period.

Transmission between the two facilities was possible. It was supported by the HBV DNA sequencing results for the acute and chronic case in ALF 2 showing a complete match with the hepatitis B viral DNA sequencing of residents at ALF 1. The acute and chronic cases at ALF 2 were diabetics and received glucose monitoring from the same HHA staff serving both facilities.

This hypothesis was considered possible because of the observed infection control deficiencies, the movement of nursing personnel between the two ALFs, and the lack of proper policies and procedures for glucose monitoring by the HHA.

Only one chronic case was found at ALF 2 who could have been the index case and source of the infection to the other residents, and transfers of residents between the two facilities during the exposure period did not occur. This resident was admitted to ALF 2 in October 2007. One possible explanation is that at some point the same reusable lancing device and/or glucometer was used at both facilities, thereby transmitting the infection from one facility to another. This possibility is based on the positive answers from the nurses' survey of using the same reusable single device or glucometer for different patients during the exposure period.

Lack of accessibility to a physical area in ALF 1 after 5:00 p.m. and during the weekends when the administration office is closed was a barrier to assuring individual patient equipment and supplies for blood glucose monitoring at the facility were used.

These findings are consistent with other described hepatitis B outbreaks in ALFs around the country that involved breaches in infection control during glucose monitoring, including shared use of finger-stick devices and shared use of glucometers [1, 4, 5]. Our results are also consistent with a survey that was conducted among fifteen large ALFs and fifteen small ALFs in Pinellas County, Florida. Small ALFs with less than 50 beds were more likely to report not having a copy of the Occupational Safety and Health Administration (OSHA) guidelines for bloodborne pathogen standards. Shared use of reusable finger-stick devices was a common practice in 67% of large ALFs and 100% of small ALFs. Vaccination of healthcare workers in small ALFs was less likely to occur. Sharing glucometers and not cleaning glucometers between each resident were reported as common [6]. It is important to note that in the ALF-associated hepatitis B outbreaks described in the literature, it is not clear if HHAs were involved in the care of the patients at the facilities.

One of the challenges associated with this outbreak investigation was related to the regulations under which ALFs are governed. ALFs should follow the federal guidelines from OSHA related to transmission of bloodborne pathogens. ALFs follow state regulations that are limited in scope regarding infection control since these facilities are considered a home setting and do not have jurisdiction to enforce federal regulations. Several of the outbreak investigations noted in the literature have recognized that there is a lack of and need for basic infection control standards in ALFs [4,6]. This imposes a challenge to eliminating bloodborne pathogen transmission in ALF settings.

Control Measures

Based on the findings from the investigation, several recommendations were provided to the ALFs' administration and the HHA. A complete report with detailed recommendations was provided and discussed in a meeting with the administrators of the HHA and ALFs.

- ALF 1: Vaccination using Twinrix vaccine wasrecommended and implemented for all susceptible residents. The CDC, Division of Viral Hepatitis suggested using Twinrix, a combined hepatitis A and hepatitis B vaccine, due to better immune response in older individuals reported in several clinical trials [7, 8, 9].
  ALF 2: Vaccination was recommended for the susceptible diabetic residents receiving glucose monitoring and/or insulin, as well as roommates of the acute and chronic case.
- Diabetic residents who lived at the facilities during the outbreak or six months prior to the date of the first diagnosed case, but who had since left, were notified by the Palm Beach CHD and HBV testing was recommended.

- All current and new staff working at the facilities with anticipated exposure to blood/body fluids should be offered the hepatitis B vaccine series at no expense to the employee.
- Physicians/labs associated with the facilities were provided reportable disease guidelines.
- CDC guidelines, "Recommended Practices for Preventing Patient-to-Patient Transmission of Hepatitis Viruses from Diabetes Care Procedures in Long-Term Settings", were provided [10].
- Recommended that the facilities change the use of spring-loaded reusable finger-stick devices to auto-disabling, single-use lancets to provide glucose monitoring.
- HHA nurses were required to receive training on standard precautions and infection control techniques during glucose monitoring and insulin administration by a person with credentials in infection control. Training was completed, as required. Annual training was recommended.
- Recommended training for CNAs at both facilities on standard precautions and bloodborne pathogens.
- Recommended that condoms be available to ALF residents.
- The regulatory agency for ALFs was informed of the outbreak and provided with the Palm Beach CHD recommendations.

Acknowledgements

The authors would like to thank: Nicole Thompson, Anne Moorman, and Scott Holmberg, laboratory staff of the CDC Division of Viral Hepatitis; FDOH Bureau of Laboratories; Roger Sanderson, Regional Epidemiologist, FDOH; Barbara F. Johnson, Nursing Consultant, Palm Beach CHD Division of Epidemiology and Disease Control; Palm Beach CHD Immunizations Program; and Palm Beach CHD Sexual Transmitted Diseases Program for laboratory support and assistance during this investigation.

References

1. Thompson ND, Perz JF, et al. Non-hospital health care-associated hepatitis B and C virus transmission: United States, 1998-2008. *Ann Intern Med.* 2009;150:33-9.
2. Chu C, Keeffe EB, Han S, et al. Hepatitis B virus genotypes in the United States: Results of a nationwide study. *Gastroenterology.* 2003;125:444-51.
3. Schaefer, Stephan. Hepatitis B virus taxonomy and hepatitis B virus genotypes. *World J Gastroenterology.* 2007;13(1):14-21.
4. Patel AS, White-Comstock MB, Woolard CD, Perz JF. Infection Control practices in assited living facilities: a response to hepatitis B virus infection outbreaks. *Infection Control Hospital Epidemiology*. 2009;30(3):209-14.
5. Cournard CA, Perz JF, Linchangco PC, Christiansen D, Ganova-Raeva L, Xia G, Jones S, Vernon M. acute hepatitis B outbreaks related to fingerstick Blood Glucose Monitoring in two assited living facilities. *Journal American Geriatric Society*. 2010;58(2):306-11.
6. Thompson ND, Barry V, Alelis, K, Cui D, Perz JF. Evaluation of the potential for bloodborne pathogen transmission associated with diabetes care practices in nursing homes and assited living facilities, Pinellas County. *Journal American Geriatric Society*. 2010;58(5):914-918.
7. Joines R W, Blatter M, Abraham B, Xie F, De Clercq N, Baine Y, and Reisinger KS. A prospective, randomized, comparative U.S. trial of a combination hepatitis A and B vaccine (Twinrix®) with corresponding monovalent vaccines (Havrix® and Engerix-B®) in adults. *Vaccine*. 2001;19: 4710-4719.

8. Van der Wielen M, Van Damme P, Chlibek R, Smetana J, von Sonnenburg F. Hepatitis A/B vaccination of adults over 40 years old: comparison of three vaccine regimes and effect on influencing factors. *Vaccine*. 2006;24:5509-5515.
9. Rendi-Wagner P, Kundi M, Stemberger H, Wiedermann G, Holzmann H, Hofer M, Wiesinger K, and Kollaritsch H. Antibody response to three recombinant hepatitis B vaccines: comparative evaluation of multicentered travel-clinic based experience. *Vaccine*. 2001;19:2055-2060.
10. CDC. Transmission of hepatitis B virus among persons undergoing blood glucose monitoring in long-term-care facilities – Mississippi, North Carolina, and Los Angeles County, California, 2003-2004. *MMWR* 2005;54(9):220-223.

Sandra Forero is a Human Services Program Consultant at the Epidemiology Division of the Palm Beach CHD. She can be reached at 561-671-4184 or by email at Sandra_forero@doh.state.fl.us. JoEllen Alvarez is a Nursing Program Specialist at the Epidemiology Division of the Palm Beach CHD. She can be reached at 561-671-4184 or by email at joellen_alvarez@doh.fl.state.us. Tim Doyle is a former Regional Epidemiologist in the Bureau of Epidemiology. He can be contacted at tdoyle@cdc.gov.

Mercury Exposure in a Broward County Neighborhood

Holly J. Montejano, MS, Patrick Jenkins, MPH, and Ryan Lowe, MPH

Introduction

On August 30, 2010, the Broward County Health Department (CHD) Epidemiology Program verified a news media report, dated August 29, of mercury exposure in Broward County residents (children). The exposure had reportedly occurred on August 29 when a neighborhood man found bottles of elemental mercury in the garage closet of a home he had recently purchased. Not aware of the dangers associated with handling elemental mercury, he allowed neighborhood children to handle, "squirt" each other, and play with the mercury on the driveway of his residence.

Background

Elemental, or metallic, mercury is a volatile substance and will vaporize at approximately 70°F. Mercury is considered toxic, and mercury vapor can affect various regions of the brain, the nervous system, and their related function. Children and fetuses are most vulnerable to the health effects of exposure to mercury. Symptoms of mercury exposure include: irritation to the lining of the mouth, airway, and lungs; elevated blood pressure and heart rate; nausea; vomiting; diarrhea; skin rashes; eye and skin irritations; weakness; fretfulness; sleeplessness; excessive salivation or sweating; itching; swelling; fever; and memory loss.

Occupational Safety and Health Administration (OSHA) guidelines for workers states that the permissible exposure limit for mercury vapor in workers is not to exceed 0.1 milligram per cubic meter of air as a ceiling limit[1]. Though mercury is listed as a skin contact hazard, there is no way to quantify this exposure aside from using a Biological Exposure Index measuring urine or blood values; skin contact would be dependant on area of coverage and duration of exposure[2].

Mercury poisoning encounters have been reported in the literature, and are of public health significance. In a review paper by Counter and Buchanan (2004), metallic mercury exposures in children due to religious practices is discussed, particularly among those in families practicing Afro-Caribbean religion (Santeria)[3]. Prolonged mercury exposure in homes where a household member had an occupational exposure is also reported in the review paper; the transfer of the

toxic metal is possible from the work place to the home[3]. This exposure event was not religious, nor was it due to an occupational exposure. It was an acute event resulting from a lack of knowledge of the dangers of metallic mercury.

Case Investigation

Eleven people were identified as having been exposed to the elemental mercury. Exposed people, presenting to four Broward County hospitals, were found using ESSENCE and the Florida Poison Information Center Network (FPICN). Five cases were reported through both ESSENCE and the FPICN, and contact information was available for a majority of these people. Missing information was provided by the hospital's infection control practitioner. Though ESSENCE provided some information on the remaining five exposed people based on emergency department (ED) chief complaints, contact information was scant. Infection control practitioners were again utilized for missing contact information so that eventually 10 of the known 11 exposed people were interviewed. The man that found the mercury on his property and supplied it to the neighborhood children was an additional exposed individual who was not able to be interviewed. He did not appear in ESSENCE so it is possible he never presented for medical attention. Consequently, contact information was not available.

Of the ten people that were interviewed, five were female (age range: 3-42 years) and five were male (age range: 11-15 years). Six people had blood mercury levels tested and one individual had urine mercury detection. The remaining three people presented to an ED but did not have testing. All of the exposed people denied symptoms upon interview. The result of the urine mercury detection was negative; the blood mercury results were elevated for all six individuals that were tested with this method (range: 14-25 micrograms/L). Mercury blood levels greater than or equal to 10 micrograms/L meet the laboratory criteria of mercury poisoning in Florida.

Five children had directly handled the mercury while playing in the neighbor's driveway (pouring the mercury in their hands), and two of these children brought home some metallic mercury leading to household contamination (discussed in the environmental health section that follows). Two children (siblings) brought the mercury home and played with it on their driveway. An additional child brought the mercury home and threw it on his mother; it subsequently landed on her and on the furniture in the room. Two siblings who had elevated blood mercury levels were from the household where the mercury had been thrown on the mother. Both children denied having direct contact with the mercury; rather they were in the house when the mercury was brought in and had inhalation contact. Their blood mercury values were slightly less than those that had direct contact with the mercury. Those that had direct contact with the mercury potentially would have had a greater risk of inhalation contact of mercury vapor because they were playing with the metal for an extended time period. Individuals that had mercury blood testing performed and had direct contact with the mercury had higher blood levels than those that had the same testing done and had strictly inhalation contact (no direct handling of the metallic mercury). Mercury blood or urine levels greater than or equal to 10 micrograms/L meet the laboratory criteria of mercury poisoning in Florida. Due to the acute nature of this incident, and the lack of symptoms in those exposed, there was no recommended medical management of those exposed by their primary care providers.

Environmental Health

Due to the environmental exposure of the mercury being handled in the residence driveway, and also reportedly poured into a neighborhood canal, members of the municipality's fire rescue, police, and school board, in addition to the Broward CHD, Environmental Protection Agency (EPA), Department of Environmental Protection (DEP), and Tetra Tech (an EPA contractor) convened to discuss the potential environmental contamination and plan the abatement efforts.

The following information was gathered from the EPA Pollution/Situation Report dated September 3, 2010.[1]

Abatement efforts were underway as of August 31. At that time, the DEP began assessing potentially impacted areas including nine private homes, one driveway where mercury was handled, an adjacent neighborhood driveway, five schools, one public library, ten vehicles, and five school buses. These locations and vehicles were thought to have been potentially exposed by mercury being tracked on the bottom of shoes and on clothing of those persons involved with the initial neighborhood exposure. Mercury vapor analyzer screenings were performed in the schools, on buses, and in the library; all were below the EPA removal action level (1000 ng/m^3). However, three of the residences were found to exceed the EPA removal action level and the residents were relocated with assistance from the Red Cross. Florida DEP enlisted the EPA to aid in the residential clean-up efforts.

Mercury vacuums and Hg Cs-102 (mercury cleaning solution 102) were used in the abatement effort. Hg Cs-102 is used to clean mercury contamination on concrete, metal, tubing and piping, tile, wood, and carpeting.[2] A mercury vacuum was used to remove mercury beads from surfaces.

One of the two affected driveways had to be completely removed due to extensive contamination. The driveway was coated with epoxy paint and the concrete was then cut with water to suppress dust spread, and removed. The second driveway was coated with Hg Cs-102 and the mercury beads were removed using the mercury vacuum.

Additionally, Hg Cs-102 was used in one residence where mercury was found in the shower, sink drains, and washing machine. Due to contamination, it was necessary to remove furniture, small household items, carpeting, and tile flooring in another residence. The floors were then thoroughly rinsed and the property ventilated. Ventilation fans were used in all affected households to aid in air exchange. If mercury was detected during the rescreening the properties were again mopped with Hg Cs-102. Residents were permitted to resume residence once mercury vapors were below the EPA removal level (set forth by the Agency for Toxic Substances and Disease Registry).

Discussion

Mercury is both toxic for the environment and for humans. The release of mercury vapor has the potential to affect water quality once it has been deposited from the air. The consequences of mercury being released into the environment led to the extensive abatement efforts performed by DEP and the EPA. The effects of mercury exposure in humans can vary from asymptomatic to very severe symptoms. Mercury exposure is most worrisome during fetal development and in young children as the nervous system is still developing.[3] This was of concern, as one person that was reported as exposed was pregnant, and another exposed person was a young child. Both of these people denied symptoms and no laboratory testing was performed. The local, state, and federal agencies successfully worked together to mitigate both the environmental and human exposures in a timely and effective manner.

Acknowledgements

Individuals that contributed to this investigation include: Prakash Mulay, MBBS, MPH, Bureau of Environmental Public Health Medicine; Susan Skye, Bureau of Environmental Public Health Medicine; and Alyssa Hughes, FOSC, U.S. Environmental Protection Agency, Region IV.

Sources

1. Occupational Safety and Health Guideline for Mercury Vapor. Available at http://63.234.227.130/SLTC/healthguidelines/mercuryvapor/recognition.html. Accessed October 22, 2010.
2. Dr. Robert Kurkjian, Principal Scientist. Tetra-Tech, California.
3. Counter, S. Allen and Buchanan, Leo H. Mercury Exposure in Children: A Review. *Toxicology and Applied Pharmacology*. 2004; 198: 209-230.
4. Margate Mercury Release- Removal Polrep. United States Environmental Protection Agency Pollution/Situation Report. September 3, 2010.
5. Chemical Solutions International. Hg Cs102 General Information. Available at http://chemicalsolutionsintl.com/hgcsgi.htm. Accessed October 5, 2010.
6. Environmental Protection Agency: Public Access Customer Service. January 19, 2005. Frequent Questions. Available at: http://publicaccess.supportportal.com/ics/support/KBAnswer.asp?questionID=18838 . Accessed October 6, 2010.

Holly Montejano is a Florida EIS Fellow with the Bureau of Epidemiology located in the Broward County Health Department. Mrs. Montejano can be contacted at 954-467-4700 ext 5583 or by email at Holly_Montejano@doh.state.fl.us. Patrick Jenkins is Epidemiology Program Manager for the Broward County Health Department. Mr. Jenkins can be contacted at 954-467-4700 ext 5575 or by email at Patrick_Jenkins@doh.state.fl.us. Ryan Lowe is the Regional Environmental Epidemiologist located in the Broward County Health Department. Mr. Lowe can be contacted at 954.467.4700 ext 5585 or by email at Ryan_Lowe@doh.state.fl.us.

Pesticide Poisoning of Hospital Employees Associated with Attempted Suicide, Orange County

Tania Harper, M.P.H. and Prakash Mulay, M.B.B.S., M.P.H.

Introduction

Secondary contamination of hospital employees caring for the organophosphate-poisoned patient has been reported in the past.[1-4] Organophosphate (OP) compounds are primarily used as an agricultural pesticide and have also been developed as chemical warfare agents.[8] Poisonings with OPs result in significant morbidity and mortality, if not treated. Secondary poisonings are of concern for public health due to the potential involvement of large numbers of healthcare staff and also due to the heavy burden placed on other responders, such as emergency department (ED) and intensive care resources. These secondary contamination incidents can be prevented by proper use of personal protective equipment (PPE) and by implementing best practices while treating the chemically-exposed patient.

This report describes poisonings that occurred among healthcare workers due to the delayed recognition that OP ingestion in a patient was a potentially hazardous incident. These delays prevented early decontamination from occurring, and resulted in the delinquent use of appropriate personal protective equipment (PPE). As a result, several hospital employees were exposed to an OP (malathion) pesticide and became ill.

Background

On July 29, 2010, the Orange County Health Department (CHD) was notified of a suspected pesticide poisoning case by a local hospital. The case was also noted through routine surveillance of Poison Control Data in the FDOH syndromic surveillance system (ESSENCE).

The patient was treated at the hospital emergency department and several hospital employees subsequently complained of symptoms consistent with pesticide poisoning.

The patient was a 55-year-old male who attempted suicide on July 28 by ingestion of approximately 14 ounces of malathion pesticide and unknown amounts of alcohol. Nearly six hours later, the patient was transported to the hospital by Emergency Medical Services (EMS). The hospital reported that EMS personnel neglected to follow proper protocol. No decontamination was conducted prior to transport, EMS did not wear appropriate PPE for a chemical ingestion call, and EMS did not notify the ED staff of the type of substance ingested. Fortunately, the patient was transported with the bottle of malathion, which aided in the identification of the causative substance.

Once malathion was noted, county and hospital Hazmat teams were contacted to perform decontamination of the patient and the ED. Poison Control was called for treatment consultation. It was reported that half of the ED was evacuated and the hospital went on a code black alert, accepting no more ambulances until later that evening.

Medical records indicate the patient presented with tachycardia, respiratory depression, vomiting, diarrhea, and diaphoresis. A very strong chemical odor coming from the patient was noted. The patient was treated with atropine and was intubated. He went into cardiac arrest on July 29 but was stabilized. He was maintained in a negative pressure room until August 17 when he was discharged to a long-term acute care facility.

Methods

Seventeen hospital employees were identified as patient exposures, of whom six reported symptoms of pesticide poisoning. Medical records were requested and cholinesterase testing was recommended for the symptomatic employees. A symptomatic case was defined as any hospital worker who experienced two or more acute pesticide-related symptoms following exposure to the patient or contaminated areas of the ED. An interview was attempted with all symptomatic cases using the Pesticide Incident Monitoring/Reporting Form and a supplementary questionnaire was administered that focused on PPE used while treating the patient and prior hazmat training.

Results

Five of the six symptomatic employees met the case definition. An interview was completed with four of the five employees who met the case definition; however, data on the patient who was not interviewed has been included where available.

Symptoms for the cases are listed in Table 1. The most frequently cited symptoms include eye irritation (80%) and nausea (80%). The average age for ill people was 34.8 years with a range of 25 to 44 years of age. Females comprised 80% of the ill people. One patient required hospitalization for seven days and another required supportive treatment in the ED. Symptoms in the other patients resolved without medical intervention. The average duration of illness for four of the five symptomatic people was 2.75 days and ranged from one to seven days. Three of the five symptomatic people were respiratory technicians, one was a nurse, and one worked in housekeeping. Supplementary questionnaire responses on PPE used while treating the patient, awareness of the hazard, and prior Hazmat training are also included in Table 1.

The hospitalized employee, a nurse, was the first staff member to treat the patient on admission. The only PPE used were gloves. She was exposed to the patient's vomit and sweat, which she described as a yellow-green secretion coming from his skin. Within 15 to 30 minutes, she

experienced onset of headache, nausea, altered vision, choking, agitation, and syncope. The nurse was hospitalized for seven days and treated with atropine. She reported ongoing vision problems and agitation during the interview.

Environmental exposure occurred in a housekeeping employee performing terminal cleaning of the ED room where the patient had been treated. At the time of the cleaning, he had already been transferred to a unit room, all bedding and equipment had been removed, and the room had been decontaminated. PPE used included gown, mask, hair cover, shoe covers, and double gloves. Approximately two hours later, the housekeeping employee experienced onset of dizziness, dry throat, nausea, vomiting, and headache. She was evaluated in the ED and her symptoms resolved after two days.

Three respiratory technicians were exposed to the attempted suicide patient on July 29 during his cardiac arrest. It was reported that no one on the team had been made aware of the potential for malathion exposure prior to responding to the patient, and the only warning posted on his door was a Contact Isolation sign. Onset of illness ranged from immediate to up to two hours after exposure. One respiratory tech reported that she had treated the patient a few times since July 29 and continued to experience mild throat irritation from the odor that was still being emitted from the patient.

Table 1. Interview Findings, Malathion Poisoning in Hospital Employees, Orange County, Florida, July 28, 2010

	Employee 1	**Employee 2**	**Employee 3**	**Employee 4**	**Employee 5**
Type of exposure	Patient Contact	Environmental	Patient Contact	Patient Contact	Patient Contact
Incubation period	15-30 minutes	2 hours	Immediate onset	½-2 hours	Unknown
Symptoms	Nausea, Eye Irritation, Dyspnea, Blurred Vision, Headache, Confusion, Restlessness, Agitation, Weakness, Asphyxia, Syncope, Slurred Speech	Nausea, Vomiting, Dizziness, Headache, Dry Throat	Nausea, Eye Irritation, Dizziness, Pruritis, Dry Mouth, Sore Throat	Nausea, Eye Irritation, Pruritis, Headache, Dry Mouth	Eye Irritation, Lightheadedness, Facial Irritation
Was PPE used?	Yes	Yes	Yes	Yes	No, per medical record
If Yes, What PPE was used?	Gloves	Gown, mask, hair cover, shoe cover, double gloves	Mask, gloves	Gloves, later provided a half mask respirator	-

	Employee 1	Employee 2	Employee 3	Employee 4	Employee 5
Was the employee aware of the situation?	No	Yes	No	No	Unknown
Had the employee received prior Hazmat training?	Yes	Yes	Yes	Yes	Unknown

Hospital Employee Health planned to monitor all exposed healthcare workers for symptoms and offered cholinesterase testing per health department recommendations. Hazmat teams implemented a PPE protocol requiring all employees to wear a half-mask respirator, gloves, gown, and goggles when interacting with the patient. The hospital is reviewing purchasing Class C PPE for nurses in the event of a similar situation in the future. Discussions were held between the hospital and EMS regarding appropriate protocol in handling chemical ingestion patients. Follow-up to determine the health status of the EMS workers involved was unsuccessful.

Discussion

The poisoning incident described in this report is a result of healthcare workers not wearing appropriate respirators and PPE for proper protection of eyes and skin. This resulted in 17 hospital employees being placed at risk for OP exposure, five (29.4%) of whom developed symptoms. This report describes one hospital employee who reported serious health effects requiring treatment with atropine after secondary exposure to malathion through patient contact.

The hydrocarbon solvents (commonly toluene and xylene) used in commercial products to dissolve malathion are more volatile than malathion itself and human toxicity can result from inhalation of solvent vapor as well. Exposure to the solvent can result in mild symptoms, such as eye irritation, nausea, headache, and cough. Malathion is rapidly absorbed by ingestion and through intact skin and eyes, resulting in acute systemic effects. Acute toxic effects, including rapidly fatal systemic poisoning, can result from ingestion of high amounts of malathion.[7]

Malathion is highly contaminating. Patients whose skin or clothing is contaminated with liquid or powdered malathion can secondarily contaminate hospital personnel by direct contact or off-gassing of solvent vapor from clothing, skin, or vomitus. Patient decontamination and use of appropriate PPE by all persons handling the patient is critical to prevent further exposure and illness. As previously noted, the hospital required use of appropriate PPE once they were aware of the chemical; however, the information was not communicated to all staff who would potentially be interacting with the patient. This highlights the importance of proper hospital room signage and communication of potential hazards to hospital personnel.

Recommendations

All hospital employees caring for patients should be made aware of chemical poisonings and the possibility of secondary contamination. Patient treatment and decontamination should ideally be conducted in a well-ventilated area with regular rotation of employees.

All healthcare workers caring for chemically-contaminated patients should use level C protection (i.e., full face mask and powered/nonpowered canister/cartridge filtration respirator) or level B

protection (i.e., supplied air respirator or self-contained breathing apparatus) based on the extent of the contamination. Latex medical gloves are of little protection against many chemicals and chemical barrier protection appropriate to the contaminant is required.[7] First responders, such as EMS and medical staff, should wear appropriate PPE and breathing masks before entering the contaminated area.[6] Hospital personnel should be notified prior to receiving chemically-contaminated patients to ensure that suitable preparations have been made. Patients should undergo external decontamination as soon as feasible: remove and bag clothes and wash their full bodies with soap and water. Employees accidentally coming into direct contact with the patient's bodily secretions should immediately and thoroughly wash the affected area. The possibility of exposure through vomited poison should not be overlooked.[4-5]

EDs may have to care for people contaminated with chemicals resulting from self-inflicted contamination, industrial incidents, and terrorist events. To protect healthcare workers caring for these patients, EDs should adhere to existing guidelines and decontamination protocols, train employees in the use of PPE, and maintain adequate quantities of antidotes.[2]

Pesticide poisoning is a condition reportable to the Florida Department of Health. All cases should be reported to the CHD. Poison Control should be notified for consultation on patient treatment.

References

1. Koksal N, Akif Buyukbese M, Guven A, Cetinkaya A, Hasanoglu HC. Organophosphate intoxication as a consequence of mouth-to-mouth breathing from an affected case. *Chest* 2002;
2. Geller RJ, Singleton KL, Tarantino ML. Nosocomial poisoning associated with emergency department treatment of organophosphate toxicity — Georgia 2000. *MMWR*
3. Butera R, Locatelli C, Barretta S *et al.* Secondary exposure to malathion in emergency department health-care workers. *J Toxicol Clin Toxicol* 2002; 40:386–7.
4. Stacey R, Morfey D, Payne S. Secondary contamination in organophosphate poisoning: analysis of an incident. *QJM* 2004; 97:75–80.
5. Mark Little, Lindsay Murray. Consensus statement: Risk of nosocomial organophosphate poisoning in emergency departments. *Emergency Medicine Australasia*, 2004; 16, 456–458.
6. Cullen G. *Organophosphate Insecticides. In: The Chemical Incident Management Handbook,* 1st ed. London, The Stationary Office, 2000:194–6.
7. ATSDR. Medical Management Guidelines. Retrieved from http://www.atsdr.cdc.gov/mhmi/mmg154.html on October, 2010.
8. Morita H, Yanagisawa N, Nakajima T, Shimizu M, Hirabayashi H, Okudera H, Nohara M, Midorikawa Y, Mimura S. Sarin Poisoning in Matsumoto, Japan*. Lancet 1995; 346:290–3.*

Tania Harper is an epidemiologist with the Orange CHD. She can be contacted at 407-858-1400, ext 1136 or by email at Tania_Harper@doh.state.fl.us. Prakash Mulay is the Chemical Surveillance Coordinator with the Bureau of Environmental Public Health Medicine. He can be contacted at 850-245-4444, ext 4576 or by email at Prakash_Mulay@doh.state.fl.us.

Florida Year-to-Date Mosquito-Borne Disease Summary Through October 16, 2010

Elizabeth Radke, M.P.H., Danielle Stanek, D.V.M., Carina Blackmore, D.V.M., Ph.D.

During the period from January 1 through October 16, 2010, the following arboviral activity was recorded in Florida.

Eastern Equine Encephalitis Virus (EEEV) Activity
Positive samples were obtained from four humans, 92 horses, 157 sentinel chickens, 34 live wild birds, and six mosquito pools in 45 counties.

West Nile Virus (WNV) Activity
Positive samples were obtained from 10 humans (includes one asymptomatic blood donor), 20 horses, one reptile, 358 sentinel chickens, and one live wild bird (flavivirus positive) in 35 counties.

St. Louis Encephalitis Virus (SLEV) Activity
No activity reported in 2010.

Highlands J Virus (HJV) Activity
Positive samples were obtained from 14 sentinel chickens in seven counties.

California Encephalitis Group Viruses (CEV) Activity
No activity reported in 2010.

Dengue Virus (DENV)
One case of dengue was reported as acquired in Broward County and 53 locally-acquired cases of dengue were reported as associated with Key West in Monroe County. Of the Key West cases, eight are residents of other Florida counties, and one resides out of state. One hundred eight imported cases with onset in 2010 in Florida residents were reported from 22 counties. Places of origin include Brazil, Columbia (8), Costa Rica (4), Dominican Republic (12), Ecuador, El Salvador, Grenada (3), Guatemala (2), Haiti (5), Honduras (6), Jamaica (5), Martinique, Nicaragua (8), Philippines, Puerto Rico (33), Venezuela (13), Virgin Islands (3), Malaysia/Dubai/Bangladesh, and Panama/Venezuela (slash indicates that cases traveled to more than one country).

Malaria
Ninety-eight imported cases of malaria with onset in 2010 were reported in Florida residents from 24 counties. Places of origin included Angola, Dominican Republic, Ghana (4), Guyana, Haiti (57), Honduras (4), India (7), Ivory Coast, Malawi (2), Nigeria (7), Pakistan, Peru, Philippines, South Africa, Togo, Uganda, West Africa (2), Zambia/South Africa, Africa, and unknown (2). Eighty-one (83%) were diagnosed with *Plasmodium falciparum,* nine (9%) with *Plasmodium vivax,* one (1%) with *Plasmodium malariae,* and the remainder were undetermined.

Dead Bird Reports
The Florida Fish and Wildlife Conservation Commission (FWC) collects reports of dead birds, which can be an indication of arbovirus circulation in an area. Since January 1, 2010, 283 reports

representing a total of 896 dead birds (47 crows, 16 jays, 45 raptors, 788 others) have been received from 46 of Florida's 67 counties. Please note that the FWC collects reports of birds that have died from a variety of causes, not only arboviruses. Dead birds should be reported to www.myfwc.com/bird/.

See the following web site for more information http://www.doh.state.fl.us/Environment/medicine/arboviral/index.html.

Elizabeth Radke is the Arthropod-borne Disease Surveillance Coordinator with the Bureau of Environmental Public Health Medicine. Ms. Radke can be contacted at 850-245-4444, ext 2437 or by email at Elizabeth_Radke@doh.state.fl.us. Dr. Danielle Stanek is a medical epidemiologist with the Bureau of Environmental Public Health Medicine. Dr. Stanek can be contacted at 850-245-4117 or by email at Danielle_Stanek@doh.state.fl.us. Dr. Carina Blackmore is the State Public Health Veterinarian and the Chief of the Bureau of Environmental Public Health Medicine. Dr. Blackmore can be contacted at 850-245-4732 or by email at Carina_Blackmore@doh.state.fl.us. The Bureau of Environmental Public Health Medicine is part of the Division of Environmental Health, Florida Department of Health.

Reportable Diseases in Florida

Up-to-date information about the occurrence of reportable diseases in Florida, based on the Merlin surveillance information system, is available at the following site: http://www.floridacharts.com/merlin/freqrpt.asp. Counts can be displayed by disease, diagnosis status, county, age group, gender, or time period.

Monthly Notifiable Disease Data

Table 1. Provisional Cases* of Selected Notifiable Diseases, Florida, September 1-30, 2010

	Month				Cumulative (YTD)	
Disease Category	**2010**	**2009**	**Mean†**	**Median¶**	**2010**	**2009**
A. Vaccine Preventable Diseases						
Diphtheria	0	0	0	0	0	0
Measles	0	0	0.4	2	1	5
Mumps	0	3	2.0	3	13	16
Pertussis	38	65	37.8	35	247	428
Poliomyelitis	0	0	0	0	0	0
Rubella	0	0	0.4	1	0	0
Smallpox	0	0	0	0	0	0
Tetanus	0	0	0.6	2	4	0
Varicella	93	51	N/A	N/A	810	968
B. CNS Diseases & Bacteremias						
Creutzfeldt-Jakob Disease	3	0	1.6	4	10	11
H. influenzae (invasive disease)	14	13	9.8	5	138	185
in those ≤5	4	2	2.2	2	23	23
Listeriosis	5	6	5.0	5	44	17
Meningitis (bacterial, cryptococcal, mycotic)	14	19	0.2	13	32	27
Meningococcal Disease	5	2	6.2	7	52	45
Staphylococcus aureus (VISA, VRSA)	1	1	0.4	1	2	6
Streptococcal Disease, Group A, (invasive disease)	19	19	17.6	19	38	53
Streptococcus pneumoniae (invasive disease)						
Drug resistant	35	36	36.2	36	621	579
Drug susceptible	33	29	31.4	29	508	518
C. Enteric Infections						
Campylobacteriosis	112	105	82.6	81	913	857
Cholera	0	0	0	0	0	0
Cryptosporidiosis	45	105	117.6	124	306	344
Cyclospora	1	4	1.6	2	56	35
Escherichia coli, Shiga toxin-producing (STEC)**	32	19	5.8	6	177	126
Giardiasis	249	172	134.2	138	1,609	1,476
Hemolytic Uremic Syndrome	1	1	0.2	1	7	3
Salmonellosis	905	945	694.0	637	4,380	4,314
Shigellosis	110	56	96.6	111	770	352
Typhoid Fever	1	4	2.6	2	16	17
D. Viral Hepatitis						
Hepatitis A	21	22	30.4	24	134	155
Hepatitis B, Acute	29	23	31.8	34	240	234
Hepatitis C, Acute	12	7	3.8	5	85	50
Hepatitis +HBsAg in pregnant women	35	62	47.2	45	329	440
Hepatitis D, E, G	0	0	0.2	1	1	3

* Confirmed and probable cases based on date of report as reported in Merlin

Incidence data for 2010 is provisional, data for 2009 was finalized on April 1, 2010

† Mean of the same month in the previous five years

¶ Median for the same month in the previous five years

** Includes *E. coli* O157:H7; Shiga toxin-positive, serogroup non-O157; and Shiga toxin-positive, not serogrouped

†† Includes neuroinvasive and non-neuroinvasive

N/A indicates that no historical data is available to caculate mean and median

Table 1. (cont.) Provisional Cases* of Selected Notifiable Diseases, Florida, September 1-30, 2010

	Month				Cumulative (YTD)	
Disease Category	**2010**	**2009**	**Mean†**	**Median¶**	**2010**	**2009**
F. Vector Borne, Zoonoses						
Dengue	35	3	2.0	3	157	21
Eastern Equine Encephalitits††	1	0	0.2	1	4	0
Ehrlichiosis/Anaplasmosis	1	3	1.6	1	13	13
Leptospirosis	1	0	0.2	1	1	0
Lyme Disease	29	25	12.8	8	105	80
Malaria	14	9	6.6	6	100	76
Plague	0	0	0	0	0	0
Psittacosis	0	0	0.2	1	0	0
Q Fever (acute and chronic)	0	0	0.2	1	1	1
Rabies, Animal	3	18	14.4	15	97	137
Rabies (possible exposure)	143	158	127.4	128	1,507	1,345
Rocky Mountain Spotted Fever	3	1	1.6	2	24	5
St. Louis Encephalitis††	0	0	0	0	0	0
Toxoplasmosis	1	0	0.4	2	7	2
Trichinellosis	0	0	0.2	1	0	0
Tularemia	0	1	0.2	1	0	1
Typhus Fever (epidemic and endemic)	1	1	0.2	1	3	1
Venezuelan Equine Enchephalitis††	0	0	0	0	0	0
West Nile Virus††	6	0	1.8	5	8	0
Western Equine Encephalitis††	0	0	0	0	0	0
Yellow Fever	0	0	0	0	0	0
G. Others						
Anthrax	0	0	0	0	0	0
Botulism-Foodborne	0	0	0.2	1	0	1
Botulism-Infant	0	0	0	0	0	0
Brucellosis	2	1	1.2	3	16	5
Glanders	0	0	0	0	0	0
Hansen's Disease (Leprosy)	1	1	1.0	2	9	3
Hantavirus Infection	0	0	0	0	0	0
Legionella	18	30	19.4	17	142	133
Melioidosis	0	0	0	0	0	0
Vibriosis	10	17	12.2	12	94	71

* Confirmed and probable cases based on date of report as reported in Merlin
Incidence data for 2010 is provisional, data for 2009 was finalized on April 1, 2010

† Mean of the same month in the previous five years

¶ Median for the same month in the previous five years

†† Includes neuroinvasive and non-neuroinvasive

N/A indicates that no historical data is available to caculate mean and median

Note: The 2010 and 2009 case counts are provisional and are subject to change until the database closes. Cases may be deleted, added, or have their case classification changed based on new information and therefore the monthly tables should not be added to obtain a year to date number.

Please refer any questions regarding the data presented in these tables to Kate Goodin at Kate_Goodin@doh.state.fl.us or 850.245.4444 Ext. 2440.

Upcoming Events

Bureau of Epidemiology Monthly Grand Rounds
Date: Last Tuesday of each month
Time: 10 a.m.-11 a.m., E.T.
Location: Building 2585, Room 310A
Dial-In Number: 877.646.8762 (password: Grand Rounds)

November 30 – "School Absenteeism Surveillance, Hillsborough County" presented by Lea Wansbrough, M.P.H., Florida EIS Fellow

This Month on EpiCom

Christie Luce

EpiCom is located within the Florida Department of Health's Emergency Notification System (FDENS). The Bureau of Epidemiology encourages *Epi Update* readers to register on the EpiCom system by emailing the Florida Department of Health Emergency Notification System Helpdesk at FDENS-help@doh.state.fl.us. Users are invited to contribute appropriate public health observations related to any suspicious or unusual occurrences or circumstances through the system. EpiCom is the primary method of communication between the Bureau of Epidemiology and other state medical and public health agencies during emergency situations. The following are titles from selected recent postings:

- Imported typhoid fever case, Duval County
- Rabid raccoon, Duval County
- Pertussis in an infant, Clay County
- Influenza-like illnesses (ILI) in a daycare center, Alachua County
- Rabid cat, Duval County
- Hepatitis A in a population of men who have sex with men (MSM), Orange County
- Case of meningococcal disease with recent travel history, Miami-Dade County
- Mosquito disease advisory, Indian River County
- Three imported typhoid fever cases, Manatee County
- Possible diphtheria case, Broward County
- Pertussis in two unrelated cases, Alachua County
- Imported malaria in an airline worker, Palm Beach County
- Northeast Florida coast algal bloom: *Cochlodinium*
- MRSA death, Clay County
- Case of West Nile Virus (WNV), Broward County
- Two cases of WNV illness, Collier County
- WNV, Duval County

Christie Luce is the Surveillance Systems Administrator for the Bureau of Epidemiology. Ms. Luce can be contacted at 850-245-4418 or by email at Christie_Luce@doh.state.fl.us.

Epi Update is the peer-reviewed journal of the Florida Department of Health, Bureau of Epidemiology and is published monthly on the Internet. Current and past issues of Epi Update

are available online at http://www.doh.state.fl.us/disease_ctrl/epi/Epi_Updates/index.html. The current issue of Epi Update is available online at http://www.doh.state.fl.us/disease_ctrl/epi/Epi_Updates/2010/October2010EpiUpdate.pdf.

For submission guidelines or questions regarding Epi Update, please contact Leesa Gibson at 850-245-4409 or by email at Leesa_Gibson@doh.state.fl.us .