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## In This Issue



# The Burden of *Haemophilus Influenzae* (Invasive Disease) in Florida from 2005 to 2008

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### Background

*Haemophilus influenzae* is a non-motile, gram-negative coccobacillus first described by Richard Pfeiffer, a German physician/bacteriologist, in 1892. *H. influenzae* bacteria are divided into two major categories; encapsulated or unencapsulated. Encapsulated *H. influenzae* have a polysaccharide capsule and can be further distinguished into six different serogroups (a,b,c,d,e, and f) based on antigens present on the bacteria's surface.[1] Unencapsulated *H. influenzae* lack a polysaccharide outer capsule and are referred to as nontypable *H. influenzae* (NTHi). Biotyping is a method which classifies *H. influenzae* into eight categories (I, II, III, IV… etc.) based on its chemical response to indole, urease, and ornithine decarboxylase.[2-5]

*H. influenzae* reside in the upper respiratory and genital tracts of humans; although not fully understood, disease occurs when the bacteria invade the bloodstream or spread throughout the respiratory tract.[6] *H. influenzae*'s virulence and pathogenicity have most often been associated with the presence, or the lack of, a polysaccharide outer capsule. Encapsulated forms of *H. influenzae*, especially serotype B (Hib), have historically been associated with more invasive diseases such as bacteremia, meningitis, epiglottitis, septic arthritis, and pneumonia. Whereas, unencapsulated (NTHi) forms of the bacteria were more often attributed to non-invasive diseases such as respiratory tract infection, otitis media, conjunctivitis, and exacerbation of chronic conditions (e.g., bronchitis, Chronic Obstructive Pulmonary Disease).[7, 8] *H. influenzae* can be transmitted via airborne droplets from the respiratory tract or from direct contact with secretions

or fomites.[6] The communicability of *H. influenzae* is considered to be limited.[9] However, studies have documented nosocomial outbreaks of NTHi, which resulted in multiple case fatalities.[10-15]

Before the introduction of conjugate vaccines, Hib accounted for 95% of all invasive *H. influenzae* diseases.[9] Since the development of Hib conjugate vaccines in 1987, incidence of Hib in the U.S. has dramatically decreased. The Centers for Disease Control (CDC) estimated in the early 1980s around 20,000 cases occurred each year, with most of these occurring in children five and younger.[16,17] This number took a sharp decline post-deployment of the newly developed vaccines. By 2000, the incidence of Hib had declined by 99% when compared to the prevaccine era.[9]

While over the past decade there has been a decrease in the incidence of disease caused by Hib, reported cases of disease caused by NTHi have been steadily increasing. In Florida, the overall reported incidence of *H. Influenzae* has increased over the past decade. This analysis of *H. Influenzae* surveillance data from 2005 to 2008 describes the epidemiology of the *H. influenzae* disease in Florida. It is important to review surveillance data to understand the distribution of serotypes and biotypes, as well as identify vulnerable populations associated with morbidity and mortality.

## Methods

Data and Analysis

A de-identified dataset was created and exported from the Merlin database into Microsoft Excel. Variables used in descriptive analyses included: gender, race, ethnicity, age, ICD-9 (diagnosis), biotype, serotype, vaccination status, outcome, and date of event. The investigator created age categories. These included: ages less than 1; 1-4; 5-9; 10-14; 15-19; 20-24; 25-34; 35-44; 45-54; 55-64; 65-74; 75-84; and over 85. Cases with available serotype data were divided into three categories: Hib (serotype b strains); non-b (all other encapsulated strains); and NTHi (unencapsulated strains). SPSS statistical software (SPSS for Windows, Rel. 15.0.0. 2006. Chicago: SPSS, Inc.) was used to compute descriptive statistics.

Cases used for analysis included confirmed and probable cases reported from 2005 to 2008 in which the patient resided in Florida and the reported diagnosis was *Hemophilus influenzae* meningitis (32000), epiglottitis (46430), cellulitis (62990), septic arthritis (71100), or bloodstream infection (3841), referred to here as “invasive”. Suspect cases and *H. influenzae* pneumonia reporting code 48220 were excluded.

## Results

Reported *H. influenza* infections have increased remarkably in Florida within the past four years. From 2005 to 2008, 549 cases of invasive *H. influenzae* were reported; this surpasses the number of cases reported during the previous eight years. Of the infections that had reported serotypes (n=422), 77% (n=326) were caused by unencapsulated strains of *H. influenzae* (NTHi). *H. influenzae* serotype b (Hib) was responsible for 3.1% (n=13) of infections, while encapsulated non-b strains caused 19.7% (n=83) of cases (Table 1).

**Table 1. Descriptive Data of *H. influenzae* Cases in Florida from 2005-2008**

| Serotype | | hib | non-b | NTHi | Unknown |
|---|---|---|---|---|---|
| # of Cases | | 13 | 83 | 326 | 127 |
| Age | | | | | |
| | Mean | 24.92 | 48.17 | 55.74 | 53.81 |
| | Median | 7 | 53 | 65 | 62 |
| | Range | <1-79 | <1-100 | <1-101 | <1-99 |
| Gender | | | | | |
| | Male | 4 | 40 | 147 | 58 |
| | Female | 9 | 43 | 179 | 69 |
| Race | | | | | |
| | White | 11 | 55 | 247 | 96 |
| | Black | 1 | 27 | 60 | 15 |
| | Asian/Pacific Islander | - | - | 1 | 2 |
| | Amer. Indian | - | - | 1 | - |
| | Other | 1 | - | 6 | 4 |
| | Unknown | - | 1 | 11 | 10 |
| Ethnicity | | | | | |
| | Hispanic | 2 | 20 | 51 | 27 |
| | Non-Hispanic | 11 | 62 | 262 | 94 |
| | Unknown | - | 1 | 13 | 6 |
| Biotype | | | | | |
| | I | 5 | 45 | 20 | 1 |
| | II | 5 | 12 | 199 | - |
| | III | - | - | 68 | - |
| | IV | - | 14 | 8 | - |
| | V | - | - | 8 | 1 |
| | VI | - | 1 | 2 | - |
| | VII | - | - | 2 | 1 |
| | Unk. | 3 | 9 | 19 | 124 |
| Diagnosis (ICD-9) | | | | | |
| | Invasive (3841) | 7 | 73 | 307 | 116 |
| | Meningitis (32000) | 4 | 8 | 17 | 9 |
| | Epiglotittis (46430) | 2 | - | - | - |
| | Cellulitis (62990) | - | 2 | 1 | 1 |
| | Septic Arthritis (71100) | - | - | 1 | 1 |

## Serotypes

Hib – Over the four year period from 2005 to 2008, Hib was the least common cause of invasive disease. Of the 13 cases, nine (69%) were female, whites outnumbered non-whites 11:2, and

non-Hispanics accounted for 85% (n=11) of cases (Table 1). The mean age of infection was roughly 25 years with a range from <1 to 79 years (Table 1). Over half (69%) of Hib cases from 2005-2008 were in children under four years of age and adults over age 65 (Table 2). Four cases were diagnosed as meningitis, two as epiglottitis, and seven as invasive (Table 1). Vaccine status was available on 11 of the 13 Hib cases; only three had received the recommended series. Among cases of Hib, none were reported as fatal.

**Table 2. Florida *Haemophilus influenzae* Counts and Incidence per 100,000; from 2005-2008**

| Age (years) | b No. (Rate) | non-b No. (Rate) | NTHi No. (Rate) | All No. (Rate) |
|---|---|---|---|---|
| <1 | 4 (0.43) | 5 (0.54) | 27 (2.93) | 36 (3.91) |
| 1-4 | 2 (0.06) | 12 (0.34) | 15 (0.43) | 29 (0.83) |
| 5-9 | 1 (0.02) | - | 6 (0.13) | 7 (0.15) |
| 10-14 | 1 (0.02) | - | 5 (0.11) | 6 (0.13) |
| 15-19 | - | 1 (0.02) | 4 (0.08) | 5 (0.10) |
| 20-24 | - | 1 (0.02) | 10 (0.21) | 11 (0.23) |
| 25-34 | - | 2 (0.02) | 17 (0.19) | 19 (0.21) |
| 35-44 | 1 (0.01) | 6 (0.06) | 15 (0.15) | 22 (0.22) |
| 45-54 | 1 (0.01) | 17 (0.16) | 37 (0.36) | 55 (0.53) |
| 55-64 | - | 13 (0.15) | 25 (0.29) | 38 (0.45) |
| 65-74 | 2 (0.03) | 12 (0.19) | 41 (0.66) | 55 (0.89) |
| 75-84 | 1 (0.02) | 4 (0.09) | 72 (1.53) | 77 (1.64) |
| 85+ | - | 10 (0.56) | 52 (2.89) | 62 (3.44) |

Non-b – Encapsulated non-b strains of *H. influenzae* were represented by serotypes a, e, and f. Cases were reported as one of these serotypes or as non-b. The majority (56%) of non-b invasive infections were classified as serotype f. Serotypes a and e were responsible for 9.6% (n=8) and 14.5% (n=16) of cases respectively, while the remaining 12 cases were described as non-b. Non-b strains of Hi were more than 6 times more likely to cause invasive infection than Hib (Table 1). The majority (88%; n=73) of cases were diagnosed as invasive, eight were diagnosed as meningitis, and two as cellulitis (Table 1). Mean age of infection was 48 years with a range of <1 to 100 years. Male and female case counts were similar at 40 and 43, respectively (Table 1). Incidence rates were similar in Hispanics and non-Hispanics, but higher in non-whites than in whites. Similar to Hib, children less than four-years-old and adults over 65 accounted for over half (52%) of all non-b Hi infections (Table 2). Yet, unlike Hib, eight non-b infections were fatal. With a case fatality rate of 23%, adults over 65-years-old accounted for six of the eight fatal cases.

NTHi – Unencapsulated strains of Hi were the most common cause of invasive disease from 2005-2008. NTHi comprised 77% (n=326) of all *H. influenzae* infections with serotype data (Table 1). Invasive infection was the diagnosis in 94% (n=307) of cases, meningitis in 17 (5.2%) cases, and one case each of cellulitis and septic arthritis. The mean age of infection was 56 years with a range of <1-101 years. NTHi was responsible for three times as many invasive infections than all other serotypes of *H. influenzae* combined. Fifty-five percent (n=179) of cases were female and incidence rates were higher in non-Hispanics than in Hispanics and in non-whites than in whites

(Table 1). Eighty-five percent (47 of 55) of typed and reported fatal *H. influenzae* cases were infected with NTHi, resulting in an overall NTHi case fatality rate of 14%. NTHi, like encapsulated strains of *H. influenzae*, were more prevalent in adult populations over 65 and in young children (<4 years) (Table 2). Thirty-seven (79%) of the NTHi fatal cases were aged less than 1 or over 65. Both infants (<1 years) and adults over 65 had case fatality rates of 19%.

Biotype

Of all reported *H. influenzae* cases in Florida from 2005-2008, 10 of the Hib, 72 of the non-b, and 310 of the NTHi cases were biotyped. Seven biotypes were represented (1-7) within the 391 biotyped isolates. Among these, biotype II accounted for the majority (n=217, 55%) of cases; while biotypes I and III comprised 19% (n=73) and 17% (n=67), respectively. Biotypes IV-VII were responsible for the final 9% (n=22,8,3,1). Hib infections were either biotype I or II (five cases each). Sixty-two percent (n=45) of non-b infections were biotype I. Biotype II was reported in 199 of the invasive NTHi cases. (Table 1)

## Discussion

In the past 12 years, Florida has seen a five-fold increase in the number of reported cases of *H. influenzae*. Reported incidence rates have increased from 0.21 per 100,000 to 0.86 per 100,000. This rise in incidence is not specific to Florida; researchers are finding the same trends in other populations.[18,19] The combination of Hib vaccine development and vaccine coverage rates ~93% in Florida children 19-35 months has decreased Hib infections to only a few sporadic cases a year. Once estimated to cause 95% of *H. influenzae* infections, Hib accounted for only 3% of all typed *H. influenzae* infections in Florida from 2005 to 2008. NTHi represented the majority (77%) of typed *H. influenzae* infections during the same time period in Florida. This unencapsulated form of the bacteria also accounted for the majority of fatal cases (86%) and had the highest case fatality rate (14%). This is important to note because unlike *H. influenzae* in the prevaccine era, *H. influenzae* is now a disease that burdens both children and older adult populations.

Surveillance and reporting of *H. Influenzae* have also improved over the past few years. Isolates from cases in Florida, especially in those under the age of 15 years, must be sent to the public health laboratory for serotyping. This may explain, in part, the increase in the number of specimens for identification including the increase in NTHi. In addition, electronic laboratory reporting has allowed epidemiologists to quickly identify cases of *H. influenzae*, collect epidemiologic information, and request that isolates be forwarded to serotyping when they might have otherwise been discarded by a hospital or commercial laboratory. All of these public health advances have allowed public health officials in Florida to better understand the epidemiology of *H. influenzae* in the state.

It is evident that, of *H. influenzae* strains, Hib has been the strain of greatest public health concern in the recent decades. While NTHi incidence rates are much lower than Hib rates seen in the prevaccine era, they are increasing in parts of the U.S. and Europe.[18,19] Vaccine development has dramatically reduced the incidence of Hib invasive disease in the U.S. This is evident in the four-year data utilized in this study, with only 3% (n=13) of typed *H. influenzae* disease being serotype b. Before vaccine development, Hib was an important pathogen in the U.S., especially in children under the age of five.[9] With Hib vaccine coverage nearing 93% in the U.S., there has been a dramatic decrease in invasive diseases due to Hib.[6,20,21] However, reported cases of invasive disease from NTHi strains have slowly increased over time.[19] Unlike Hib, NTHi strains burden both children under the age of five and adults over 65 years.[19,20,21] Because NThi strains are now being implicated in the majority of cases of *H. influenzae* disease,

it is important to note trends seen with these strains. While no outbreaks of NTHi have been reported in Florida, NTHi strains have been reported in nosocomial outbreaks involving secondary transmission to healthy staff, antibiotic resistance, and multiple fatalities.[22-27] NTHi strains are also rarely subtyped, therefore, clonal strains are nearly untraceable. Because Florida remains one of the highest reporters of *H. influenzae* disease in the U.S, analysis of *H. influenzae* cases in Florida provides invaluable data to health officials across the country. *H. influenzae* data analyzed in this report confirm trends seen in other population-based studies. As different strains of *H. influenzae* are implicated in disease and burdens shift to other vulnerable population, it is important to continue surveillance of morbidity and mortality due to *H. influenzae*. This disease remains a human pathogen of concern for Florida and the rest of the U.S.

**Recommendations**

1) Continue surveillance on serotypes causing *H. influenzae* invasive disease.
2) Analyze historical data.
3) Publish findings to add to current knowledge and trends of NTHi.
4) Identify means to better subtype NTHi (i.e., PCR).
5) Increase provider knowledge on potential for *H. influenzae* (especially NTHi) outbreaks and formulate infection prevention/control plans.
6) Support NTHi vaccine development.

**Limitations**

1) Incomplete data.
2) Underlying medical conditions not available in fatal *H. influenzae* cases/review of death certificates to determine primary or secondary causes of death.
3) Data may not be generalizable.
4) Investigators did not verify vaccine status of Hib cases via Florida SHOTS.

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# Pancreatic Cancer in Florida, 2006

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The Florida Department of Health (DOH) recognizes November as Pancreatic Cancer Awareness Month. According to the American Cancer Society (ACS), pancreatic cancer is the fourth leading cancer killer in the U.S. During the entire month of November, efforts are dedicated to educate, increase awareness, and support pancreatic cancer patients in Florida.

Pancreatic cancer begins in the pancreas, an organ that produces digestive enzymes and regulates blood sugar through insulin release. Risk factors that are associated with pancreatic cancer include:

- age,
- gender,

- race,
- smoking,
- diet,
- obesity,
- lack of physical activity,
- diabetes, and
- stomach problems.

Pancreatic cancer is hard to diagnose, often metastasizes early, and is resistant to treatment.

For this article, data on pancreatic cancer incidence and diagnosis stage are from the Florida Cancer Data System (FCDS), and mortality data are from the Florida Department of Health, Office of Vital Statistics. The Florida data are compared with that from the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute (NCI). The U.S. mortality data reported by SEER are provided by the National Center for Health Statistics (NCHS).

In Florida in 2006, the pancreatic cancer incidence rate was 11.2 per 100,000 population and the mortality rate was 9.6 per 100,000 population. Both incidence and mortality rates were higher among older age groups and among males. Blacks had similar rates as whites: incidence rate 11.0 per 100,000 vs. 11.1 per 100,000; mortality rate 9.7 per 100,000 vs. 9.6 per 100,000, respectively. The 2006 incidence rate was 22% higher than the rate observed in 1981 (9.3 per 100,000). The 2006 mortality rate was 8% lower than the rate observed in 1981 (10.5 per 100,000). The Florida incidence rate among blacks was lower than the SEER rate. Florida mortality rates among both sexes, both race groups, and the four sex-race groups were lower than the U.S. rates.

Of all Florida pancreatic cancer cases, nearly 72.3% were diagnosed at an advanced stage in 2006. Males had a higher percentage of cancer diagnosed at an advanced stage than females. The percentage of cancer diagnosed at an early stage was 32% lower in 2006 compared to the percentage diagnosed in 1981.

A comprehensive fact sheet with detailed data tables on pancreatic cancer in Florida will be available shortly at the Florida Department of Health, Bureau of Epidemiology website at http://www.doh.state.fl.us/disease_ctrl/epi/cancer/Pancreas_Report.pdf.

For additional information, please contact the Florida Department of Health, Bureau of Epidemiology at 850.245.4401 or visit our website at http://www.floridachronicdisease.org/.

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# Are Florida Healthcare Workers at Increased Risk of 2009 Influenza A H1N1 Infection?

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## Introduction

This analysis was performed to determine if some occupations have been more heavily impacted than others by the circulating H1N1 virus. Specifically, this analysis was driven by the question: "Are healthcare workers suffering a disproportionate number of cases, hospitalizations, and/or deaths?" In addition to that question, are there so many illnesses in healthcare workers that it is likely to compromise the functioning of healthcare organizations? Data was extracted from Merlin and represent those cases classified as laboratory-confirmed novel H1N1 influenza cases. The guidance for reporting novel H1N1 influenza cases has changed as the epidemic has evolved. During the initial phase of the epidemic, all laboratory-confirmed cases of H1N1 were reportable (referred to in this report as the "all cases period"). After case-based control measures were determined to be no longer effective, Florida surveillance strategies were updated as needed. On July 17, 2009, new guidance was issued discontinuing individual case reporting of all laboratory-confirmed novel H1N1 influenza cases. The new guidance was updated to focus data collection in several groups determined to be special surveillance populations. As of July 17, 2009, CHDs were only asked to report cases that were hospitalized and/or died. More specifically, hospitalizations are defined as those with life-threatening illness, and hospitalized pregnant women. Following the change of the guidance, population-based data collection no longer occurred (referred to in this report as "severe illness cases"). For this reason, data presented here are stratified according to whether cases were reported before or after July 17, 2009.

Of the 2,611 cases of novel H1N1 included in this report, almost three-quarters did not have occupation data available for analysis. Due to the large percentage of missing data, all interpretations should be made with extreme caution.

## Data sources and methods

All data presented here are laboratory-confirmed cases of novel H1N1 influenza A in those over 16 years of age that have been reported in Merlin as of October 22, 2009. As of October 22, 2009, 6,446 records for novel H1N1 were reported in Merlin. Of those records, 5,290 cases have been completed and reported to the Bureau of Epidemiology; of the reported cases, 4,955 (93.67%) were confirmed cases. Finally, of the 4,955 reported confirmed cases, 2,611 were in people over 16. As a result, the numbers reflected here will differ from the numbers represented in the weekly influenza surveillance reports produced by the Bureau of Epidemiology. County Health Department (CHD) epidemiologists completed case data entry into Merlin with assistance from the Bureau of Epidemiology during the initial response on all reported cases of infection with the novel H1N1 strain of influenza.

For this analysis, occupation was assigned to all cases based on three sources included on the case report entered into Merlin:

1. The occupation code on the Merlin basic case page contains a pick-list of values: a) food handler, b) healthcare worker, c) no or non-sensitive occupation, and d) unknown. Occupation categories were assigned based on the North American Industry Classification

System (NAICS). If the value for occupation on the basic case page was food handler or healthcare worker, then no further programming was needed to assign occupation.

2. If occupation was indicated to be unknown or no or non-sensitive, then the more specific risk factor question in the Merlin outbreak module (occupation_survey) was examined.

3. If neither of these was filled out, then the text fields on the Merlin basic case screen, as well as the Merlin outbreak module that allow for entry of the name of the case's employer, were used to categorize general occupational groups.

The federal Bureau of Labor Statistics reports occupational estimates by state once a year, the most recent being May 2008. State-level data for occupation category is reported using Standard Occupational Codes (SOC) which are similar but not identical to NAICS codes. The Bureau of Labor Statistics reports by occupation type or category for Florida were used to compare occupation category proportions among novel H1N1 cases to defined occupation category proportions in the workforce.

**Analysis**

Table 1 displays the number of cases in each occupation category as well as the percentage of cases that fall into a particular occupation category. Overall, 5.97% (156) of novel H1N1 cases reported in Florida are among healthcare and social assistance workers. According to the Bureau of Labor May 2008 report, the healthcare and social assistance occupation category is only 3.3% of the state population and 8.11% of the overall workforce (meaning of those people with jobs, 8.11% work in the healthcare/social assistance sector). This indicates that the healthcare and social assistance field has a higher number of reported influenza cases than expected. During the time period before July 17 when all laboratory-confirmed novel H1N1 influenza cases were reportable, 8.59% of cases occurred in the healthcare and social assistance field. After July 17, when the reporting guidance changed to collect data on only those in special surveillance populations, the proportion of cases among healthcare and social assistance workers was 3.32%.

The Bureau of Labor Statistics estimates Florida's unemployment rate at 10.7%, overall. The unemployed cases represent 8.33% of the cases reported after July 17, but only 3.80% of cases reported before July 17. Of those listed as unemployed, the average age was 36 years, median of 35, with a range of 16-90 years of age. All of the 158 case reports counted as unemployed specifically stated that they were unemployed. Five were inmates of correctional facilities and one had immigrated a week before symptom onset.

**Table 1. Novel H1N1 Cases by Occupation Category as Defined by the Bureau of Labor for Laboratory-Confirmed Cases of Novel H1N1 (Cases Prior to July 17) and for Laboratory-Confirmed H1N1 Cases in Special Surveillance Populations (deaths, hospitalized pregnant women, and those with life-threatening illness), (Cases After July 17), Florida, Cases Reported as of October 22, 2009**

| Occupation Category | | | All Laboratory-Confirmed Cases Prior to July 17 | | Laboratory-Confirmed Cases in Special Surveillance Populations* Cases after July 17 | | Total Cases (May – October) | |
|---|---|---|---|---|---|---|---|---|
| | % of workforce | % of state population | N | % of all cases | N | % of all cases | N | % of all cases |
| Agriculture, Forestry, Fishing, and Hunting | 0.43% | 0.17% | 1 | 0.08% | 2 | 0.15% | 3 | 0.11% |
| Construction | 5.55% | 2.26% | 4 | 0.30% | 4 | 0.31% | 8 | 0.31% |
| Retail Trade | 12.54% | 5.10% | 12 | 0.91% | 12 | 0.93% | 24 | 0.92% |
| Transportation and Warehousing | 5.97% | 2.43% | 10 | 0.76% | 8 | 0.62% | 18 | 0.69% |
| Information | 2.00% | 0.81% | 5 | 0.38% | 1 | 0.08% | 6 | 0.23% |
| Finance and Insurance | 5.08% | 2.07% | 8 | 0.61% | 5 | 0.39% | 13 | 0.50% |
| Real Estate and Rental and Leasing | 0.52% | 0.21% | 2 | 0.15% | 0 | 0.00% | 2 | 0.08% |
| Professional, Scientific, and Technical Services | 0.58% | 0.24% | 5 | 0.38% | 8 | 0.62% | 13 | 0.50% |
| Management of Companies and Enterprises | 2.86% | 1.16% | 1 | 0.08% | 3 | 0.23% | 4 | 0.15% |
| Administrative and Support and Waste Management and Remediation Services | 23.52% | 9.56% | 10 | 0.76% | 10 | 0.77% | 20 | 0.77% |
| Educational Services | 5.17% | 2.10% | 8 | 0.61% | 9 | 0.69% | 17 | 0.65% |
| **Healthcare and Social Assistance** | **8.11%** | **3.30%** | **113** | **8.59%** | **43** | **3.32%** | **156** | **5.97%** |
| Arts, Entertainment, and Recreation | 1.25% | 0.51% | 8 | 0.61% | 5 | 0.39% | 13 | 0.50% |
| Accommodation and Food Services | 9.48% | 3.86% | 16 | 1.22% | 17 | 1.31% | 33 | 1.26% |
| Other Services (except Public Administration) | 2.70% | 1.10% | 2 | 0.15% | 7 | 0.54% | 9 | 0.34% |
| Public Administration | N/A | N/A | 12 | 0.91% | 14 | 1.08% | 26 | 1.00% |
| Disabled | - | - | 6 | 0.46% | 13 | 1.00% | 19 | 0.73% |
| Housewife | - | - | 6 | 0.46% | 3 | 0.23% | 9 | 0.34% |
| Retired | - | - | 12 | 0.91% | 21 | 1.62% | 33 | 1.26% |
| Self-Employed | N/A | N/A | 3 | 0.23% | 8 | 0.62% | 11 | 0.42% |
| Student | - | - | 55 | 4.18% | 21 | 1.62% | 76 | 2.91% |
| Unemployed | - | 10.7% | 50 | 3.80% | 108 | 8.33% | 158 | 6.05% |
| Unknown | - | - | 966 | 73.46% | 974 | 75.15% | 1,940 | 74.30% |
| Total | - | - | 1,315 | 100.00% | 1,296 | 100.00% | 2,611 | 100.00% |

* Novel Influenza A H1N1 deaths, hospitalized pregnant women, and those with life-threatening illness.
N/A= not available

Table 2 displays the death proportions among two occupational groups (healthcare vs. non-healthcare). Healthcare workers were considered their own group and all other occupations (see Table 1) were collapsed into the non-healthcare professionals group. A total of four deaths have been reported among healthcare workers. The overall proportion of cases among healthcare workers that died (5.97%) was slightly higher than that in the other occupational groups (4.21%).

**Table 2. Novel H1N1 Laboratory-Confirmed Deaths by Healthcare Profession, Florida, as of October 22, 2009**

| | Total Cases (May-October) | | |
|---|---|---|---|
| | Deaths N | Total Cases | % |
| Non-healthcare professionals* | 110 | 2,455 | 4.21% |
| Healthcare professionals | 4 | 156 | 5.97% |
| Total | 114 | 2,611 | 4.37% |

*Includes those unemployed, those with no known occupation, and students.

Table 3 displays proportion of hospitalized cases among two occupational groups (healthcare vs. non-healthcare). Healthcare workers were considered their own group and all other occupations (see Table 1) were collapsed into the non-healthcare professionals group. The proportion of cases among healthcare workers that were hospitalized was 25%. This is slightly above the proportion for all other occupations (21.83%) and the total hospitalization proportion (22.02%).

**Table 3. Novel H1N1 Laboratory Confirmed Hospitalized Cases by Healthcare Profession, Before and After July 17, 2009, Florida, as of October 22, 2009**

| | All Laboratory-Confirmed Cases Prior to July 17 | | | Laboratory-Confirmed Cases in Special Surveillance Populations* Cases After July 17 | | | Total Cases (May-October) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Hospitalized N | Total Cases | % Hospitalized | Hospitalized N | Total Cases | % Hospitalized | Hospitalized N | Total Cases | % Hospitalized |
| Non-healthcare professionals** | 231 | 1,202 | 19.22% | 305 | 1,253 | 24.34% | 536 | 2,455 | 21.83% |
| Healthcare professionals | 24 | 113 | 21.24% | 15 | 43 | 34.88% | 39 | 156 | 25% |
| Total | 255 | 680 | 19.39% | 320 | 1,296 | 24.69% | 575 | 2,611 | 22.02% |

* Novel Influenza A H1N1 deaths, hospitalized pregnant women, and those with life-threatening illness.
**Includes those unemployed, those with no known occupation, and students.

Table 4 displays the number of cases in the same two occupational groups (healthcare workers and non-healthcare workers), but considers the proportion of cases to overall total cases. This differs from the within-group comparisons presented in Tables 2 and 3. Overall, healthcare professionals represent 5.97% of the total cases, 6.78% of the hospitalizations, and 3.51% of the deaths due to novel H1N1 in Florida. Again, this is in comparison to 3.3% of the workforce in Florida that is categorized as healthcare professionals or practitioners.

Healthcare professionals were diagnosed more often as cases, they were hospitalized more often, but they were not dying at a higher rate than any other group. There are several possible explanations for this observation. Healthcare workers may have an elevated risk of influenza and hospitalization, but get better care and, thus, are less likely to die. The risk of influenza, hospitalization, and death may be the same in healthcare workers as in other occupations, but when hospitalized, they are more likely to have a laboratory diagnosis of influenza or to be reported. Or, the risk of influenza and death may be the same in healthcare workers as in other occupational groups, but they are more likely to be hospitalized for any given severity of illness. We cannot distinguish among these possibilities, but the lack of an elevated death rate suggests that infection and hospitalization rates may not be significantly elevated in healthcare workers.

**Table 4. Laboratory-Confirmed Novel H1N1 Cases, Hospitalizations, and Deaths by Healthcare Profession, Before and After July 17, 2009, Florida, as of October 22, 2009**

| | All Laboratory-Confirmed Cases, Prior to July 17 | | Laboratory-Confirmed Cases in Special Surveillance* Populations, After July 17 | | Total Cases (May-October) | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **Hospitalizations** | | | | | | |
| Non-healthcare professionals** | 231 | 90.59% | 305 | 95.31% | 536 | 93.22% |
| Healthcare professionals | 24 | 9.41% | 15 | 4.69% | 39 | 6.78% |
| Total | 255 | | 320 | | 575 | |
| **Deaths**† | | | | | | |
| Non-healthcare professionals** | | | | | 110 | 96.49% |
| Healthcare professionals | | | | | 4 | 3.51% |
| Total | | | | | 114 | |
| **All Cases** | | | | | | |
| Non-healthcare professionals** | 1,202 | 91.41% | 1,253 | 96.68% | 2,455 | 94.03% |
| Healthcare professionals | 113 | 8.59% | 43 | 3.32% | 156 | 5.97% |
| Total | 1,315 | | 1,296 | | 2,611 | |

* Novel Influenza A H1N1 deaths, hospitalized pregnant women, and those with life-threatening illness.
**Includes those unemployed, those with no known occupation, and students.
†Deaths have been consistently reportable in Florida, therefore no date comparison was done.

Table 5 displays the specific occupations for those 156 cases included in the healthcare professionals group. The majority of cases (73.72%) did not have a specific profession listed but were only categorized in the generic healthcare worker field. The highest proportion of cases was in nurses (8.33%), followed by paraprofessionals (7.69%).

**Table 5. Novel H1N1 Laboratory-Confirmed Cases Among Healthcare Professionals by Occupation, Florida, as of October 22, 2009**

| Occupation | N | % |
|---|---|---|
| **Healthcare Worker (non-specified)** | **115** | **73.72%** |
| | | |
| **Physician** | **1** | **0.64%** |
| | | |
| **Nurse (includes RNs, CNAs, and non-specified nurses)** | **13** | **8.33%** |
| | | |
| **Paraprofessions** | **12** | **7.69%** |
| Dental | 3 | 1.92% |
| Dialysis Tech | 1 | 0.64% |
| Laboratory Tech | 2 | 1.28% |
| Mental Health Counselor | 1 | 0.64% |
| Nutrition Educator | 1 | 0.64% |
| Phlebotomist | 1 | 0.64% |
| Physical Therapist | 2 | 1.28% |
| Respiratory Therapist | 1 | 0.64% |
| | | |
| **Administrative and Clerical** | **9** | **5.77%** |
| Business Office | 1 | 0.64% |
| Clerk | 1 | 0.64% |
| Driver/Courier | 1 | 0.64% |
| Housekeeping | 1 | 0.64% |
| Intern | 1 | 0.64% |
| Maintenance | 1 | 0.64% |
| Receptionist/Secretary | 3 | 1.92% |
| | | |
| **Social Assistance** | **6** | **3.85%** |
| Child Care | 4 | 2.56% |
| Child Protection | 2 | 1.28% |
| | | |
| **TOTAL** | **156** | |

Table 6 displays the cases classified as healthcare workers and the type of facility that they reported as their place of employment (from occupation_survey only). The highest proportion of case reports did not specify a type of facility (80.77%). The highest proportion of cases that had a known facility occurred in hospitals (14.10%) with the Emergency Room having the most cases.

**Table 6. Novel H1N1 Laboratory Confirmed Among Health Care Professionals by Facility Type, Florida, as of October 22, 2009**

| Facility Type | N | % |
|---|---|---|
| **Hospital** | **22** | **14.10%** |
| ICU | 3 | 1.92% |
| ER | 4 | 2.56% |
| Labor and Delivery | 1 | 0.64% |
| Non-specified | 14 | 8.97% |
| **Clinic or Private Office** | **5** | **3.21%** |
| **Assisted Living Facility** | **1** | **0.64%** |
| **Home Care** | **1** | **0.64%** |
| **Fire Rescue** | **1** | **0.64%** |
| **Not Specified** | **126** | **80.77%** |
| **TOTAL** | **156** | |

## Limitations

The data presented here was not originally collected to evaluate attack rates or risk ratios in professional groups. Complete denominator data is not available. For that reason, the only statistics that can be presented here are proportions. In addition, the guidance on which types of cases to investigate and report changed over the course of the pandemic response and as a result it is not necessarily valid to compare data from before the guidance change (July 17) and after the guidance change. The most meaningful comparisons will be between occupational groups within the same time period. Also, the highest proportion of cases by far was reported with unknown occupations (51.18%). This severely limits the validity of any comparison between the individual occupation proportions and the expected proportion based on state employment data. Influenza-like illness data is based on the patient's chief complaint when presenting to the Emergency Room and may not reflect the actual diagnosis.

Any questions regarding the data presented here can be directed to Kate Goodin at Kate_Goodin@doh.state.fl.us.

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# Impact of 2009 Influenza A H1N1 on Children and Young Adults in Florida

***Richard S. Hopkins, M.D., M.S.P.H., Aaron Kite-Powell, M.S., Kate Goodin, M.P.H., Leah Eisenstein, M.P.H., Janet J. Hamilton, M.P.H.***

The impact of influenza on any population group reflects both the number of cases occurring in that group and the average severity of cases. This article will take the perspective of individuals concerned about the risk of disease and adverse outcomes for themselves and their family members, as well as that of the healthcare system, which is concerned about the number of people presenting for care and the severity of their illness. Children and adolescents account for the largest number of emergency department (ED) visits for influenza-like illness (ILI) but this does not tell us about average severity.

**Summary**

Incidence rates (ED visits per 10,000 population) are highest in those under five-years-old and fall steadily with increasing age.

Although children under age five are at high risk of hospitalization, they account for only a small proportion of hospitalizations. Children under age five are at a low risk of death, and account for only a very small proportion of deaths.

Children and young adults aged 5 to 24 are at only half the risk of hospitalization as those less than five-years-old, but the number of people in this age group is much higher in the population, and they account for 27.8% of hospitalizations.

Death rates are lowest in children aged 0 to 4, out of all age groups, and they account for only a very small percentage of deaths. Death rates are also very low for people aged 5 to 24, but because they are such a high percentage of all cases (45.3% of ED visits for ILI), they do account for a substantial proportion of deaths (11.7% of deaths).

Figure 1 that follows indicates that cases (blue bars) are concentrated among the youngest people, while confirmed hospitalizations (red) and deaths (black) are concentrated among those aged 25 to 64. Figure 2 shows that rates of ED visits and hospitalizations fall with increasing age, while death rates peak at ages 50 to 64.

**Individual perspective**

- The ratio of ILI visits at 125 hospitals per 10,000 statewide population from July 17 to October 20, 2009, is highest among those under 5-years-old, at 131, and falls steadily to 67 in those 5 to 24; 29 at ages 25 to 49; 11 at ages 50 to 64; and 5 among those aged 65 or older.
- From late April through July 18, when individual case reports (N = 2915) were still being tabulated, 15.7% of reported confirmed cases in people aged 0 to 4 were being hospitalized, as well as 7.6% of people aged 5 to 24. The percentage hospitalized was higher in the three older age groups: 13.4% in those aged 25 to 49; 27.1% in those aged 50 to 64; and 22.5% in those aged 65 and over.
- Children under five-years-old have the greatest chance of hospital admission with confirmed Influenza A H1N1; there were 119 admissions per million population, cumulatively, through October 20. The rate for other age groups is much lower: 55 per

million for those aged 5 to 24; 49 for ages 25 to 49; 45 for ages 50 to 64; and 15 for those aged 65 and older.

- In contrast, the death rate for persons with confirmed Influenza A H1N1 has been lowest in children aged 0 to 4 years (3.5 deaths per million population, cumulatively); 5 to 24 (3.3); and adults over 65 (2.4); and highest in those aged 45 to 64, at 13.6.

**Healthcare system and societal impact perspective**

- Children, adolescents, and young adults account for two-thirds of all ED visits for ILI: 21.4% of visits are by children under age 5; 35% are aged 5 to 18; and 10.3% are aged 19 to 24.
- People 25- to 49-years-old account for 38.1% of all hospitalizations. Adults aged 50- to 64-years-old account for 18.6%. Only 8.9% of hospitalizations are in children aged 0 to 4; 13.3% in children aged 5 to 18; and 14.5% in young adults aged 19 to 24. The oldest group, aged 65 and older – the usual high-risk group for seasonal influenza – account for only 6.6% of hospital admissions.
- Deaths are shifted even more to older ages: 42.7% are in adults aged 25 to 49; and 35% in adults aged 50 to 64. By contrast, only 2.9% of deaths are in children aged 0 to 4; 3.9% in those aged 5 to 18; and 7.8% in those aged 19 to 24. Again, the oldest group, aged 65 and older, accounts for only 7.7% of deaths.
- Persons aged 25 to 64 make up 67.7% of intensive care unit (ICU) patients with confirmed Influenza A H1N1. People below age 19 account for 18.1% of ICU admissions.
- The percentage of ICU patients who require mechanical ventilation rises from 29% in children under age 5 to over 70% for those aged 50 and older.

**Figure 1**

Percent of Visits to ESSENCE Emergency Departments (EDs) for Influenza-Like Illness (by Chief Complaint), Percent of Hospitalizations, and Percent of Deaths by Age Group, Florida, July 17, 2009 to October 20, 2009

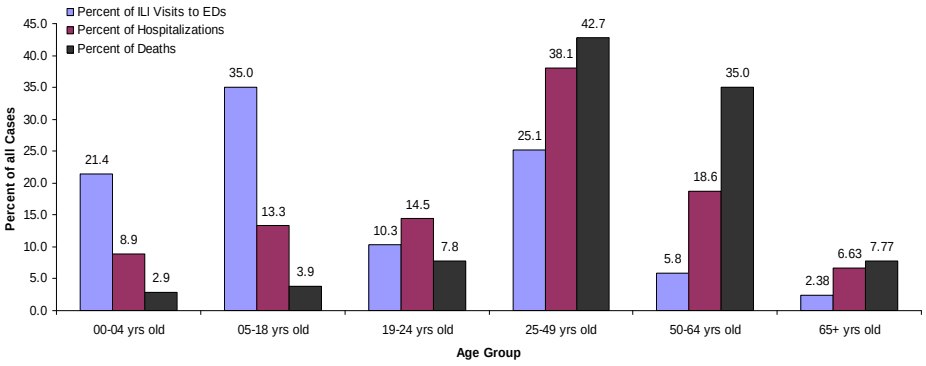
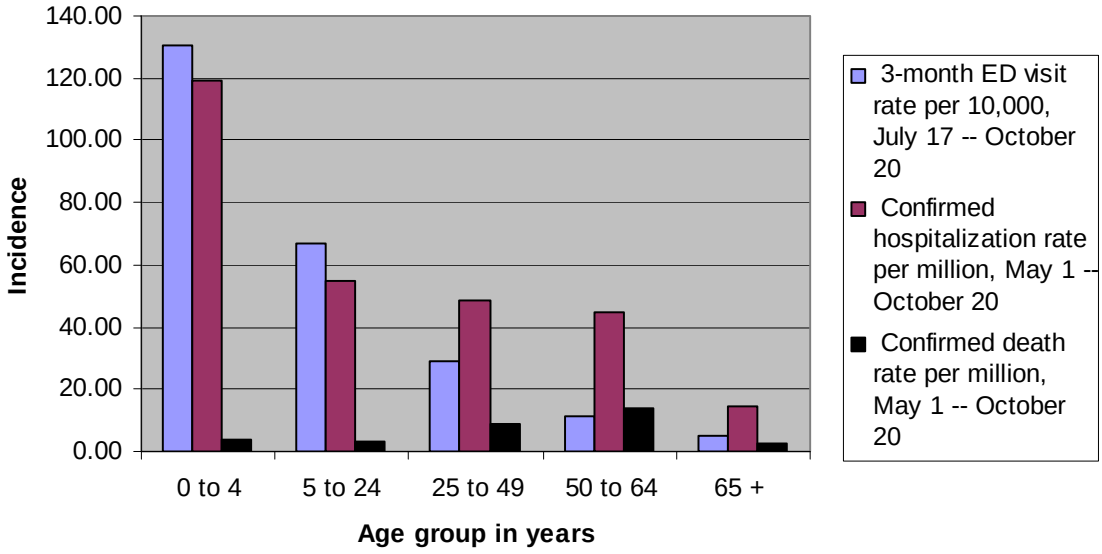


**Figure 2**

**Population rates of ILI ED visits, H1N1 influenza hospitalizations, and H1N1 influenza deaths, Florida, 2009**

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# Florida Influenza Surveillance Report

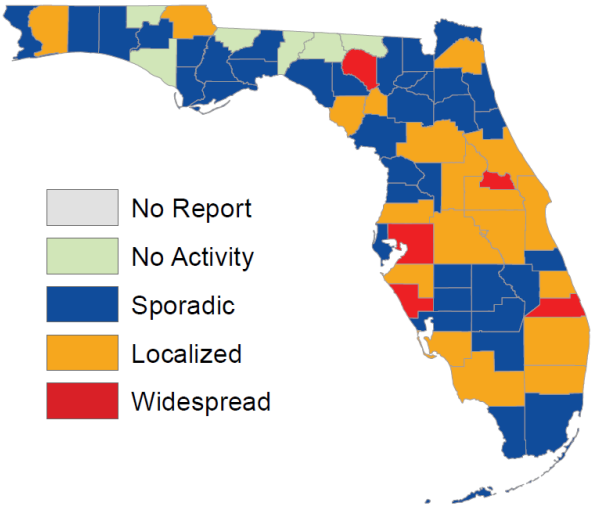
***Colin Malone, M.P.H.***

After experiencing an early start to the Fall influenza season due to the 2009 H1N1 Influenza A outbreak, Florida has experienced sustained, high levels of influenza activity. In recent weeks, some indicators have shown influenza activity beginning to decline although influenza activity statewide still remains above what is expected for this time of year. Florida may continue to see influenza activity for months more, since peak influenza transmission occurs in January through March during normal flu seasons. To monitor influenza activity, the Florida Department of Health (FDOH) maintains multiple surveillance systems. The Bureau of Epidemiology produces a weekly report to help FDOH track influenza activity. The surveillance sources summarized in these reports include:

1. Emergency department syndromic surveillance as monitored through the Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE);
2. Laboratory data from the Bureau of Laboratories;
3. County influenza activity levels as reported by county health department epidemiologists;
4. The Florida Pneumonia and Influenza Mortality Surveillance System (FPIMSS);
5. Florida Outpatient Influenza-Like Illness Surveillance Network (ILINet) providers;
6. Novel H1N1 influenza notifiable disease data for special surveillance populations (deaths, hospitalized pregnant women, and those with life threatening illness) and pediatric influenza-associated mortality as reported in the Merlin system for notifiable disease surveillance; and
7. Outbreaks or clusters of influenza-like illness (ILI) as reported through EpiCom.

During week 45 (November 8 – November 14) there was a decrease in flu activity across all of the influenza surveillance systems. This includes decreases in flu activity in the majority of Florida's regional data sources, as well as statewide estimates of influenza. Most counties in Florida are also reporting that influenza activity is decreasing, as opposed to staying the same or increasing, for the first time since FDOH began tracking counties' assessment of their overall influenza activity trend in early October. The majority of counties are reporting sporadic influenza activity, as shown in Map 1 that follows. This is the first time since August that there has been a declining trend of influenza activity detected in all of the surveillance systems.

**MAP 1: Weekly County Influenza Activity for Week 45 (ending November 14, 2009) as Reported by 1:00 pm. November 18, 2009**

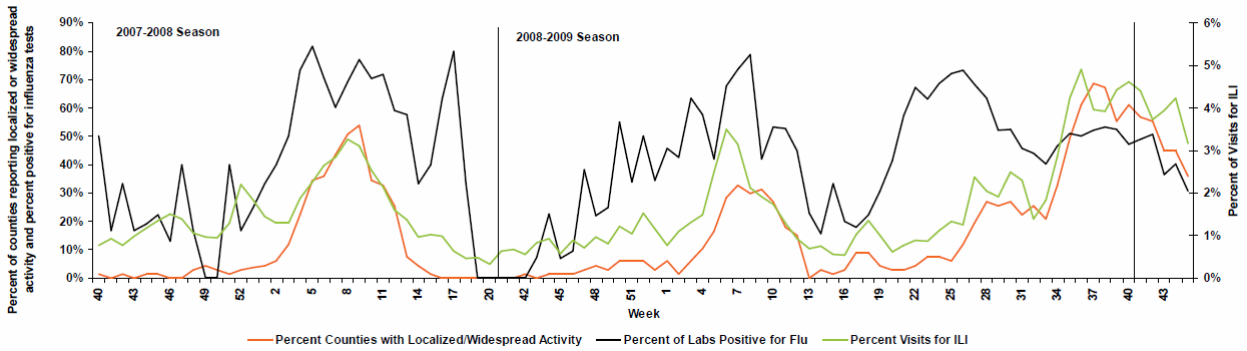



Despite decreases in activity, Florida still meets the CDC's definition for widespread activity: outbreaks of influenza or increases in ILI cases in more than half the regions of the state with recent laboratory evidence of influenza in those regions. There are five possible categories: No Activity, Sporadic, Local, Regional, or Widespread. The CDC report can be viewed at http://www.cdc.gov/flu/weekly/usmap.htm. Although influenza activity is declining compared to

previous weeks, there is still influenza activity across the state that is above what is expected for this time of year in many regions.

Although the vast majority of positive influenza specimens tested by the Bureau of Laboratories (BOL) continue to be positive for novel H1N1 Influenza A, there have been a few notable exceptions in the past weeks. In week 44 (November 1-November 7), there were 138 influenza positive specimens; 40% of the total of 344 specimens tested by the BOL. Ninety-seven percent of those positive specimens were novel H1N1, while two specimens tested positive for H3 Influenza A, and two specimens tested positive for Influenza B. Influenza B does not cause epidemics. This marked the first time H3 seasonal influenza was reported since May, and increased the number of influenza B specimens reported to four since week 39. Thirty-one percent of specimens with a lab event date* from week 45 were positive for influenza, and 100% of positive influenza specimens were novel H1N1. Novel H1N1 strains causing illness in Florida remain sensitive to Tamiflu and Relenza. The graph below shows the progression of the 2007-2008, 2009-2009, and 2009-2010 influenza seasons in three of the seven surveillance systems, including BOL viral surveillance.

FIGURE 1: Percent Visits for ILI to ILINet Sites, Percent of Counties with Localized or Widespread Activity, and Percent of Labs Tested by Florida Bureau of Laboratories Positive for Influenza, 2007-2008 (Weeks 40-20), 2008-2009 (Weeks 40-39), and 2009-2010 (Week 40-45)




For up-to-date information on influenza surveillance and H1N1 influenza in Florida, please visit the Bureau of Epidemiology influenza surveillance reports website at http://www.coh.state.fl.us/disease_ctrl/epi/htopics/flu/reports.htm.

* Earliest of the following dates associated with the lab: date collected, date received by the laboratory, date reported, or date inserted.

***Colin Malone is an influenza surveillance epidemiologist in the Bureau of Epidemiology. Mr. Malone can be contacted at 850.245.4444, ext 2403 or by email at Colin_Malone@doh.state.fl.us.***

# Florida Year-to-Date Mosquito-Borne Disease Summary Through November 16, 2009

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

During the period from January 1 through November 16, 2009, the following arboviral activity was recorded in Florida:

**Eastern Equine Encephalitis Virus (EEEV) Activity**
Positive samples were obtained from 72 equines, 1 captive bird, 188 sentinel chickens, and 103 live wild birds, and three mosquito pools in 34 counties.

**West Nile Virus (WNV), St. Louis Encephalitis Vrus (SLEV) Activity**
Three confirmed human cases of WNV were reported. Two infections were locally-acquired in Miami-Dade and Lee County; the other case was a Clay County resident who acquired the virus out of state. Positive samples from 5 equines, 71 sentinel chickens, and 2 dead birds were received from 20 counties. Samples from three live wild birds from two counties tested positive for antibodies to a flavivirus; either WNV or SLEV.

**Highlands J Virus (HJV) Activity**
Positive samples were obtained from 103 sentinel chickens in 11 counties.

**California Encephalitis Group Viruses (CEV) Activity**
None

In addition, the following imported mosquito-borne disease was reported:

**Dengue Virus (DENV)**
Twenty cases of DENV acquired in Key West have been confirmed, including one New York resident. Eight of these cases were identified through an investigation conducted by the Florida Department of Health, the Monroe County Health Department, and the Centers for Disease Control and Prevention. Illness onset dates range from July 26, 2009 to October 19, 2009.

Twenty-two imported cases were reported from ten counties: Alachua, Brevard (3), Broward (4), Dade (3), Hillsborough, Lee, Orange (5), Osceola, Palm Beach, and Sarasota (2). Places of origin included Puerto Rico (3), Dominican Republic (3), Haiti (3), Panama (2), Bolivia (2), India (2), Brazil, Honduras, Suriname, the Philippines, Guatemala, Malaysia, and Columbia.

**Malaria**
Eighty-one imported cases were reported from eighteen counties: Alachua (2), Broward (21), Clay, Dade (17), Duval (5), Escambia, Hillsborough (2), Lee, Leon (2), Marion, Orange (7), Palm Beach (8), Pasco (2), Pinellas (2), Polk (3), St. Lucie (2), Seminole (3), and Volusia. Places of origin included Haiti (36), Nigeria (10), Ghana (7), India (5), Malawi (3), Sierra Leone (2), South Africa, Honduras, Mexico (2), Uganda, Colombia, Guinea, Pakistan, Kenya, Congo, Dominican Republic (2), Thailand, Togo, Zambia, Sudan/Uganda, and West Africa; one was unknown. One case acquired malaria in Florida via blood transfusion. Seventy-seven percent of cases (63/82)

were diagnosed with *Plasmodium falciparum*; 15% (12/82) were *Plasmodium vivax*, and seven were not determined.

**Dead Bird Reports**
The 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, 348 reports representing a total of 877 dead birds (77 crows, 40 jays, 56 raptors, 704 others) were received from 54 of Florida's 67 counties. Please note that 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.

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# 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)

December 22: "Evolution of Florida's Statewide ESSENCE System" presented by Aaron Kite-Powell, M.S.

# 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, October 1-31, 2009

| | Month | | | | Cumulative (YTD) | |
|---|---|---|---|---|---|---|
| **Disease Category** | **2009** | **2008** | **Mean†** | **Median¶** | **2009** | **2008** |
| **A. Vaccine Preventable Diseases** | | | | | | |
| Diphtheria | 0 | 0 | 0 | 0 | 0 | 0 |
| Measles | 0 | 0 | 0 | 0 | 5 | 0 |
| Mumps | 2 | 4 | 2 | 3 | 18 | 24 |
| Pertussis | 39 | 25 | 18 | 18 | 476 | 244 |
| Poliomyelitis | 0 | 0 | 0 | 0 | 0 | 0 |
| Rubella | 0 | 1 | 0 | 0 | 0 | 3 |
| Smallpox | 0 | 0 | 0 | 0 | 0 | 0 |
| Tetanus | 0 | 0 | 0 | 1 | 0 | 1 |
| Varicella | 69 | 122 | 44 | 109 | 1,039 | 1,394 |
| **B. CNS Diseases & Bacteremias** | | | | | | |
| Creutzfeldt-Jakob Disease | 1 | 5 | 1 | 4 | 12 | 23 |
| *H. Influenzae* (invasive) | 6 | 9 | 8 | 5 | 192 | 116 |
| in those ≤5 | 1 | 1 | 3 | 3 | 24 | 51 |
| Listeriosis | 1 | 9 | 4 | 3 | 18 | 38 |
| Meningitis (bacterial, cryptococcal, mycotic) | 18 | 16 | 10 | 11 | 177 | 163 |
| Meningococcal Disease | 3 | 2 | 5 | 4 | 48 | 50 |
| *Staphylococcus aureus* (VISA, VRSA) | 0 | 0 | 0 | 0 | 6 | 1 |
| Streptococcal Disease, Group A, Invasive | 9 | 22 | 22 | 22 | 238 | 225 |
| *Streptococcus pneumoniae* (invasive disease) | | | | | | |
| Drug resistant | 61 | 51 | 38 | 36 | 638 | 596 |
| Drug susceptible | 48 | 41 | 33 | 32 | 581 | 539 |
| **C. Enteric Infections** | | | | | | |
| Campylobacteriosis | 73 | 124 | 85 | 79 | 930 | 948 |
| Cholera | 0 | 0 | 0 | 0 | 0 | 0 |
| Cryptosporidiosis | 76 | 67 | 84 | 67 | 420 | 456 |
| Cyclospora | 0 | 0 | 0 | 1 | 35 | 54 |
| *Escherichia coli*, Shiga-toxin producing (STEC)** | 20 | 16 | 3 | 4 | 145 | 34 |
| Giardiasis | 181 | 157 | 125 | 131 | 1,614 | 1,075 |
| Hemolytic Uremic Syndrome | 0 | 2 | 1 | 2 | 3 | 3 |
| Salmonellosis | 881 | 678 | 676 | 678 | 5,206 | 4,301 |
| Shigellosis | 37 | 55 | 144 | 171 | 389 | 701 |
| Typhoid Fever | 0 | 2 | 1 | 2 | 17 | 15 |
| **D. Viral Hepatitis** | | | | | | |
| Hepatitis A | 16 | 20 | 21 | 20 | 178 | 146 |
| Hepatitis B, Acute | 24 | 37 | 40 | 37 | 260 | 295 |
| Hepatitis C, Acute | 5 | 3 | 4 | 4 | 57 | 44 |
| Hepatitis +HBsAg in pregnant women | 47 | 43 | 44 | 43 | 491 | 504 |
| Hepatitis D, E, G | 0 | 0 | 0 | 0 | 3 | 1 |

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

Incidence data for 2009 is provisional, data for 2008 was finalized on April 1, 2009

† 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, October 1-31, 2009

| | Month | | | | Cumulative (YTD) | |
|---|---|---|---|---|---|---|
| **Disease Category** | **2009** | **2008** | **Mean†** | **Median¶** | **2009** | **2008** |
| **F. Vector Borne, Zoonoses** | | | | | | |
| Dengue | 10 | 2 | 3.8 | 2 | 31 | 27 |
| Eastern Equine Encephalitits†† | 0 | 0 | 0 | 0 | 0 | 1 |
| Ehrlichiosis/Anaplasmosis | 0 | 1 | 1 | 2.5 | 11 | 10 |
| Leptospirosis | 0 | 0 | 0 | 0 | 0 | 0 |
| Lyme Disease | 33 | 16 | 6.2 | 4 | 117 | 82 |
| Malaria | 6 | 7 | 5.2 | 5 | 82 | 49 |
| Plague | 0 | 0 | 0 | 0 | 0 | 0 |
| Psittacosis | 0 | 0 | 0 | 0 | 0 | 2 |
| Q Fever (acute and chronic) | 0 | 0 | 0.4 | 1 | 1 | 0 |
| Rabies, Animal | 7 | 22 | 15.8 | 17 | 145 | 123 |
| Rabies (possible exposure) | 158 | 147 | 110.8 | 124 | 1,503 | 1,335 |
| Rocky Mountain Spotted Fever | 0 | 2 | 1.6 | 2 | 6 | 14 |
| St. Louis Encephalitis†† | 0 | 0 | 0 | 0 | 0 | 0 |
| Toxoplasmosis | 1 | 4 | 1.2 | 1 | 4 | 12 |
| Trichinellosis | 0 | 0 | 0 | 0 | 0 | 1 |
| Tularemia | 0 | 0 | 0 | 0 | 1 | 0 |
| Typhus Fever (epidemic and endemic) | 0 | 0 | 0 | 0 | 1 | 0 |
| Venezuelan Equine Enchephalitis†† | 0 | 0 | 0 | 0 | 0 | 0 |
| West Nile Virus†† | 3 | 0 | 2 | 5 | 3 | 3 |
| 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 | 0 | 0 | 0 |
| Botulism-Infant | 0 | 0 | 0.2 | 1 | 1 | 1 |
| Brucellosis | 0 | 2 | 0.8 | 1 | 6 | 9 |
| Glanders | 0 | 0 | 0 | 0 | 0 | 0 |
| Hansen's Disease (Leprosy) | 3 | 1 | 0.8 | 1 | 6 | 8 |
| Hantavirus Infection | 0 | 0 | 0 | 0 | 0 | 0 |
| Legionella | 22 | 11 | 12.6 | 12 | 157 | 121 |
| Melioidosis | 0 | 0 | 0.2 | 1 | 0 | 0 |
| Vibriosis | 11 | 7 | 9.4 | 9 | 83 | 80 |

* Confirmed and probable cases based on date of report as reported in Merlin
Incidence data for 2009 is provisional, data for 2008 was finalized on April 1, 2009

† 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 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.***

# 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 agencies during emergency situations. The following are titles from select recent postings:

- Influenza-like Illness (ILI) clusters, Sept. 1 - Oct. 9, Palm Beach County
- Weekly summary of ILI clusters in schools, Oct. 5-9, Collier County
- Clusters of ILI in public schools, Osceola County
- Confirmed H1N1 influenza in military installation, Clay County
- ILI outbreaks in schools, Oct. 5-9, Palm Beach County
- Hepatitis C cases associated with an outpatient clinic, Hillsborough County
- ILI clusters in schools, Oct. 5-9, Nassau County
- 10 ILI outbreaks in schools, Lake County
- Clusters of ILI in public schools, Osceola County
- Bat exposure & appropriate PEP, Clay County
- ILI clusters week 41 in schools, Oct. 11-17, Seminole County
- ILI reporting in public schools 2009, St. Johns County
- *Babesia*, Volusia County
- HAN advisory on empirical treatment of suspected 2009 influenza H1N1 to improve outcomes
- Weekly summary of ILI clusters in public schools, Collier County
- Follow up surveillance H1N1, military installation, Clay County
- Influenza A H1N1 and ILI activity in schools, Lake County
- Private school to close briefly because of ILI, Marion County
- Possible ILI outbreak at a day care center, Oct. 16, Miami-Dade County
- Clusters of ILI in schools, Oct. 12-16, Nassau County
- ILI outbreak at a public middle school, Oct. 20, Miami-Dade County
- ILI weekly summary, Oct. 11-17, Alachua County
- Hansen's disease, Hillsborough County
- School-associated ILI cases, Orange County
- Clusters of ILI in public schools, Osceola County
- Pertussis, Suwannee County
- ILI outbreaks in schools, Oct. 12-16, Palm Beach County
- H1N1 outbreak in special needs facility, Duval County
- ILI outbreak in an Indian River school, Indian River County
- ILI outbreaks in school settings, Oct. 19-23, Palm Beach County
- Suspected foodborne illness outbreak, Oct. 28 update, Palm Beach County
- Rabid cat, Escambia County
- ILI outbreak at a local daycare, Pasco County
- Peramivir guidance for clinicians from CDC
- Foodborne illness outbreak, Oct. 30 update, Palm Beach County

- Notice of ILI outbreaks, Duval County
- Update on Florida acquired Dengue, Monroe County
- Fatal *Brucellosis*, Hillsborough County
- Elevated school absenteeism and ILI, Marion County
- ILI surveillance in Clay County schools, October, Clay County
- ILI surveillance in daycares and long-term care facilities, Clay County
- ILI outbreak at a private school, Oct. 29, Miami-Dade County
- ILI outbreak at a local prison, Marion County
- GI illness in a memory care facility, Alachua County
- ILI clusters in schools, Oct. 26-30, Palm Beach County
- ILI activities in schools, Lake County
- Suspected ILI in an assisted living facility, Lake County
- Norovirus outbreak in an assisted living facility, Duval County
- Fifth rabies alert, Duval County
- Small influenza A H1N1 outbreak at a prison, Osceola County
- Suspected outbreak of *E. coli* O157:H7 in school faculty - no students involved, Miami-Dade County
- Increase in daily ESSENCE query for possible reported diseases
- *Vibrio vulnificus* in a Palm Beach County resident who ate raw oysters, Indian River County
- *Vibrio vulnificus* case from raw oysters, Broward County
- Influenza A H1N1 activities in schools, Nov. 2-6, Lake County
- ILI activity not in a school setting, Lake County
- Antiviral treatment guidance for hospitalized patients, Hillsborough County
- ILI outbreak at an adult mental health care center, Nassau County
- Possible foodborne outbreak at a detention facility, Glades County
- Surveillance and investigation of *Salmonella* Rubislaw cases PFGE pattern of JLPX01.0059, Nov. 13, multi-county
- Varicella in elementary school, Alachua County
- Two cases of Meningococcal disease, Miami-Dade County
- Dengue virus surveillance, Monroe County
- ILI outbreak in a local elementary school classroom, Pasco County
- ILIs in an elementary school, Nov. 1-7, Alachua County
- Novel H1N1 outbreak at a skilled nursing facility, Orange County
- Suspected foodborne outbreak in school faculty and one lab-confirmed *E. coli* O157:H7, Miami-Dade County

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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: 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/2009/November2009EpiUpdate.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 .


FLORIDA BUREAU OF EPIDEMIOLOGY
DIVISION OF
Disease Control