

# Louisiana Morbidity Report



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## Vaccine Adverse Events: Cause or Coincidence

*Frank J. Welch, M.D.*

The Immunization Program within the Louisiana Department of Health and Hospitals' Office of Public Health administers the Vaccines for Children (VFC) Program, (<http://new.dhh.louisiana.gov/index.cfm/page/1016>). Through VFC, vaccine is available at no charge to enrolled public and private health care providers for eligible children. This network currently provides vaccine to 870 sites with more than 2,500 physicians actively participating in vaccinating children within Louisiana. These providers logged over 2.5 million pediatric vaccinations in 2013.

There are many other vaccinations that happen in the public and private sectors throughout the year. For example, it is estimated that almost a million people were vaccinated against influenza in Louisiana last year.

As with any drug, there are risks and side effects with vaccines, although serious side effects are mostly rare. Side effects are symptoms and signs that occur either locally - such as pain or redness at the injection site, or which may be systemic - such as headache or fever, that are known to follow a particular immunization or administration of drugs. We use the term "adverse event" to mean something that occurred at about the time a vaccine was given, which could have been caused by the vaccine, or could have just have occurred by coincidence.

Thus, when an adverse event occurs after vaccination, it  
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## Rodent Infestations and Disease - Louisiana and U.S.

*Gary Balsamo, D.V.M, M.P.H. & T.M.*

Rodent infestation is certainly a serious matter and may cause health problems if not addressed. Infestation may cause several problems, including contamination of food, damage to property and disease transmission. Rats can produce up to 12 to 16 milliliters of urine and up to 50 fecal droppings in a 24-hour period (Photo).

Photo: Rat Droppings in Attic Insulation



Courtesy of: David Seerveld - [www.247wildlife.com](http://www.247wildlife.com)

Gnawing of electrical cables is but one example of property damage that might result from the presence of rodents in buildings. Contamination of stored food with rodent feces or urine can transmit diseases to both humans and pets, and can increase spoilage and render foods inedible. Rodent lice, mites and fleas can also infest other animals and, occasionally, people.

Worldwide, many rodent-transmitted diseases cause varying degrees of morbidity and mortality. The Centers for Disease Control and Prevention (CDC) lists several rodent-transmitted diseases important in the United States. The following is a list of diseases that can be transmitted by rodents:

- Plague, caused by the bacteria *Yersinia pestis*, is infamous for killing millions of people in Europe during the Middle Ages (the Black Plague). Today, modern antibiotics are effective in treating plague. Without prompt treatment, however, the disease can cause serious illness or death, especially from the pneumonic form. Historically the rat flea, *Xenopsylla cheopis*, has been the

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# Influenza Pediatric Deaths Louisiana, 2013-2014

Chiemi M. Riedel, M.P.H. Candidate

Pediatric influenza-associated deaths have been a nationally notifiable condition since 2004. According to the Centers for Disease Control and Prevention (CDC), pediatric-related influenza deaths are defined as deaths resulting from a clinically compatible illness confirmed to be influenza by appropriate laboratory or rapid diagnostic test.

There were 100 total pediatric deaths in the United States reported to the CDC during the 2013-2014 influenza season. In Louisiana, there were a total of six confirmed influenza-related pediatric deaths which represents approximately six percent of all reported pediatric deaths (n=100) during this period. Two of the six cases tested positive for Influenza B and the other four tested positive for the Influenza A- H1N1 pandemic virus.

All six cases were diagnosed using reverse-transcriptase polymerase chain reaction (RT-PCR) testing or the rapid influenza diagnostic test. Three cases were diagnosed with Influenza A using the rapid test; one was diagnosed with Influenza B. Two of those diagnosed with A were also confirmed as Influenza A-H1N1 using PCR. The rapid test was negative for one case and was not done for another case, but both cases were later confirmed by PCR as Influenza A-H1N1 and Influenza B respectively.

The average age of the cases was 6.65 years, with the youngest at nine months and the oldest at 14 years. The genders were evenly distributed with three females and three males. The children varied in race with two being White/Caucasian, three Black/African-American, and one Hispanic/Latino.

All cases were spread throughout Louisiana, each occurring in a different parish with six out of nine regions\* represented. Five deaths occurred in January 2014 and one death in February 2014 (CDC weeks 1401-1410), during peak influenza season and consistent with national data. The average time from initial reported symptom onset date to date of death was 9.667 days (minimum -three days; maximum-31 days).

All cases were hospitalized for one to 30 days and placed on mechanical ventilation and ICU care, except for one child who expired in the hospital emergency room prior to admission. According to the CDC, children at high risk of developing serious flu-related complications include those with chronic health conditions such as asthma, diabetes, neurological or neurodevelopmental disorders, weakened immune systems, and children younger than five-years-old. Three cases had underlying medical conditions including asthma, cerebral palsy, seizure disorders, or developmental delays. The other three reported no underlying medical conditions. Several cases also tested positive for other bacterial co-infections including *Clostridium difficile*, Methicillin-resistant *Staphylococcus aureus*, *Escherichia coli* and a *Micrococcus* bacteria.

Only one case had received a documented influenza vaccination during the 2013-2014 season, but at least two others had received the influenza vaccination in previous years. The one

\* Map of Regions on Page 7

case who had documented influenza vaccination in 2013-2014, received the vaccination less than two weeks prior to symptom onset and received only one out of the two recommended doses of FluZone®. Influenza vaccination is recommended annually for all children ages six months to 18 years, with a second dose recommended at least 28 days after the initial dose for children younger than eight years of age and/or if it is their first flu vaccine. Vaccination status for the current and previous seasons for each case was determined through patient medical records and state immunization registries.

All cases reported fever during their illness with the average recorded temperature of 101°F. Five out of six reported coughing and shortness of breath, consistent with Pneumonia/Acute Respiratory Distress Syndrome. Only one child reported diarrhea and two reported nausea and/or vomiting during illness. Additional symptoms for some cases included muscle aches, loss of appetite, fatigue, sore throat, increased heart rate, weakness and rhinorrhea. Two cases reported ill household family members prior to symptom onset, but no ill contacts were diagnosed or treated for influenza. Four out of six patients were treated with Oseltamivir (Tamiflu®), although one case only received one dose before death. Treatment information was unavailable for one patient and another patient died before any treatment could be administered. Additional complications prior to death included seizures, bleeding from the nose and mouth, and cardio-pulmonary arrest. Cause of death on the death certificates were listed as influenza, influenza-related, or respiratory distress. One death certificate was unavailable because the death occurred outside of Louisiana, although the case was a resident of the state.

For more information, please go to [www.cdc.gov/flu/protect/vaccine/index.htm](http://www.cdc.gov/flu/protect/vaccine/index.htm) or contact Julie Hand at (504) 568-8298 or email to [julie.hand@la.gov](mailto:julie.hand@la.gov).

## SAVE THE DATE

### Field Epidemiological Workshop

Ruston- September 17, 2014

For a registration form, agenda and workshop information, please go to [www.dhh.louisiana.gov/index.cfm/page/1816](http://www.dhh.louisiana.gov/index.cfm/page/1816).

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# Environmental Public Health Tracking Network-Louisiana, 2014

*Emán Williams, M.S.P.H.; Kate Strevva, M.N.S.; Shannon Soileau, M.S.; Dianne Dugas, M.P.H., M.S.W.*

In recent years, there has been an increased awareness and interest in information about relationships between health and the environment. The Louisiana Department of Health and Hospitals (DHH) has developed an innovative tool to help better understand the environment’s impact on health.

Health care providers can benefit from access to quality environmental health data and information so they can meet the education and information demands of their patients and peers. To make it easier for medical professionals, researchers and others responding to questions concerning the environment’s impact on human health, the Centers for Disease Control and Prevention (CDC) developed the National Environmental Public Health Tracking Network (Tracking). The CDC currently funds health departments in 23 states and one city to contribute data to the National Tracking Network.

In 2009, DHH became one of the state health departments to receive funds to develop an environmental public health tracking network. DHH’s Network is available online at <https://lephtportal.dhh.la.gov> and is the state’s most comprehensive source for environmental and public health information, and data concerning Louisiana. This site can be used by providers searching for data and information on environmental hazards such as air quality, and some non-infectious health conditions including asthma, myocardial infarction and birth outcomes. Other indicators identified by the CDC and the Tracking workgroups are continually added. DHH also chose to include information specific to Louisiana such as local fish advisories and occupational health data. Data is available in multiple formats including tables, graphs, maps and reports which can downloaded directly to be viewed (.csv), or printed from the site (Figures 1 and 2).

Figure 1: Tracking data displayed as a bar graph; particulate matter (PM2.5) air quality data - CDC/EPA, 2010. Note: the current annual average NAAQS standard for PM2.5 is 15 micrograms per cubic meter (µg/m3).

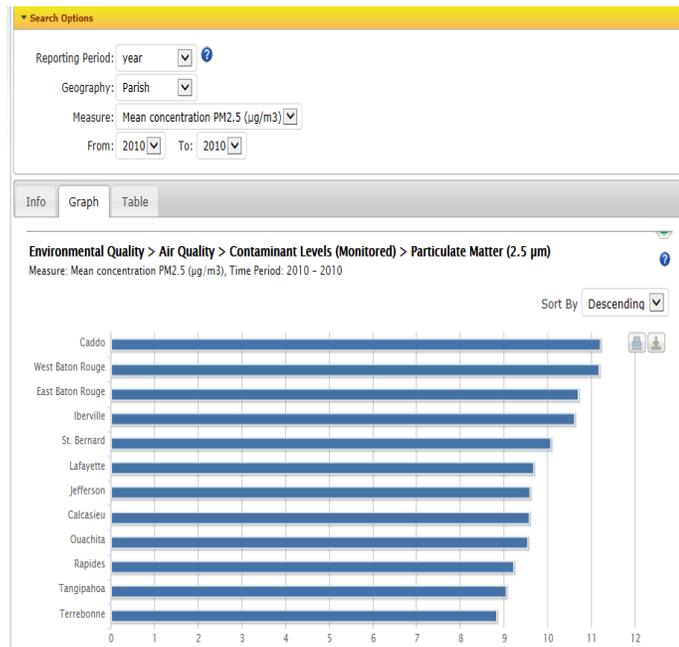


Figure 2: Tracking data displayed in a table; age-adjusted rates of asthma hospitalization by parish – Louisiana DHH, 2010

Area	2010	Area	2010	Area	2010
Acadia	16.08	Iberia	8.76	St. Charles	7.27
Allen	10.47	Iberville	13.99	St. Helena	7.85
Ascension	7.09	Jackson	14.10	St. James	17.23
Assumption	10.36	Jefferson	11.57	St. John the Baptist	12.61
Avoyelles	5.62	Jefferson Davis	22.64	St. Landry	16.17
Beauregard	19.20	La Salle	32.19	St. Martin	12.42
Bienville	20.44	Lafayette	12	St. Mary	13.09
Bossier	14.90	Lafourche	14.69	St. Tammany	9.26
Caddo	19.18	Lincoln	13.50	Union	13
Calcasieu	9.26	Livingston	11.65	Tensas	12.24
Caldwell	23.50	Madison	17.50	Terrebonne	26.64
Cameron	13.11	Morilehouse	2.86	Vernon	7.71
Catahoula	27.75	Natchitoches	10.94	Vermilion	11.12
Claborne	*	Orleans	15.29	Washington	13.32
Concordia	3.65	Ouachita	12.20	Webster	25.39
De Soto	15.38	Plaquemines	9.40	West Baton Rouge	9.05
East Baton Rouge	13.86	Pointe Coupee	8.36	West Carroll	7.69
East Carroll	*	Rapides	11.84	West Feliciana	10.11
East Feliciana	15.01	Red River	11.24	Winn	21.68
Evangeline	14.54	Richland	13.33		
Franklin	12.23	Sabine	9.73		
Grant	7.47	St. Bernard	14.74		

Data from each of the Tracking grantees is available on the CDC’s website: <http://ephtracking.cdc.gov>. From a national standpoint, this information helps the CDC and its partners to compare data and identify trends across the country. Health professionals can use tracking data in many ways, including responding to questions, generating hypotheses, identifying patterns and trends, identifying data quality issues, facilitating research and conducting environmental health investigations.

In addition to making data available to providers, researchers and the public, the CDC has also partnered with the National Environmental Health Association to create a Tracking 101 webinar. This webinar is available to medical professionals at no cost. Nurses and health educators can receive continuing education credits for completing each module in the training. Health care providers who are interested in enrolling in Tracking 101 can visit [www.neha.org/tracking.html](http://www.neha.org/tracking.html) and follow the instructions under “Environmental Public Health Tracking 101.”

DHH has developed a list serve to provide its stakeholders with updates on the state and national Tracking programs. For more information or to receive program updates, contact DHH’s Tracking Team at (888) 293-7020, via email at [epht@la.gov](mailto:epht@la.gov), or visit the site at <http://lepht.dhh.la.gov>.

## Announcements

**Updates: Infectious Disease Epidemiology (IDEpi) Webpages**  
[www.infectiousdisease.dhh.louisiana.gov](http://www.infectiousdisease.dhh.louisiana.gov)

**Annual Reports:** Several Year Comparison 2012-2014

**Epidemiology Manual:** Cryptosporidiosis Cleaning Guidelines; Ebola Hemorrhagic Fever; Malaria Form (CDC); Necrotizing Fasciitis; Shigellosis Public Information-Spanish; Vibrio Card; *Vibrio cholerae* (Cholera) Summary; Viral Meningitis Public Information-Spanish

**Infection Control Manual:** Sequence for Putting On and Removing Personal Protective Equipment (PPE)

**Influenza:** Weekly Report

**LEEDS:** Louisiana Early Event Detection System; Syndromic Surveillance in Louisiana

**West Nile Virus:** Weekly Report

*(Vaccine Adverse Effects ... continued from page 1)*

needs to be determined whether the adverse event was caused by the vaccine, or whether it was just coincidental in time with the administration of the vaccine - that is, it was going to happen anyway. For example, many vaccines are given to children at the ages when developmental and other problems are being recognized for the first time. Because something happened at about the same time that a vaccine was given, does not mean that the vaccine caused the problem.

Although vaccines have saved millions of lives around the world, some have blamed them for causing conditions that are not completely understood despite the fact that there is no scientific evidence that the vaccines caused the condition - for example, asthma, autism, diabetes type 1, multiple sclerosis and sudden infant death syndrome (SIDS), among others, have all been blamed on vaccines at some time. How can researchers determine if a vaccine causes a particular adverse event or not?

### **Establishing Causality**

It is often difficult, time consuming and expensive to answer these types of questions. However, as vaccines are recommended for all children as they are developing, it is critical that the studies be done. There are a number of factors that are considered in trying to determine whether a vaccine is the cause of an adverse event or disease:

- Time of onset: The onset of the disease must follow vaccination. If symptoms of the disease occurred before vaccination, then the vaccine is not the cause.
- Virus isolation: In the case of a live virus vaccine, a causal relationship between vaccine and disease may often be inferred if the virus is recovered from a normally sterile body site (for example, blood or cerebral spinal fluid).
- Uniqueness of the clinical syndrome: Causation may be inferred if the adverse event or disease only occurs following vaccination and does not occur in persons who did not receive the vaccine. Causation may also be inferred if the adverse event occurs a second time after repeat exposure to the same vaccine.
- Biological mechanism: Biologic mechanisms that could potentially explain how the vaccine might cause the adverse event are not sufficient to prove that the vaccine caused the problem. However, when there is other evidence of an association, such as epidemiologic studies, biologic mechanisms that could explain the association scientifically could help in establishing whether the vaccine caused the problem.
- Epidemiological studies: Epidemiological studies often provide the most important evidence as to whether a vaccine caused the problem because most adverse events are not unique clinical syndromes (that is, they also occur in people who did not receive the vaccine). Epidemiological studies determine whether the risk (rate) of the illness of concern is higher in vaccinated persons compared to unvaccinated persons. A higher risk among vaccinated persons could mean that the vaccine caused the problem.

### **Epidemiology and Causation**

Epidemiology is the study of how disease is distributed in a population and of the factors that influence or determine this

distribution. Epidemiology helps to identify the causes and risk factors of a disease in a community. Causality is often inferred from epidemiological studies by using the following criteria:

- Strength of association: The greater the difference in rates between the vaccinated and unvaccinated, the more likely there is a causal relationship.
- Consistency of association: The more studies that show similar results using different populations and differing study methods, the more likely there is a causal relationship.
- Dose response: When it can be shown that there is increasing risk for the adverse event with increasing dose, the more likely there is a causal relationship. This is usually more of a consideration for chemicals or drugs and is not often relevant for vaccines.

Epidemiological studies are useful to identify the cause of a disease in the general population. It is harder, however, for epidemiology to find the cause of rare diseases in a small percentage of the population; epidemiology cannot prove the negative - it cannot prove that a vaccine does not cause a disease.

### **An Example: Rotavirus (RotaShield®) Vaccine**

The process of evaluating whether a particular vaccine causes an adverse event can start with repeated observations or reports of an adverse event. Then researchers conduct epidemiological studies to determine the risk of the event for vaccinated people compared to unvaccinated people. Still other researchers will try to determine potential biologic mechanisms for the vaccine to cause the event.

This process can be illustrated with a rotavirus vaccine, RotaShield®, licensed by the Food and Drug Administration (FDA) in August 1998. In July 1999, after approximately one million children had been immunized with the vaccine, the Centers for Disease Control and Prevention (CDC) recommended that use of the rotavirus vaccine be temporarily suspended. The CDC was concerned that the vaccine might be causing a serious bowel disease called “intussusception,” since 15 cases of this condition had been reported in children who had received the vaccine. Subsequent epidemiological studies reported that an infant’s risk of developing intussusception indeed increased after receiving RotaShield®.

- Four different epidemiologic studies employing very diverse methodologies demonstrated an increased risk of intussusception occurring predominantly during the first week after the first dose of the vaccine. The timing of the adverse event, that it was scientifically plausible, and the strength and consistency of the evidence led scientists to conclude that there was a causal association. This example shows the types of evidence used to establish causality.
- Although there is consensus among scientists about the causal association, some have hypothesized that vaccine triggered intussusception in intussusception-prone infants - that is, these children might have developed intussusception later in infancy anyway. This example demonstrates the complexity of interpreting causality associations.

The vaccine was withdrawn from the market by the manufacturer in October 1999.

### **Coincidental Associations**

While epidemiologic studies can help establish a causal

association between a vaccine and an adverse event, they cannot prove with absolute certainty that an adverse event that follows immunization represents only a coincidence. These tools can only infer that coincidence is the most likely explanation.

Epidemiologic studies cannot absolutely prove coincidence (reject causation) because there can always be very rare occurrences that were not detected in the study population, or because the vaccine only accounted for a very small proportion of the adverse events. Thus, the strongest interpretation that can be made from epidemiologic studies is that the evidence favors rejection of causation when the risk for vaccinated children cannot be distinguished from the risk for unvaccinated children.

Thus, the Institute of Medicine (IOM) uses two categories for favoring causation:

- 1) favoring causation - the evidence is supportive, but not definitive
- 2) establishing causation - the evidence is definitive.

On the other hand, because epidemiologic evidence can never

be 100 percent certain, there is only one category for favoring coincidence, that is “the evidence favors rejection of a causal relationship.” For example, in the case of vaccines and autism, multiple large epidemiological studies done in different countries and using different methods provide a preponderance of evidence that “favors rejection of a causal relationship between the MMR vaccine and autism” as well as “favors rejection of a causal relationship between thimerosal-containing vaccines and autism.”

Another element that may help infer coincidence is the finding of alternative causes for the disease, or absence of the disease. For example, a few years ago it was noticed that as rates of hepatitis B immunization at birth were increasing, cases of SIDS were decreasing. However, the Hepatitis B vaccine was not protecting against SIDS; increasing use of the vaccine was just coincidental with a successful campaign aimed at parents to place their infants to sleep on their backs.

For references and more information, please contact Dr. Welch at (504) 838-5300 or email to [frank.welch@la.gov](mailto:frank.welch@la.gov).

## IDEPI Question/Answer Corner

*A resident had a stove/oven stored in a garage, where it became infested with mice. Before moving it into her house, she exterminated the mice and cleaned the stove thoroughly. When she turned on the oven, she still smelled mouse urine. Is it safe to cook with the stove?*

A Hantavirus is a virus in the *Bunyaviridae* family and is usually carried by rodents. Some of the viruses have the potential of causing serious infections such as hantavirus pulmonary syndrome (HPS), Human infections of hantaviruses have almost entirely been linked to human contact with rodent excrement.

It is said that Hantavirus cannot survive a temperature of 150°F for 20 minutes. Therefore, normal cooking temperatures should destroy any common infectious agent. Frequent and thorough cleaning and disinfection of the stove surface should also serve to prevent secondary or cross contamination.

If the stove still smells like rodent urine, the smell is likely emanating from the interior of the stove in spaces where rodents could have found shelter. Although unpleasant, food is likely not coming in contact with those areas.

If the stove is valuable, one recommendation is to consult a commercial entity that specializes in treating severe odors (some pest control companies do this), or possibly consulting an appliance repair person that may be familiar with the interior of the appliance. The stove owner may want to warn any person cleaning the interior of the stove that the appliance may have been contaminated with rodent feces and urine. The “cleaner” should wear an N95 or better mask, gloves and dampen the surfaces with dilute bleach prior to cleaning. Of course caution should be used if the device is electric.

For more information, please go to [http://dhh.louisiana.gov/assets/oph/Center-PHCH/Center-CH/infectious-epi/Annuals/Hantavirus\\_LaIDAnnual.pdf](http://dhh.louisiana.gov/assets/oph/Center-PHCH/Center-CH/infectious-epi/Annuals/Hantavirus_LaIDAnnual.pdf)

## MERS-CoV Testing Louisiana, 2014

*Julie Hand, M.S.P.H.*

Coronaviruses are common viruses that usually cause uncomplicated colds. There are six known coronaviruses; four are ubiquitous and the remaining two are Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV), and Middle East Respiratory Syndrome Coronavirus (MERS-CoV). SARS-CoV was first diagnosed in 2003 causing a global outbreak resulting in more than 8,000 cases and more than 700 deaths. MERS-CoV was first reported from Saudi Arabia in 2012. Much is still unknown about MERS-CoV, including the source and transmission routes. Greater than 700 cases and 200 deaths have been reported from nine countries with 11 additional countries reporting travel-associated cases. Two travel-associated cases have occurred in the U.S., one in Indiana and one in Florida. These cases were not linked, but both were health care workers who lived and worked in Saudi Arabia.

The majority of secondary cases of MERS-CoV are in health care workers. Standard, contact, and airborne precautions are recommended for suspected cases; up-to-date infection control recommendations can be found at: [www.cdc.gov/coronavirus/mers/infection-prevention-control.html](http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html). For a patient in Louisiana to be considered for MERS-CoV testing, they must meet the case definition criteria for a patient under investigation (PUI). This definition includes both travel history to a country that has previously reported MERS-CoV cases, as well as having fever and severe respiratory infection. The most current case definitions can be found at: [www.cdc.gov/coronavirus/mers/case-def.html](http://www.cdc.gov/coronavirus/mers/case-def.html). Specimens from multiple sites are recommended for testing including: lower respiratory tract, upper respiratory tract, serum, and stool. Testing can be performed at the state public health laboratory but must be approved by the Infectious Disease Epidemiology Section of the Department of Health and Hospitals. A comprehensive overview of MERS-CoV can be found on website: [dhh.louisiana.gov/assets/oph/Center-PHCH/Center-CH/infectious-epi/EpiManual/MERSSummary.pdf](http://dhh.louisiana.gov/assets/oph/Center-PHCH/Center-CH/infectious-epi/EpiManual/MERSSummary.pdf).

*(Rodent Infestations ... continued from page 1)*

vector of the disease, however many flea species serve as capable vectors. Fleas are often found on rodents such as rats and mice, and seek out other prey when their rodent hosts die. Plague, however, is not considered to exist in Louisiana; the state has never reported a case of plague. About the farthest east the disease has occurred in recent history is distant West Texas, in areas inhabited by prairie dogs.

- Hantavirus Pulmonary Syndrome is an often deadly disease transmitted by rodents through urine, feces, or saliva. There are more than 25 antigenically different viral species of hantavirus, each associated with a single rodent species. The cotton rat (*Sigmodon hispidus*), and the rice rat (*Oryzomys palustris*) have been the rodents implicated in cases in Louisiana and the southeastern United States. There have been six cases reported in Louisiana between 2005 and 2014. Humans can contract the disease after inhalation of dried, aerosolized secretions. Since 1959, less than 400 cases have been reported in the U.S. and Canada. Although a rare disease, the severity of the condition underscores reason for concern. The mortality rate for Hantavirus Pulmonary Syndrome is 38 percent. The best prevention of exposure is rodent control in and around the home.
- Murine typhus, a rickettsial infection caused by *Rickettsia typhi*, is a disease that occurs worldwide and is transmitted to humans by rat fleas. In some areas peridomestic cycles involving cats, dogs and opossums and their fleas may exist. The disease is more common in summer months, but in warmer climates the condition can occur year round. In the United States, most cases have been reported from California, Hawaii, southern Texas and the Gulf Coast. Symptoms of the disease often include headache, myalgia and rash and seldom last longer than two weeks. The disease is often mild, but untreated severe cases can be fatal. Rat infested buildings and homes, especially in port cities or in riverine environments, often serve as havens for rats harboring fleas.
- Rat-bite fever is a systemic bacterial illness that is most often transmitted to humans through a bite or scratch. One might also acquire the disease through ingestion of food or water contaminated with rat feces. The etiologic agents are *Streptobacillus moniliformis* and *Spirillum minus*. Possible symptoms include fever, chills, muscle pain, vomiting, headache, rash and adenopathy. In approximately 50 percent of patients the disease progresses to a non-suppurative polyarthrititis or arthralgia. Occasionally, solid organ abscesses, pneumonia, endocarditis, myocarditis, or meningitis occur. The case fatality rate of rat-bite fever in untreated cases is approximately seven percent to ten percent.
- Leptospirosis is a disease caused by *Leptospira* bacteria transmitted in the urine of infected rodents. Both pathogenic and non-pathogenic leptospires exist. Infection can be asymptomatic, or can cause a range of symptoms. Mild cases exhibit headache, fever, abdominal pain, diarrhea and/or rash. More severe cases may experience kidney damage, meningitis, liver failure, or respiratory distress. These infections are rarely fatal. Many wild and domestic animal species, in addition to rodents, act as reservoirs and may transmit the disease. Incidence of leptospirosis in Louisiana is less than ten cases reported per year.
- Eosinophilic meningitis sometimes results from infection of the brain with larval stages of the rat lungworm, *Angiostrongylus*

*cantonensis*. The intermediate hosts of these rat parasites are terrestrial and aquatic snails and slugs. Examples of paratenic hosts, (hosts in which no development occurs, but in which infectious stages of the parasite can be accumulated) are fish, amphibians, reptiles, crustaceans and land planarians.

Vegetables may also accumulate infectious larva. Persons may become infected by ingesting snails, raw or improperly cooked paratenic hosts, or foods (especially salad greens) contaminated by slugs or snails. Some infections are asymptomatic; some victims experience mild symptoms of fairly short duration, but occasionally a fulminant eosinophilic meningitis, with headache, nuchal rigidity, paresthesia, low-grade fever, nausea, and vomiting results. In some cases, these symptoms may persist for weeks or months.

- Several bacterial infections have been transmitted by rodents to humans through consumption of contaminated food or water. Usually these infections do not cause severe consequences, although infection can be characterized by diarrhea, abdominal cramps, vomiting and nausea. However, in persons with reduced immunity, including the elderly and the very young, some infections may be fatal. *Salmonella enterica* serovar Typhimurium is an example of one such bacterium. Listeriosis may also be transmitted by a number of rodent species.
- Rodents have also been implicated in the transmission of several other helminths and scores of bacterial, rickettsial, protozoal, and viral infections around the globe.

Control of rodents and elimination of infestations should minimize risk of infection with the aforementioned agents. Although the diseases mentioned above are rarely diagnosed, some conditions are underreported or are reported only when very serious consequences result. Residence in a home or occupation of premises in the face of severe rodent infestation is a significant health risk. Contamination of foodstuff is a very real danger. Direct contact with infectious excretions and secretions, and the potential for direct contact with the rodents are real causes for concern. Proper control measures should immediately be undertaken if signs of infestation exist.

Advice on precautions in cleaning up rodent feces and urine can be found on the CDC website: [www.cdc.gov/rodents/cleaning/](http://www.cdc.gov/rodents/cleaning/). Hiring a professional to address severe problems of rodent infestation is recommended. Should control of the problem in lieu of a professional be attempted, the following are some key points in rodent control:

- If droppings are noticed, remove them (Use precautions listed at [www.cdc.gov/rodents/cleaning/](http://www.cdc.gov/rodents/cleaning/)). Observe if the droppings reappear. This indicates an active infestation.
- Look for burrows around the home or business. If burrows are noticed, rats are usually feeding close by, possibly in the home or business.
- Rodents will seek and find warmth.
- If using traps, bait the traps for a few days, but do not set the springs. Let the animals become comfortable with the traps, then arm the devices.
- Use quarter-inch or smaller hardware cloth to seal entries.

For more information, please go to [dhh.louisiana.gov/index.cfm/page/536](http://dhh.louisiana.gov/index.cfm/page/536), [dhh.louisiana.gov/index.cfm/page/531](http://dhh.louisiana.gov/index.cfm/page/531), or email to Dr. Gary Balsamo at [gary.balsamo@la.gov](mailto:gary.balsamo@la.gov).

Table: Communicable Disease Surveillance, Incidence by Region and Time Period, May-June, 2014

DISEASE	HEALTH REGION									TIME PERIOD				
	1	2	3	4	5	6	7	8	9	May-Jun 2014	May-Jun 2013	Jan-Dec Cum 2014	Jan-Dec Cum 2013	Jan-Dec % Chg*
	<b>Vaccine-preventable</b>													
Hepatitis B Cases	2	2	0	1	0	1	0	1	4	11	9	35	27	29.6
Hepatitis B Rate <sup>1</sup>	0.2	0.4	0	0.2	0	0.3	0	0.3	1.0	0.3	0.2	0.8	0.6	NA*
Measles	0	0	0	0	0	0	0	0	0	0	0	0	0	NA*
Mumps	0	0	0	0	0	0	0	0	0	0	0	0	1	NA*
Rubella	0	0	0	0	0	0	0	0	0	0	0	0	0	NA*
Pertussis	4	0	0	1	0	3	3	2	0	13	48	38	78	-51.3
<b>Sexually-transmitted</b>														
HIV/AIDS Cases <sup>2</sup>	67	59	10	13	9	6	23	15	9	211	213	703	653	7.7
HIV/AIDS Rate <sup>1</sup>	6.7	10.2	2.6	2.4	3.2	2.0	4.5	4.3	2.1	4.8	4.9	16.1	14.9	NA*
Chlamydia Cases <sup>1,3</sup>	80	123	52	112	60	80	99	171	34	811	4,556	5,768	12,565	-54.1
Chlamydia Rate <sup>1</sup>	9.2	18.3	12.8	18.9	20.4	25.8	18.0	48.0	6.2	17.6	99.0	125.3	273.0	N/A
Gonorrhea Cases <sup>1,3</sup>	13	28	9	24	10	11	23	54	6	178	1,462	1,577	3,709	-57.5
Gonorrhea Rate <sup>1</sup>	1.5	4.2	2.2	4.1	3.4	3.5	4.2	15.2	1.1	3.9	31.8	34.3	80.6	N/A
Syphilis (P&S) Cases <sup>1,3</sup>	13	5	6	6	1	0	7	6	3	47	60	187	170	10.0
Syphilis (P&S) Rate <sup>1</sup>	1.5	0.7	1.5	1.0	0.3	0	1.3	1.7	0.5	1.0	1.3	4.1	3.7	N/A
<b>Enteric</b>														
Campylobacter Cases	4	4	2	12	7	2	10	8	2	51	54	108	122	-11.5
Hepatitis A Cases	0	0	0	0	0	0	0	0	0	0	0	4	5	NA*
Hepatitis A Rate <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	NA*
Salmonella Cases	23	31	19	46	9	28	16	18	40	230	243	401	461	-13.0
Salmonella Rate <sup>1</sup>	2.2	5.5	5.0	8.9	3.4	9.2	3.2	5.1	10.4	5.3	5.6	9.3	10.7	NA*
Shigella Cases	3	2	2	1	1	1	0	6	6	22	73	82	145	-43.4
Shigella Rate <sup>1</sup>	0.3	0.4	0.5	0.2	0.4	0.3	0	1.7	1.6	0.5	1.7	1.9	3.4	NA*
Vibrio, cholera Cases	0	0	0	0	0	0	0	0	0	0	0	0	0	NA*
Vibrio, other Cases	2	1	2	0	0	1	1	0	3	10	11	19	20	NA*
<b>Other</b>														
<i>H. influenzae (other)</i>	3	4	0	3	0	0	0	1	1	12	12	31	36	-13.9
<i>N. Meningitidis</i>	0	0	0	1	0	0	0	0	0	1	0	4	6	NA*

<sup>1</sup> = Cases Per 100,000.

<sup>2</sup> = These totals reflect people with HIV infection whose status was first detected during the specified time period. This includes people who were diagnosed with AIDS at the time HIV first was detected. Because of delays in reporting HIV/AIDS cases, the number of persons reported is a minimal estimate. Data should be considered provisional.

<sup>3</sup> = Preliminary data.

\* = Percent change not calculated for rates or count differences less than 5.

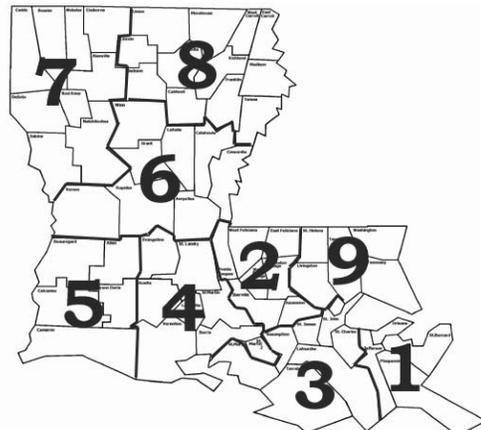
Table 2. Diseases of Low Frequency, January-December, 2014

Disease	Total to Date
Legionellosis	23
Lyme Disease	0
Malaria	5
Rabies, animal	1
Varicella	21

Table 3. Animal Rabies, May-June, 2014

Parish	No. Cases	Species
Caldwell	1	Bat

Figure: Department of Health and Hospitals Regional Map



## Sanitary Code - State of Louisiana Part II - The Control of Disease

**LAC 51:II.105: The following diseases/conditions are hereby declared reportable with reporting requirements by Class:**

### Class A Diseases/Conditions - Reporting Required Within 24 Hours

*Diseases of major public health concern because of the severity of disease and potential for epidemic spread — report by telephone immediately upon recognition that a case, a suspected case, or a positive laboratory result is known; [in addition, all cases of rare or exotic communicable diseases, unexplained death, unusual cluster of disease and all outbreaks shall be reported.*

Acute Flaccid Paralysis	Fish/Shellfish Poisoning (Domoic Acid, neurotoxic, Ciguatera, paralytic, Scombroid)	Plague ( <i>Yersinia pestis</i> )	Smallpox
Anthrax	Foodborne Infection	Poliomyelitis (paralytic & non-paralytic)	<i>Staphylococcus aureus</i> , Vancomycin Intermediate or Resistant (VISA/VRSA)
Avian or novel strain Influenza A (initial detection)	<i>Haemophilus influenzae</i> (invasive disease)	Q Fever ( <i>Coxiella burnetii</i> )	Staphylococcal Enterotoxin B (SEB)
Botulism	Influenza-associated Mortality	Rabies (animal and human)	Pulmonary Poisoning
Brucellosis	Measles (Rubeola imported or indigenous)	Ricin Poisoning	Tularemia ( <i>Francisella tularensis</i> )
Cholera	<i>Neisseria meningitidis</i> (invasive infection)	Rubella (congenital syndrome)	Viral Hemorrhagic Fever
<i>Clostridium perfringens</i> (foodborne infection)	Outbreaks of Any Infectious Disease	Rubella (German Measles)	Yellow Fever
Diphtheria	Pertussis	Severe Acute Respiratory Syndrome-associated Coronavirus (SARS-CoV)	

### Class B Diseases/Conditions - Reporting Required Within 1 Business Day

*Diseases of public health concern needing timely response because of potential of epidemic spread — report by the end of the next business day after the existence of a case, a suspected case, or a positive laboratory result is known.*

Amoeba (free living infection: <i>Acanthamoeba</i> , <i>Naegleria</i> , <i>Balamuthia</i> , others)	Chancroid	Hepatitis B (perinatal infection)	Mumps
Anaplasmosis	Dengue Fever	Hepatitis E	Salmonellosis
Arthropod-Borne Neuroinvasive Disease (West Nile, St. Louis, California, Eastern Equine, Western Equine, others)	<i>Escherichia coli</i> , Shig-toxin producing (STEC), including <i>E. coli</i> 0157:H7	Herpes (neonatal)	Shigellosis
Aseptic Meningitis	Granuloma Inguinale	Human Immunodeficiency Virus <sup>2</sup> [(HIV), infection in pregnancy]	Syphilis <sup>1</sup>
Babesiosis	Hantavirus (infection or Pulmonary Syndrome)	Human Immunodeficiency Virus <sup>2</sup> [(HIV), perinatal exposure]	Tetanus
Chagas Disease	Hemolytic-Uremic Syndrome	Legionellosis (acute disease)	Tuberculosis <sup>3</sup> ( <i>M. tuberculosis</i> , <i>M. bovis</i> , <i>M. africanum</i> )
	Hepatitis A (acute disease)	Malaria	Typhoid Fever
	Hepatitis B (acute illness and carriage in pregnancy)		

### Class C Diseases/Conditions — Reporting Required Within 5 Business Days

*Diseases of significant public health concern-report by the end of the workweek after the existence of a case, suspected case, or a positive laboratory result is known.*

Acquired Immune Deficiency Syndrome <sup>3</sup> (AIDS)	Enterococcus, Vancomycin Resistant [(VRE), invasive disease]	Human T Lymphocyte Virus (HTLV I and II infection)	Staphylococcal Toxic Shock Syndrome
Anaplasma Phagocytophilum	Giardia	Leptospirosis	Streptococcal Disease, Group A (invasive disease)
Blastomycosis	Glanders	Listeria	Streptococcal Disease, Group B (invasive disease)
Campylobacteriosis	Gonorrhea <sup>1</sup> (genital, oral, ophthalmic, pelvic inflammatory disease, rectal)	Lyme Disease	Streptococcal Toxic Shock Syndrome
Chlamydial infection <sup>1</sup>	Hansen's Disease (leprosy)	Lymphogranuloma Venereum <sup>1</sup>	<i>Streptococcus pneumoniae</i> , invasive disease
Coccidioidomycosis	Hepatitis B (carriage, other than in pregnancy)	Melioidosis ( <i>Burkholderia pseudomallei</i> )	Transmissible Spongiform Encephalopathies (Creutzfeldt-Jacob Disease & variants)
Cryptococcosis	Hepatitis C (acute illness)	Meningitis, Eosinophilic	Trichinosis
Cryptosporidiosis	Hepatitis C (past or present infection)	Nipah Virus Infection	Varicella (chickenpox)
Cyclosporiasis	Human Immunodeficiency Virus <sup>2</sup> (HIV (infection other than as in Class B)	Psittacosis	Vibrio Infections (other than cholera)
Ehrlichiosis (human granulocytic and monocytic, <i>Ehrlichia chaffeensis</i> )		Spotted Fevers [Rickettsia species including Rocky Mountain Spotted Fever (RMSF)]	Yersiniosis
		<i>Staphylococcus aureus</i> , (MRSA) invasive infection	

### Class D Diseases/Conditions — Reporting Required Within 5 Business Days

Cancer	Hemophilia <sup>4</sup>	Severe Undernutrition (severe anemia, failure to thrive)
Carbon Monoxide Exposure and/or Poisoning <sup>5</sup>	Lead Exposure and/or Poisoning (children) <sup>4</sup> (adults) <sup>5</sup>	Sickle Cell Disease <sup>4</sup> (newborns)
Complications of Abortion	Pesticide-Related Illness or Injury (all ages) <sup>5</sup>	Spinal Cord Injury
Congenital Hypothyroidism <sup>4</sup>	Phenylketonuria <sup>4</sup>	Sudden Infant Death Syndrome (SIDS)
Galactosemia <sup>4</sup>	Reye's Syndrome	
Heavy Metal (Arsenic, Cadmium, Mercury) Exposure and/or Poisoning (all ages) <sup>5</sup>	Severe Traumatic Head Injury	

Case reports not requiring special reporting instructions (see below) can be reported by mail or facsimile on Confidential Disease Report forms (2430), facsimile (504) 568-8290, telephone (504) 568-8313, or 1-800-256-2748 for forms and instructions.

<sup>1</sup>Report on STD-43 form. Report cases of syphilis with active lesions by telephone, within one business day, to (504) 568-8374.

<sup>2</sup>Report to the Louisiana HIV/AIDS Program: Visit [www.hiv.dhh.louisiana.gov](http://www.hiv.dhh.louisiana.gov) or call 504-568-7474 for regional contact information.

<sup>3</sup>Report on CDC72.5 (f.5.2431) card

<sup>4</sup>Report to the Louisiana Genetic Diseases Program and Louisiana Childhood Lead Poisoning Prevention Programs: [www.genetics.dhh.louisiana.gov](http://www.genetics.dhh.louisiana.gov) or call (504) 568-8254.

<sup>5</sup>Report to the Section of Environmental Epidemiology and Toxicology: [www.seet.dhh.louisiana.gov](http://www.seet.dhh.louisiana.gov) or call 1-888-293-7020