What’s “Tick”-ing?
Gary A. Balsamo, DVM MPH; Mary J. Murphy, MD

In July 2006, a forty year-old male HIV patient presented to a clinic complaining of fever and rash. Two weeks prior, the patient had noticed an erythematous macular rash on the trunk and extremities, including the palms of the hands and soles of the feet. He developed edema and erythema of both feet and nummness in the extremities three days prior to presentation and began to experience a sore throat twenty-four hours prior to the visit.

On physical examination, the patient was diaphoretic and appeared acutely ill. He was febrile (temperature: 101.3°F), tachycardic (heart rate: 123 BPM), and exhibited mild oropharyngeal infection. The sclerae were clear, exhibiting no signs of icterus. Pitting edema, warmth and tenderness were noted in the left foot. The right foot was slightly erythematous but edema and tenderness were absent. He also experienced decreased sensation in the distal left extremity.

Laboratory findings indicated evidence of a new onset anemia (present hemoglobin: 11.4 g/dl, hematocrit: 36; previous hemoglobin: 14.1 g/dl, hematocrit: 40.8). The AST was mildly elevated (55 IU/l), and albumin was 2.9 g/dl.

The patient related that he had spent the month of June 2006 working and living with family members on Long Island, New York. Shortly after his arrival in Long Island he noticed a lesion on his left eyelid resembling a sty, which resolved spontaneously a few days later. After resolution of the eyelid lesion, the patient began to experience night sweats and subjective fevers. The symptoms were accompanied by increased fatigue and eventually, paresthesia and numbness in the lower extremities.

During the patient’s stay on Long Island he reported taking daily for seven days and 750 mg atovaquone twice per day for seven days, an initial dose of 500 mg azithromycin followed by 250 mg daily for seven days and 750 mg atovaquone twice per day for seven days.

A week after initiating the above therapy, serologic results indicated a positive titer for *Babesia microti* (IgM > 320). Lyme and *Ehrlichia* titers were negative. The patient was informed by phone and reported that fever and night sweats had resolved, the rash had almost disappeared, but that some fatigue persisted. Later laboratory results indicated persistent anemia without further worsening.

At a follow-up clinic visit some three weeks later, the patient appeared well. All physical symptoms had resolved.

NOTE:
Arthropod-transmitted diseases cause enormous morbidity, mortality and economic losses worldwide. Babesiosis, a tick borne zoonosis, is one such arthropod-borne disease, caused by a protozoan. The primary etiologic agents of human babesiosis in North America and Europe are *Babesia microti* and *Babesia divergens*, respectively. These causative agents are intraerythrocytic protozoa of the phylum Apicomplexa. The organisms share some similarities with the causative agents of malaria, *Plasmodium* species and can be mistaken for such.

Animal babesiosis exists in most temperate and tropical areas of the world and causes significant economic losses in cattle. By 1943, the disease was eradicated from cattle in the U.S. although re-introduction is a constant threat. *B. microti* is primarily transmitted through nymphal ticks that feed on rodents, such as the white-footed mouse, *Peromyscus leucopus*. Since transstadial transmission does not occur between nymph and adult tick, larger adult ticks that feed on deer and cattle are usually not vectors of the disease. Thus *B. microti* is not an important infection of cattle in the U.S.

The first case of human babesiosis was described in 1956. Since that time, hundreds of cases have been reported, mostly in the U.S. and Europe. The primary vector of *babesiosis* in the United States (Continued on page 2)
is the deer tick, *Ixodes scapularis*, also a vector of Lyme disease and human granulocytic ehrlichiosis. In endemic areas, simultaneous infections with two or three of these diseases is not uncommon. Increased deer populations in rural and suburban areas enhance the risk of transmission of both arthropod-borne diseases. The organism can also be transmitted through blood transfusions and can co-occur along with other tick-borne diseases such as Lyme disease.

In North America, *B. microti* infections are most often asymptomatic or self-limiting. In young adults asymptomatic infections may persist for years. The self-limiting illness usually appears one to four weeks after the tick bite or four to nine weeks after transfusion. After approximately one week of general malaise, loss of appetite and fatigue, the patient may experience fever, muscle ache and diaphoresis. Laboratory manifestations of hemolysis are usually present. Occasionally elevated hepatic enzymes and thrombocytopenia are also observed.

AIDS patients, frequent relapses and prolonged duration are often characteristic. Lymphopenia is occasionally seen in cases of babesiosis.

Definitive diagnosis is usually determined by demonstrating characteristic trophozoites in thick or thin blood smears. Several thick or thin smears are often examined before discovery of the organism. *Babesia* species only circulate ring trophozoites, which makes differentiation with *Plasmodium falciparum* occasionally problematic. Travel history and knowledge of morphologic differences between the organisms can be used to correctly identify the etiology. Often a characteristic tetrad of trophozoites appears in blood smears infected with *Babesia*.

Serologic testing, as utilized in the case discussed above, is also useful. However, specific antibodies are not detected for a minimum of one week following illness onset. This delay in identifiable antibody production can be a problem, especially in cases involving *B. divergens* which often progresses to fulminant disease rapidly.

In the United States, *B. microti* is the most common parasite transmitted in blood transfusions, with more than forty cases of transfusion-related babesiosis being reported since 1980. The process used to remove *T. cruzi*, the causative agent of Chagas disease, is not effective in removing the agent of babesiosis. The increase in geographic range of the vector, the appearance of new causative species and increased prevalence of the organism in the United States are disturbing. In some communities in endemic areas, serologic evidence of infection was demonstrated in ten percent of inhabitants. Additionally ample evidence exists that chronic carriers can remain parasitic for long periods of time. Development of methods to control transfusion associated transmission, not initiated as of yet, seems appropriate, although the odds of acquiring the infection through transfusion are currently estimated to be less than one in one million.

In the recent past, human babesiosis cases were limited geographically to suburban and rural areas of New York, Massachusetts, Rhode Island and Connecticut, with hyperendemic areas in coastal regions, especially Cape Cod, Nantucket and Martha’s Vineyard in Massachusetts, Fire Island in New York and Block Island in Rhode Island. However the northeastern endemic area has expanded to include New Jersey, where slightly less than half of the state’s counties have reported cases, as well as several additional eastern and Midwestern states. Cases have also been identified in California, Washington, Kentucky and Missouri. As stated above, new causative species have been identified. The causative organism of human babesiosis in California and Washington is not identical to, but is related to *Babesia gibsoni*. The etiologic agent in the Missouri and Kentucky cases is closely related to *B. divergens*, the causative agent in Europe.

Primary prevention of babesiosis as well as all tick-borne infections involves prevention of tick attachment or early removal of ticks soon after attachment. Ticks attached less than twenty-four to thirty-six hours are less likely to transmit disease. Frequent tick inspections are also recommended to facilitate early tick removal. Use of permethrin-treated fabric and repellents are also recommended for persons working in areas where ticks may be abundant.

When history of travel to endemic areas, recent blood transfusion, or tick exposure is noted, babesiosis should be included in the differential diagnosis for febrile illness with evidence of hemolysis. In usual circumstances, timely initiation of appropriate antibiotic therapy results in complete recovery, although exchange transfusion has been used in severely ill patients with high parasitemia.

In the case mentioned above, suspicion exists that the “sty”-like lesion noticed on the patient’s eyelid may have been, in fact, a nymph stage of an Ixodid tick or a lesion secondary to previous tick attachment, which offers an explanation for exposure to the agent.

For references or more information please contact Dr. Murphy at the Louisiana State University Health Science Center, Section of Infectious Diseases or Dr. Balsamo (504) 219-4593, gbalsamo@dbh.la.gov.

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**Diabetes in Region 3 Health Units - Louisiana, 2006**

*Penny Cuneo, RN BSN*

**Introduction:**

The purpose of this survey was to determine the prevalence of diabetes among the Region 3 health unit population (Southeastern

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About one-fourth of both groups stated they took the flu shot every year. The percentage of persons with diabetes taking the flu shot was slightly higher at twenty-nine percent. A higher percentage of people with diabetes (81.5%), reported that they and their family received recommended vaccines routinely than did all respondents (67%).

Survey participants (both general and diabetic) did respond more favorably to receiving recommended vaccines routinely.

The Louisiana Tobacco Program states that more than 750,000 adults (24.6%) in Louisiana currently smoke cigarettes. About nineteen percent of the general survey participants claimed to smoke and a slightly higher percentage of diabetic survey participants smoked.

Discussion:

As literature shows that many people who have diabetes haven’t been diagnosed yet, this percentage of 5.3% could be higher.

According to this survey data, Region 3 has a lower percentage of persons with diabetes versus the percentage of persons with diabetes shown by the BRFSS data. There are several possible reasons for this discrepancy:

1- People with more serious diabetes disease or complications may go to their private physician for all care versus going to the health unit.
2- The age group distribution of the survey may be different from that of the BRFSS.

More education is needed on diabetes regarding sign and symptoms, risk factors, long-term effects of uncontrolled diabetes, recommended annual tests for diabetics and standards of care for diabetics as well as more education on the importance of flu vaccine and recommended vaccines in general, especially if a person has diabetes.

In addition, information could be provided to the health unit population as to where local, diabetic classes are held.

For more information, contact Penny Cuneo at (985)447-0916 or pcuneo@dhh.la.gov.
DEATH AT WORK:
Fatal Occupational Injuries
Louisiana, 1995-2004
Mariella Gastanaduy, MPH; Michelle Lackovic, MPH

This study examines ten years (1995-2004) of work-related fatality data for Louisiana. A fatal work-related injury is an injury occurring at work that results in death.

Data were obtained from the Census of Fatal Occupational Injuries (CFOI), a Federal/State cooperative program administered by the Bureau of Labor Statistics (BLS), which is charged with annually collecting detailed information on all work-related fatalities occurring in the U.S. The CFOI uses diverse State and Federal data sources to identify, verify and profile fatal work-related injuries. Information about each workplace fatality (e.g., circumstance of the event, industry, occupation, type machinery or equipment involved and other worker characteristics) is obtained by cross-referencing source documents, such as death certificates, workers’ compensation records, medical examiner reports and police reports as well as news and other non-governmental reports.

CFOI includes fatalities resulting from non-intentional injuries such as falls, electrocutions and acute poisonings as well as fatal injuries from motor vehicle crashes that occurred during travel for work. Also included are intentional injuries (i.e., homicides and suicides) occurring at work. Fatalities that occur during a person’s commute to or from work are not counted nor are illnesses or any condition produced in the work environment over a period longer than one workday or shift.

Results

During the ten-year period, there were 1289 fatal work-related injuries in Louisiana. (Table 1)

Fatality counts ranged from ninety-five to 159 per year with an average of 129 fatal work injuries per year. This corresponds to approximately one on-the-job fatal injury every 2.8 days.

Table 1: Number of fatal work-related injuries - Louisiana, 1995-2004

<table>
<thead>
<tr>
<th>Year</th>
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<tr>
<td>2003</td>
<td>95</td>
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<tr>
<td>2004</td>
<td>121</td>
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</table>

The vast majority of work-related fatalities occurred among men (1201 cases, or 93.1% of all cases). (Table 2)

Workers between 25 and 54 years of age accounted for 70.5% of all fatalities. During the ten-year period, CFOI used two different systems to classify industry. From 1995 to 2002, CFOI used the 1987 Standard Industrial Classification Manual. Since 2003, it has been using the 2002 North American Industry Classification System. To simplify and present an overview of industry data, industry codes for 2003 and 2004 were grouped according to the earlier years. Industry data were not available for eighteen cases. (Figure 1)

Crude annual death rates for Louisiana and the U.S. were calculated by dividing the annual number of fatal work-related injuries by the number of employed persons aged sixteen years or older for the same calendar year. Denominator data were obtained from BLS’s Current Population Survey (CPS): a monthly survey of about 60,000 households representing the civilian non-institutionalized population of the U.S. The CPS collects labor force information from which estimates on the number of persons employed and unemployed at the state and national levels are calculated. (Figure 2)

As shown in Figure 2, between 1995 and 2004 the U.S. work-related injury fatality rate declined eighteen percent. The figure also shows that in Louisiana, the rate declined seventeen percent from 7.6 deaths per 100,000 workers in 1995 to 6.3 per 100,000 workers in 2004. Despite this decrease, Louisiana’s rate of work-related fatalities has been consistently higher than the U.S. rate: the average rate for Louisiana is 6.8 compared with 4.5 for the U.S. rate.

The CFOI classifies each fatal event or exposure into one of six major categories. (Figure 3)
A significant proportion of transportation accidents are highway incidents, followed by incidents where a worker is struck by a vehicle or mobile equipment and aircraft accidents.

The contact with an object or equipment category includes incidents where a worker is struck by an object (including a falling object) or caught in equipment or machinery. Exposure to harmful substances or environments, the third most common cause of worker fatality, primarily involves accidents resulting from contact with electric currents or oxygen deficiency. Assault or violent acts may be defined as a homicide or suicide. The majority of assaults were homicides involving a shooting. Falls are primarily a fall to a lower level such as fall from a roof, ladder, or scaffold.

There were no data reported for bodily reaction and exertion for any of the years studied; fatal event data were not available for five cases.

CFOI’s work-related fatality data indicate Louisiana’s workforce has a greater risk of a work-related injury than the U.S. workforce. There are multiple risk factors associated with work-related fatalities such as workplace processes and design, work organization, worker characteristics, economics and other social factors. The data clearly suggest that preventing transportation accidents (particularly highway accidents) would greatly impact work-related fatalities and further investigation of the factors associated with highway fatalities is warranted. An objective of Office of Public Health’s (OPH) Occupational Health Surveillance Program (funded by a 3-year CDC grant) is to conduct surveillance of basic occupational health indicators using existing data systems, such as CFOI. In turn, the surveillance findings can be used by OPH in conjunction with employers, labor unions, health and safety professionals and community-based organizations to develop and disseminate feasible and effective interventions that can prevent workplace fatalities.

For more information about OPH’s Occupational Health Surveillance Program contact Michelle Lackovic at (504)219-4518 or email mlackovi@dhh.la.gov.

Federal Medical Stations

Louisiana, 2006

Stacy Hall, RN MSN

A large natural disaster (such as the Gulf hurricanes of 2005) or widespread terrorism event can overwhelm the medical care delivery system in an affected area. This could occur through a surge beyond the local hospital capacity, a degradation of area hospitals or both. Federal Medical Stations (FMS), (the prototype of which was in process in Louisiana prior to August 2005) are a resource to provide surge capability throughout the nation.

The FMS was designed by the United States Department of Health and Human Services (DHHS) and is a recent mission assignment (May, 2006) for the Division of Strategic National Stockpile (DSNS). They require pre-planning and coordination between federal, state and local emergency planners and responders. FMS can be pre-positioned and configured to respond rapidly and effectively to all types of public health emergencies, from significant incidents to large-scale catastrophic disasters. There are four types of FMS:

- Type I Advanced has the capability to care for severely ill or injured persons, the equivalent to a conventional operation room, ICU and basic laboratory.
- Type II Specialized is configured for specific clinical scenarios, such as respiratory isolation or burn and blast care. Prototypes remain in development.
- Type III Basic provides low to mid-level acuity of care and is a platform for DMAT teams, special shelters, quarantine function, alternate care facility to augment community hospital capability.
- Type IV FMS is a medical needs shelter.

A Type III Basic FMS has four modules. The basic support module includes fifty beds with a quarantine capability. The treatment module includes medical supplies and equipment for non-acute care and a pharmacy module. There are up to four expansion modules with fifty beds each.

The FMS can be transported by air or ground by the DSNS and can be quickly established in existing structures. It is recommended that FMS locate close to existing hospitals to provide definitive and supportive care. A FMS is dependent upon a facility that meets specific requirements. Preplanning and contingency agreements with facilities and firms could greatly ease FMS set up. A FMS is modeled to accommodate all age populations and includes a three day supply of resources. A FMS consists of these supplies and equipment only; clinical staff/personnel are provided separately by federal or state and local health care workers or volunteers.

The DSNS will send a FMS Team with any FMS deployment. They are prepared to guide a group of local volunteers in offload and setup of the FMS material. Pre-selection of sites with at least 40,000 square feet is encouraged. The FMS requires major support. This includes: power (preferably with backup), water/food and laundry services, medical-waste disposal, service for oxygen and portable toilets, restocking of commodities and equipment, transportation and emergency medical services resources, mortuary support, billeting for staff and security.

An area can adapt a FMS to help meet a wide range of mass medical care needs that might emerge in a disaster. In the aftermath of Hurricane Katrina in September of 2005, DHHS and DSNS took the program from prototype to reality almost overnight. Louisiana officials used what was then called a Federal Medical Contingency Station in Baton Rouge. The units the SNS deployed there were platforms for the provision of a more advanced level of care. Various public and private entities from nearby and also from out of state, co-located their mobile service modules with the FMS. These modules included a clinical laboratory, a radiological diagnostic facility, an intensive care unit and a surgical suite.

FMS have begun to address the nation’s potential shortfall in all-hazard mass casualty care events. FMS deployed 3,500 beds in five locations in Mississippi, Florida and Louisiana for Hurricane Katrina. In Texas 2,000 beds were deployed for Hurricane Rita. For Hurricane Wilma 1,000 beds were staged at a DSNS warehouse. Future plans include analysis/reassessment of deployment during the hurricanes.

For more information, please contact Ms. Hall at (504) 568-2077 or email shall@dhh.la.gov.
Subject Index for the Louisiana Morbidity Report, 2005 – 2006

Antibiotic Sensitivity/Resistance:
Community-Associated Methicillin Resistant Staphylococcus Aureus: Nasal Carriage Prevalence in New Orleans, 2005, 05/05
Is Mortality From Staphylococci on the Rise?, 05/03
Trends in Antibiotic Sensitivity, 06/04

Chronic Diseases/Other Conditions:
A Comparison of Asthmatics in LA vs U.S. Using the BRFSS Survey, 2002, 05/04
Cardiovascular Disease Risk Factors Among Louisianians, 05/03
Diabetes in Region 3 Health Units - Louisiana, 2006, 06/06
Important Notice: Hypothyroidism Testing in LA. After Katrina, 06/01
Stroke in Louisiana, 2005, 05/05
Work Sites, Health Policies and Risk Factors for Chronic Disease, 05/02

Foodborne & Zoonotic Diseases/Outbreaks:
Office of Public Health Rabies Testing Policies Clarified, 06/04
Raccoons and Human Disease, 05/05
What’s “Tick”-ing?, 06/06 (Babesiosis)

General Surveillance/Screening:
A Closer Look At Drowning, Louisiana, 05/04
A Web-Based Integrated Veterinary Surveillance System for LA, 05/02
Analysis of Fetal and Infant Mortality Rates – Using Perinatal Periods of Risk Approach, Louisiana, 2000-2002, 06/01
Anthrax Detection Systems in Postal Facilities, 05/04
Bioterrorism Incident Tracking System End of Year Review, 2005, 06/05
Breastfeeding Profiles in Louisiana’s Mothers, 2000-2001, 05/06
Environmental Assessment Summary December 1, 2005, 05/06
Evaluation of the Louisiana Pregnancy Risk Assessment Monitoring System and the Effects of Hurricane Katrina, 06/05
Hurricane Response in Louisiana: The Animal Perspective, 05/06
IDRIS-A New Infectious Disease Reporting System, 06/05
Infant Mortality Rates Suffer Rapid Increase, New Orleans, Louisiana 2000-2002, 05/02
Katrina Related Regional Responses- Regions 3, 5, 8 & 9, LA, 05/06
Louisiana Office of Public Health’s Occupational Health Surveillance Program, 06/02
Neonatal Mortality to Teen Mothers, Louisiana, 1997, 06/02
Prevalence of Legionella Antibodies, Louisiana, 2005, 05/04
Promoting A Safe Sleep Environment: Will It Make a Difference?, 05/05
Region IX Childhood Obesity Study, 05/03
Review of National Response Center Reports for Louisiana, 1990-2003: Trend and Risk Factor Analysis, 05/01
School-Based Health Center Post Katrina and Rita Needs Assessment Survey: Louisiana, 2006, 06/03
Unexplained Deaths Surveillance, Louisiana, 2002-2004, 06/01

Hepatitis:
Hepatitis C Infection in Louisiana, 05/03

Immunization/Vaccine Preventable Diseases:
Has Mortality From Influenza and Pneumonia Been Rising in Louisiana?, 05/04
Immunization Bulletins, 06/02
Influenza in Louisiana-An Analysis of Sentinel Surveillance Data, 1998-2004, 05/05
Pandemic Influenza in Louisiana: What to Expect, 06/01
Pertussis: Hidden in Louisiana?, 05/02

Miscellaneous:
A Case of Delusional Parasitosis - Not, 05/01 (Psocoptera; Booklice)
A Strategic National Stockpile Update, 06/04

Additions to Disease Reporting Requirements: Pesticides-Related Illness & Injury and Heavy Metals (Arsenic Cadmium, Lead and Mercury); Pesticide Exposure and Toxicity; Heavy Metal Exposure and Toxicity, 06/03
Alternative Disease Names From Previous Centuries, 05/01
Announcement: Recent Updates to the Infectious Disease Epidemiology Webpage, 06/04, 06/05, 06/06
Changes for the Louisiana Public Health Laboratory System, 06/05
Erratum, 05/01, 05/04
Federal Medical Stations - Louisiana, 2006, 06/06
Hurricanes Katrina and Rita Related Education, 06/01
Infectious Disease Epidemiology Field Epidemiology Techniques Training, Louisiana, August-November 2005, 06/02
Louisiana’s Infectious Disease Rapid Response Team Meeting - August 8-10, 2006, New Orleans, 06/05
Louisiana Fact, 05/04 (Pharmacy)
OPH Training Offerings, 05/01, 05/02, 05/03, 05/04, 05/05, 06/02, 06/03
Outlawing of Private Ownership of Non-Human Primates in LA, 06/02
Regional Epidemiologist Meeting, 05/01
School Pesticide Safety, 06/04

Neisseria Meningitidis/Other Meningitis:
Neisseria Meningitidis: An Organizational Meningitis Outbreak, 06/02
Eosinophilic Meningitis and Antiastroglyculus Cantonensis, 06/03
Non-Foodborne Outbreaks:
Carbon Monoxide Poisoning in the Aftermath of Hurricanes Katrina and Rita—Louisiana, August-November, 2005, 05/06
Don’t Mix With Bleach, 06/02
Post Katrina Case Study, 05/06 (Carbon Monoxide)
Workers Health Alert—Brucellosis Obliterans Among Food Manufacturing Workers, 06/05

Other Diseases:
An Unusual Bug, 05/01 (Clostridium sordellii)
Is Mortality in Louisiana from Invasive Streptococcal Infections Increasing?, 05/01

Sexually Transmitted Diseases:
Nationwide Syphilis Elimination Program: Focus on Louisiana, 1988-2005, 06/03
Office of Public Health Sexually Transmitted Diseases and Emergency Preparedness Program Collaborate, Baton Rouge, LA, 05/04
Relationship Between Prenatal HIV Prevention Counseling and Medicaid Status in Louisiana 1997-1999, 05/01
Sexually Transmitted Disease During Pregnancy, LA, 1997-2004, 06/04

Tuberculosis:
Hurricane Katrina’s Impact on Tuberculosis Control in the Gulf States, 06/02

Vibrio:
Online CME-Approved Course for Physicians, 05/03 (V. vulnificus)
Vibrio Illnesses After Hurricanes Katrina and Rita—Louisiana, August 29-October 15, 2005, 05/06
Vibrio, Summer and Seafood, 06/05

West Nile Virus:
Are Hunters at Increased Risk of Contracting West Nile Virus?, 05/02
Louisiana Arbovirus Surveillance History, 05/02
One-Year Sequelae in Patients with West Nile Virus Encephalitis and Meningitis in Louisiana, 05/03
West Nile Virus Summary, 2002-2005, 06/04

Note: Year and Issue Number are listed after the comma on each line - 05/06 = Issue Number 6 (Nov-Dec) for the Year 2005
# LOUISIANA COMMUNICABLE DISEASE SURVEILLANCE

## September-October, 2006

### Table 1. Disease Incidence by Region and Time Period

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<th>9</th>
<th>2006</th>
<th>2005</th>
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<td>16</td>
<td>20.2</td>
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<td>29.9</td>
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<td>4</td>
<td>3</td>
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<td>9</td>
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<td>86</td>
<td>18</td>
<td>174</td>
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<td>0</td>
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<td>3</td>
<td>2</td>
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<td>3</td>
<td>16</td>
<td>25</td>
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<tr>
<td>Other</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
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<td>H. influenzae (other)</td>
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<td>0</td>
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<td>1</td>
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<td>4</td>
<td>1</td>
<td>18</td>
<td>31</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>31</td>
<td>30</td>
<td>NA*</td>
</tr>
</tbody>
</table>

1 = Cases Per 100,000  2=These totals reflect persons with HIV infection whose status was first detected during the specified time period. This includes persons who were diagnosed with AIDS at time HIV was first detected. Due to delays in reporting of HIV/AIDS cases, the number of persons reported is a minimal estimate. Data should be considered provisional.

* Percent Change not calculated for rates or count differences less than 10

### Table 2. Diseases of Low Frequency (January-October, 2006)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Total to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legionellosis</td>
<td>10</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>0</td>
</tr>
<tr>
<td>Malaria</td>
<td>5</td>
</tr>
<tr>
<td>Rabies, animal</td>
<td>6</td>
</tr>
<tr>
<td>Varicella</td>
<td>173</td>
</tr>
</tbody>
</table>

### Table 3. Animal rabies (September-October, 2006)

<table>
<thead>
<tr>
<th>Parish</th>
<th>No. Cases</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vernon</td>
<td>1</td>
<td>Bat</td>
</tr>
<tr>
<td>Ascension</td>
<td>1</td>
<td>Bat</td>
</tr>
<tr>
<td>St.Landry</td>
<td>1</td>
<td>Skunk</td>
</tr>
</tbody>
</table>

* Percent Change not calculated for rates or count differences less than 10
LAC 51:1.H.05: 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.

- Anthrax
- Avian Influenza
- Botulism
- Brucellosis
- Cholera
- Diphtheria
- Haemophilius influenza (invasive disease)
- Influenza-associated Mortality

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

- Arthropod-Borne Neuroinvasive Disease and other infections (including West Nile)
- Brucellosis
- Cholera
- Dengue
- Ehrlichiosis
- Enterococcus, Vancomycin Resistant [VRE], invasive disease
- Giardia

### 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, a suspected case, or a positive laboratory result is known.

- Acquired Immune Deficiency Syndrome (AIDS)
- Blastoctisis
- Campylobacteriosis
- Chlamydial infection
- Clostridiodonosis
- Cryptococcosis
- Cryptosporidiosis
- Cyclosporiasis
- Dengue
- Ehrlichiosis
- Enterococcus, Vancomycin Resistant [VRE], invasive disease
- Giardia

### Class D Diseases/Conditions - Reporting Required Within 5 Business Days
Diseases of potential public health concern-report by the end of the workweek after the existence of a case, a suspected case, or a positive laboratory result is known.

- Acquired Immune Deficiency Syndrome (AIDS)
- Blastoctisis
- Campylobacteriosis
- Chlamydial infection
- Clostridiodonosis
- Cryptococcosis
- Cryptosporidiosis
- Cyclosporiasis
- Dengue
- Ehrlichiosis
- Enterococcus, Vancomycin Resistant [VRE], invasive disease
- Giardia

### Class E Diseases/Conditions - Reporting Required Within 15 Business Days
Diseases of lesser public health concern-report by the end of the 15th business day after the existence of a case, a suspected case, or a positive laboratory result is known.

- Acquired Immune Deficiency Syndrome (AIDS)
- Blastoctisis
- Campylobacteriosis
- Chlamydial infection
- Clostridiodonosis
- Cryptococcosis
- Cryptosporidiosis
- Cyclosporiasis
- Dengue
- Ehrlichiosis
- Enterococcus, Vancomycin Resistant [VRE], invasive disease
- Giardia

Case reports not requiring special reporting instructions (see below) can be reported by Confidential Disease Case Report forms (2430), facsimile, telephone or web base at https://ophrdd.dhh.state.la.us.

2Report on CDC72.5 (f.5.2431) card.
3Report to the Louisiana Genetic Diseases Program Office by telephone at (504) 219-4413 or facsimile at (504) 219-4452.

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