Saint Louis Encephalitis (SLE)

Saint Louis Encephalitis is a Class B Disease and must be reported to the state within one business day.

St. Louis Encephalitis (SLE) was first recognized in 1933 in St. Louis, Missouri during an outbreak of over 1,000 cases. The vector of this virus is the *Culex* species of mosquitoes. Historically, an average of 14 disease cases are reported annually in the United States.

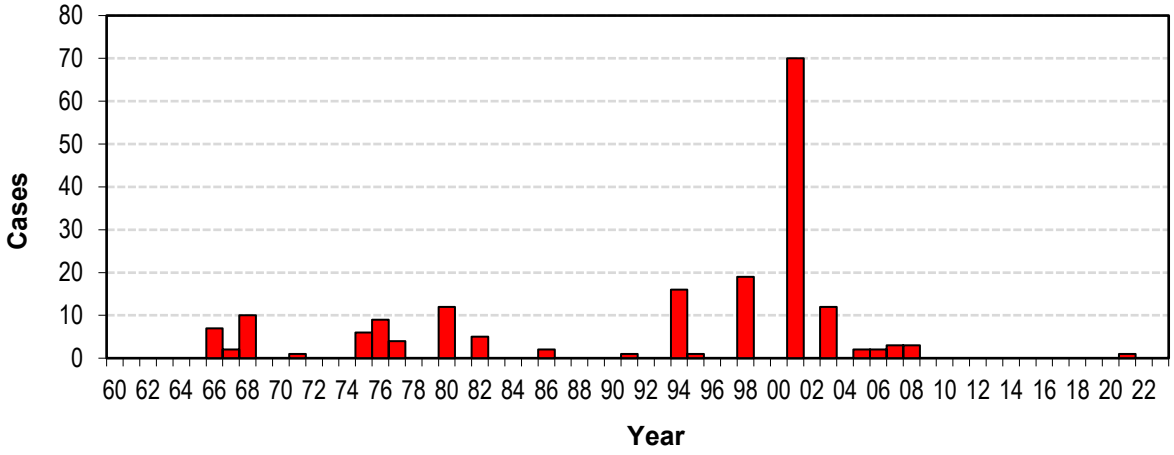
SLE cases occur in unpredictable intermittent outbreaks or as sporadic cases during the summer and fall. Less than 1% of infections manifest as clinically apparent disease cases. The illness is usually benign, consisting of fever and headache; and most ill persons recover completely 4 to 14 days after symptom manifestation. The illness can progress to severe disease with symptoms including altered mental status, seizures, paralysis, and encephalitis. Older adults are more at risk of developing severe disease. Approximately 5-20% of severe St. Louis encephalitis cases are fatal, and many non-fatal cases result in long-term symptoms.

Mosquito-borne diseases can be prevented by taking personal protection measures such as:

a) Applying mosquito repellent to exposed skin
b) Wearing protective clothing such as light colored, loose fitting, long sleeved shirts and pants
c) Eliminating mosquito breeding sites near residences by emptying containers which hold stagnant water
d) Using fine mesh screens on doors and windows.

Sporadic cases and outbreaks have historically been reported in the Louisiana. The largest outbreak of SLE occurred in Monroe and West Monroe in 2001. In 2003, between the end of July and mid-November, ten cases of SLE were reported from three neighboring parishes in Louisiana: Baton Rouge, Iberville, and Livingston. Since 2003, sporadic cases have been reported in Louisiana, most recently in 2021 (Figure 1).

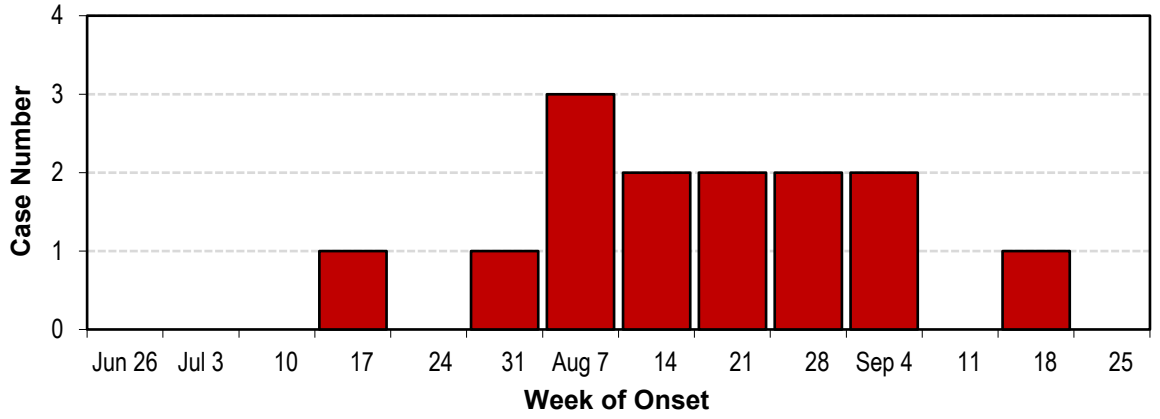
Figure 1: Saint Louis Encephalitis Cases - Louisiana, 1960-2023



The SLE Outbreak of 1994

Between July and October 1994, 15 cases of SLE were reported in Louisiana. The last SLE outbreak previously occurred in 1980 and since then very few sporadic cases had been reported. Of the 15 SLE cases, 14 occurred in residents of the metropolitan New Orleans area and one case occurred in a Washington Parish resident. Onset of illness ranged from July 22nd to October 8th with ages ranging from 12 to 81 years. Nine (60%) of the cases were males and nine (60%) were African-Americans. Three of the cases died (case mortality 20%) (Figure 2).

Figure 2: SLE Outbreak - New Orleans - Louisiana, 1994



In order to specify the vector involved in this outbreak, trapping and testing of mosquitoes for SLE virus was performed by the Centers for Disease Control and Prevention (CDC) in collaboration with New Orleans Mosquito Control. None of the mosquitoes tested were positive for the SLE virus.

Although *Culex quinquefasciatus* has been assumed to be the vector for SLE in this outbreak (and large populations of *C. quinquefasciatus* mosquitoes were found near some of the initial cases), the finding of a higher than expected abundance of *Culex nigripalpus*, the primary SLE virus vector in Florida, raises the possibility of transmission by *C. nigripalpus* mosquitoes in this outbreak.

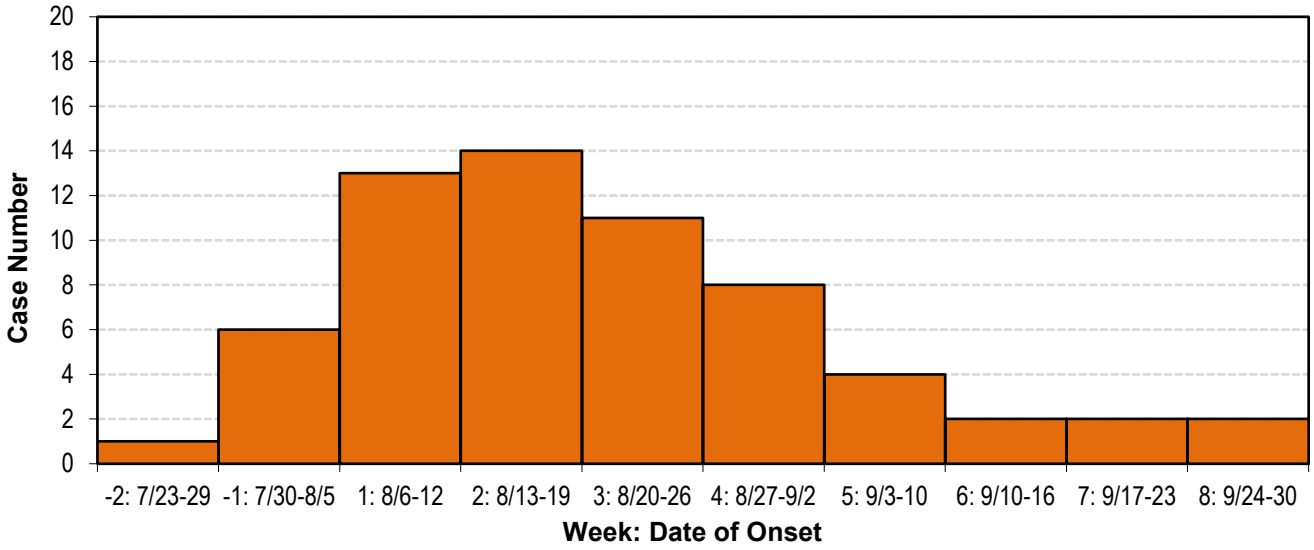
The SLE Outbreak of 1998

Between July and October of 1998, 19 cases of SLE were reported from three parishes in southern Louisiana. Of the SLE cases reported, five were reported from Lafayette Parish, one from St. Tammany Parish, and the remaining 13 cases were reported from Jefferson Parish. Onset of illness ranged from July 5th to September 27th. Ages ranged from six to 72 years. Ten of the cases (53%) were females and 15 (79%) of the cases were white. Only one death was reported (Case Mortality: 5%).

The SLE Outbreak in Monroe of 2001

In 2001, 63 cases of SLE were reported in Monroe and West Monroe with seven additional cases reported in the neighboring parishes of Richland, Morehouse, and Franklin. The epidemic curve based on sample collection date showed an explosive outbreak reaching a peak by the second week and progressively slowing down. The SLE epidemic curve by week of onset shows that by the time the first case was diagnosed (Week 1: 8/6/2001 to 8/13/2001), 60% or more of the cases were already infected (Figure 3).

Figure 3: SLE Epidemic Curve by Week of Onset - Louisiana, 2001



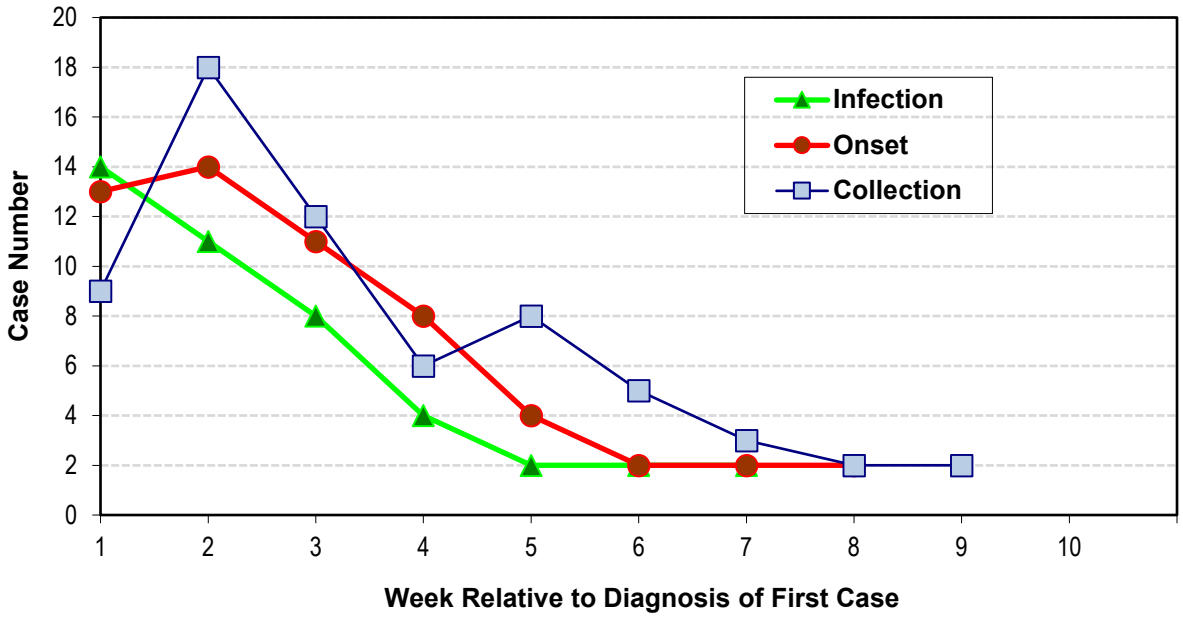
Most cases presented with fever and meningitis with altered mental status. Tremors were common (56% of cases). There were three deaths. The age group distribution showed predominance of cases among individuals aged 45 years and older. Cases are presumptively diagnosed on the basis of a positive IgM for *Flavivirus*. The first cases were further tested by the CDC in Fort Collins, CO. by neutralization testing. Acute and convalescent serums were collected and forwarded to the CDC lab for confirmation. Mosquito pools (*Culex quinquefasciatus*) confirmed the presence of SLE virus.

As soon as the first case was reported, campaigns for health education and increased mosquito adulticiding were implemented. Within three weeks, more than 95% of the population interviewed was aware of the problem and of precautionary measures.

Adulticiding with pyrethroid applications by trucks was targeted against pest mosquitoes and was on-going before the outbreak. After the first cases were reported to mosquito control, aerial and truck applications increased, and house-to-house applications were initiated.

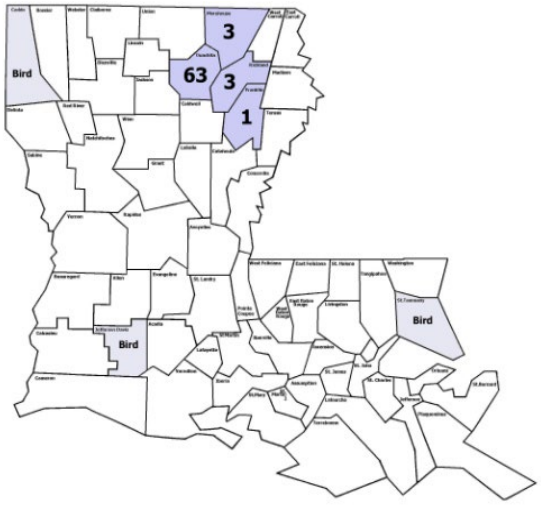
The outbreak lasted until the first week in October. By week one (when the first cases were reported), it appeared that more than 60% of cases were already within their incubation period (Figure 4).

Figure 4: SLE Epidemic Curves- Monroe Outbreak: Weeks of Infection, Onset and Collection of Blood or CSF - Louisiana, 2001



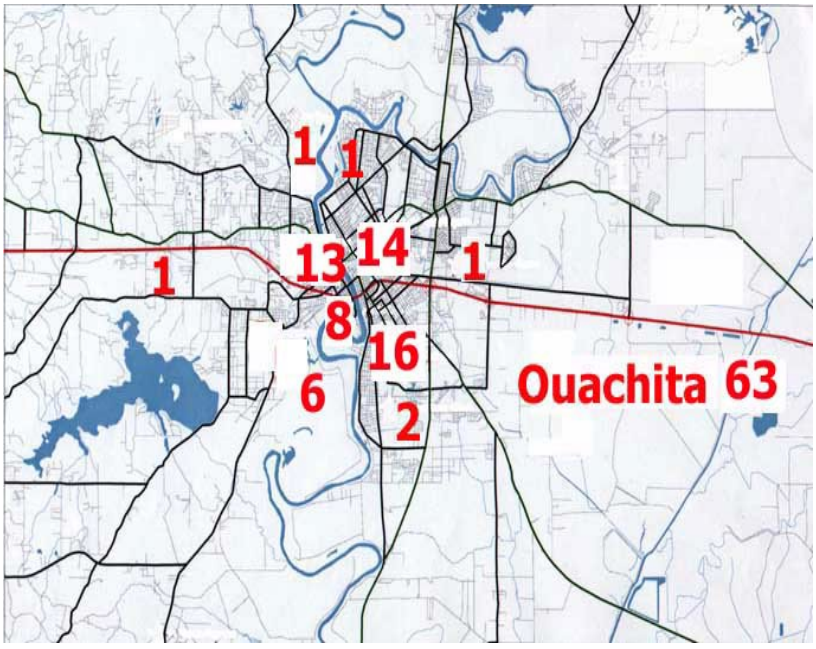
All cases were in Monroe (Ouachita Parish) and surrounding parishes (Morehouse, Richland and Franklin), (Figure 5).

Figure 5: SLE Cases - Louisiana, 2001



The highest number of cases concentrated around the intersection of the Ouachita River and Interstate 20, overlapping the towns of Monroe and West Monroe (Figure 6).

Figure 6: SLE Cases - Ouachita Parish - Louisiana, 2001



The SLE Outbreak of 2003

Between the end of July and mid-November 2003, ten cases of SLE were reported from three neighboring parishes in Louisiana. Of the SLE cases reported, three were reported from East Baton Rouge Parish, one from Iberville Parish, and six from Livingston Parish. Onset of illness ranged from July 23rd to November 12th.

It should be noted that two sporadic cases were also reported in mid-April, one in the northwest corner of the state in Caddo Parish and one in the southwest corner in Calcasieu Parish.

Seven out of the 12 cases were men (58%). The case ages ranged from 33 to 73 years of age (50% of cases were older than 45 years). Nine of the 12 cases were white (75%). There was one death reported.