



CITY OF NEW ORLEANS

Condensed Zika Virus Plan

August 3, 2016

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Introduction

In May 2015 the Pan American Health Organization (PAHO) issued an alert regarding the first confirmed local transmission cases of Zika Virus Disease (Zika) infection in Brazil. Subsequently, outbreaks are now occurring in many countries across the Americas. Although Zika infection rarely leads to severe illness, it has been found to cause birth defects such as microcephaly and has been associated the neuromuscular disorder Guillain-Barré syndrome. In response to this outbreak, the World Health Organization declared the Zika a Public Health Emergency of International Concern on February 1, 2016.

As of August 3, 2016 there is no local transmission of Zika virus in Louisiana, however travel-related cases have been reported. Local transmission of Zika has been confirmed in one neighborhood in Miami, Florida. New Orleans is at high risk of Zika transmission as a tourist destination and port city, due to abundant *Aedes* mosquito vector populations. The Comprehensive Zika Plan provides guidelines for preparation and response to the virus in Orleans Parish.

The Comprehensive Zika Virus Plan provides direction for the prevention and mitigation of Zika virus in Orleans Parish. The plan discusses Zika virus management in three phases: no reported cases, travel-related cases, and local transmission. Within each phase, the components of vector control, public education & media, and interagency coordination are discussed.

Zika virus is a newly emerging virus and recent scientific information is continually becoming available. This document will be updated regularly to reflect additional information from peer-reviewed research, the Centers for Disease Control and Prevention (CDC), and other relevant organizations. More information is regularly becoming available at www.cdc.gov/zika.

Background

Zika is a mosquito-borne virus that is primarily transmitted to people through the bite of an infected *Aedes* mosquito vector. It is in the family Flaviviridae which also includes chikungunya, dengue and yellow fever viruses. Zika was first isolated in Uganda in 1947 and caused sporadic human cases in Africa and Southern Asia from the 1950s to 2000s. In 2007, an outbreak occurred on Yap Island of Micronesia which later spread to surrounding Pacific Islands in 2013-2014.

In May 2015, the Pan American Health Organization issued an alert regarding the first confirmed Zika virus infection in Brazil. Local transmission of the virus has spread rapidly in the Americas, and outbreaks are currently occurring in many countries. As of August 3, 2016 there have been 15 confirmed travel cases in the state of Louisiana. No local transmission of Zika virus by an infected mosquito has been confirmed in the continental United States but transmission has occurred through sexual contact with individuals who acquired the infection while traveling abroad.

Symptoms

Zika fever is a mosquito-borne viral disease caused by Zika virus. It consists of fever, rash, joint pain, conjunctivitis (red eyes), muscle pain and headache. Symptoms occur about 3-14 days after an infectious mosquito bite. One out of 5 people infected may develop symptoms, and the disease is generally mild with symptoms that can last between 2-7 days. However, neurological and auto-immune complications (including Guillain-Barré Syndrome) were reported during large outbreaks in Brazil in 2015 and French Polynesia in 2013-2014. Guillain-Barré Syndrome is a rare disorder in which a person's own immune system damages their nerve cells causing muscle weakness and sometimes paralysis.

As of early April, Zika has been linked to birth defects including Microcephaly. Microcephaly is a birth defect where a baby's head is smaller than expected when compared to babies of the same sex and age. Babies with microcephaly often have smaller brains that might not have developed properly.

Prevention

Transmission of Zika virus is primarily through the bite of an infected *Aedes aegypti* (Yellow Fever mosquito) or *Aedes albopictus* (Asian Tiger mosquito). Zika-infected individuals have sufficient virus in their blood to infect a mosquito for roughly a week following the onset of symptoms. There have been documented cases of transmission during labor, blood transfusion, laboratory exposure, but these have been relatively infrequent mechanisms during previous outbreaks. Prolonged presence of virus in semen for weeks has been proven and Zika has been spread through sexual transmission.

The CDC has issued a travel alert (Level 2 – Practice Enhanced Precautions) for people traveling to regions and countries where Zika virus transmission is ongoing and suggests that high risk populations may want to delay travel. The CDC recommends that travelers should protect themselves from mosquito bites and pregnant woman may want to consider postponing travel where Zika virus transmission is ongoing. People who have traveled to affected areas should use condoms or abstain from sexual activity for 8 weeks after travel. People who had symptoms of Zika while or after traveling should use condoms or abstain from sexual activity for 6 months. People with pregnant partners are encouraged to use condoms throughout the duration of the pregnancy.

If travel is unavoidable, consultation with a physician and strictly avoiding mosquito bites during the trip is recommended. It is advised that personal protection measures such as applying insect repellent, wearing clothes that protect as much of the body as possible, and using physical barriers against mosquitoes are used. This includes window and door screens and mosquito nets when sleeping, especially during at dawn and dusk when *Aedes* mosquitoes are the most active. Protection against mosquito bites should also be advised for infected individuals until they are no longer infectious, approximately 1 week following the onset of symptoms.

Sexual Transmission

More research is showing that Zika can be sexually transmitted by both men and women and there have been cases of sexual transmission in the United States. Condoms are recommended for use during all sexual activity including vaginal, anal and oral sex.

Testing

Suspected cases must be reported to the Louisiana Department of Health and Hospitals Infectious Disease Epidemiology Section (IDEpi) at which time epidemiologists will determine if testing is appropriate. The established protocol is that the State Public Health Laboratory will test the sample for virus and the antibody test will be performed by CDC.

Treatment

There is no vaccine or specific treatment for Zika virus. If infection is suspected, travel history should be shared with the healthcare provider. The CDC recommends treating the symptoms by resting, drinking fluids, and taking certain types of pain medicine. Some treatments for Guillain-Barré syndrome may help mitigate the paralysis but patients frequently require ICU care and subsequent physical therapy. There is no treatment to correct microcephaly.

Vectors

The primary means of transmission of Zika virus is through the bite of an infected *Aedes aegypti* (Yellow Fever mosquito) or *Aedes albopictus* (Asian Tiger mosquito). These are the same species of mosquitoes which transmit dengue, chikungunya and yellow fever. It takes approximately 10 days from the time a female mosquito bites a Zika-infected individual until the mosquito is infectious and can transmit the virus. This is referred to as the extrinsic incubation period. It is expected that the mosquito would remain infectious through the remainder of its life span.

These mosquitoes lay eggs singly along the waterline inside water-holding containers and have the ability to survive without water for several months. The eggs hatch after a rain event or re-flooding of the eggs. Therefore, it is important to eliminate potential breeding sites around households such as buckets, flower pots, discarded tires and any additional containers that can collect water. The eggs adhere to the containers so it is important to scrub containers that are refilled, such as bird baths, to remove the eggs. If the mosquito population is completely eliminated from an area, it can recover within 2 weeks as a result of egg hatching following a rainfall or containers refilling.

During the warmer months, these mosquitoes can complete their lifecycle (from egg to adult) in as little as a week. It is recommended that residents (owners and renters) inspect their property for standing water on a weekly basis to minimize breeding locations. These species can be active during the day, but are largely crepuscular (active in the twilight hours of dawn and dusk) when conditions are hot and dry. Each species has slightly different habitat preference but can commonly be found co-existing and breeding in the same areas and even the same containers.

Aedes aegypti

The adult *Ae. aegypti* mosquito is recognizable by its black and white coloration and characteristic silvery-white lyre-shaped pattern on the dorsal side of the thorax (Fig. 1). It is closely associated with humans and their dwellings. The eggs of this species are very desiccation resistant and can survive hot, dry environments and urban areas with less vegetation. *Ae. aegypti* is typically found outdoors, but can also be found resting inside dwellings. *Ae. aegypti* has a preference for feeding on humans. In New Orleans, this species overwinters as an adult and can be found year-round when temperatures are warm enough.

Aedes aegypti originated in Africa and was likely introduced in water storage vessels through shipping and trade activities. A resident of New Orleans for centuries, the species is responsible for the yellow fever epidemics, the last being in 1905. *Aedes aegypti* mosquitoes have a high vectorial capacity (the effectiveness of virus transmission in nature) for dengue, chikungunya, Zika and yellow fever viruses.



Figure 1. *Aedes aegypti* (Yellow Fever mosquito) has a characteristic black and white pattern with a lyre-shaped marking on the dorsal (top) part of its abdomen.

Aedes albopictus

This small black and white mosquito has a characteristic silvery-white stripe on the dorsal side of the thorax (Fig. 2). This mosquito prefers vegetation and is found mostly outdoors. *Ae. albopictus* are better larval competitors and adapted to using lower-nutrient, natural resource environments. It is an aggressive biter with a variety of hosts, including man, domestic and wild animals. In New Orleans, this species overwinters as eggs and is less abundant in winter months when day length is shorter.

Aedes albopictus was introduced into the U.S. through scrap tires from Northern Asia in the late 1980s. *Ae. albopictus* has displaced *Ae. aegypti* in many locations, its geographic range extends as far as north in states such as New Jersey. This species is a competent vector of West Nile, dengue, chikungunya and Zika viruses. Given its wide host selection, it may often be implicated in arbovirus transmission, however, at this time, not much information is known about the species vectorial capacity with Zika virus.



Figure 2. *Aedes albopictus* mosquito with its characteristic black and white pattern with a stripe along the dorsal (top) part of its abdomen.

In New Orleans, both species are widely distributed (Figs. 3 & 4). *Aedes aegypti* is abundant in highly-populated urban areas and *Ae. albopictus* is more likely to be found in suburban, rural and vegetated urban habitats like large parks. Based on 2011 and 2013 ovitrap collections, *Ae. aegypti* predominates in areas of Mid-City, Bywater and parts of Uptown such as Broadmoor. *Aedes albopictus* is predominant along the Lakefront, New Orleans East and on the West Bank outside of Algiers Point. However, either species can be found throughout the city. State-wide, *Ae. aegypti* populations are currently found only in the Greater New Orleans area (Orleans, Jefferson, St. Bernard and isolated populations in St. Tammany Parishes), *Ae. albopictus* is found throughout the state (Fig. 5).

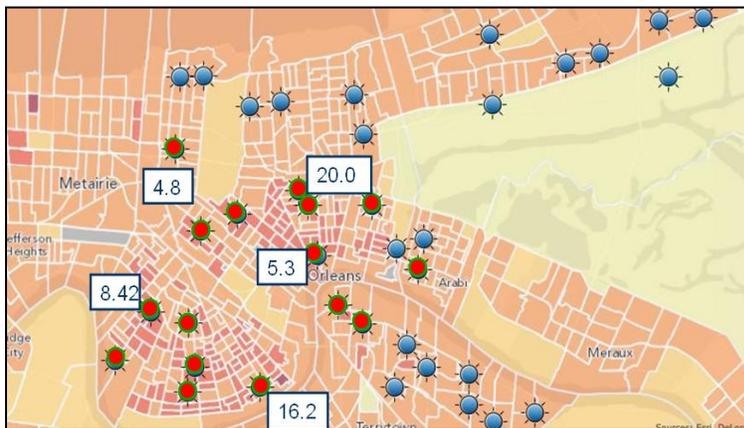


Figure 3. Ovitrap collections from 2011 in New Orleans by Tulane University (Dr. Dawn Wesson) and the New Orleans Mosquito Control Board. Locations in red indicate where the ratio of *Aedes aegypti* exceeds that of *Aedes albopictus*, the number indicates the number of times greater the population of *Aedes aegypti*.

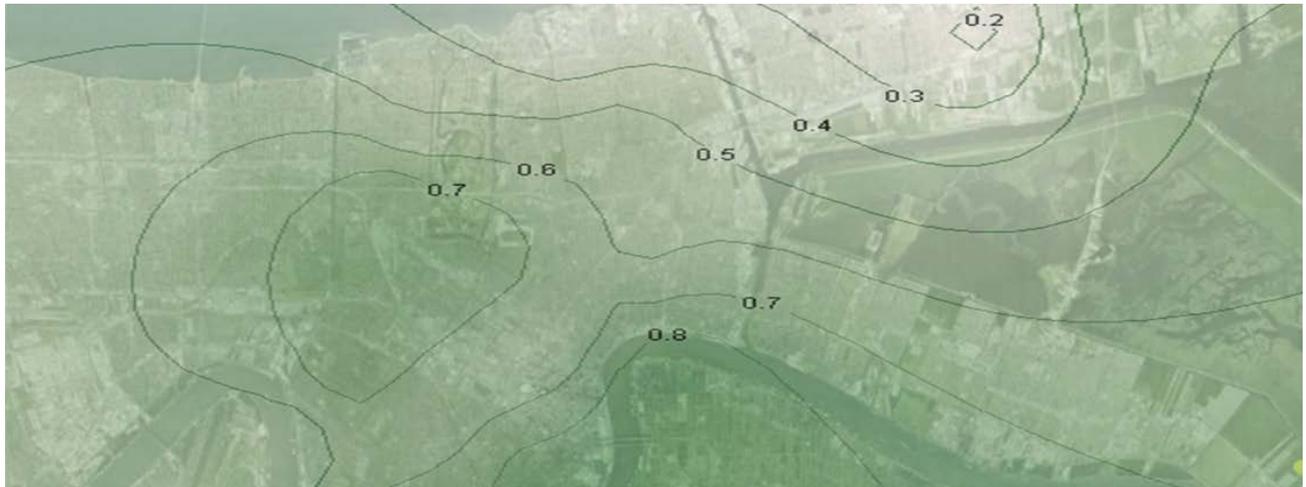


Figure 4. Ovitrap collections in New Orleans conducted in 2013 by Tulane University (Dr. Dawn Wesson) and the New Orleans Mosquito Control Board. The numbers are expressed as a ratio of *Aedes aegypti* to *Aedes albopictus*, in areas of darker green and higher ratio, the *Aedes aegypti* population exceeds that of *Aedes albopictus*.

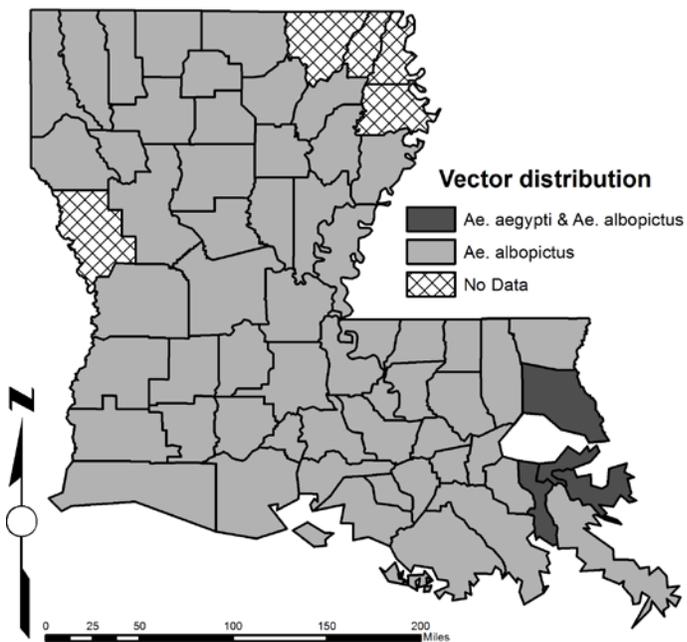


Figure 5. State-wide presence of *Aedes aegypti* and *Aedes albopictus* mosquito species in an 2014 survey (K. A. Caillouët, unpublished data).

Vector Control

NOMTCB is the lead agency for mosquito surveillance and control in New Orleans. The City of New Orleans has had an established mosquito control program since 1964. The agency utilizes an integrated mosquito management approach to vector control, consisting of vector population surveillance, public education, larval mosquito habitat reduction, biological control, and chemical control of larval and adult mosquitoes.

Integrated Mosquito Control

An integrated mosquito management approach is used by The City of New Orleans Mosquito, Termite and Rodent Control Board (NOMTCB). This involves vector population surveillance, public education, larval mosquito habitat reduction, and chemical control of larval and adult mosquitoes. Larval source reduction (i.e. the physical elimination of larval breeding sites) involves the inspection and removal of man-made containers (including tires), clutter and trash around residences. For sites that cannot be removed or drained, biorational larvicides are used to target developmental stages. Adult mosquitoes can be treated on a yard, block or residential level using a variety of equipment; backpack or hand-held sprayers, trucks and airplanes.

Monitoring/Surveillance

A thorough understanding of the basic biology of the pest species and the many factors that influence their density must be understood to effectively implement IPM for Mosquito Control. This is a continual process of monitoring, sampling and surveillance to observe changes in the mosquito population density, diversity, ecology, behavior, and arbovirus prevalence.

- Survey – one-time gathering of inspection data to assess a situation
- Surveillance – a continuing process to monitor changes in mosquito populations
 - Indicates when control measures are needed
 - Monitors effectiveness of these measures
 - Pinpoint time and species presence

The aim of vector and pathogen monitoring is to define the spatial and temporal risk of Zika transmission and to guide effective and efficient mosquito control interventions. Mosquito surveillance collections can target any life stage; egg, larvae, pupae, adult. A variety of methods have been developed and used to monitor population abundances of adult *Ae. aegypti* and *Ae. albopictus* mosquitoes in sufficient numbers for pathogen pooling and testing.

Mosquitoes

Vector population monitoring throughout Orleans Parish will continue. Efforts in high risk areas with abundant *Ae. aegypti* and *Ae. albopictus* populations will be increased.

Monitoring methods

- Ovitrap - small containers, usually plastic and black in color specifically designed to collect the eggs of *Aedes aegypti* and *Ae. albopictus* mosquitoes, plastic cups & seed germination paper.
- Container assessments - larvae & pupae collection from field, turkey basters/ pipettes, whirl-pack bags/ lidded containers, buckets for carrying samples, mosquito breeders for rearing in lab
- Calculation of infestation indices (Breteau, container, pupal) – accurate record of containers evaluated, location & numbering system for samples, datasheets, clipboards.
- Risk mapping – ARC GIS support, baseline larval habitat indices, sampling after intervention.

Adult mosquito collections

- *Passive* - BG Sentinel traps, CO₂-baited CDC light traps
- *Active*: Nasci or Prokopac aspirator vegetation sampling, human landing counts (suspended during high risk periods) Inspectors record the number and species of mosquitoes which land on themselves or a partner inspector in a specific period of time (usually 5 minutes). Care must be used not to use this technique when risk of arboviral transmission is high, but the method offers a quick assessment that can be used to evaluate the proper control strategy and treatment efficacy.

Requests for service from the public

- Service requests can also provide important information for making operational decisions. This is an opportunity to educate residents and to eliminate potential mosquito breeding sites around the home. Location data is recorded so that they can be geo-referenced (mapped) and used to target adulticide and larvicide applications. Standard inspection forms and door hangers are used to inform residents of actions taken in response. A script will be provided to 311 to provide the call agents information on commonly asked questions. However, agents will be instructed to forward all technical calls to NOMTCB at 658-2440. Agents are not to give mosquito control or medical advice.

Larval control

Larval surveys are conducted to locate the exact areas in which mosquitoes are breeding, estimate their relative abundance and to treat or eliminate larval habitats. Reducing populations of immature mosquitoes (larvae and pupae) reduces the reliance and expense of adulticides. Many larvicidal products are biorational and come in sustained released formulations.

Larvicides are available in a variety of formulations such as briquettes, granules and oils and should be selected based on the type of treatment site as well as the duration of control needed.

- Larval inspections of urban sites. Inspect any containers holding water including rain barrels, tires, buckets, coolers, watering cans, flower pots, bird baths, pet dishes, trash, gutters and tree holes.
- Evaluate the data collected. Information should include if larvae and pupae collected, the type and size of container and mosquito species. Locations should be recorded to construct a map of positive larval sites for re-inspection when appropriate.
- Review data. Review the data to ensure that the most current and least ecologically impactful control strategy is used and that the efficacy has been evaluated. Larvicides are available in a variety of formulations and should be selected based on the site of treatment, the developmental stage targeted, and the duration of control needed.
- Review mapping of the sites once it has been completed.
- Biological control
 - Mosquito fish program. *Gambusia affinis* is a commonly used fish species which consume larvae, reproduce readily and are successful, long-term solution for mosquito control in permanent water habitats. The Louisiana Department of Wildlife & Fisheries permits release into man-made structures like fountains and pools but are prohibited from being released into natural water bodies.
 - Copepods. Copepods are small (0.5 -1.5 mm) crustaceans found naturally in marine and fresh water habitats. *Mesocyclops longisetus* and *Macrocyclops albidus* are aggressive species which can consume first and second instar mosquito larvae (>40 larvae/day). Successful control of *Ae. albopictus* and *Ae. aegypti* larvae has been achieved through the addition of copepods in containers such as tire, barrels and cisterns. Copepods have a varied diet allowing them to survive once mosquito larvae have been depleted and can tolerate dry periods. Door-to-door source reduction campaigns (habitat reduction & education), Involve community & neighborhood groups for sustained effect, community-wide events (such as waste tire collection)
 - CDC Fact Sheets <http://www.cdc.gov/zika/fs-posters/index.html>
 - EPA approved and registered larvicides used as needed. Larvicides have a variety of formulations and each type used will be based on the situation and need.
- Ultra-low volume (ULV) larvicide application,
 - Truck - Grizzly ULV/ LV application unit with SmartFlow tracking
 - Aerial application – possible but can only be applied by helicopter over congested air space, NOMTCB does not have the capacity at this time
- Granular or liquid larvicides
 - Back-pack application - Maruyama sprayer, granules Spheratax SPH® good for large, difficult to reach areas such as abandoned home with containers and tire piles

- Can also be applied by hand directly to breeding sites

Adult Control

Adulticide applications are effective in causing a rapid reduction in the vector mosquito population but typically must be reapplied to have a sustained effect.

Adult Control

- Backpack
 - Device: SOLO or Stihl SR200 Backpack Spray Mister
 - Insecticide: Talstar® (bifenthrin)
- Aerial application
 - Device: Britten-Norman Islander Aircraft
 - Insecticide: Dibrom® (naled)
- Truck/ Ground ULV
 - Device: Ford F-150s with ULV units: Guardian 190ES with Monitor 4 tracking system, or Grizzly with SmartFlow tracking
 - Insecticide: Fyfanon ULV® (malathion)
- Pesticide rotation - use of different adulticides for additional modes of control including residual and knockdown
 - Scourge® (resmethrin), DeltaGard® (deltamethrin)
 - Permanone® (permethrin) - persistent

Monitoring Insecticide Susceptibility and Resistance

Repeated applications of insecticide can result in chemical tolerance, and there are several methods that can be utilized to test mosquito populations for resistance. It is important that testing is done continuously and if resistance is detected, changes should be made in response such as increased application rate or a change in the class or type of insecticide used.

- Bottle Bioassays – laboratory assay, conducted prior to and following the spray season determines baseline susceptibility and if there has been a change in insecticide resistance
- Cage tests – field test, using a cage of field-collected mosquitoes, and ground or aerial ULV equipment to determine spray efficacy

Bottle bioassays conducted by NOMTCB with local populations of *Ae. albopictus* and *Ae. aegypti* have determined susceptibility to insecticides currently in operational use in the district at application rates. Over the last two years, NOMTCB has evaluated the efficacy of the aerial and ground ULV (truck) against populations of *Aedes* mosquitoes. The results of these studies demonstrated 80-90% mortality in caged mosquitoes placed in open and sequestered locations in neighborhoods in Mid-City and the 7th Ward.

LDAF Compliance

The Louisiana Department of Agriculture and Forestry (LDAF) requires records be kept on pesticide applications including the site of application, specific chemical information and rate applied. LDAF provides "Pesticide Applicator Record Keeping forms" for use by certified applicators. Applications must be made in adherence to Louisiana Pesticide La (L.R.S. 3:3201-3310), state pesticide regulations (LAC7:XXIII) and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and also under the rules set forth in the Louisiana Pollutant Discharge Elimination System General Permit (LAG870000) These records must be kept on file and available for inspection at the NOMTCB Administration building. Only certified applicators will apply pesticides.

NOMTCB has a history of research and operational use of biological control agents including *Gambusia* (mosquito fish), copepods (small crustaceans) and *Toxorhynchites* (cannibal mosquitoes). In February, we began to increase the production of these at our Biological Control Laboratory in New Orleans East. Sustained control efforts will likely involve the experimental releases of biological control species in areas at higher risk such as those with frequent illegal waste tire dumping, prolonged tire storage or high number of containers positive for immature mosquitoes.

Phase 1: No Reported Cases

This section describes the actions that have taken place or will take place prior to a reported case of Zika virus infection in New Orleans.

Vector Control

The NOMTCB mosquito control program is active throughout the year. Cooler, winter and early spring consist of maintenance of equipment and preparing for the mosquito season. In 2013 – 2016, additional mosquito traps specific for *Aedes aegypti* and *Aedes albopictus* were purchased and larviciding capacity was increased.

Areas of the city with high numbers of *Aedes* mosquitoes and dense human population are potential hotspots for Zika virus transmission. NOMTCB has mosquito surveillance data from multiple years using traps specifically designed to target the collection of *Aedes* mosquitoes. In February, entomologists determined a sampling framework and resumed adult collections, which will likely continue until the winter months. Mosquito activity is temperature-dependent. For example, in 2015, *Aedes* mosquitoes were active through December due to warm winter temperatures. Surveillance will be adapted to include additional areas if any epidemiologic data on suspected or confirmed Zika virus cases become available.

Door-to-door backyard container assessments will continue to identify key premises for control efforts, common containers for mosquito breeding and for developing targeted control efforts. In 2015, property inspections in targeted neighborhoods yielded an average of 1.4 water-holding containers per residence, containers were likely to be small and included buckets, coolers, planters & plant saucers, watering cans, dog bowls, plastic barrels and tubs. In November and

December, 31.8% of the yards inspected were positive for immature mosquitoes and *Ae. aegypti* was the most commonly collected species (85.9%). It will become critical to engage residents and neighborhoods in the removal and elimination of containers and other water-holding items in order to achieve long-term management.

The citywide mosquito surveillance program was initiated on February 16, 2016 and the traps targeting *Ae. aegypti* and *Ae. albopictus* March 30, 2016. Adult mosquito surveillance involves the collection, identification and pooling of adult mosquitoes for virus testing.

Public Education/Media

NOHD and NOMTCB are working with key partners to assure the dissemination of updated, accurate and consistent information. Partners include the Mayor's Office of Communications, Neighborhood Engagement, Louisiana Department of Health (LDH) Infectious Disease Epidemiology Section (IDEpi), Tulane University School of Public Health & Tropical Medicine Department of Tropical Medicine, the State Arbovirus Working Group, and the Louisiana Mosquito Control Association.

NOHD has established a website with Zika virus information and produced a general fact sheet on Zika and mosquito prevention. NOHD and NOMTCB have also created specialized factsheets to distribute to the following groups:

- General public
- Healthcare Providers, specifically pediatricians and OB/GYNs
- Pregnant Women, specifically those with recent travel history
- Travelers Organizations serving Pregnant Women
- Convention & Visitors Bureau
- Universities, specifically study abroad programs and international students
- Military and National Guard in Louisiana
- Pet owners

NOHD, NOMTCB and LDH are distributing clinical information to healthcare facilities in Orleans Parish. Shared information includes guidance on the process of screening for Zika virus, recognizing signs and symptoms, and knowledge of the areas where the disease is either endemic or outbreaks are currently occurring.

NOMTCB has created a mosquito control factsheet, presented seminars and webinars to the pest control professionals and environmental health specialists locally and nationally. Topics included were general information about mosquito biology and identification, yard inspections, resistance management, best practices for pesticide applications, and mosquito control emergency response preparedness.

Any calls that come to 311 with regards to Zika will be provided with information from the NOHD website and will be transferred to NOHD or NOMTCB for specific questions to be answered. Calls on Zika and mosquito concerns have already been received. The email address healthdepartment@nola.gov has been listed on the website as a method for residents to ask general questions about Zika. Emails will be answered by the Emergency Preparedness Lead or

Director of Health and referred to IDEpi if needed. Any mosquito related question will be transferred to NOMTCB (658-2440 or mosquitocontrol@nola.gov).

NOMTCB is continuing to accept mosquito service requests from residents through 311. Mosquito Control personnel will update 311 staff and determine if additional information will need to be collected. Location data from each request will be recorded, geo-referenced (mapped), and used to target adulticide and larvicide applications. Standard inspection forms and door hangers will be used to inform residents of actions taken in response.

Interagency Coordination

Federal, State, and City agencies shall continue to be involved in preventing the introduction and spread of Zika virus in New Orleans. The three City working groups will continue to meet as necessary for planning and regular updates will be sent out as needed.

Mitigation and removing mosquito breeding sites are critical to the success of this plan. NOHD and NOMTCB will share all information on calls and service requests through a shared Excel document. Code Enforcement, Sanitation, Safety and Permits, NOHD and NOMTCB will use GIS Collector to track the number of properties inspected, problem properties and refer properties to each other for follow up. All City agencies shall provide regular updates to NOHD and NOMTCB to ensure that the city is effectively employing a comprehensive prevention and treatment plan.

Phase 2: Travel-Related Cases

This section describes actions that may take place after a travel-related case of Zika virus is reported in Orleans Parish. Cases will be identified by IDEpi who is responsible for testing and counseling the individual and their physician. Individuals with Zika should practice safe sex for 6 months to avoid transmission through sexual contact. Target areas will be a 1 mile radius from the location of the travel case based on CDC guidance.

Vector Control

Property inspections and educational campaigns through the use of door hangers, and source reduction will be conducted. Properties within the target area with code violations will be identified and the information will be given to NOFD, Code Enforcement, and the Sanitation Department for processing. Sanitation, NOMTCB and Code Enforcement will work together to identify and remove any debris and trash that may hold water on lots near the target area. Biological control, larviciding and adulticiding will be conducted as weather permits. The details of the case (viremia, time since onset of symptoms) will dictate the intensity of the response. All individuals working on Zika response will be provided with EPA-registered insect repellent.

Public Education/Media

Outreach messaging after a travel-related case of Zika will focus on personal protection against mosquitoes. New Orleanians will be encouraged to wear protective clothing (e.g., long pants and long-sleeve shirts), use effective mosquito repellents, and minimize opportunities for

mosquitoes to breed. For example, residents will be encouraged to eliminate water holding containers around the home, change water frequently in containers that cannot be discarded such as pet bowls, ensure windows and doors have screens in good repair, and to consider using air conditioning rather than keeping the doors and windows open.

NOHD will continue to update its website with Zika virus information and distribute updated factsheets to universities, healthcare providers, travelers, hotels, travel agencies, pregnant women, and organizations serving pregnant women.

Updated information and resources will be shared with healthcare providers and NOHD will offer its assistance in preparing providers for Zika, chikungunya, and dengue viruses. NOHD will also develop protocols for screening and reporting suspected Zika virus cases for its programs and clinics based on CDC guidelines.

The 311 phone line will be available in order to take Zika-related phone calls. These calls will be transferred to the Health Department's call center where trained NOHD staff can answer general questions about Zika virus, to NOMTCB if there are specific vector-related questions and to IDEpi if there are specific human diagnostic, treatment and surveillance questions from health care professionals and patients (1-800-256-2748).

Interagency Coordination

NOMTCB will ask for assistance from other city agencies including NOHD, NOFD, NOPD, Code Enforcement, and the Department of Sanitation. In the past, partner agencies have assisted with waste tire cleanup efforts in areas with increased West Nile virus activity and in areas near chikungunya travel cases. The level of need will depend on the number of travel cases reported, surveillance results, and size of the area needing attention. NOMTCB and NOHD will work with the Office of Communications to conduct media releases and in field interviews if necessary.

Phase 3: Locally Acquired Cases

This section describes actions that may take place after local (mosquito-borne or sexual) transmission of Zika virus is confirmed in Orleans Parish. Actions described in Phase 2 will be continued. Target areas will be a 1 mile radius from the local of cases based on CDC guidance. It is expected that a CDE Emergency Response Team (CERT) would be requested by LDH for assistance. The actions taken in this section would be based on the number of locally acquired cases.

Vector Control

NOMTCB will aggressively implement all mosquito control methods available in the immediate area for a sustained period of time. The area of implementation of aggressive control methods will be determined by the number and location of human cases, mosquito populations, container indices, presence of virus in mosquitoes, and general risk of transmission determined by scientific methods. Aerial and ground treatments will be conducted at three day intervals, as this has previously proven effective in New Orleans. The insecticide label lifts any restrictions on repeated applications in the event of disease detection. Applications should be timed just after

sunrise or just before sunset, sunset preferred. This is preferred because of the highly urban larval habitats of the vector mosquitoes and the need to quickly suppress gravid adult females.

Property inspections, educational campaigns through the use of door hangers, and source reduction will be conducted. Biological control, larviciding and adulticiding will be conducted as weather permits. A sustained effort will be activated for a period of time, approximately 1 month, due to the time frame for potential transmission (length of viremic period of human case, extrinsic incubation period in mosquito and potential lifespan of infected mosquito).

Public Education/Media

If local transmission is confirmed in Orleans Parish, outreach messages will include mosquito control and prevention, personal protection, and information on the disease. NOHD will distribute updated factsheets to universities, healthcare providers, travelers, hotels, travel agencies, pregnant women, and organizations serving pregnant women. NOHD will also distribute specialized factsheets to:

- Schools and Childcare Facilities
- Neighborhood Associations/Community Organizations
- Homeless Providers
- Those participating in outdoor activities (NORDC, school sports, etc.)
- Those who work outside (construction, landscaping, parks, etc.)

Zika Outreach Teams will be deployed to neighborhoods with local transmission of Zika. Each of these teams will provide each property with a door hanger, and in the event they are approached with questions, they will have a basic knowledge of what needs to be said as well as a number to provide for inquiries. Their message will be three-fold: protection, information on Zika virus disease and source reduction. Protection methods will include both mosquito transmission and sexual transmission. Source reduction will be emphasized so that there is a reduction of habitat for mosquitoes. The team will also conduct property inspections and will remove standing water and report all breeding locations to NOMTCB. Properties within the target area with code violations will be identified and the information will be given to NOFD, Code Enforcement, and the Sanitation Department for processing.

Sexual transmission will become a serious risk if there is local transmission. All individuals will be encouraged to use condoms or abstain from sexual activity. Women will also be encouraged to use contraception to avoid unwanted pregnancies.

NOHD, LDH and NOMTCB will reach out to community partners that can spread information about Zika virus and mosquito source reduction throughout their organizations. Organizations serving populations vulnerable to mosquito-borne diseases will be targeted first and will be expanded to the entire city over time.

NOHD will activate a Zika virus hotline and call center to answer questions, address fears and rumors, and provide resources. Specific mosquito and treatment questions will be referred to NOMTCB. Community partners, health care providers, and other organizations will be kept up-

to-date on information via an email listserv maintained by NOHD. NOHD also maintains a NOLA Ready Emergency Alert group that can be utilized to quickly send alerts to these organizations.

Interagency Coordination

Interagency coordination will continue as before.

Updated City Code 82-351 through 82-385

Adopted by New Orleans City Council April 21, 2016

AN ORDINANCE to amend and reordain Sections 82-351 through 82-385 of the Code of the City of New Orleans relating to regulations prohibiting the existence of, creation, keeping or maintenance of artificially induced mosquito breeding areas, including conditions deemed to allow the existence of, creation, keeping or maintenance of an artificially induced mosquito breeding area, enforcement powers, notice requirements, right to e

SECTION 1. THE COUNCIL OF THE CITY OF NEW ORLEANS HEREBY ORDAINS that Sections 82-351 through 82-385 of the Code of the City of New Orleans relating to regulations prohibiting the existence of, creation, keeping or maintenance of artificially induced mosquito breeding areas hereby are amended and reordained to read as follows:

“ARTICLE IX. MOSQUITOES AND FLIES

Sec. 82-351. Definitions.

For the purposes of this Article, the following terms shall have the following meanings:

Abate means to take corrective action(s) to control mosquito breeding.

Artificial containers means any manmade containers, including, but not limited to, tires, cans, vases, buckets, rain barrels boats, bird baths, jars, canals, ditches or flower cutting containers.

Artificially induced mosquito breeding area is any site at which five (5) or more immature mosquitoes are present in artificial containers, vegetative plants or wastewater facilities at any one (1) time.

Enforcement officer means the City officer charged with the administration and enforcement of this Article, or their designated representative.

Immature mosquito means eggs, mosquito larva or pupa.

Person means an individual, corporation, organization, partnership, municipality, or other legal entity.

Sec. 82-352. Prohibition against allowance, creation or maintenance of artificially induced mosquito breeding area.

- (a) It shall be a violation of this Article for any person to allow the existence of, create, keep or maintain an artificially induced mosquito breeding area.
- (b) Conditions deemed to allow the existence of, create, keep or maintain an artificially induced mosquito breeding area shall include, but are not limited to:
 - i. Failure to thoroughly empty, dry or clean any artificial containers at least every five (5) days, unless property screened in a manner to prevent the ingress and egress of mosquitos to and from the water contained therein.
 - ii. Failure to drain or fill any excavations, holes or depressions in which water may stand such that the standing water may in the judgment of the

enforcement officer allow the existence of, create, keep or maintain an artificially induced mosquito breeding area.

- iii. Failure to properly screen any cistern, tank, rain barrel or well in a manner to prevent the ingress and egress of mosquitos to and from the water contained therein.
- iv. Failure to maintain all gutters, drains, or roofs such that they drain thoroughly after rains and do not permit standing water such that it is likely to allow, create, keep or maintain an artificially induced mosquito breeding area.
- v. Failure to maintain all swimming pools, spas and hot tubs in a clean and sanitary condition and in good repair with a functioning filtration system.
- vi. Failure to treat all new, used or waste tires being stored on a property in a manner such as not to allow the existence of, create, keep or maintain an artificially induced mosquito breeding area.

Sec. 82-353. Enforcement.

The City shall cause this Article to be enforced and to that end, it or persons acting under its authority may enter upon any premises, lots, squares, parks or battures to investigate and abate conditions determined to be in violation of this Article.

Sec. 82-354. Right of entry.

- (a) In the performance of his or her duties, the enforcement officer may enter any land, structure, or premises in the city to enforce this Article, at any reasonable time, as provided in this Section.
- (b) If the premises is occupied, prior to entering any land, structure, or premises to enforce this Article, the enforcement officer must give notice of his or her intent

to enter at least twenty-four (24) hours in advance of proposed time of entry. Notice shall be in writing and provide the date and time at which the enforcement officer will be present to make the inspection, and inform the person notified that he or she may request to reschedule the inspection to another date and time by contacting the enforcement officer before the stated date. If the premises is vacant, but secured from the general public, the notice shall be mailed or delivered to the last known address of the owner as provided in the assessor's records.

- (c) After the notice has been given, if the person notified fails to arrange for, denies or unduly delays the entry, the enforcement officer may request that the law department file in a court of competent jurisdiction a petition for right of entry to authorize entry for the enforcement of this Article. The court of competent jurisdiction shall grant the petition upon determining that:
 - i. The notice required by subparts (b) and (c) this Section have been given; and
 - ii. The petition establishes probable cause that an inspection will reveal violation(s) of this Article.
- (d) The petition for right of entry shall be verified by the enforcement officer and accompanied by a sworn and signed affidavit containing facts within the personal knowledge of the affiant that probable cause exists.
- (e) Any entry conducted for enforcement purposes of this Article pursuant to an order permitting right of entry shall be made within fifteen (15) calendar days of the date the order is issued, unless otherwise provided in the order. The order shall be void upon the expiration of the entry period.

- (f) Neither an order nor prior notice is required in any of the following named circumstances:
- i. Entry is by permission of an owner or occupant upon the enforcement officer presenting credentials and requesting entry, or at the request of an owner or occupant of the land, structure, or premises or by a person with apparent right of possession;
 - ii. If the land, structure, or premises is vacant, visibly open and obviously accessible to members of the general public and violations of this Article are in plain view; or
 - iii. Following a declared public health emergency, whereby in the judgment of the City, immediate entry for purposes of enforcement of this Article is necessary to combat the declared public health emergency. Such authority shall only last during the duration of the declared public health emergency.

Sec. 82-355. Penalties.

- (a) The City shall prosecute violations of this Article in accordance with the administrative adjudication procedures established in Chapter 6 of the Code of the City of New Orleans.
- (b) A penalty may be imposed for each noticed violation existing on, in or upon a premises. The penalty for each noticed violation shall be not exceed the maximum provided in Section 6-37 of the Code of the City of New Orleans. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

Sec. 82-356. Abatement.

- (a) *Abatement by owner.* Upon notification of violation, as provided in this Article, the owner or occupant of the land, structure or premises, or person with apparent right of possession, or person acting on his or her behalf, shall abate the artificially induced mosquito breeding area and/or prohibited activity or condition by removing the offending matter or taking corrective action to abate said artificially induced mosquito breeding area and/or prohibitive activity or condition within five (5) calendar days of the receipt of the notice.
- (b) *Abatement by the City.* Notwithstanding whether any injunctive or other judicial relief is petitioned for in accordance with this Article, if the violation exists and is not abated within five (5) calendar days of receipt of notification, the City, or persons acting under its authority, are hereby authorized to take corrective action to abate the artificially induced mosquito breeding area, at the owner or occupant of the land, structure or premises, or person with apparent right of possession's expense without further notice. Corrective actions may include the application of pesticides or use of biological control agents in accordance with label directions or conduct source reduction.
- (c) Should the owner or occupant of the land, structure or premises, or person with apparent right of possession fail to abate or cause a premises to be abated within five (5) calendar days of receipt of notification, he or she shall be responsible for all costs of performing such abatement, which includes all expenses, fines, penalties, interest and administrative costs. The costs shall be charged against the premises and shall be a lien upon such property. A certified copy of the statement of costs reflecting the amount of such charges shall be filed with the recorder of mortgages, which shall operate as a lien and privilege in favor of the City against the property.

- (d) Neither the City, nor any employee of the City, or person acting on behalf of the City shall be liable for any damages resulting from any corrective actions taken to enforce this Article.

Sec. 82-357. Emergencies.

Nothing in this Article shall be construed as prohibiting the City's ability to take any emergency corrective actions that in the judgment of City are necessary to prevent an epidemic or abate an immediate threat or menace to public health or safety to the fullest extent permitted by law.

Secs. 82-358 – 82-385. Reserved.”

Mosquito Biology Fact Sheet

City of New Orleans Mosquito, Termite & Rodent Control Board

Mosquitoes: A General Guide

Brendan Carter, Greg Thompson, and Sarah Michaels
City of New Orleans Mosquito, Termite & Rodent Control Board

Mosquitoes can act as annoying biting nuisances and are a public health concern for many in Louisiana and across the world. It is important for residents to understand the mosquito life cycle, the health concerns associated with mosquitoes, and the best methods of controlling and preventing mosquitoes.

Mosquito Identification

Mosquitoes belong to the scientific order Diptera which includes house flies, midges, and gnats. The most distinguishing feature of the order is a single set of functional wings, unlike butterflies and dragonflies. The majority of mosquitoes can be distinguished from other Diptera by their long, needle-shaped proboscis which is used to take blood meals from their hosts (Figure 1). **Only female mosquitoes take a blood meal.**

Overall, there are about 3,500 identified mosquito species in the world. The continental United States is home to about 170 species with at least 64 species in Louisiana. Each mosquito species prefers a particular host for their blood meal which can include birds, humans, or other mammals. Different mosquito species are active at different times of day and prefer to lay eggs in specific types of habitat, depending on the species.

The main species of concern in Orleans Parish are *Culex quinquefasciatus* (southern house mosquito), *Aedes albopictus* (Asian tiger mosquito; Figure 1), and *Aedes aegypti* (yellow fever mosquito; Figure 2).



CITY OF NEW ORLEANS

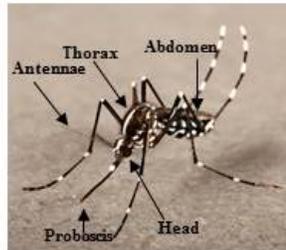


Figure 1. An adult female *Aedes albopictus*. The white line on the thorax is characteristic of the species.



Figure 2. An adult female *Aedes aegypti* taking a blood meal. The curved lyre-shape on the thorax is characteristic of the species.

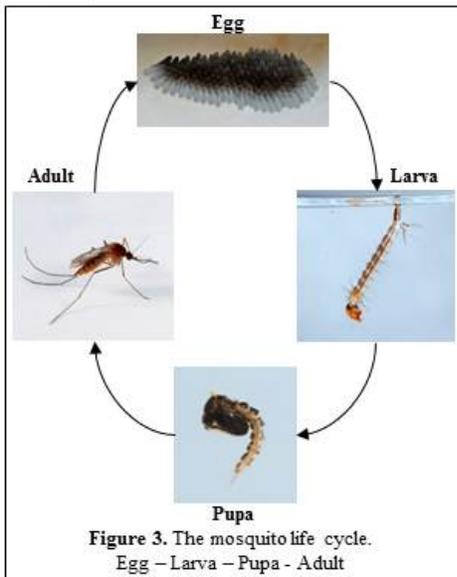


Figure 3. The mosquito life cycle.
Egg - Larva - Pupa - Adult

Mosquito Life Cycle

The first stage of the mosquito life cycle is the egg (Figure 3), which can be laid on a variety of substrates. Some species prefer to lay their eggs in containers while others prefer standing water or wet ground. Some species like *Cx. quinquefasciatus* lay their eggs in rafts in standing water, while others like *Ae. aegypti* and *Ae. albopictus* lay their eggs singly in containers. After being exposed to water, larvae hatch from eggs.

All mosquito larvae must develop in water where they feed and grow through four different larval stages called instars. Mosquito larvae can often be found on top of the water surface where they use their siphon to breathe. Larvae usually prefer shaded, still water. After the 4th instar, mosquito larvae develop into pupae. Pupae are also aquatic, but do not feed.

When ready, the adult mosquito emerges from the pupa. **It takes a mosquito only 5-7 days to grow from egg to adult.** Once the adult female mosquito has mated and taken a blood meal, the mosquito will be ready to lay eggs and continue the cycle.

All photos by E. D. Freytag

Doc. NOMTCB 1-2016

Mosquitoes & Public Health

A biting mosquito can also be a public health threat. The bite of a mosquito can potentially transmit various disease pathogens including West Nile virus (WNV), Eastern Equine Encephalitis (EEE), St. Louis Encephalitis (SLE), La Crosse encephalitis (LAC), chikungunya, dengue, Zika, and dog heartworm among others. Different species can transmit different disease pathogens as summarized below.

Mosquito Species	Common Name	Preferred Larval Habitat	Active Time	Associated Disease Pathogens
<i>Aedes aegypti</i>	Yellow Fever mosquito	Containers, tires	Daytime, dusk, dawn	chikungunya, dengue, Zika
<i>Aedes albopictus</i>	Asian Tiger mosquito	Containers, tires	Daytime, dusk, dawn	chikungunya, dengue, Zika, EEE, LAC, dog heartworm
<i>Culex quinquefasciatus</i>	Southern House mosquito	Standing water with organic matter, tires	Evening, dusk to dawn	WNV, SLE, dog heartworm

Mosquito Prevention & Control

There are many ways to protect yourself against mosquitoes and to prevent mosquitoes from breeding around the outside of your home. To prevent mosquitoes and mosquito bites:

- Empty and scrub, turn over, or cover containers that may hold water
- Tightly cover any water storage containers (buckets, rain barrels, etc.)
- Dispose of or recycle used tires and other trash that can hold water
- Cover containers that cannot be emptied with a fine wire mesh with holes smaller than an adult mosquito
- Use screens on windows and doors and keep them in good repair
- Clean clogged roof gutters
- Wear mosquito repellent
- Wear long pants and long-sleeve shirts
- Limit outdoor activity at dusk or dawn

Mosquito repellents recommended by the World Health Organization (WHO) include DEET, picaridin, oil of lemon eucalyptus, and IR3535. Wearing repellents may help reduce the number of mosquito bites, but dumping over containers and removing standing water will reduce mosquito breeding in your yard or neighborhood. Be sure to check any bottles, buckets, fountains, potted plants, pet dishes, rain barrels, tarps, or any other items that may hold water (Figure 4). Mosquitoes only need a small amount of water to lay eggs.



Figure 4. Potential mosquito breeding sites

For more information or to report mosquito problems, please contact:

City of New Orleans Mosquito, Termite & Rodent Control Board

Phone: 311 or (504) 658-2400

Email: mosquitocontrol@nola.gov

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Zika Fact Sheets (Travel Cases)

Everything you need to know about

Zika Virus



On January 15, 2016, the Centers for Disease Control and Prevention (CDC) issued a travel alert for people traveling to regions where Zika virus transmission is ongoing. Pregnant women in any trimester should consider postponing travel to the areas where Zika virus transmission is ongoing. **There are travel-related cases in New Orleans but no locally transmitted cases.**

Currently the City of New Orleans Mosquito and Termite Control Board (NOMTCB) and the New Orleans Health Department (NOHD) are working with partners to provide you with information about Zika. NOTCMB is monitoring the mosquito population. Mitigation efforts to limit the mosquito population will utilize a combination of chemical control and habitat reduction methods as needed.

What is Zika?



Zika virus disease (Zika) is a disease spread to people primarily through the bite of an infected mosquito. It can also spread when an infected person has sex with another person. Most people with Zika do not know they have it. Symptoms are usually mild, lasting about a week.

Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

If you develop symptoms within 2 weeks of travel, see a doctor and tell the doctor where you traveled.

Pregnancy and Zika Virus



Zika can be spread from a mother to her fetus during pregnancy. There have been reports of a serious birth defect of the brain called microcephaly in babies of mothers who had Zika virus while pregnant.

Travel Information for women who are pregnant or thinking of becoming pregnant:

- ✈ Consider postponing travel to any area where Zika virus transmission is ongoing.
- ✈ If you must travel to one of these areas, talk to your doctor first and strictly follow steps to prevent mosquito bites during your trip.
- ✈ It is safe for pregnant and breastfeeding women to use insect repellent.

Microcephaly is a birth defect where a baby's head is smaller than expected when compared to babies that are the same sex and age. Babies with microcephaly often have smaller brains that may not have developed properly.

Travel Advisory

Level 2:

Practice Enhanced Precautions

For a list of affected countries:

Visit cdc.gov/travel

How to protect yourself



Cover your skin by wearing long-sleeve shirts and long pants. For extra protection, treat clothing with the permethrin insect repellent.



Remove standing water around the home in places such as plant containers, tires, pet dishes and buckets.



Daytime is when mosquitoes that spread Zika virus are most aggressive, but they can also bite at dawn and dusk.



EPA-registered insect repellents when used as directed, are proven safe and effective even for pregnant or breastfeeding women.

- Look for these ingredients: DEET, picaridin, IR3535, OLE, or PMD.
- Reapply insect repellent as directed.
- Apply sunscreen before insect repellent.
- Do not apply repellent directly to a child's face. Spray it into your hand first, then apply.



Practice safe sex because Zika can be sexually transmitted. It is important to always use condoms.

Pets

There is no evidence that Zika virus is spread to people from contact with animals. Animals in the United States are not at risk of becoming sick with Zika virus.

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🌐 www.nola.gov/health

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Everything you need to know about

Zika Virus

Information for Pregnant Women



On January 15, 2016, the Centers for Disease Control and Prevention (CDC) issued a travel alert for people traveling to regions where Zika virus transmission is ongoing. Pregnant women in any trimester should consider postponing travel to the areas where Zika virus transmission is ongoing. There are travel-related cases in New Orleans but no locally transmitted cases.

Currently the City of New Orleans Mosquito and Termite Control Board (NOMTCB) and the New Orleans Health Department (NOHD) are working with partners to provide you with information about Zika. NOMTCB is monitoring the mosquito population. Mitigation efforts to limit the mosquito population will utilize a combination of chemical control and habitat reduction methods as needed.

What is Zika?



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Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

If you develop symptoms within 2 weeks of travel, see a doctor and tell the doctor where you traveled.

Pregnancy and Zika Virus



Zika can be spread from a mother to her fetus during pregnancy. There have been reports of a serious birth defect of the brain called microcephaly in babies of mothers who had Zika virus while pregnant.

Travel Information for women who are pregnant or thinking of becoming pregnant:

- ✈ Consider postponing travel to any area where Zika virus transmission is ongoing.
- ✈ If you must travel to one of these areas, talk to your doctor first and strictly follow steps to prevent mosquito bites during your trip.
- ✈ It is safe for pregnant and breastfeeding women to use insect repellent.

Microcephaly is a birth defect where a baby's head is smaller than expected when compared to babies that are the same sex and age. Babies with microcephaly often have smaller brains that may not have developed properly.

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How to protect yourself



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Remove standing water around the home in places such as plant containers, tires, pet dishes and buckets.



Daytime is when mosquitoes that spread Zika virus are most aggressive, but they can also bite at dawn and dusk.



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Everything you need to know about

Zika Virus Information for Travelers



Currently the City of New Orleans Mosquito and Termite Control Board (NOMTCB) and the New Orleans Health Department (NOHD) are working with partners to provide you with information about Zika. NOTCMB is monitoring the mosquito population. Mitigation efforts to limit the mosquito population will utilize a combination of chemical control and habitat reduction methods as needed.

For more information

If you have questions about mosquitoes or Zika, call 311 for further information and assistance.

What is Zika?



Zika virus disease (Zika) is a disease spread to people primarily through the bite of an infected mosquito. It can also spread when an infected person has sex with another person. Most people with Zika do not know they have it. Symptoms are usually mild, lasting about a week.

Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

If you develop symptoms within 2 weeks of travel, see a doctor and tell the doctor where you traveled.

Planning a trip to New Orleans

New Orleans does not have local transmission of Zika. New Orleans does have the mosquitoes that could transmit Zika and other viruses.

If you are planning a trip to New Orleans, you should protect yourself and your family from mosquito bites. It is always important to wear insect repellent.

Traveling from a country with Zika

If you have recently returned from an area with ongoing virus transmission:

- Wear mosquito repellent even if you do not have Zika symptoms. This will keep mosquitoes in New Orleans from becoming infected and spreading Zika.
- If you feel sick, visit a doctor or call Louisiana Department of Health and Hospitals Infectious Disease Epidemiology Section at (800) 256-2748

How to protect yourself



Cover your skin by wearing long-sleeve shirts and long pants. For extra protection, treat clothing with the permethrin insect repellent.



Daytime is when mosquitoes that spread Zika virus are most aggressive, but they can also bite at dawn and dusk.



EPA-registered insect repellents when used as directed, are proven safe and effective even for pregnant or breastfeeding women.

- Look for these ingredients: DEET, picaridin, IR3535, OLE, or PMD.
- Reapply insect repellent as directed.
- Apply sunscreen before insect repellent.
- Do not apply repellent directly to a child's face. Spray it into your hand first, then apply.



Practice safe sex because Zika can be sexually transmitted. It is important to always use condoms.

Stay in places with air conditioning or that use window and door screens to keep mosquitoes outside.

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Everything you need to know about

Zika Virus

Information for Travelers



On January 15, 2016, the Centers for Disease Control and Prevention (CDC) issued a travel alert for people traveling to regions where Zika virus transmission is ongoing. Pregnant women in any trimester should consider postponing travel to the areas where Zika virus transmission is ongoing. **There are travel-related cases in New Orleans but no locally transmitted cases.**

Currently the City of New Orleans Mosquito and Termite Control Board (NOMTCB) and the New Orleans Health Department (NOHD) are working with partners to provide you with information about Zika. NOTCMB is monitoring the mosquito population. Mitigation efforts to limit the mosquito population will utilize a combination of chemical control and habitat reduction methods as needed.

What Is Zika?



Zika virus disease (Zika) is a disease spread to people primarily through the bite of an infected mosquito. It can also spread when an infected person has sex with another person. Most people with Zika do not know they have it. Symptoms are usually mild, lasting about a week.

Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

If you develop symptoms within 2 weeks of travel, see a doctor and tell the doctor where you traveled.

Planning a trip



If you are planning a trip to an area with ongoing Zika virus transmission, you should protect yourself and your family from mosquito bites. There is no vaccine to prevent you from becoming infected.

If you are pregnant, you should consider postponing travel to the areas with ongoing transmission.

If you are thinking of becoming pregnant, talk to your doctor about travel plans.

Returning travelers



If you have recently returned from an area with ongoing virus transmission:

Pregnant women: Talk to your doctor about your travel at your next prenatal visit. Testing is recommended for women with symptoms within the first week of illness. Even if you do not have symptoms, you can be screened for Zika virus infection.

Travel Advisory

Level 2:

Practice Enhanced Precautions

For a list of affected countries:

Visit cdc.gov/travel

How to protect yourself



Cover your skin by wearing long-sleeve shirts and long pants. For extra protection, treat clothing with the permethrin insect repellent.



Remove standing water around the home in places such as plant containers, tires, pet dishes and buckets.



Daytime is when mosquitoes that spread Zika virus are most aggressive, but they can also bite at dawn and dusk.



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- Apply sunscreen before insect repellent.
- Do not apply repellent directly to a child's face. Spray it into your hand first, then apply.



Practice safe sex because Zika can be sexually transmitted. It is important to always use condoms.

Stay in places with air conditioning or that use window and door screens to keep mosquitoes outside.

Sleep under a mosquito bed net if you are overseas or outside and are not able to protect yourself from mosquito bites.



Icons retrieved from Icon Project

Everything you need to know about Zika Virus



On January 15, 2016, the Centers for Disease Control and Prevention (CDC) issued a travel alert for people traveling to regions where Zika virus transmission is ongoing. Pregnant women in any trimester should consider postponing travel to the areas where Zika virus transmission is ongoing. **There are travel-related cases in New Orleans but no locally transmitted cases.**

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Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

If you develop symptoms within 2 weeks of travel, see a doctor and tell the doctor where you traveled.

How businesses can help



- Practice mosquito control efforts by removing standing water from your property. Dump, drain, turn over, or cover all containers that can hold standing water including flower pots, trash cans, decorative vases, and ashtrays.
- Consider contacting a pest control company for spraying.
- Keep doors and windows closed to keep mosquitoes out.
- If you have employees that work outdoors, recommend that they wear insect repellent to protect themselves.
- If you have guests who have traveled to a Zika affected country and are sick, they can call the Louisiana Department of Health at (800) 256-2748.

Travel Advisory

Level 2:

Practice Enhanced Precautions

For a list of affected countries:

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How to protect yourself



Cover your skin by wearing long-sleeve shirts and long pants. For extra protection, treat clothing with the permethrin insect repellent.



Remove standing water around the home in places such as plant containers, tires, pet dishes and buckets.



Daytime is when mosquitoes that spread Zika virus are aggressive daytime biters, but they can also bite at dawn and dusk.



EPA-registered insect repellents when used as directed, are proven safe and effective even for pregnant or breastfeeding women.

- Look for these ingredients: DEET, picaridin, IR3535, OLE, or PMD.
- Reapply insect repellent as directed.
- Apply sunscreen before insect repellent.
- Do not apply repellent directly to a child's face. Spray it into your hand first, then apply.



Practice safe sex because Zika can be sexually transmitted. It is important to always use condoms.

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Everything you need to know about Zika Virus For Healthcare Providers



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Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

If you see patients with the symptoms ask them where they have traveled.

Diagnostic testing

Preliminary diagnosis is based on the patient's clinical features, places and dates of travel and activities. Acute Zika virus disease should be suspected if the patient:

- 1) Traveled to or resided in an area with ongoing transmission of Zika virus within the past 2 weeks
- 2) Displays more than two symptoms

There are no commercially available diagnostic tests for Zika disease. Zika virus testing is performed by the CDC.

As an arboviral disease, Zika virus is a nationally notifiable condition. Healthcare providers are encouraged to report suspected cases to DHH to facilitate diagnosis and mitigate the risk of local transmission.

Treatment involves supportive care; Aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) should be avoided until dengue can be ruled out to reduce risk of hemorrhage.

Report any suspected cases to DHH for testing.

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Dial 311

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Report Suspected Cases

Report to Louisiana Department of Health and Hospitals Infectious Disease Epidemiology Section at:
Main line: (504)568-8313
After Hours: (800)256-2748

How to protect yourself



Cover your skin by wearing long-sleeve shirts and long pants. For extra protection, treat clothing with the permethrin insect repellent.



Remove standing water around the home in places such as plant containers, tires, pet dishes and buckets.



Daytime is when mosquitoes that spread Zika virus are aggressive daytime biters, but they can also bite at dawn and dusk.



EPA-registered insect repellents when used as directed, are proven safe and effective even for pregnant or breastfeeding women.

- Look for these ingredients: DEET, picaridin, IR3535, OLE, or PMD.
- Reapply insect repellent as directed.
- Apply sunscreen before insect repellent.
- Do not apply repellent directly to a child's face. Spray it into your hand first, then apply.



Practice safe sex because Zika can be sexually transmitted. It is important to always use condoms.

Everything you need to know about Zika Virus Information for OB/GYN



On January 15, 2016, the Centers for Disease Control and Prevention (CDC) issued a travel alert for people traveling to regions where Zika virus transmission is ongoing. Pregnant women in any trimester should consider postponing travel to the areas where Zika virus transmission is ongoing. **There are travel-related cases in New Orleans but no locally transmitted cases.**

Currently the City of New Orleans Mosquito and Termite Control Board (NOMTCB) and the New Orleans Health Department (NOHD) are working with partners to provide you with information about Zika. NOTCMB is monitoring the mosquito population. Mitigation efforts to limit the mosquito population will utilize a combination of chemical control and habitat reduction methods as needed.

What Is Zika?

Zika virus disease (Zika) is a disease spread to people primarily through the bite of an infected mosquito. It can also spread when an infected person has sex with another person. Most people with Zika do not know they have it. Symptoms are usually mild, lasting about a week.

Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

There have been serious reports of a birth defect of the brain called microcephaly and other poor pregnancy outcomes of mothers who were infected with Zika virus while pregnant.

Evaluating and testing patients

Women who have traveled to an area with ongoing Zika virus transmission during pregnancy and reported two or more symptoms within two weeks of travel should be evaluated for Zika virus infection and tested in accordance with CDC Interim Guidance.

Zika virus infections have been confirmed in infants with microcephaly, but this association is under investigation.

Women with recent travel to an area with ongoing Zika virus transmission and ultrasound findings of microcephaly or intracranial calcifications may be offered amniocentesis.

A positive Zika virus result from amniotic fluid would be suggestive of intrauterine infection. In the absence of microcephaly, the presence of intracranial calcifications before 22 weeks gestation may suggest a risk for the future development of microcephaly.

The CDC recommends testing tissues of live births and fetal loss with evidence of maternal or fetal Zika virus infection.

Report any suspected cases to DHH for testing.

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Prenatal Visits

The CDC advises that all pregnant women in the U.S. should be assessed for potential Zika exposure during every prenatal visit.

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Zika Fact Sheets (Local Transmission)

Everything you need to know about Zika Virus



There is local transmission of Zika by infected mosquitoes.

Currently the City of New Orleans Mosquito and Termite Control Board (NOMTCB) and the New Orleans Health Department (NOHD) are working with partners to provide you with information about Zika. NOMTCB is monitoring the mosquito population. Mitigation efforts to limit the mosquito population will utilize a combination of chemical control and habitat reduction methods as needed.

What is Zika?



Zika virus disease (Zika) is a disease spread to people primarily through the bite of an infected mosquito. It can also spread when an infected person has sex with another person. Most people with Zika do not know they have it. Symptoms are usually mild, lasting about a week.

Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

Visit your healthcare provider if you develop symptoms.

Stop the spread



If you have Zika and a mosquito bites you, it can pass Zika to other people. Following mosquito protection tips will help stop the spread of Zika.

If you have Zika, it is important to use insect repellent and use condoms when you have sex.

Anyone concerned about getting Zika from sex can use condoms. If you have sex (vaginal, anal, or oral) you should use a condom the right way every time.

Treatment



There is no vaccine to prevent or specific medicine to treat Zika infections.

You can treat the symptoms:

- Get plenty of rest.
- Drink fluids to prevent dehydration.
- Take medicine like acetaminophen (Tylenol) to relieve fever and pain. Do not take aspirin or NSAID drugs.

For More Information

If you have questions about mosquitoes or Zika, call 311 for further information and assistance.

How to protect yourself



Cover your skin by wearing long-sleeve shirts and long pants. For extra protection, treat clothing with the permethrin insect repellent.



Remove standing water around the home in places such as plant containers, tires, pet dishes and buckets.



Daytime is when mosquitoes that spread Zika virus are most aggressive, but they can also bite at dawn and dusk.



EPA-registered insect repellents when used as directed, are proven safe and effective even for pregnant or breastfeeding women.

- Look for these ingredients: DEET, picaridin, IR3535, OLE, or PMD.
- Reapply insect repellent as directed.
- Apply sunscreen before insect repellent.
- Do not apply repellent directly to a child's face. Spray it into your hand first, then apply.



Practice safe sex because Zika can be sexually transmitted. It is important to always use condoms.

Pregnant Women

Zika is linked to birth defects. If you think you or your male partner have or has had Zika, tell your healthcare provider.

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Everything you need to know about

Zika Virus For Pregnant Women



There is local transmission of Zika by infected mosquitoes.

Currently the City of New Orleans Mosquito and Termite Control Board (NOMTCB) and the New Orleans Health Department (NOHD) are working with partners to provide you with information about Zika. NOMTCB is monitoring the mosquito population. Mitigation efforts to limit the mosquito population will utilize a combination of chemical control and habitat reduction methods as needed.

What is Zika?



Zika virus disease (Zika) is a disease spread to people primarily through the bite of an infected mosquito. It can also spread when an infected person has sex with another person. Most people with Zika do not know they have it. Symptoms are usually mild, lasting about a week.

Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

Visit your healthcare provider if you develop symptoms.

Pregnancy and Zika Virus



Your doctor should talk to you about your risk for Zika virus at every prenatal visit.

Zika can be spread from a mother to her fetus during pregnancy. There have been reports of a serious birth defect of the brain called microcephaly in babies of mothers who had Zika virus while pregnant.

Microcephaly is a birth defect where a baby's head is smaller than expected when compared to babies that are the same sex and age. Babies with microcephaly often have smaller brains that might not have developed properly.

Treatment



There is no vaccine to prevent or specific medicine to treat Zika infections.

You can treat the symptoms:

- Get plenty of rest
- Drink fluids to prevent dehydration
- Take medicine like acetaminophen (Tylenol) to relieve fever and pain. Do not take aspirin or NSAID drugs.

For More Information

If you have questions about mosquitoes or Zika call 311 for further information and assistance.

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Everything you need to know about Zika Virus For Healthcare Providers



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Common Symptoms: Fever, rash, joint pain, and conjunctivitis (red eyes). Other symptoms include headache and muscle pain.

Encourage patients to schedule a visit if they develop symptoms.

Diagnostic Testing

Preliminary diagnosis is based on the patient's clinical features, places and dates of travel and activities. You may test asymptomatic pregnant women.

There are no commercially available diagnostic tests for Zika disease. Zika virus testing is performed by DHH and CDC.

As an arboviral disease, Zika virus is a nationally notifiable condition. Healthcare providers are encouraged to report suspected cases to DHH to facilitate testing and mitigate the risk of local transmission.

Contact DHH for testing of any suspected cases.

Treatment



There is no vaccine to prevent or specific medicine to treat Zika infections. Treatment involves supportive care; Aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) should be avoided until dengue can be ruled out to reduce risk of hemorrhage.

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Pregnant Women

The CDC advises that all pregnant women in the U.S. should be assessed for potential Zika exposure during every prenatal visit.

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Everything you need to know about Zika Virus For OB/GYN



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Testing Pregnant Women



Pregnant women who reside in areas with active Zika virus transmission are at risk of Zika virus infection throughout their pregnancy.

For pregnant women with symptoms consistent with Zika, testing is recommended during the first week of illness.

- For asymptomatic pregnant women, IgM testing is recommended at the initiation of prenatal care with follow-up IgM testing mid-second trimester.
- If new symptoms consistent with Zika develop, a prior negative test for Zika does not rule out current infection. If new symptoms develop, a pregnant woman should be retested.

Laboratory evidence of maternal Zika virus infection can include Zika virus RNA detected by RT-PCR in any clinical specimen or positive Zika virus IgM with confirmatory neutralizing antibody titers that are ≥ 4 -fold higher than dengue virus neutralizing antibody titers in serum by PRNT.

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