

# ZIKA



## CDC Interim Response Plan

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## Table of Contents

Purpose .....	3
Zika Virus in the Continental United States.....	3
Definitions .....	4
Local Mosquito-borne Transmission.....	4
Suspect Case of Local Mosquito-borne Transmission.....	4
Confirmed Local Mosquito-borne Transmission .....	4
Confirmed, Multiperson Local Mosquito-borne Transmission.....	4
Preparedness .....	5
Surveillance .....	5
Case surveillance .....	5
Pregnancy and birth defects surveillance .....	6
Enhanced surveillance in areas at risk for mosquito-borne transmission .....	7
Vector Control .....	8
Blood and Tissue Safety .....	9
Communication .....	10
Response.....	11
CDC Emergency Response Teams (CERT).....	12
Communicating Geographic Areas with Zika Virus Transmission Risk.....	13
Zika active transmission areas (red areas) .....	13
Zika cautionary areas (yellow areas).....	14
Response to a Suspect Case of Local Mosquito-borne Transmission .....	14
Response to a Confirmed Case of Local Mosquito-borne Transmission.....	15
Response to Confirmed, Multiperson Local Mosquito-borne Transmission.....	17
Future Zika Virus Preparedness .....	19
Appendix A - Domestic Travel and Testing Guidance for Local Mosquito-borne Transmission of Zika Virus*.....	21

## Purpose

This document describes updated guidance and resources from the Centers for Disease Control and Prevention (CDC) for responding to cases of Zika virus infection in the continental United States (CONUS) and Hawaii. This guidance is targeted to state, local, and tribal jurisdictions, which are responsible for responding to Zika virus disease in their communities. This guidance may also be used by jurisdictions in US territories and freely associated states as applicable and adapted as needed. Information is provided to assist jurisdictions in protecting pregnant women and infants and responding to travel-associated, sexually transmitted, and locally acquired Zika virus infections in the United States. CDC encourages jurisdictions to use existing funding to support these activities. There are no additional funds available from CDC at this time to support implementation of this guidance. This document serves as a reference for public health decision-making and is not meant to be prescriptive or comprehensive, as activities and decisions are jurisdiction- and event-specific. The response activities outlined in this plan are based on currently available knowledge about Zika virus, its transmission, and its effects on pregnant women and infants. These activities may change as more is learned about Zika virus.

## Zika Virus in the Continental United States

In 2016, non-congenital and congenital Zika virus infection and disease became nationally notifiable conditions in the United States. Cases are reported to [ArboNET](#), the national arboviral surveillance system managed by CDC and state and territorial health departments, using the [Council of State and Territorial Epidemiologists \(CSTE\) approved case definitions for non-congenital and congenital Zika virus infection and disease](#). CDC provides weekly provisional data on Zika virus disease case counts and presumptive viremic blood donors reported by US states and territories on the [CDC Zika Virus Case Counts in the US website](#). Zika virus disease cases that meet the probable or confirmed CSTE definitions are categorized as acquired through travel to affected areas, presumed local mosquito-borne transmission, or other routes (e.g., sexual, laboratory, or blood-borne transmission).

Zika virus infection during pregnancy may cause birth defects including microcephaly, fetal brain abnormalities, eye abnormalities, hearing loss, and other consequences of central nervous system damage in infants exposed in utero. Pregnancy loss and neonatal deaths have also been reported. To complement notifiable reporting of Zika virus disease, CDC has established the [US Zika Pregnancy Registry \(USZPR\)](#), an enhanced national surveillance system for monitoring the effects of Zika virus infection on pregnant women and their infants. The USZPR includes pregnant women with laboratory evidence of possible Zika virus infection in a maternal, placental, or fetal/infant sample and monitors these women and their infants.

Within CONUS, local mosquito-borne Zika virus transmission was reported by Florida and Texas in 2016. A description of Florida's response and control efforts for local mosquito-borne transmission of Zika virus in Miami-Dade and Broward Counties during June-August 2016 was published in CDC's [Morbidity and Mortality Weekly Report \(MMWR\)](#). Recommendations and guidance for people living in or traveling to areas of the United States with Zika virus transmission are available [on the CDC website](#).

Building on lessons learned in 2016 and feedback from state and local health partners, CDC has revised this document to be more streamlined, added links to existing guidance on CDC's website, and updated critical guidance. Detailed guidance on issuing and removing designations for Zika active transmission (red) areas and Zika cautionary (yellow) areas has been provided. In addition, the guidance for identifying areas at risk for the purpose of blood and tissue safety is now more closely aligned with the guidance for issuing travel and testing guidance.

## Definitions

### Local Mosquito-borne Transmission

Zika virus infection in a person who has not traveled from an area with Zika virus transmission or had sexual exposure or other known exposure to body fluids of an infected person.

### Suspect Case of Local Mosquito-borne Transmission

A person with symptoms or preliminary test results compatible with Zika virus infection who does not have risk factors for Zika virus acquisition through travel, sexual contact, or other known exposure to body fluids and for whom Zika virus test results are pending.

OR

A blood donor with initial donation screening positive for Zika virus and confirmatory test pending, who does not have risk factors for Zika virus acquisition through travel, sexual contact, or other known exposure to body fluids.

### Confirmed Local Mosquito-borne Transmission

A person who does not have risk factors for Zika virus acquisition through travel, sexual contact, or other known exposure to body fluids and who tests positive for Zika virus infection per [CDC laboratory guidance](#).

OR

A blood donor who does not have risk factors for Zika acquisition through travel, sexual contact, or other body fluid exposure and who has a positive Zika virus nucleic acid test (NAT) on screening AND confirmation through an approved confirmatory test algorithm.

### Confirmed, Multiperson Local Mosquito-borne Transmission

Three or more cases of confirmed local transmission in non-household members with onsets greater than 2 weeks apart (the approximate lifespan of an infected mosquito) and less than 45 days in an area of approximately 1-mile in diameter. Identification of overlapping movement within a 1-mile diameter of multiple people with locally acquired Zika virus infection suggests a common location (e.g., residential neighborhood, workplace, or other location) for infected mosquito exposure, because the lifetime flight range of the *Aedes aegypti* mosquito vector is approximately 150 meters (approximately 500 ft).

## Preparedness

CDC recommends that jurisdictions develop Zika virus action plans to guide preparedness and response activities through a phased, risk-based continuum. The continuum includes support for mosquito season preparedness and graduated action in response to detection of confirmed local mosquito-borne transmission and multiperson local mosquito-borne transmission, if present. Planning should also address activities to occur in subsequent seasons, following the confirmation of multiperson local mosquito-borne transmission.

Local mosquito-borne transmission can only occur when competent *Aedes* species mosquito populations are present within a community. The temperate climate of CONUS limits year-round Zika virus transmission in most locations; the seasonal timing of imported cases greatly influences the potential for local Zika virus transmission (e.g., imported cases during cooler months are less likely to lead to local mosquito-borne transmission). Mosquito season varies by jurisdiction but is typically during the summer months. However, year-round local transmission of Zika virus may be possible in warmer locations. Jurisdictions with competent vectors should conduct an assessment of vector risks and institute vector control activities as indicated.

## Surveillance

### Case surveillance

All health departments should be prepared to identify and investigate potential Zika cases in travelers, presumptive viremic blood donors, and their sexual contacts. These activities are important to mitigate risk to the community. Because clinicians are integral to the surveillance process, all health departments should take steps to increase healthcare provider awareness of Zika virus and ensure testing of potential cases. In addition, health departments should ensure that appropriate divisions, sections, or other units within their organizations have established lines of communication and are coordinating planning and response efforts, especially maternal and child health and birth defects programs. Vector control programs, which may exist within or outside health departments, should also be included.

The following information should be gathered as quickly as possible when a potential case is identified:

- Basic demographic information (e.g., age, sex, state, and county of residence)
- Clinical symptoms (including fever, rash, conjunctivitis, arthralgia, or evidence of neurologic disorder, such as Guillain-Barré syndrome)
- Illness onset date
- Exposure history (location of travel, dates of travel, partner's clinical information if sexual transmission is suspected, and receipt of any blood, organ, or tissues in previous 28 days)
  - For each confirmed case, dates of symptom onset and exposure to areas with risk of Zika or sexual contacts at risk for Zika virus infection should be closely evaluated to determine whether local mosquito-borne transmission can be ruled out. (see [Zika Virus Infection Case Investigation Form](#))

- Further detailed investigation should be conducted promptly for people who develop illness compatible with Zika virus disease within 28 days of receiving blood products, organs, or tissue because of the potential for Zika virus transmission through transfusion/transplantation.
- Hospitalization, reason for hospitalization, and disposition
- Pregnancy status and related information (e.g., sexual exposure, estimated date of delivery, results of prenatal ultrasound and other testing, outcomes, including pregnancy loss, live birth and any birth defects)
- If the patient is an infant, obtain maternal history as outlined above, including gestational age during pregnancy at the time of exposure and at birth. Also collect laboratory test results (maternal, infant, or placental), infant physical exam, and imaging findings, including microcephaly, intracranial calcifications, other neurologic abnormalities and birth defects and follow up on growth and development milestones, as appropriate.
- History of blood or tissue donation

Tools and resources to assist health departments in conducting epidemiologic investigations can be found on CDC's website.

While interacting with the patient and family, reinforce the steps necessary to avoid exposure to local mosquito populations to prevent transmission (e.g., stay indoors in screened, air-conditioned rooms during the first week of illness, use Environmental Protection Agency (EPA)-registered insect repellent, and perform mosquito reduction activities around home).

States and blood collection establishments should work together to ensure prompt communication from the blood center to the health department of any positive results identified in blood donors. It is possible that either local transmission cases or travel-associated cases could be identified through blood screening.

## **Pregnancy and birth defects surveillance**

CDC is ready to immediately assist jurisdictions with confirmed local mosquito-borne transmission of Zika virus to protect and [educate pregnant women](#), track cases of Zika infections during pregnancy and infant outcomes, and assist with provider outreach and education. State, local, and territorial public health programs are encouraged to collaborate with the [US Zika Pregnancy Registry \(USZPR\)](#), an active population-based surveillance system that monitors the effects of Zika virus infection during pregnancy on women and their infants. Data from the USZPR are used to update clinical evaluation and management of pregnant women and infants.

Whether symptomatic or asymptomatic, pregnant women with possible Zika virus infection and their infants should be reported to USZPR in as timely a manner as possible. Infants in whom Zika is diagnosed after birth should also be promptly reported, along with their mothers. Clinical information about the pregnancy as well as infant outcome data are tracked as part of USZPR surveillance.

Establishing and maintaining pregnancy and birth defects surveillance capacity is important before and during local mosquito-borne transmission. Jurisdictions should ensure that maternal and child health and birth defects programs are integrated into Zika virus planning and response activities and should ensure that clinicians caring for pregnant women and infants are aware of Zika risks, laboratory test availability, surveillance reporting, and clinical guidance.

## Enhanced surveillance in areas at risk for mosquito-borne transmission

In locations with competent mosquito vectors and travel-associated Zika virus disease cases, health departments should consider implementing enhanced surveillance for Zika virus disease when the mosquitoes are present and active and before identifying a first case of local mosquito-borne transmission. The appropriate geographic scope and intensity of such increased surveillance depends on local circumstances, such as history of previous local dengue or chikungunya virus transmission, population density, anticipated mosquito abundance, locations of recent travel-associated cases, local travel patterns (i.e., areas known to have a high number of travelers to affected areas, or areas with previously identified cases of travel-associated dengue and chikungunya), and other risk factors (e.g., lack of air conditioning or screens). Enhanced surveillance near the area(s) of likely exposure should also be conducted when a confirmed case of local transmission is reported. CDC is available to provide additional guidance to state, local, and tribal jurisdictions as requested. Contact CDC's Emergency Operations Center at 770-488-7100 or [eocreport@cdc.gov](mailto:eocreport@cdc.gov) for assistance.

Jurisdictions should take the following steps to quickly detect and report local mosquito-borne transmission:

1. Ensure diagnostic testing is available and communicate with providers about local testing goals.
  - Ensure processes for laboratory test ordering and approval (from public health laboratories [PHLs]) are in place and that providers are aware of PHLs and commercial laboratory diagnostic testing options.
  - Ensure timely specimen transport and testing for suspected local transmission cases and plans for test confirmation if there is a positive result.
  - Ensure any changes in guidance on laboratory testing or interpretation of results are communicated promptly through appropriate public health channels to reach clinicians.
  - Emphasize outreach to healthcare providers caring for pregnant women and infants to ensure they are aware of how to obtain Zika virus testing when indicated.
  - Ensure a mechanism exists for timely reporting of results to providers, particularly those caring for pregnant women.
2. Increase surveillance for Zika virus disease in areas with confirmed travel-associated cases and competent vector activity to identify possible cases of local transmission.
  - Interview household members of confirmed travel-associated cases, conduct testing of anyone with symptoms consistent with Zika virus disease, and inform household members to notify public health authorities if symptoms develop.
    - Whenever possible, follow up on households that had a travel-associated case with onset of symptoms 14-21 days earlier to ascertain if any additional household members developed symptoms that could indicate local transmission, and to provide or facilitate testing for any newly symptomatic people.
    - Deliver prevention and early detection messages to nearby households.
  - Increase outreach to local [healthcare providers](#), including infectious disease specialists, obstetricians and gynecologists, maternal-fetal medicine specialists, and pediatricians.
  - Develop tools and processes to ensure providers can report clinically compatible cases, particularly pregnant women with prenatal findings consistent with congenital Zika syndrome and infants with birth defects consistent with congenital Zika syndrome to state or local public health officials.

- Contact local laboratories that perform Zika virus testing to monitor the number and geographic location of additional suspect cases and any preliminary positive results, to reconcile with reports from public health departments, to assess testing volume and to ensure laboratories are aware of public health reporting requirements.
  - Conduct syndromic surveillance using data from healthcare facilities, including emergency departments, to detect early increases in illnesses that could be Zika virus disease, wherever possible.
  - Consider implementing sentinel surveillance in areas at higher risk for local mosquito-borne transmission.
    - Rapidly identifying suspect local mosquito-borne transmission cases in areas with confirmed travel-related cases and potential for mosquito-borne transmission requires timely testing of patients with illnesses highly suggestive of Zika virus disease (e.g., people who have two or more of the four primary clinical signs/symptoms: rash, fever, arthralgia, or conjunctivitis), but who lack known travel-related exposures.
  - Consider implementing [event-based surveillance](#) for clusters of rash illness.
    - Educate and enlist providers to be vigilant for unexplained clusters of rash illness, to report the finding to public health, and to conduct further investigation and testing for Zika virus disease. This is especially important if some patients have additional symptoms (e.g., fever, arthralgia, or conjunctivitis), or if the cluster involves adults, where rash illnesses may be less common.
3. Develop standing communication channels with vector control officials to share vital information and coordinate surveillance and vector control efforts.
- State and local health departments should coordinate closely with local vector control districts to ensure vector control personnel are rapidly informed of any confirmed Zika virus infection in their jurisdiction.

## Vector Control

The goal of vector control is to suppress *Aedes aegypti* and *Aedes albopictus* mosquito populations in a coordinated and effective manner to prevent or interrupt Zika virus transmission. CDC has developed guidelines on the [Surveillance and Control of \*Aedes aegypti\* and \*Aedes albopictus\* in the United States](#). The magnitude of activities used in a vector control response will depend on the extent of mosquito-borne transmission, as measured by the number of Zika cases and their geographic and temporal distribution.

- Control activities that target both adult and larval mosquitoes will be necessary to prevent or interrupt Zika virus transmission by mosquitoes.
- The methods used around a single case may be accomplished with intensive sanitation and limited adulticiding delivered with backpack spraying. More widespread transmission may require equipment (i.e., trucks or aircraft) that can deliver larvicides and adulticides over a much broader area in a timely and effective manner.
- Any vector control should be guided by robust mosquito surveillance to evaluate the effectiveness of interventions.
- The American Mosquito Control Association, through funding provided by CDC, has updated its [Best Practices for Integrated Mosquito Management](#).



CDC has also developed a database for the collection of [surveillance information on the distribution, abundance, and insecticide resistance status](#) of *Aedes aegypti* and *Aedes albopictus*. This information is useful to inform strategy and resource allocation for the control of these mosquito vectors. Additional guidance on Zika vector control in the Continental United States can be found [here](#).

## Blood and Tissue Safety

The US Food and Drug Administration (FDA) issued updated guidance for industry to reduce the risk of transfusion-transmission of Zika virus in [August 2016](#). These recommendations call for blood collection establishments in **all** states and US territories to screen individual units of donated whole blood and blood components with a Zika virus screening test authorized for use by FDA under an investigational new drug (IND) application or with a licensed test when available. Alternatively, an FDA-approved pathogen-reduction device may be used for plasma and certain platelet products. FDA has also issued guidance for reducing the risk of Zika virus transmission by [human cell and tissue products](#). For organ transplants, the Organ Procurement and Transplantation Network (OPTN) of the Health Resources and Services Administration (HRSA) has developed [information on Zika virus](#) for organ transplant establishments and organ procurement organizations.

Jurisdictions should ensure procedures are in place with blood collection establishments for sharing information and coordinating response activities related to presumed viremic blood donors. Jurisdictions should also strengthen communication and information sharing procedures with local tissue collection establishments regarding Zika virus and tissue donations.

In addition to its critical role in protecting health, blood donation screening for Zika virus can enhance surveillance efforts and inform prevention and response measures. CDC efforts in these areas include the following:

- Providing consultation and [guidance](#) to help state, local, and tribal jurisdictions reduce the risk of transfusion- or tissue-related transmission (e.g., semen) of Zika virus.
- Establishing criteria for health departments to report blood donors with Zika infection to CDC's ArboNET.
- Working with state and local health officials to ensure that [geographic areas with Zika virus transmission risk](#) are posted on the CDC Zika virus website to assist blood collection and tissue recovery establishments in identifying areas requiring blood and tissue safety intervention (see [Communicating Geographic Areas with Zika Virus Transmission Risk](#) section).
- Providing guidance and technical assistance, as needed, to state or local jurisdictions and blood collection and tissue recovery establishments in following up with positive donors, reporting of donors with Zika virus infection to ArboNET, and investigating suspected cases of transfusion- and transplant-transmitted infections.

## Communication

When preparing for local Zika virus transmission, jurisdictions should follow [risk communication principles](#) to immediately communicate and effectively address concerns about Zika.

- Maintain credibility and public trust by regularly providing timely, accurate, and actionable information about what is known and unknown about Zika virus and dispelling rumors and misinformation.
- Increase access to accurate information about Zika among affected populations (i.e., pregnant women and community members) and convey appropriate action messages for each audience.
- Ensure communication is sensitive to diverse cultural health beliefs and practices, preferred languages, health literacy, and other communication needs (for more information, consult the [National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care \[CLAS\]](#)).
- Ensure communication messages are accessible to non-English speaking audiences.

Jurisdictions should ensure that communication activities achieve the following:

- Increase knowledge of vector control activities in affected communities.
- Increase the capacity of [healthcare providers](#) to share accurate health information about Zika prevention with pregnant women and women of reproductive age, their partners, and affected populations. This will likely require targeted outreach to [healthcare providers caring for pregnant women and infants](#).
- Motivate action by community leaders and organizations (e.g., [MotherToBaby](#) and [March of Dimes](#)) to protect pregnant women and other people at risk, especially vulnerable populations, from Zika virus infection.
- Communicate [how Zika is spread](#) and [how people can protect themselves](#).
- Distribute [communication materials](#) (i.e., fact sheets, web updates, video messages, press releases) explaining public health activities by local, state and CDC officials, including [provider tools](#), responsive vector control activities and travel guidance.

CDC's communication activities in response to Zika virus include the following:

- Coordination with relevant stakeholders
  - Coordinate public announcements with local authorities and other agencies.
  - Coordinate with state/local press release or press conference to issue a CDC press statement or hold a press briefing with CDC leadership or subject matter experts, as appropriate.
  - Before press events, distribute key information to agencies, officials, and public health partners.
    - Partner organizations, including national and local chapters as applicable: American College of Obstetricians and Gynecologists, Association of State and Territorial Health Officers, Council of State and Territorial Epidemiologists, National Association of City and County Health Officers, Pan American Health Organization, Society for Maternal-Fetal Medicine, and the World Health Organization
    - Federal partners: Assistant Secretary for Preparedness and Response, Centers for Medicare and Medicaid Services, Environmental Protection Agency, Food and Drug Administration, Health Resources and Services Administration, and Indian Health Service

- Congressional staff and elected officials at multiple levels
- Communication of messages
  - As appropriate, issue press release/media statement(s) and support local and state Public Information Officers.
  - Convey health messages and resources to professionals (i.e., clinicians, health departments, and laboratories) and the public.
  - Communicate how Zika is spread and how people can protect themselves.
- Ensuring effectiveness of communication activities
  - Support state and local responders in adapting and tailoring CDC-produced information products designed to ensure consistency and clarity of messages regarding Zika, vector control activities, and clinical guidance.
  - Monitor and assess news media, social media, and public inquiries to update or correct information delivered as needed.
  - Engage with relevant target audiences regularly to update and improve messaging and uptake.

## Response

In the event of suspected or confirmed local transmission, state health officials should notify designated officials and the CDC Emergency Operation Center at 770-488-7100 or [eocreport@cdc.gov](mailto:eocreport@cdc.gov).

CDC will work closely with the state health department to balance consistency in Zika virus response activities nationally with specific requirements of individual states and localities. CDC will provide support and assistance as needed in confirming cases, determining appropriate geographic areas for interventions, rapidly conducting an epidemiologic investigation, and enhancing surveillance activities, entomologic evaluation, and risk communication. CDC can provide on-the-ground assistance via a CDC Emergency Response Team, as described below. Although blood donation screening has been implemented in all US states and territories, CDC will continue to post information about geographic areas with Zika virus transmission risk on a [designated section of the CDC Zika virus website](#) to assist in identifying areas with risk of Zika for the purposes of blood and tissue safety intervention.

CDC continually reviews data and issues clinical guidance and testing recommendations focused on women of reproductive age, pregnant women, and infants. Pregnant women and women planning a pregnancy, as well as infants born to women infected with Zika virus during pregnancy, are a priority. For women and couples living in areas with risk of Zika who wish to delay or prevent pregnancy, CDC recommends that healthcare providers discuss how to prevent unintended pregnancy and offer the full range of FDA-approved contraceptive methods. In all stages of the response, CDC will provide [educational materials and targeted messages](#) designed to reach pregnant women, men and women of reproductive age, and their healthcare providers.

## CDC Emergency Response Teams (CERT)

When a suspected or confirmed case of local transmission is identified, CDC will work with the state or tribal health authorities to determine if CERT support is needed. CERT(s) may be requested by state, local, or tribal health authorities through the CDC Emergency Operations Center at 770-488-7100 or [eocreport@cdc.gov](mailto:eocreport@cdc.gov). CDC will review the request and, if approved, will coordinate the mission and logistics of the CERT deployment with the health or emergency management authorities.

The composition of the CERT will depend on the needs of the state/local or tribal health authorities and will be a joint decision of the state/local or tribal health authority and CDC. CERTs can provide on-the-ground technical assistance in epidemiology, vector control, pregnancy and birth defects, blood and tissue safety, and risk communication, as well as community engagement, response management, and logistics. The team's resources include experts who specialize in detecting and controlling mosquito-borne diseases, case-investigation/ascertainment and surveillance, identifying and studying insects and vector control, and laboratory diagnostics for responding to the challenges presented by Zika. Specifically, CERTs can

- Assist with epidemiologic investigation of known cases to determine the timing and source of infection (travel-related, sexual, mosquito-borne, or other) through interviews with suspect cases, family, and possibly primary care providers.
- Assist with clinical outreach to healthcare providers caring for pregnant women and infants.
- Assist with clinical laboratory reporting to healthcare providers and laboratory interpretation.
- Assist with collection of data for the pregnancy registries and birth defects surveillance.
- Provide technical assistance and education on the clinical management of pregnant women and infants affected by Zika to state, local, and tribal health officials and providers.
- Work with existing local vector control programs to fill gaps around implementing local vector control measures
- Enhance or implement mosquito surveillance (if absent) to determine the type, distribution, and population size of competent *Aedes* mosquito species.
- Support community engagement efforts to implement vector control strategies and programs.
- Provide communication research, media and technical assistance, and audience-focused materials to help local health departments institute risk communication campaigns to provide information about the risk of Zika virus infection and personal measures people can take to decrease their risk for infection and adverse outcomes, with a focus on protecting pregnant women.
- Facilitate outreach to the local medical community to test and report suspect cases and to provide clear and actionable prevention information to patients, including prevention of both mosquito-borne and sexual transmission.
- Support staffing needs (as CDC resources permit) for state, local, or tribal health departments to enhance surveillance for Zika virus infection in people.
- Provide on-site training or assistance in performing laboratory tests for Zika infection, including scale up of local laboratory capacity or rapid transport of specimens to reference laboratories.

## Communicating Geographic Areas with Zika Virus Transmission Risk

In the event that Zika virus transmission occurs at an intensity that presents a risk to pregnant women, CDC in consultation with states will issue domestic travel guidance for pregnant women to avoid or consider postponing travel to the affected area, as well as prevention, laboratory testing, and preconception counseling guidance. To keep the public informed, CDC will provide [travel information and trip planning recommendations](#) to the public and indicate areas of Zika transmission risk with guidance, maps, and case counts. CDC will also assist blood collection and tissue recovery establishments in identifying areas requiring blood and tissue safety intervention by posting this information on a designated [website](#).

CDC has identified [two types of geographic areas](#) to describe where Zika virus-related domestic travel, testing, and other guidance applies: Zika cautionary areas (designated as yellow on map) and Zika active transmission areas (designated as red on map) ([Appendix A](#)). The designation of these areas can be revised or removed when public health assessment suggests a change in risk in consultation with CDC and state and local officials.

Surveillance and public health interventions implemented in and around these areas should be determined based on risk assessments for further local transmission (boundaries may vary by intervention). Risk assessments should include factors such as history of previous local dengue or chikungunya virus transmission; population density; large numbers of the mosquitoes that spread Zika; locations of recent travel-associated cases; local travel patterns (i.e., areas known to have a high number of travelers to affected areas, areas with previously identified cases of travel-associated dengue and chikungunya); and other risk factors (e.g., lack of air conditioning or screens).

Surveillance and response activities should be scaled based on the intensity and geographic extent of transmission. CDC can provide consultation and CERT assistance with scaling up surveillance and response activities, as needed.

### **Zika active transmission areas (red areas)**

A Zika active transmission (red) area is a geographic area in which local, state, and CDC officials have identified the presence of [confirmed, multiperson local mosquito-borne transmission](#) and have determined that the intensity of Zika virus transmission presents a significant risk of Zika virus infection, posing a risk to pregnant women and blood and tissue safety. In a red area, a combination of preventive interventions should be implemented, most importantly travel guidance recommending pregnant women not travel to the area. Blood collection and tissue recovery establishments should refer to FDA guidance for detailed recommendations (see [Blood and Tissue Safety](#) section). Testing, prevention, and preconception counseling recommendations for red areas can be found [here](#).

When defining a red area, states in consultation with CDC, should designate the smallest, easily identifiable location, with a minimum of 1-mile diameter that completely encompasses the geographic area of significant risk, particularly to pregnant women, as delineated by epidemiologic, entomologic, and environmental investigation. The boundaries of this area should be communicated to the public using terminology and landmarks recognizable to residents and visitors, such

as street-level borders, a neighborhood, a zip code area, a city, or a county. After a period of 45 days with no additional confirmed local transmission cases and no suspected local transmission cases under active investigation, a red Zika active transmission area should be designated as a cautionary (yellow) area, as described below.

## Zika cautionary areas (yellow areas)

A Zika cautionary (yellow) area is a geographic area in which local mosquito-borne transmission has been identified and pregnant women and blood and tissue safety are at some undetermined risk, but evidence is lacking on whether the intensity of transmission is widespread and sustained. Pregnant women should consider postponing travel to yellow areas. Blood collection and tissue recovery establishments should refer to FDA guidance for detailed recommendations (see [Blood and Tissue Safety](#) section). Testing, prevention, and preconception counseling recommendations for yellow areas can be found [here](#).

Acknowledging the need to be adaptable and responsive to local circumstances, a yellow area may be established in one of two ways: (1) as a cautionary area surrounding a Zika active transmission (red) area, or (2) as a cautionary (yellow) area alone. When a red area is established, a yellow area is implemented simultaneously around it, with the yellow area boundaries defined by the borders of the county, city, or another similar jurisdiction with easily identifiable borders for public communication. Removal or revision of the yellow area may be considered when public health assessment indicates a clear change in risk (e.g., a period of 45 days after the red area designation ends, with no additional confirmed local transmission cases, no suspected local transmission cases under active investigation and enhanced surveillance in place).

If a red area has not been defined, a yellow area may be designated if there are three or more local transmission cases without an epidemiologic link (e.g., non-household cases) within a 5-mile diameter over a 45-day period. Preferably, case locations should be mapped by the location of the most likely exposure or if necessary, by home or neighborhood residence. Similar to a yellow area surrounding a red area described above, the boundaries of a “stand-alone” yellow area are defined by the borders of the county, city, or another similar jurisdiction with easily identifiable borders for public communication. Removal or revision of the yellow area may be considered when public health assessment indicates a clear change in risk (e.g., a period of 45 days after the yellow area is implemented, with no additional confirmed local transmission cases and no suspected local transmission cases under active investigation and enhanced surveillance in place). Additional reporting factors to consider before removal or revision of the yellow area, especially in jurisdictions balancing multiple competing priorities, include timeliness of case investigations, laboratory testing, and delays in data sharing.

## Response to a Suspect Case of Local Mosquito-borne Transmission

In response to a suspect case of local mosquito-borne transmission, state and local health authorities should

- Initiate an epidemiologic investigation to determine the timing and potential source of infection (i.e., locations of possible mosquito exposure, travel within CONUS) (see [Possible Local Mosquito-borne Transmission Zika Virus Case Investigation Form](#)).

- Be prepared to share vital information and coordinate surveillance and vector control efforts with vector control officials.
- Implement [local vector surveillance and control](#), as appropriate.
- Communicate with clinicians caring for pregnant women and infants about the risks of Zika and disseminate CDC guidance for these populations.
- Ensure that state and local maternal and child health and birth defects programs are integrated into Zika virus planning and response activities.
- If applicable, coordinate with blood collection establishments to begin traceback and other follow-up activities related to presumptive viremic blood donors.
- Verify procedures and points of contact with local tissue collection establishments regarding Zika virus and tissue donations.

## Response to a Confirmed Case of Local Mosquito-borne Transmission

Local transmission by mosquitoes should be assumed whenever a case is confirmed and other routes of exposure (e.g., travel, sexual contact, transfusion) have been evaluated and likely ruled out. Under these circumstances, state, local, and tribal jurisdictions should implement surveillance for Zika virus disease around the home of the confirmed, locally acquired case and any other likely locations of exposure identified through the case investigation. The principal objectives of this surveillance should be to define the frequency and geographic extent of local transmission. Tools to assist in conducting epidemiologic investigations and surveillance in households, workplaces, and the community can be found in CDC's [Toolkit for Investigating Possible Local Mosquito-Borne Transmission of Zika Virus](#).

Because dengue and chikungunya virus infections share a similar geographic distribution with anticipated Zika virus distribution and acute symptoms of infection with all three viruses are similar, patients under investigation for Zika virus infection should also be evaluated and managed for possible dengue or chikungunya virus infection. It is important to identify dengue virus infections because proper clinical management of dengue can improve outcomes for patients.

In response to a confirmed case of local mosquito-borne transmission, state and local health authorities should

- Notify CDC of the investigation and provide basic epidemiologic information regarding the confirmed case to ensure coordination of efforts between the jurisdiction and CDC. (see [Zika Virus Line List Template](#))
- Determine if [CERT](#) support is needed.
- Identify the physical location of the case patient's most likely place(s) of exposure (e.g., home, work, other US location, if recent travel). (see [Possible Local Mosquito-borne Transmission Zika Virus Case Investigation Form](#))
- Implement targeted surveillance activity around suspected area(s) of local transmission to identify if other recent cases are from same/nearby mosquito pool; these activities can help quickly confirm local transmission. (see [CDC Sample Protocol for Community Survey, Household Member Survey Form, Workplace Survey Form, Household or Workplace Visit Log, Zika Virus Line List Template](#))

- For household members:
  - Assess for symptoms of Zika virus disease (e.g., within 8 weeks prior to the case patient's symptom onset).
  - Evaluate relationship to case patient, pregnancy status and plans to become pregnant, if applicable.
  - Collect urine and serum to test for recent Zika virus infection.
  - Assess travel and other potential exposures, if applicable.
  - Ask about history of blood or tissue donation.
- For close neighbors/neighborhood in suspected area/workplace with outdoor exposure
  - Conduct house-to-house survey of any available people, or survey at local gathering place or workplace, to identify any recently symptomatic people (e.g., within 8 weeks prior to the case patient's symptom onset)
  - If symptomatic, obtain specimens to test for recent Zika virus infection.
- Conduct [enhanced surveillance](#) in areas contiguous to the location where local transmission likely occurred, especially those with documented vector activity and high travel volume to the affected area.
  - Determine if additional identified suspect cases are likely to represent a single transmission chain or separate occurrences.
  - Ensure adequate surveillance of pregnant women and infants, including testing when indicated.
- In coordination with CDC, evaluate the need to define a [Zika cautionary \(yellow\) area](#). If a yellow area is established:
  - Communicate [travel, testing, and related guidance](#) associated with cautionary areas to target audiences and partners, including the boundaries of such areas.
  - Communicate the location(s) of any such area(s) to blood collection and tissue recovery establishments.
- In coordination with vector control officials, implement [local vector surveillance and control](#) as appropriate.
  - Intensify vector surveillance and resistance testing efforts in identified geographic area(s).
  - Consider focal or area-wide treatments with larvicides and adulticides using application methods (truck or aerial) appropriate for the treatment area(s).
  - Intensify source reduction efforts.
  - Consider adding community-based adult mosquito control consisting of outdoor residual spraying and space spraying if necessary.
  - Consider targeted indoor residual spraying in areas where air conditioning and screens are not widely available.
- Increase coordination of response activities with state and local maternal and child health and birth defects programs.
- Communicate with blood collection and tissue recovery establishments (see [Blood and Tissue Safety](#) section) to identify additional cases.
- If applicable, coordinate with blood collection establishments to begin traceback and other follow-up activities related to presumptive viremic blood donors.
- Further expand laboratory testing for symptomatic people, including pregnant women, and assess laboratory surge capacity for anticipated increased testing volume.



- Augment clinician outreach, education, and communication activities to healthcare providers in the county or jurisdiction through existing local channels (e.g., messages through local medical societies and local chapters of ACOG/AAP, Health Alert Network messages [HANs], conference calls).
  - Communicate with clinicians caring for pregnant women and infants about the risks of Zika and disseminate [CDC guidance](#).
  - Emphasize the importance of testing pregnant women and infants.
- Prepare and issue a media statement in coordination with CDC and involved local health departments.
- Hold press conferences/events about confirmed local transmission Zika case, ongoing investigations, and updates. Pre-release copies of the press release and Q&As to
  - State and local health departments
  - Responding health department unit, environmental health unit, law enforcement, and local elected officials
- Conduct appropriate [risk communication](#), following established principles (e.g., be first, be right, be credible).
  - Inform the public about what is known and what is not known.
  - Provide actions people can take to protect themselves and their families to reduce the risk of infection through mosquito bites and sexual transmission, and minimize the potential for public misunderstanding, rumors, and fear.
  - Use available communication channels appropriate for the local community.
  - Engage with pregnant women, women of reproductive age, and their families/partners with personal protective measures recommendations (e.g., steps to prevent mosquito bites and sexual transmission)
- Provide information to [pregnant women](#) and [women of reproductive age](#) about the presence of Zika virus in the local area and what precautions they should take to prevent being infected with or avoid Zika virus exposure during pregnancy. Information should also be made available for their [sexual partners](#).
- Implement community outreach efforts to encourage people with clinically compatible illnesses to seek care (and testing for confirmation, when appropriate).
- Monitor local news stories and social media posts to determine if information is accurate, identify messaging gaps, and make adjustments to communication materials, as needed.

## Response to Confirmed, Multiperson Local Mosquito-borne Transmission

In response to confirmed, multiperson local mosquito-borne transmission, state and local health authorities should

- Determine if CERT support is needed.
- In coordination with CDC, define the boundaries of the Zika active transmission (red) area and the surrounding Zika cautionary (yellow) area to communicate [geographic areas with Zika virus transmission risk](#).
  - Communicate [travel, testing, and related guidance](#) associated with these areas to target audiences and partners, including the boundaries of such areas.
  - Communicate the location(s) of any such area(s) to blood collection and tissue recovery establishments.
- Prepare and issue a media statement in coordination with CDC and involved local health departments.

# ZIKA

## CDC Interim Response Plan

- Continue to conduct [enhanced surveillance](#) activities to identify additional cases of local transmission.
- Continue [vector surveillance and control measures](#) as guided by an entomologic evaluation of the area.
  - Consider intensifying and expanding area-wide treatments with larvicides and adulticides using application methods (truck or aerial) appropriate for the scale of the treatment area.
  - Conduct intensive source reduction in affected area(s).
  - Consider intensifying targeted indoor residual spraying to vulnerable homes if air conditioning and screens are not widely available.
- Continue to enhance coordination of response activities with state and local maternal and child health and birth defects programs.
- Further escalate clinician outreach and communication activities to healthcare providers in the county or jurisdiction through existing local channels (e.g., messages through local medical societies and local chapters of ACOG/AAP/AMCHP, Health Alert Network messages [HANs], conference calls).
  - Intensify communication with [clinicians caring for pregnant women and infants](#) about the risks of Zika and disseminate CDC guidance.
- Recommend testing to all pregnant women (symptomatic and asymptomatic) and other people who have symptoms who live in or travel to a red area and the surrounding yellow area.
  - Implement laboratory surge plans to ensure timely testing.
  - Prioritize pregnant women for diagnostic testing, followed by symptomatic people who are not pregnant, except in circumstances where testing a limited number of symptomatic people is crucial for monitoring key epidemiologic factors (e.g., changes in transmission intensity or extent).
  - Provide [guidance to laboratories](#) as needed.
- Communicate with blood collection and tissue recovery establishments (see [Blood and Tissue Safety](#) section) to identify additional cases.
- If applicable, coordinate with blood collection establishments to begin traceback and other follow-up activities related to presumptive viremic blood donors.
- With CDC assistance, conduct risk communication activities that ensure information and prevention recommendations reach intended audiences within their jurisdictions. Communication activities should
  - Describe the area where Zika virus transmission is thought to be occurring based on the best available epidemiologic, entomologic, and environmental information.
  - Identify estimated date when local Zika virus transmission began.
  - Describe the surveillance and response efforts taking place in the affected area and provide objective assessments of the situation and scale of the public health threat.
  - Communicate the importance and availability of testing to all pregnant women (symptomatic and asymptomatic) and other people who have symptoms who live in or travel to red area and the surrounding yellow area.
  - Advise healthcare providers of pregnant women of the appropriate steps for Zika virus testing in accordance with [CDC guidance](#).
  - Reinforce recommendations for pregnant women and women wishing to conceive and their sex partners.
  - Provide advice about ways to reduce mosquito populations around the home.

- Advise pregnant women and their sex partners to take steps to prevent mosquito bites and sexual transmission (e.g., wearing insect repellent and using condoms or not having sex to protect themselves from Zika virus infection).
- Identify and provide resources (e.g., insect repellent, window screens, condoms) for specific communities as necessary to minimize exposure risk, particularly for pregnant women and their partners.
- Provide guidance to schools, such as the [Interim Guidance for School District and School Administrators in the Continental United States and Hawaii](#).
- Engage early with businesses, including blood collection and tissue recovery establishments and labor stakeholders, to prepare for the potential short- and long-term economic effects.
- The Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) have published [interim guidance](#) for protecting workers from occupational exposure to Zika virus
- Implement expanded state and local intervention plans for all vulnerable populations, specifically pregnant women, women at risk for unintended pregnancy, women and men planning pregnancy, and children. Recommendations for reducing risk should target everyone, but particularly pregnant women and women at risk for unintended pregnancy who live in, work in, or must travel to an area with risk of Zika.
- Identify statewide resources for caring for infants and children with Zika-associated birth defects, developmental concerns, and other related outcomes.
- Encourage providers to join an [American Academy of Pediatrics/American College of Obstetricians and Gynecologists](#) (AAP/ACOG) provider network (when established).
- Report all cases to [ArboNET](#), using the [Council of State and Territorial Epidemiologists \(CSTE\) approved case definitions](#) for non-congenital and congenital Zika virus infection and disease.
- Report all pregnant women with laboratory evidence of possible Zika virus infection and their infants to the [US Zika Pregnancy Registry \(USZPR\)](#) for monitoring and follow up on pregnancy and infant outcomes.
- Work with the state-based birth defects surveillance system to report all infants with birth defects potentially related to Zika virus to [Zika Active Birth Defects Surveillance](#) at CDC.
- Continue to monitor the status of local transmission on a weekly basis, at a minimum. The geographic area(s) for Zika virus intervention should be adjusted based on current information.
  - Environmental conditions not conducive to mosquito activity, or other evidence that indicates the risk of Zika virus transmission has been reduced, should also be considered when scaling down interventions.
  - Implement a protocol and communication strategy when interventions are changed or rightsized.

## Future Zika Virus Preparedness

As jurisdictions continue to address the threat posed by Zika virus, it is vital to build on the plans and capacities established over the past year by incorporating evolving knowledge of Zika virus and the methods used to combat its spread. CDC will assist jurisdictions in protecting their residents by improving surveillance, enhancing vector control, facilitating appropriate testing, and providing messaging to clinicians and the public.

The full range of health effects caused by Zika virus is currently unknown. However, if a pregnant woman is infected, the virus can pass to her fetus during pregnancy and cause [congenital Zika syndrome](#). Congenital Zika syndrome is a pattern of birth defects associated with Zika virus infection during pregnancy that includes brain abnormalities, eye abnormalities, and hearing loss. Research continues to further define the spectrum of anomalies associated with Zika virus infection during pregnancy.

Zika virus poses a serious risk to public health; therefore, it is essential that jurisdictions remain engaged in preparedness and response activities. States, locals, and tribes should use the guidance provided in this document and referenced throughout to prepare for and respond to the threat of Zika virus in their jurisdictions.

## Appendix A - Domestic Travel and Testing Guidance for Local Mosquito-borne Transmission of Zika Virus\*

Risk Designation	Trigger On	Geographic Area with Transmission Risk	Trigger Off	Travel Guidance	Testing Guidance
Yellow Area	Confirmed local transmission <sup>†</sup> for ≥ three cases without an epidemiologic link within a 5-mile diameter over a 45-day period.	County, city, or other similar jurisdiction with easily identifiable borders for public communication.	Consider removing if there are no new cases of confirmed local transmission <sup>§</sup> in at least a 45-day period after the yellow area is implemented <sup>¶</sup> .	Pregnant women should <b>consider postponing travel</b> to the geographic area.	All pregnant women who lived in, traveled to, or had sex without a condom with someone who lived in or traveled to area should be tested for Zika virus.
	Implemented simultaneously with red area.	County, city, or other similar jurisdiction with easily identifiable borders for public communication.	Consider removing if there are no new cases of confirmed local transmission <sup>§</sup> for a period of 45 days after red area ends <sup>¶</sup> .		
Red Area	Confirmed multi-person transmission <sup>**</sup> .	The smallest, easily identifiable location that completely encompasses the area at risk. Minimal area is 1-mile diameter.	No new cases of confirmed local transmission <sup>§</sup> identified for a period of 45 days <sup>††</sup> .	Pregnant women should <b>not travel</b> to the geographic area.	All pregnant women who lived in, traveled to, or had sex without a condom with someone who lived in or traveled to area should be tested for Zika virus.

\* Recommendations for pregnant women and other people that live in areas with local mosquito-borne transmission can be found here: <https://www.cdc.gov/zika/geo/domestic-guidance.html>. Additional guidance can also be found at <https://wwwnc.cdc.gov/travel/page/us-citizens-living-in-areas-with-zika>.

† A person who does not have risk factors for Zika virus acquisition through travel, sexual contact, or other known exposure with body fluids, and who tests positive for Zika virus infection per CDC laboratory guidance; **OR**

A blood donor identified through Zika virus screening of blood donations, who does not have risk factors for Zika acquisition through travel, sexual contact, or other body fluid exposure, and who has a positive Zika virus nucleic acid test (NAT) on screening AND confirmation through an approved confirmatory test algorithm.

§ And no suspect local transmission cases under investigation with enhanced surveillance in place.

¶ CDC and state/local public health officials should discuss likelihood of ongoing risk before removal of the yellow area designation.

\*\* Three or more cases of confirmed local transmission in non-household members, with at least two cases with onsets greater than two weeks apart (the approximate survival of an infected mosquito), and less than 45 days in an approximate 1-mile diameter area.

†† After 45 days without a confirmed case of local transmission red area, CDC and state/local public health officials should discuss converting it to a yellow area.

For more information, please contact 1-800-CDC-INFO (232-4636)

TTY: 1-888-232-6348

**[www.cdc.gov](http://www.cdc.gov)**

**Centers for Disease Control and Prevention**

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