

# ZIKA

A small, dark silhouette of a mosquito is positioned within the letter 'A' of the word 'ZIKA'.

CDC Draft Interim Response Plan

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## Interim CDC Zika Response Plan (CONUS and Hawaii) Overview: Initial Response to Zika Virus Infections

The purpose of this document is to describe the Centers for Disease Control and Prevention (CDC) response plan for the first locally acquired cases of Zika virus infection in the continental United States and Hawaii. The Zika virus is spread to people primarily through the bite of an infected *Aedes aegypti* or *Aedes albopictus* mosquito. The response activities outlined in this plan are based on currently available knowledge about Zika virus and its transmission, and these activities may change as more is learned about Zika virus infection. Most of the plan focuses on response activities that would occur after locally acquired Zika virus transmission has been identified. CDC also is committed to responding to travel-associated and sexually transmitted Zika virus infections reported in the United States (US) before detection of the first locally transmitted case of Zika virus infection.

### Planning Assumptions

Travel-associated and sexually transmitted Zika virus infections will continue to occur. CDC anticipates that local summer transmission may occur in limited areas of the continental United States (CONUS) and Hawaii where competent mosquito vectors exist.

- Because of the risk of transmission of Zika virus infection through blood transfusions, blood safety interventions are needed for both unaffected and affected areas. With the recent outbreaks in the Americas, the number of Zika virus infections among travelers visiting or returning to the United States is likely to increase.
- Local transmission of Zika virus in US territories and affiliated Pacific Island countries is ongoing.
- Neither vaccines nor proven clinical treatments are expected to be available to treat or prevent Zika virus infections before local transmission begins within CONUS or Hawaii.
- The efficacy of vector control in reducing mosquito-borne infection risks may be limited, as has been the case with similar mosquito-borne viruses, such as dengue and chikungunya.

CDC supports state and local efforts to prepare and respond to Zika virus. CDC guidance to state and local jurisdictions recommends that Zika action plans be developed to guide response activities through a phased, risk-based continuum. The continuum includes support for mosquito season preparedness and then graduated action in response to detection of:

- The first limited local transmission
- Widespread local and continuous transmission
- Widespread, multicounty, continuous transmission

CDC and partners will support and assist states in the key activity areas listed below as different stages in this continuum are reached.

Stage	Phase Level	Transmission Risk Category
Pre-incident	0	<b>Preparedness</b> — vector present or possible in the state
	1	<b>Mosquito Season</b> — <i>Aedes aegypti</i> or <i>Aedes albopictus</i> mosquito biting activity. Introduced travel-related or sexually transmitted cases
Suspected/Confirmed Incident	2	<b>Limited Local Confirmed Transmission</b> — single, locally acquired case, or cases clustered in a single household.
Incident/Response	3	<b>Widespread Local Transmission</b> — Zika virus illnesses with onsets occurring $\geq 2$ weeks apart but within an approximately 1 mile (1.5 km) diameter
	4	<b>Widespread Multijurisdictional Transmission</b> — Zika virus illnesses with onsets occurring $\geq 2$ weeks apart in $>1$ jurisdictional area

## Phase 0/1: Mosquito Season Preparedness and Mosquito Season

CDC will support state and local jurisdictions and other partners to prepare for the onset of mosquito season. Support will focus on preparatory actions to enable state and local jurisdictions to detect Zika virus infections. Introduced cases identified through testing of symptomatic persons or pregnant women (symptomatic or asymptomatic) with travel or sexual exposure risk factors for Zika virus infection will be reported to state health departments. CDC activities will cover the following areas, which are explained in further detail in accompanying appendices.

- **Initial response plan for local transmission.** (Appendix A)
- **Guidance for delineating and publicly communicating about Zika transmission areas.** (Appendix B)
- **CDC Emergency Response Teams (CERT):** CERTs are ready to deploy and can provide on-the-ground technical and epidemiologic assistance, risk communication, vector control, and logistical support. (Appendix C)
- **Communication and Community Education:** Developing audience research-based messages and materials to educate the public on preventing mosquito bites, controlling mosquito populations (vector control), preventing sexual transmission, access to and use of effective contraception, protecting pregnant women from Zika virus infection, and educating women of childbearing age. Support news and social media channels with facts about Zika virus, risks to the public, and reasonable expectations for outbreak response. Use risk communication frame to respond to audience concerns. (Appendix D)

- **Surveillance:** Enhancing support for case identification, improved surveillance, and increased epidemiologic investigations of travel-related or locally acquired cases and contributing to the national Zika Pregnancy Registry. (Appendix E)
- **Laboratory Diagnostics:** Increasing capacity for laboratory diagnostics, developing a laboratory surge capacity plan, streamlining procedures and confirmatory testing of suspect cases, in addition to considering new laboratory tools that will reduce testing times.
- **Vector Control:** Providing technical expertise on vector control strategies for jurisdictions across CONUS, including consulting on vector mapping, insecticide resistance, and vector control response when cases are introduced into the community. Identifying strategies the US government (USG) could use to provide surge capacity. (Appendix F)
- **Pregnant Women Outreach:** Ensuring that training and educational materials have reached pregnant women and their healthcare providers. (Appendix G)
- **Blood Safety:** Providing consultations and guidance, as needed, to assist with developing and implementing blood safety plans, as outlined [in FDA's recommendations to reduce the risk of transfusion-transmission of Zika virus.](#) (Appendix H)
- **Planning:** Engaging a wide variety of stakeholders (e.g., healthcare providers, vector control organizations, medical associations, school associations, private enterprise) to assist with community preparedness and education. Participating in tabletop or other exercises related to response to the first local transmission and widespread transmission, and adjusting the response plan as appropriate. As part of USG plans for possible widespread transmission, assessing healthcare system preparedness and readiness of healthcare coalitions to identify and reallocate equipment and supplies as needed, as well to ensure an adequate and sufficiently educated workforce to care for complications of Zika infection. As circumstances necessitate, the Office of the Assistant Secretary for Preparedness and Response (ASPR), in coordination with CDC, will activate the Unified Coordination Group bringing together the senior leaders representing various Federal departments and agencies to conduct unified coordination, communication and information sharing among USG stakeholders.

## Phase 2: Limited Local Confirmed Transmission

CDC will focus on activities that assist states in responding to the first locally transmitted case of Zika virus infection in a jurisdiction. No single formula will be adequate to trigger a given response activity given the myriad environmental variations throughout the United States and the epidemiologic circumstances of the identified Zika virus infection cases. A starting point for consideration of defining a Zika transmission area is two or more cases (not due to travel to an area of ongoing transmission or sexual transmission) in non-household members occurring in a one-mile diameter over the course of a month.

When a suspect or confirmed case of local transmission is identified, CDC will reach out to the state or tribal jurisdiction to determine the need for assistance in activating the state incident management

structure, or need for deployment of a CDC Emergency Response Team (CERT). CERTs are ready to deploy and can provide on-the-ground technical and epidemiologic assistance, and support in risk communication, vector control, and response logistics. Examples of types of assistance provided by a CERT to state and local health authorities include

- Investigate all known cases to determine the timing and source of infection (travel-related, sexual, and mosquito-borne) through interviews with suspect cases, family, and possibly primary care providers.
- Work with existing local vector control programs to fill gaps around the implementation of local measures to diminish the risk of transmission, including vector control and providing information and materials to prevent mosquito-borne transmission.
- Fill any staffing needs by local or state health department to enhance surveillance for Zika virus infection in humans, including interviewing neighbors and obtaining/facilitating testing close contacts of suspect cases.
- Provide on-site training or assistance in performing laboratory tests for Zika infection, including local scale up or rapid transport of specimens to reference laboratories.
- Enhance or implement (if absent) mosquito surveillance to determine the type, distribution, and population size of *Ae. aegypti* and *Ae. albopictus*.
- Provide communication research, media and technical assistance, and audience-focused materials to help local health department staff institute a risk communication campaign locally to provide information regarding the risk of Zika virus infection and personal measures the public can take to decrease their risk for infection and adverse outcomes.
- Facilitate outreach to the local medical community to test and report suspect cases and to provide clear and actionable prevention information to patients, including barrier and other forms of contraception for at-risk persons.

The extent of the response in terms of broadening vector control, defining a Zika transmission area, and enhancing the availability of long-term contraceptive assistance will depend on the number of cases and their geographic and temporal distribution as a measure of the extent of mosquito-borne transmission. Key considerations in defining the extent of the transmission include: 1) confirmation of Zika case diagnosis and exclusion of exposure to areas affected by Zika directly or through sexual contact; and 2) consensus regarding scope and magnitude of local transmission. The size of the local area as a starting point would be an area of approximately one mile in diameter. This boundary can be adjusted according to the estimated certainty that cases are not occurring outside the boundary (e.g., cases of illness compatible with Zika that are not yet confirmed but lie outside the original boundary) and according to recognizable landmarks for the public. Expanding the boundary by one-half mile from the furthest case is a reasonable first step. CDC will continue activities listed in the pre-incident stage, in addition to the following steps in coordination with ASPR and larger USG activities:

- **Communication:** Assist with development and dissemination of information for the news and social media, the public, and clinicians with a focus on protecting pregnant women, women of childbearing age, sex partners of pregnant women, and other vulnerable populations. Include

information about personal protection measures to reduce the risk of infection as well as urge community action and support for protective measures such as vector control. Continue to emphasize risk framing (including uncertainty) in messaging whenever appropriate.

- **Surveillance:** Assist with intensified surveillance for Zika virus disease in local areas at risk for transmission and with epidemiologic investigation of suspected cases. Designating local areas will be based on epidemiologic parameters established between CDC and the state department of health, as outlined in CDC's guidance on defining a Zika transmission area.
- **Laboratory Diagnostics:** CDC's Laboratory Response Network (LRN) begins to process and test specimens through coordination with CDC, to assist in laboratory surge efforts and address any increase in excess testing requirements.
- **Vector Control:** Continue to provide technical expertise on rapid assessment of vector insecticide resistance and determine appropriate vector control strategies.
- **Outreach to Pregnant Women:** Provide materials to inform pregnant women of the presence of Zika virus in the local area and what precautions they should take to prevent being bitten/infected. Materials will also be available for their sexual partners. Ensure all identified infected pregnant women are entered into the US Zika Pregnancy Registry for monitoring and follow-up of birth outcomes.
- **Blood Safety:** Ensure that geographic determinations for notification of blood centers on local transmission have been established by state/local jurisdictions, and that any US areas with active Zika virus transmission are included on CDC's website, as called for in [FDA's recommendations to reduce the risk of transfusion-transmission of Zika virus](#). Work with FDA, state/local health officials, and the blood bank community to help implement blood safety interventions for affected areas.
- **Planning to Support State Coordination:** Ensure robust and timely communication between USG, subject matter experts, and state and local public health leaders. ASPR, in coordination with CDC, will activate the Unified Coordination Group bringing together the senior leaders representing various Federal departments and agencies to conduct unified coordination, communication and information sharing among USG stakeholders, as circumstances necessitate.

## Phase 3: Widespread Local and Continuous Transmission

CDC will focus on activities that assist states in responding to evidence of continuous transmission and subsequent definition of geographic boundaries for the response. CERT will deploy to support jurisdictions. The size of the CERT will depend on the needs of the state/local health authorities and will be determined along with the state/local health authority and CDC, once clearly defined triggers have taken place. The team combines experts who specialize in detecting and controlling the spread of mosquito-borne disease, case-investigation/ascertainment and surveillance, the identification and study of insects and vector control, and laboratory diagnostics for responding to the challenges presented by Zika. Subject matter expert support includes risk communication, blood safety, and pregnancy and birth defects expertise. The team includes both people deployed to the field and those who remain at

headquarters to provide technical assistance. For the initial response protocol, CDC will continue activities in phases 1 and 2 in an expanded fashion, in addition to the following steps in coordination with ASPR and larger USG activities:

- **Communication:** Assist with intensified communication with the community partners, particularly targeted to pregnant women. Work closely with states to educate news and social media outlets, monitor for news trends, and track misinformation for corrections. Advise men in the county/jurisdiction to use condoms or abstain from sexual contact with pregnant women. Prepare messages to address stigmatization within communities. Focus communication on diagnostic testing for those on people at high risk and clearly identify those who need testing. Continue to provide the best available guidance based on science, current data, and expert opinion, including what research is being done to find additional answers. CDC will closely collaborate with state and local officials on communication needs. Redistribute CDC's [Zika Communication Planning Guide](#) for states, which provides resources to develop appropriate state-based communication strategies and continue to update resources in this guide.
- **Surveillance:** Assist with intensified surveillance for Zika virus disease in expanded geographic areas at risk for transmission and expand assistance for epidemiologic investigations, including considerations for tracking neurologic complications in non-pregnant adults. These efforts may include sentinel surveillance for Guillain-Barré syndrome or febrile rash illness.
- **Laboratory:** Work with states to offer testing of symptomatic people and asymptomatic pregnant women, according to CDC guidance. Route surge capacity to the LRN if needed, and ensure state capacity is in place and trained. CDC will perform periodic re-assessment of capacity and re-evaluation of needs in anticipation of escalation to widespread multicounty transmission.
- **Vector Control:** Consult on expansion of vector control activities and revised/optimal strategies for local control. Assist with monitoring effectiveness.
- **Outreach to Pregnant Women:** If a Zika transmission area is defined, work with the state to implement expanded intervention plans for populations at risk (pregnant women, potentially other vulnerable populations) in the Zika transmission area, including recommendations for pregnant women to avoid travel to a Zika transmission area (or, if they must travel, to consult with their healthcare provider and strictly follow steps to avoid mosquito bites), advising all persons who live in, work in, or must travel to a Zika transmission area to use personal protective measures to reduce the risk of infection through mosquito bites and sexual contact, and advising women and their sexual partners who live or work in a Zika transmission area to discuss pregnancy planning with their healthcare provider.
- **Blood Safety:** Ensure that timely information on areas of active transmission is accessible to blood centers through CDC's website. Provide guidance/technical assistance to state/local areas and blood centers on implementing blood safety interventions, conducting follow-up of positive blood donors, and investigating suspected cases of transfusion-transmitted infections.



### Phase 4: Widespread Local Multicounty, Continuous Transmission

Local jurisdiction/area resources may become overwhelmed and require increased CDC and other federal support. CDC will work closely with the affected state and tribal public health officials to ensure that any support CDC can provide is identified. CDC can also leverage its relationships with other government and non-governmental organizations to gather information and distribute technical, clinical information as required. CERTs will support jurisdictions by consultation and/or deployment. CDC will continue activities in phases 1, 2, and 3 in an expanded fashion in addition to the following steps:

- **Communication:** Assist with operationalizing risk communication by local staff as needed and, if requested, provide on-the-ground support for strategic messaging, materials, and media.
- **Vector Control:** Consult on expanded vector control strategies (e.g., aerial spraying). CDC will provide, as needed, expanded capacity through federal vector control contract.
- **Medical Countermeasures:** Work through Hospital Preparedness Program (HPP) coalitions to inventory medical equipment and non-medical countermeasures that can be shared and reallocated within and across coalitions, particularly ventilators and ventilator supplies. CDC's Strategic National Stockpile (SNS) will coordinate any medical and non-medical countermeasures surge requirement with the state and jurisdiction officials.
- **Planning for babies born with complications of Zika virus disease:** Assist with identifying statewide resources for caring for children with Zika virus disease complications, assess gaps and potential needs, encourage providers to join an AAP/ACOG learning network (when established).

The Zika virus response brings together partners that are normally not engaged with each other. Structured use of the National Response Framework will help ensure that partners work effectively and efficiently together. This provides an opportunity to expand partnerships for improving the response in subsequent mosquito seasons.

## Appendix A: Protocol for Initial Response to Local Transmission of Zika Virus

Upon state health department notification indicating a suspect locally transmitted Zika virus infection, CDC will work with jurisdictions to implement the following protocol:

- Assist with case confirmation (request sample for testing at CDC)
- Assist with rapid epidemiologic investigation
- Ensure plans for notification of blood centers in affected area
- Activate CERT and deploy, if requested
- Intensify case surveillance around local area identified and assist as needed
- Re-issue health communication information for personal protective measures, contraception messages, repellent, and pregnancy guidance
- Assist with entomologic evaluation
- Report, as needed under International Health Regulations (2005) Assessment and Notification

**If case investigation determines that this is a single case with no continuous transmission, stand down the response after 45 days, which equals three mosquito incubation periods (the time from when a mosquito acquires Zika virus from an infected human to the time it is capable of transmitting the virus to a new human host) after the last identified case onset date, or when environmental conditions are no longer conducive to mosquito transmission.**

**If case investigation identifies additional Zika virus infections in the local area with evidence of continuous transmission, then the following additional actions will be taken:**

- Increase communication in local area and train risk communicators as needed
- Implement enhanced surveillance in appropriate expanded area
- Ensure case reporting conducted through ArboNET and all pregnant woman are reported to US Zika Pregnancy Registry for follow-up
- Mobilize community for source reduction mosquito control
- Assess vector control capacity and reassess insecticide resistance in local area
- Implement operational plan for additional vector control strategies (e.g., backpack sprayers)
- Increase laboratory testing capacity: prioritize pregnant women, asymptomatic and symptomatic
- Address how the Laboratory Response Network (LRN) will facilitate interstate testing support
- Ensure blood center notification and implementation of blood safety interventions in local area
- Engage healthcare providers directly through Clinician Outreach Calls (COCA) and through state and professional organizations
- Assess jurisdiction's ability to provide personal protection measures to affected populations

- Based on epidemiologic, entomologic, and environmental investigations, determine if a Zika transmission area can be defined, and, if so, the geographic extent of the area and a clear strategy for communicating the area to the public
- Implement expanded intervention plans for populations at risk (pregnant women, potentially other vulnerable populations) in a Zika transmission area

**If investigation determines there is widespread local multicounty, ongoing transmission,** CDC and the local jurisdiction will continue and/or expand activities above and will also

- Expand risk communicator training
- Recommend operational plan for additional vector control strategies (e.g., aerial spraying)
- Assess capacity and provide additional assistance to ensure needs are met
- Determine if a Zika transmission area can be defined (if not already done), and continue to reassess boundaries of existing Zika transmission area(s) based on ongoing case surveillance
- Implement expanded intervention plans for populations at risk (pregnant women, potentially other vulnerable populations) in a Zika transmission area

## Appendix B: Defining a Zika Transmission Area

### Purpose

This document is intended to assist state, local, and tribal public health officials in determining the presumed geographic boundaries of a “Zika transmission area” in which local vector-borne transmission of Zika virus has occurred, and communicating the boundaries of the area to the public so that they may take action to protect themselves and others. CDC has developed interim guidance and tools to help states create materials to inform people, including pregnant women (and their families/partners), and how they can protect themselves if they live in, work in, or are planning travel to areas where Zika virus transmission may be occurring. The guidance in this document is intended to reduce the risk of sustained local vector-borne Zika virus transmission within the continental United States (CONUS) and Hawaii.

### Background

In urban settings, humans are the principal amplifying hosts and *Aedes aegypti* mosquitoes are the predominant recognized vector for dengue, chikungunya, and Zika viruses. Therefore, areas within CONUS and Hawaii that have experienced prior local dengue and chikungunya virus transmission are at increased risk for Zika virus outbreaks. Prolonged widespread local transmission within CONUS is not expected for any of these arboviruses, due to environmental conditions (e.g., temperate climate, lower population density, widespread use of air conditioning and screens, and reduced mosquito habitat) that inhibit human-mosquito-human transmission by *Ae. aegypti* and that differ from more tropical areas that have experienced widespread transmission.

*Ae. albopictus* is also a competent vector for Zika virus and breeds in areas farther north than *Ae. aegypti*, but has not been documented to transmit dengue or chikungunya viruses in CONUS. However, *Ae. albopictus* has caused dengue outbreaks in Hawaii, and Zika virus has recently been isolated from *Ae. albopictus* in Mexico.<sup>1</sup> *Ae. albopictus* is a less efficient vector for infections like dengue, which may account for the limited spread and low incidence of dengue outbreaks in Hawaii. However, reduced vector efficiency does not rule out the potential for local transmission by this species.

The variable sociologic and environmental conditions within CONUS argues against a one-size-fits-all approach to determining the public health response to identification of possible local vector-borne Zika virus transmission. The temperate climate of CONUS limits year-round Zika virus transmission in most locations; thus, the seasonal timing of cases greatly influences the potential for continued Zika virus transmission (e.g., cases occurring just before colder winter temperatures are unlikely to lead to

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<sup>1</sup> Note: flaviviruses have been isolated from many mosquito species that have never been demonstrated to transmit these viruses. As a result, isolation does not necessarily mean transmission will occur. PAHO. Zika – Epidemiological Update. 21 April 2016. (Accessed 05-05-2016; [http://www.paho.org/hq/index.php?option=com\\_docman&task=doc\\_view&Itemid=270&gid=34243&lang=en](http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&Itemid=270&gid=34243&lang=en)).

continuing transmission). Despite the regional variation in conditions, criteria used to determine the public health response to local vector-borne Zika virus transmission should be well described and, to the degree possible, their application should be consistent from state to state.

CONUS-specific historical observations of locally-acquired cases of related infections (e.g., dengue, chikungunya) include:

- Single local transmission cases often have no evidence of further transmission. Of 12 locally acquired cases of chikungunya reported in Florida in 2014, only two appeared to be linked due to their proximity in time and space.<sup>2</sup>
- Ongoing local transmission of dengue within CONUS has occurred only in South Florida (Florida Keys) and southernmost Texas, and has not expanded beyond these areas.
- Therefore, prolonged widespread local transmission of Zika virus within CONUS is not expected.
- Local transmission is more likely to occur when competent *Ae. aegypti* or *Ae. albopictus* vector populations are present within a community. Mosquito season varies by jurisdiction but is typically during the summer months.
- In most states, the temperate climate limits the potential for year-round Zika virus transmission.

This guidance is built on a foundation of surveillance for human-related illness, rather than active surveillance for infected mosquitoes. Investigation of local transmission clusters of dengue and chikungunya viruses have shown that human illness surveillance is more informative and sensitive than vector surveillance. Zika cases detected through state and local surveillance are investigated by state and local health authorities (with assistance from CDC as needed) to determine international and domestic exposures (e.g., travel, work, home, sex). Identification of Zika virus infections in one or more people with no history of travel from or sexual exposure to a man with history of travel from an area with ongoing Zika virus transmission will initiate the response outlined below. As a team, CDC, the states and their entities will continuously monitor any and all instances of local vector-borne Zika virus transmission and recommend responses tailored to the specific circumstances.

## Definitions

Local transmission is defined as vector-borne Zika virus infection in a person who has not traveled from an area with Zika virus transmission or had sexual exposure to an infected person.

Suspect case of local transmission: A suspect case of local transmission is defined as

1. A person with symptoms compatible with Zika virus infection, who does not have risk factors for Zika acquisition through travel or sexual contact, and for whom Zika virus test results are pending, OR

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<sup>2</sup> *Notes from the Field*: Transmission of Chikungunya Virus in the Continental United States – Florida, 2014; Morbidity and Mortality Weekly Report (MMWR). 2014;63(48):1137.

2. A presumed viremic blood donor (i.e., initial screen positive for Zika virus and confirmatory test pending) who does not have risk factors for Zika acquisition through travel or sexual contact.

Confirmed case of local transmission: A confirmed case of local transmission is defined as

- A person who does not have risk factors for Zika acquisition through travel or sexual contact, and who has laboratory evidence of recent Zika virus infection by
    - Detection of Zika virus by culture, viral antigen or viral RNA in serum, urine, cerebrospinal fluid (CSF), tissue, or other specimen OR
    - Zika virus IgM antibodies in serum or CSF,
- OR
- A blood donor identified through Zika virus screening of blood donations, who does not have risk factors for Zika acquisition through travel or sexual contact, and who has a positive Zika virus nucleic acid test (NAT) on screening AND a positive alternate Zika virus NAT or positive Zika virus IgM.

Note that, for the purposes of this document (defining a Zika Transmission Area), laboratory criteria for defining a confirmed case of local Zika virus transmission encompasses laboratory criteria for defining a probable or confirmed case of Zika virus disease according to [Council of State and Territorial Epidemiologists \(CSTE\) Zika virus disease interim case definition](#), as well as laboratory criteria for defining a confirmed case of local Zika virus transmission in a blood donor according to the [CSTE proposal for blood center notification of Zika virus transmission areas to reduce the risk of transfusion transmission](#).

Multiperson local transmission is defined as two or more epidemiologically linked cases of confirmed local transmission (i.e., not travel-associated or sexually transmitted) in non-household members. Cases are considered epidemiologically linked if their movement during their exposure period overlaps in space (e.g., within an area of one-mile in diameter as a starting point for investigation). Because the lifetime flight range of the *Ae. aegypti* mosquito vector is approximately 150 meters, identification of overlapping movement within a one mile diameter of two or more people with locally acquired Zika virus infection suggests a common location (e.g., residential neighborhood, workplace, or other location) for infected mosquito exposure. The 1-mile diameter is a starting point and should be discussed along with a number of other factors (Box 1) when determining the likelihood and extent of ongoing local transmission.

Zika transmission area: A Zika transmission area is a geographic area in which multiperson local transmission has occurred and may be ongoing.

## Determining the Presumed Geographic Boundaries of a Zika Transmission Area

In many cases, it may not be possible to determine where transmission occurred for a single suspect or confirmed case of local transmission (e.g., if the person moved throughout a large area for work, daily activities, and home during the period they were likely exposed and no other cases are found that are linked in space and time). However, all suspect or confirmed cases are investigated by state or local public health. Concurrent with implementation of enhanced surveillance to determine the extent of local transmission (i.e., a single isolated case versus multiple cases of local transmission), vector control, communications, outreach, and other response efforts should be initiated as outlined in the CDC Zika Virus Planning & Response: Interim State and Local Guidance and Checklist, Phase 2 (Limited Local Confirmed Transmission) and outlined in Appendix B-1.

When multiperson (e.g., two or more confirmed cases in non-household members) local transmission is identified, state or local public health officials, with assistance from CDC, should determine the geographic extent of possible Zika virus transmission, based on available epidemiologic, entomologic, and environmental information (Box 1).

Given that the lifetime flight range of the *Ae. aegypti* mosquito vector is approximately 150 meters, an area of one mile in diameter would provide a large margin of safety around a single common location (e.g., neighborhood, workplace) for infected mosquito exposure. This one mile diameter would be a starting point for identifying the area of transmission. If indicated by available epidemiologic, entomologic, and environmental information, the identified area may be expanded or reduced from one mile in diameter with consideration of other factors (Box 1). This change may occur if the epidemiologic data indicate that the Zika transmission area has expanded (e.g., vector control activities are unsuccessful). Enhanced surveillance, vector control, communication, outreach, and other response efforts should be continued as outlined in the CDC Zika Virus Planning & Response: Interim State and Local Guidance and Checklist, Phase 2 (Limited Local Confirmed Transmission) and outlined in Appendix B-1.

## Communicating with the Public about a Zika Transmission Area

### Single confirmed case of local transmission

Although it may not be possible to define precisely where the transmission event occurred for a single confirmed case of locally acquired infection, states should issue a media statement and initiate other communication activities (Appendix B-1).

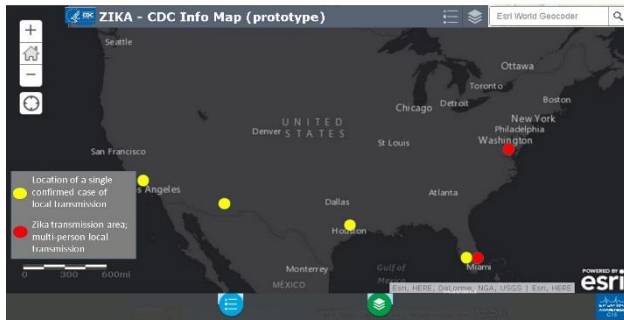


Figure 1: CDC Interactive Map of Local Vector-Borne Zika Virus Infection, Country View

To display all possible local vector-borne Zika virus transmission occurring in CONUS and Hawaii in a standardized manner, CDC will maintain on its website an interactive map that identifies both single confirmed cases of local transmission and multiperson local transmission (i.e., Zika transmission areas). On this map, single confirmed cases of local transmission (in which no Zika transmission area can be identified) will be displayed in a manner that will allow viewers to determine the general area where transmission occurred (e.g., southern part of state), but not visualize the specific location. . As

an example, on the prototype country view map [Figure 1] and state/regional view map [Figure 2], yellow dots appear over the general location in which hypothetical single cases of local transmission have occurred, but these dots disappear on the higher resolution neighborhood view [Figure 3]. All appropriate personal protection messages will be linked to from this map.

### Multiperson confirmed local transmission: Zika transmission area

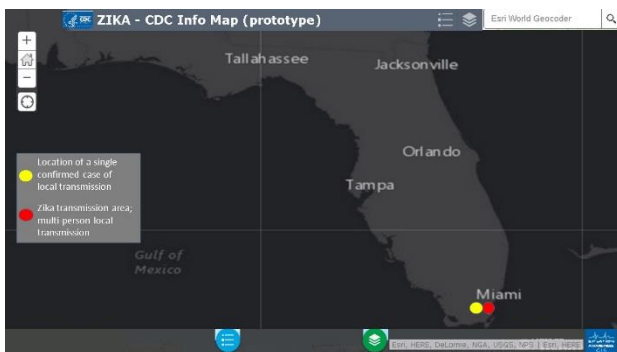


Figure 2: CDC Interactive Map of Local Vector-Borne Zika Virus Infection, State View

To communicate with the public about a Zika transmission area, state public health officials should identify the smallest easily identified location that completely encompasses the Zika transmission area delineated above as part of the epidemiologic/entomologic investigation. The smallest easily identified location that encompasses the transmission area should be used in order to minimize disruption and adverse impact to residents of, and businesses in, the identified area, and to ensure that available resources and timely diagnostic testing are made available to those in greatest need. The Zika transmission area should be communicated to the

public using terminology and landmarks recognizable to residents and visitors (e.g., a neighborhood, city, county, or group of counties depending on the extent of transmission) so they can take appropriate precautions. Intensified communication regarding travel to the area, use of personal protective measures (e.g., use of mosquito repellents, condoms), changes in laboratory testing recommendations (e.g., to test all pregnant women, including those who are asymptomatic), should be targeted toward people who live in, work in, or may travel to this location, with a focus on pregnant women and their partners (Appendix B-1).



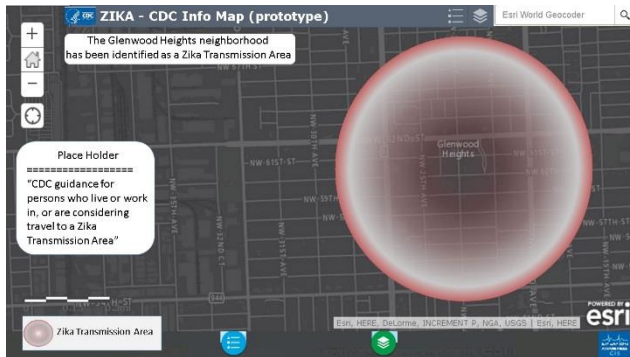


Figure 3: CDC Interactive Map of Local Vector-Borne Zika Virus Infection, Neighborhood View

On the lower resolution (e.g., country and state) views of the CDC interactive map, Zika transmission areas will be displayed over the general area where transmission occurred (for example, as red dots, to distinguish them from single cases). On the higher resolution views (Figure 3), the Zika transmission areas will be displayed with blurred edges, to visually communicate that there is not a clear line of demarcation between areas where Zika virus transmission is likely and unlikely to occur. On the prototype neighborhood view map [Figure 3], the Zika transmission area is displayed as a circle with blurred edges. However, the actual representation of the Zika transmission area will

vary based on the geographic boundaries determined by the state. CDC will work with states to ensure consistency between states in how Zika transmission areas are displayed on this map (e.g., the smallest geographic area possible that fully encompasses the area of possible transmission, without compromising the privacy of case-patients). All appropriate travel and personal protection messages will be linked to from the map.

## Discontinuing the Designation of a Zika Transmission Area

States, with assistance from CDC as needed, should continue to assess the likelihood of ongoing local transmission, on at least a weekly basis, during mosquito season. The designation of a Zika transmission area will end (and the area will be removed from the interactive CDC map) when no new cases of local Zika virus transmission are identified in or around the Zika transmission area for a period of 45 days, or when environmental conditions are not conducive to mosquito transmission. This timeline allows for three mosquito incubation periods (the time from when a mosquito acquires Zika virus from an infected human to the time it is capable of transmitting the virus to a new human host) and suggests that Zika virus transmission is no longer ongoing.

### Box 1. Considerations for Defining a Zika Transmission Area

#### Human factors

- Number of cases identified and whether the incidence of cases is increasing or decreasing
- Known or suspected links between cases (e.g., multiple infections in a household, which may reflect a single prior transmission episode, are of less concern than cases scattered in a neighborhood), including ruling out sexual transmission
- Geographic distribution of cases in an area (e.g., clustered cases in an area would suggest a higher intensity of transmission)
- Population density
- Privacy concerns (i.e., ensuring that individual case patients cannot be identified)

#### Mosquito surveillance and control factors

- Current vector surveillance data
- History of *Ae. aegypti* or *Ae. albopictus* in the area
- Presence of *Ae. aegypti* (greater concern) or *Ae. albopictus* (less concern)
- Mosquito breeding season remaining
- Vector control interventions of sufficient intensity likely to eliminate infection incidence in areas where case exposure likely occurred

#### Environmental and ecologic factors

- History of local dengue or chikungunya virus transmission in the area
- Area is within estimated [geographic range](#) of *Ae. aegypti* or *Ae. albopictus*
- Area is below 2000 meters in elevation (elevation above which conditions are not conducive to transmission)
- Current or projected temperature supports vector activity
- Cases identified early (which are of more concern) or late (which are of less concern) in mosquito season

#### Infrastructure in area

- Estimated proportion of homes, workplaces, and other settings with air conditioning
- Estimated proportion of homes, workplaces, and other settings with intact screens on windows and doors
- Estimated proportion of homes, workplaces, and other settings with non-secured water catchment systems

## Appendix B-1: Action Steps for States and CDC in the Event of Suspected or Confirmed Local Vector-Borne Zika Virus Transmission

### Single Suspect Case of Local Transmission or Presumed Viremic Blood Donor

- State health officials should
  - Notify designated state officials, as appropriate
  - Immediately notify CDC by calling CDC's Emergency Operations Center at 770-488-7100 or emailing [eocreport@cdc.gov](mailto:eocreport@cdc.gov).
  - Inform designated state officials and CDC whether suspect case was identified through blood donor screening.
  - Initiate epidemiologic investigation and enhance case surveillance to identify other possible cases of local transmission, as outlined in the CDC Zika Virus Planning & Response: Interim State and Local Guidance and Checklist, Phase 1 (Mosquito Season).
  - Implement local vector control and surveillance as appropriate.
  - Ensure that state and local maternal and child health and birth defects programs are integrated into Zika virus planning and response activities.
- CDC will provide support and assistance as needed, including deployment of a CDC Emergency Response Team (CERT). CERTs can provide on-the-ground technical, epidemiologic, risk communication, laboratory, and vector control expertise, in addition to logistical support.

### Single Confirmed Case of Local Transmission

- States should
  - Initiate enhanced case surveillance to identify other possible cases of local transmission and intensify vector control and surveillance, risk communication, outreach, and other response efforts, as outlined in the CDC Zika Virus Planning & Response: Interim State and Local Guidance and Checklist, Phase 2 (Limited Local Confirmed Transmission).
  - Ensure that state and local maternal and child health and birth defects programs are integrated into Zika virus planning and response activities.
  - Notify CDC and blood collection centers that operate in their jurisdiction, if confirmed case was identified through blood donor screening.
  - Issue a media statement.

- CDC will
  - Provide support and assistance, including assistance in activating the state incident management structure, as needed, and offering deployment of a CERT.
  - Identify the general location of the single case on the CDC interactive map down to the state level but not to the local level.
  - Post information on area at risk for mosquito-borne Zika transmission on a designated [website for blood collection centers](#) to reduce the risk of transfusion-transmission of Zika virus.
- ASPR, in coordination with CDC, will activate the Unified Coordination Group bringing together the senior leaders representing various Federal departments and agencies to conduct unified coordination, communication and information sharing among USG stakeholders, as circumstances necessitate.
- Risk communication should focus on
  - Reinforcing existing messages on personal protective measures that can be taken to reduce the risk of infection through mosquito bites and sexual contact.
  - Outreach to pregnant women and women of reproductive age, and their families/partners, with enhanced recommendations for personal protective measures.
  - Following established risk communication principles (e.g., be first, be right, be credible) to help build trust in local health authorities, inform the public about what is known and what is not known, provide actions people can take to protect themselves and their families, and minimize the potential for public misunderstanding, rumors, and fear.

## Confirmed Multiperson Local Transmission: Zika Transmission Area

- States should
  - Notify designated state officials and CDC immediately by calling CDC's Emergency Operations Center at 770-488-7100 or emailing [eocreport@cdc.gov](mailto:eocreport@cdc.gov).
  - Further intensify case surveillance, vector control and surveillance, risk communication, outreach, and other response efforts as outlined in the CDC Zika Virus Planning & Response: Interim State and Local Guidance and Checklist, Phase 3 (Widespread Local Transmission).
  - Ensure that state and local maternal and child health and birth defects programs are integrated into Zika virus planning and response activities.
  - With the assistance of CDC, as needed, initiate epidemiologic, entomologic, and environmental investigations to determine the extent of local transmission. This determination will take in to account a number of factors, including identification of other possible cases of local transmission, geographic and temporal association of the

cases, environmental conditions, and the presence and distribution of the mosquito (Box 1).

- Identify the Zika transmission area based on epidemiologic and entomologic investigations, and then adapt this area for communication purposes by using available geographic and landmark information to define the most easily communicated area.
- Provide guidance for people who live in, work in, or plan to travel to the Zika transmission area.
- Implement planned risk communication activities to ensure that prevention recommendations are widely distributed and reach the intended audience within their jurisdictions. With assistance from CDC, these risk communication activities should convey necessary information to people who live in, work in, or plan to travel to the Zika transmission area.
- Ensure wide dissemination of local transmission guidance to relevant stakeholders (e.g., laboratories, healthcare partners/providers, blood collection centers, CDC, neighboring states, tribal leaders).
- Assess state plan to identify and provide resources (e.g., insect repellent, bed nets, window screens, condoms) for specific communities as necessary to minimize exposure risk to people who live in, work in, or must travel to, the Zika transmission area, particularly for pregnant women and their partners.
- With the assistance of CDC as needed, institute surge lab capacity plans as required to ensure timely testing of all pregnant women (symptomatic and asymptomatic) in or near the Zika transmission area, consistent with CDC guidance.
- Engage early with businesses and labor stakeholders to prepare for the potential short- and long-term economic effects of identifying a Zika transmission area.
- With assistance from CDC, as needed, continue to assess occurrence of ongoing local transmission, at least weekly. Prepare to implement a protocol and communication strategy to discontinue the designation of a Zika transmission area when local transmission ceases.
- CDC will
  - Provide continued support and assistance, including deployment of a CERT and assistance in determining the geographic extent of Zika virus transmission, based on available epidemiologic, entomologic, and environmental information.
  - Assist with development of communication messages, as needed.
  - Identify the Zika transmission area on the CDC interactive map down to community level.
  - Work with states to ensure that there is consistency between states in how Zika transmission areas are displayed on the CDC map (e.g., the smallest geographic area possible that fully encompasses the area of possible transmission, without compromising the privacy of case-patients).

- Publish guidance for travelers that aligns with the Zika transmission area as defined by the state, and update this guidance regularly to remove designated areas when local transmission has ended (i.e., no new cases of local Zika virus transmission are identified in a designated Zika transmission area for a period of 45 days).
- Post information on Zika virus transmission areas within CONUS and Hawaii on a designated [website for blood collection centers](#) to reduce the risk of transfusion-transmission of Zika virus.
- Risk communication should focus on
  - Identification of the description of the Zika transmission area defined above.
  - Identification of an estimated date when local Zika transmission began.
  - Targeted risk communication messages and [action steps](#) for people who will travel to, live within or routinely commute into the defined Zika transmission area for work or other activities, with [enhanced measures](#) to be taken by pregnant women and women wishing to conceive and their sex partners, using CDC-developed tools to ensure message consistency.
    - Messages should enumerate all of 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.
    - Messages should advise pregnant women to avoid travel to the area, (or, if they must travel, to consult with their healthcare provider and strictly follow steps to avoid mosquito bites), and should advise all people who must travel to or live in the area to use personal protective measures to reduce the risk of infection through mosquito bites and sexual contact, consistent with US travel notices issued for countries and territories with local Zika virus transmission.
    - Messages should advise all pregnant women (symptomatic and asymptomatic) who live in or have traveled to a Zika transmission area to get tested for Zika virus, in accordance with CDC guidance. Pregnant women will be prioritized for diagnostic testing, followed by symptomatic people, except in circumstances where testing a limited number of symptomatic people is crucial for monitoring key epidemiologic factors (e.g. expansion of the Zika transmission area, changes in transmission intensity). Due to potential to over-burden laboratory capacity to provide testing to priority groups in a timely fashion, testing should not be routinely offered to asymptomatic men and non-pregnant women.
    - Messages should advise women and their partners who live in or have traveled to a Zika transmission area to discuss pregnancy planning with their healthcare provider, including timing of attempting pregnancy and avoiding unintended pregnancy, consistent with guidance provided to Americans living in countries and territories with ongoing Zika transmission.

- Messages should advise about ways to [reduce mosquito populations](#) around the home.
- CDC guidance for healthcare providers, particularly those caring for pregnant women and women of reproductive age: [Interim Guidance for Health Care Providers Caring for Women of Reproductive Age with Possible Zika Virus Exposure – United States, 2016](#), [Interim Guidelines for Health Care Providers Caring for Pregnant Women and Women of Reproductive Age with Possible Zika Virus Exposure – United States, 2016](#).
- Recommendations for employers with worksites located in a designated area. 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.

## Appendix B-2: Scenarios for Defining and Communicating a Zika Transmission Area

### Scenario 1

- One Zika virus disease case who lives in northern Virginia and works in Washington, DC
- No recent travel, sexual contact with traveler, or blood transfusion/organ transplant
- Reported illness onset in mid-September
- Illness onset occurred 1-2 weeks before laboratory confirmation by RT-PCR
- No other symptomatic illnesses identified in households or neighborhood

**Interpretation:** Likely mosquito-borne transmission. Unclear where exposure occurred. Cooler fall weather likely to limit further transmission.

**Suggested course of action for state(s):** Do not define a Zika transmission area. Initiate enhanced case surveillance to identify other possible cases of local transmission, intensify vector control and surveillance, risk communication, outreach, and other response efforts, as outlined in the CDC Zika Virus Planning and Response: Interim State and Local Guidance and Checklist, Phase 2 (Limited Local Confirmed Transmission).

### Scenario 2

- Five confirmed or possible Zika virus disease cases who reside within one mile of each other in Miami, Florida
- No recent travel outside the United States, sexual contact with traveler, or blood transfusion/organ transplant but one case recently spent time in the Florida Keys
- Illness onsets occurred throughout July.
- Two had illness onset 1-2 weeks before laboratory confirmation and both confirmed by RT-PCR.
- Three had a compatible illness (fever, rash, conjunctivitis), but laboratory testing is pending.
- Cases were never in the same location.

**Interpretation:** Likely ongoing mosquito-borne transmission in one area of Miami. Since early in mosquito season, mosquito transmission could continue or escalate. Although all possible cases not confirmed, circumstances indicate that one or more will be confirmed.

**Suggested course of action for state:** Define and communicate a Zika transmission area, as described above. Implement enhanced case surveillance, vector control and surveillance, risk communication, outreach, and other response efforts as outlined in the CDC Zika Virus Planning & Response: Interim State and Local Guidance and Checklist, Phase 3 (Widespread Local Transmission).



## Appendix C: CDC's Emergency Response Team (CERT)

### Purpose

The CDC Emergency Response Team (CERT) is a highly trained cadre of public health experts that can be mobilized and deployed upon the identification of confirmed local transmission of Zika virus.

### Zika CERT Deployments

CERT(s) will deploy, as appropriate, following the report of laboratory-confirmed local transmission of Zika virus in the United States. Upon receipt of each CERT request, the Incident Manager (IM) will review and approve the CERT deployment.

All members of the CERT will not always deploy for each request. The IM, Field Team Lead and CDC Emergency Operations Center (EOC) CERT Team Lead will assemble the team membership from the current CERT monthly roster. The composition/make-up of the deploying team will be determined based on the circumstance of the incident, as well as specific requests for technical assistance by the state/local health authority. The remaining CERT members who do not deploy will remain at CDC in case another request for assistance is received.

### Roles and Responsibilities

#### Field CERT Staff

- **CERT Field Team Lead:** Oversees and coordinates all aspects of the onsite investigation; provides guidance, instruction, direction, and leadership to the field CERT staff on immediate steps to accomplish goals and objectives of the mission; serves as CDC main point of contact with state and local health authorities and other jurisdictional partners.
- **Zika Virus Disease Subject Matter Expert (SME)/Epidemiology Team Lead:** Investigates all known cases to determine the timing and source of infection (e.g., travel-related, transfusion-, sexual, local mosquito-borne); performs rapid follow-up of suspected cases through laboratory testing; provides guidance to state and local authorities on enhanced surveillance for Zika infection in humans through enhanced testing of close contacts of cases, blood donors, and pregnant women.
- **Pregnancy Birth Defects SME:** Supports coordination of the investigation and reporting of pregnant women and infants with laboratory evidence of Zika virus in collaboration with state-based maternal-child experts, birth defects surveillance experts, and infectious disease experts; serves as pregnancy-birth SME to ensure that infants with congenital Zika virus infection and birth defects are captured in both the US Zika Pregnancy Registry and state-based birth defects surveillance systems; fills gaps in state/local jurisdiction's capacity to

- investigate Zika among pregnant women and infants and their outcomes; engages the medical community in testing and reporting suspect cases, providing prevention information to patients, including barrier and other forms of contraception for people at risk.
- **Vector SME:** Provides technical expertise on local vector control measures as well as information and materials to prevent mosquito-borne, sexual, and congenital transmission to diminish the risk of transmission; enhances mosquito surveillance to determine the type, distribution, and population size of *Ae. aegypti* and *Ae. albopictus*; works in coordination with local authorities to align existing resources and partnerships with vector control services and fill anticipated gaps in vector guidance and vector control.
  - **Lab SME:** Improves the availability of laboratory tests for Zika virus infection through local scale up or rapid transport of specimens to reference laboratories; provides guidance, technical assistance, and training for diagnostic testing.
  - **Communications SME:** Assists with planning and implementation of local campaigns to communicate the risk of Zika virus infection and personal measures the public can take to decrease their risk for infection, disease, and adverse outcomes; assists local/state health authorities with press inquiries and messaging regarding investigations; maintains ongoing communication with CDC and consistency in all messages.

### EOC CERT Staff

CERT Team Lead manages the overall operations of the CERT program from the CDC EOC and is the liaison between the field team and IM leadership. The EOC CERT staff do not deploy, but provide consult and administrative support to those in the field.

### Requesting the CERT Team

The first case of local transmission will draw a great deal of media and public attention and will likely necessitate the deployment of a CERT team. An invitation for CDC assistance in responding to the first case of local transmission is based on preliminary discussions between the state/local health authority, CDC Director, and the response Incident Manager (IM) regarding the type of assistance needed. The CERT members deployed will greatly depend on the needs of the jurisdiction. Some key considerations include:

- Triggers regarding how the first case was detected
- Prioritization of resources
- Location/population density
- Capacity/resources of local authority
- Timing/seasonality
- Acceptance by local authorities

### Notification of a Locally Acquired Zika Case

CERT pre-deployment preparations are initiated once the initial assessment by the IM is performed. A formal written request and terms of reference (TOR) from the state/local health authority for the CERT team will be sent via email to the response IM. At that point, the CERT Lead will initiate the paperwork for the request (CERT TOR).

### Pre-Deployment Preparations

Pre-deployment preparations begin once the IM approves CERT deployment. State and local health authorities lead the investigation and CDC is invited to assist with the response. State and local authorities and CDC must agree on investigation goals and activities before deploying the CERT. As the investigation develops, additional goals and objectives may be added to the agreement.

### Team Activities on Arrival

On arrival, the CERT will meet and work closely with the state and local health authorities to assess the situation and launch the investigation, keeping in constant contact with the CDC EOC about unfolding developments. The teams will review and discuss in details the goals and plans for the first days on-site, identify roles/responsibilities of both CDC and local team members, and establish routes of communication with all relevant authorities.

### Daily Reporting/Communication

The team will establish a regular meeting/reporting time in conjunction with the state and local health authorities. Daily field reports will be sent from the field teams to the CERT Lead in the EOC for internal response leadership reporting. The lead for media requests/interactions will be agreed on by state/local health authorities, the Field Team Lead, and CERT Communications SME.

### Team Activities before Departure

When the investigation has been completed, CERT field staff will meet with state and local health authorities for an exit meeting to summarize response activities, status of events, and follow up, if necessary.

### Post-Deployment Activities

Once the team returns to CDC, the Field Team Lead and CERT Team Lead will ensure that all post-deployment activities are completed. This will include a final report of the investigations as well as a summary of the final exit meeting with the local health authority. A copy of this report will be provided to the local health authority as well.

## CERT Membership and Duties

To be part of the monthly CERT roster, **team members must be able to deploy within 12-24 hours of notification**. Depending on incident circumstances and position, deployment lengths may vary but the maximum duration is anticipated to be no longer than 3 weeks, but a new CERT team could be rostered for field deployment beyond 3 weeks if needed. CERT members must complete the necessary medical clearances before deployment. Training will be provided monthly for each team.

## Field Equipment

Vector surveillance and control equipment will be deployed with the team, including necessary materials/chemicals for surveillance traps and larval and adult mosquito control. This will be coordinated between Ft. Collins and CDC headquarters.

## Travel

The EOC Logistics Team will coordinate travel for all CERT team members.

## Appendix D: Communication

### Goal

To prepare for and immediately communicate and address concerns about Zika transmission, the first suspect or confirmed case of local transmission of Zika infection, and subsequent cases in the continental United States and Hawaii.

### Objectives

- Maintain credibility and public trust by regularly providing timely, accurate, and actionable information about what is known and what is not known, and dispelling rumors and misinformation.
- Increase access and knowledge of accurate information about Zika among affected populations and community members. Convey appropriate action messages for each audience.
- Increase knowledge of and support for vector control activities in communities.
- Increase the capacity of healthcare providers to share accurate health information about Zika prevention to pregnant women and women of reproductive age, their partners, and affected populations.
- Motivate action by community leaders and organizations to protect pregnant women from Zika infection, and other people at risk, especially vulnerable populations.

### Table of Risk Category Descriptions

Stage	Phase Level	Transmission Risk Category
Pre-incident	0	<b>Preparedness</b> — vector present or possible in the state
	1	<b>Mosquito Season</b> — <i>Ae. aegypti</i> or <i>Ae. albopictus</i> mosquito biting activity. Introduced travel-related or sexually transmitted cases
Suspected/Confirmed Incident	2	<b>Limited Local Confirmed Transmission</b> — single, locally-acquired case, or cases clustered in a single household
Incident/Response	3	<b>Widespread Local Transmission</b> — Zika virus illnesses with onsets occurring $\geq 2$ weeks apart but within approximately 1 mile (1.5 km) diameter
	4	<b>Widespread Multi-jurisdictional Transmission</b> — Zika virus illnesses with onsets occurring $\geq 2$ weeks apart in $>1$ jurisdictional area

**Table of Communication Activities by Risk Category**

Risk Category	State/Local Activities	CDC Activities
<p><b>0. Preparedness</b></p> <p><b>1. Mosquito Season</b></p> <p><i>(Prior to First Case Event)</i></p>	<ul style="list-style-type: none"> <li>• Prepare a communication campaign for pregnant women, travelers, healthcare providers, and the public to raise awareness of Zika virus. Include messaging on the risk for sexual transmission, and steps people can take to prevent it.</li> <li>• Ensure coverage of roles and responsibilities for emergency risk communication activities should local cases arise.</li> <li>• Create and update emergency risk communication plans.</li> <li>• Update scripts for state call centers to include Zika messaging.</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct national webinars for state and local responders on Zika emergency risk communication planning and crisis and emergency risk communication planning and implementation.</li> <li>• Raise awareness of Zika virus disease and prevention through a national umbrella campaign with targeted media outreach in areas most at risk for Zika virus transmission. Campaign will target primarily pregnant women, women of childbearing age, and sex partners. Include messaging on reducing risk of mosquito-borne and sexual transmission.</li> <li>• Conduct regular interviews with news media using trusted spokespeople to deliver clear prevention messaging about risks for Zika virus. Expand and amplify through social media channels.</li> </ul>
<p><b>2. Confirmed Limited Local Transmission by Mosquitoes</b></p> <p><i>(Single case or cases clustered in a single household)</i></p> <p><u>First 24 Hours and Beyond</u></p>	<ul style="list-style-type: none"> <li>• Coordinate with CDC and other agencies and authorities regarding local Zika virus transmission event.</li> <li>• Hold press conference and issue a public alert following the confirmation of a locally transmitted Zika case and press release/event.</li> <li>• Intensify visible activities in the county to increase attention to Zika virus</li> </ul>	<ul style="list-style-type: none"> <li>• Coordinate with local authorities and other agencies regarding local transmission case, federal agencies, and federal officials.</li> <li>• As appropriate, issue press release/media statement, and support local and state Public Information Officers.</li> <li>• Intensify activities to increase attention to Zika transmission risk and personal protection measures.</li> </ul>

Risk Category	State/Local Activities	CDC Activities
	<p>transmission risk, personal protection measures, and measures to be taken by infected persons to prevent mosquito bites.</p> <ul style="list-style-type: none"> <li>• Monitor local news stories and social media postings to determine if information is accurate, identify messaging gaps, and make adjustments to communications as needed.</li> </ul>	<ul style="list-style-type: none"> <li>• Continue targeted campaign efforts to get messages out using research-based tailored messages in a risk communication frame.</li> <li>• Work with external partners and third party validators to extend and amplify messaging.</li> <li>• Support state and local responders to adapt and tailor CDC-produced information products designed to ensure consistency and clarity of messages regarding Zika, vector control activities, and clinical guidance.</li> <li>• Monitor and assess news media, social media, and public inquiries to update or correct information delivered as needed.</li> </ul>
<p><b>3. Widespread Local Transmission by Mosquitoes</b></p> <p><i>(multiple cases within a county or jurisdiction)</i></p> <p><u>First 24 Hours</u></p>	<ul style="list-style-type: none"> <li>• Coordinate with CDC, other agencies, and authorities regarding local Zika virus transmission event.</li> <li>• Prepare for press event. Before press event(s), convey to authorities key information regarding the ongoing investigation to assess the extent of local transmission, the locations of online information (local and CDC), and prerelease copies of the press release and Q&amp;As, to include:</li> </ul>	<ul style="list-style-type: none"> <li>• Coordinate public announcements with local authorities and other agencies regarding local transmission case, federal agencies, and federal officials.</li> <li>• Before press events, distribute key information to responding agencies, officials, and public health partners to include: <ul style="list-style-type: none"> <li>○ CDC staff and partners, including state, CSTE, PAHO, WHO, ASTHO</li> <li>○ Federal partners: HHS ASPR, EPA HQ, EPA</li> <li>○ Congressional staff, elected officials</li> </ul> </li> </ul>

Risk Category	State/Local Activities	CDC Activities
	<ul style="list-style-type: none"> <li>○ State, county/local health departments</li> <li>○ Responding health department unit, environmental health unit, law enforcement, and local elected officials</li> <li>● Issue fact sheets explaining public health activities by local, state, and CDC officials, including responsive vector control activities and travel guidance.</li> </ul>	<ul style="list-style-type: none"> <li>● Contribute to state/local press release, press conference, and issue a CDC press statement or hold a press briefing and availability with CDC leadership or subject matter expert.</li> <li>● Support state and local responders to adapt and tailor CDC-produced information products designed to ensure consistency and clarity of messages regarding Zika virus disease, vector control activities, and clinical guidance.</li> <li>● Convey health messages and resources to professionals (clinicians, health departments, and labs) and the public through a range of channels:             <ul style="list-style-type: none"> <li>○ Health Alert Network (HAN)</li> <li>○ News media</li> <li>○ CDC social media handles</li> <li>○ <a href="http://www.cdc.gov/Zika">www.cdc.gov/Zika</a></li> <li>○ CDC-INFO (1-800 hotline)</li> <li>○ Web page updates and GovDelivery RSS Feed notification</li> </ul> </li> <li>● Update <a href="http://www.cdc.gov/Zika">www.cdc.gov/Zika</a> page of active local transmission locales.</li> <li>● Monitor and assess news media, social media, and public inquiries to update information delivered as needed.</li> </ul>



Risk Category	State/Local Activities	CDC Activities
<p><b>3. Widespread Local Transmission by Mosquitoes</b></p> <p><i>(multiple cases within a county or jurisdiction)</i></p> <p><u>First Week and Beyond</u></p>	<ul style="list-style-type: none"> <li>• Issue information explaining public health activities by local, state, and CDC officials, including responsive vector control activities and guidance for persons who live in, work in, or travel to a Zika transmission area, such as fact sheets (flyers, community leaders, social media).</li> </ul> <p>Convey health messages and resources to the local community through a range of channels:</p> <ul style="list-style-type: none"> <li>• Social media, websites, text services, mobile media.</li> <li>• County/local alert systems and emergency notification systems.</li> <li>• Paid notifications in local papers</li> <li>• Direct mailing of one-page flyers to residents within 1-2 miles of the Zika active zone (flyer to contain brief info, health messages, and references for where to obtain more info).</li> <li>• Posting of fact sheets/flyers in local</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct research with the relevant target audiences to update and improve messaging and uptake.</li> </ul> <ul style="list-style-type: none"> <li>• Update all information products as the local case investigation and disease control activities continue.</li> <li>• Post information on Zika transmission areas on CDC website with appropriate linkage to protection and prevention measures.</li> <li>• Continue to convey health messages and resources to professionals and the public through a range of channels:               <ul style="list-style-type: none"> <li>○ Add Clinician Outreach Calls (COCA)</li> <li>○ Add partner calls</li> <li>○ Health Alert Network (HAN)</li> <li>○ News media (Add embeds)</li> <li>○ CDC social media handles, promote partner messaging</li> <li>○ <a href="http://www.cdc.gov/Zika">www.cdc.gov/Zika</a></li> <li>○ CDC-INFO (1-800 hotline)</li> </ul> </li> <li>• Respond to partner requests for information and products.</li> <li>• Issue updates for the media and hold telebriefings as needed in coordination with local, state, and federal agencies and organizations.</li> </ul>

Risk Category	State/Local Activities	CDC Activities
	<p>schools, libraries, community centers, health facilities, municipal buildings as appropriate.</p> <ul style="list-style-type: none"> <li>Public availability sessions, community meetings.</li> </ul>	
<p><b>4. Widespread Multi-jurisdictional Transmission by Mosquitoes</b></p>	<p>Respond as in category 3, plus:</p> <ul style="list-style-type: none"> <li>Expand response activities regionally or state-wide.</li> </ul>	<p>Respond as in category 3, plus:</p> <ul style="list-style-type: none"> <li>Intensify all communication efforts, which may include CDC-held press events and notices.</li> <li>Provide on-the-ground media assistance and support as requested.</li> <li>Update Zika transmission area information as needed</li> </ul>
<p><b>Post Event</b></p>	<p>Hold press conference to announce end of concern with local transmission and stand down of emergency response.</p>	<ul style="list-style-type: none"> <li>Update <a href="http://www.cdc.gov/Zika">www.cdc.gov/Zika</a> page of active local transmission locales.</li> <li>Respond to media inquiries as required.</li> <li>Document the efforts and write up for press and community to share lessons learned and best practices.</li> </ul>

## Coordination of Communication Activities

- Existing state protocols for information releases and media outreach need to be honored and integrated during a local Zika virus transmission event.
- All fact sheets, press releases, and other materials developed by CDC during a local Zika transmission event need to be coordinated and approved by state personnel.
- Agency notifications, community outreach, and media outreach efforts should be handled by state partner staff; any activities initiated by CDC should be approved by state and local personnel.
- State and local authorities should identify in advance local spokespersons and subject matter experts who will be responsible for public communication.

## Key Considerations

- The first public announcement of a suspected or confirmed case of Zika virus infection in the United States may come from the news media or through social media. Be prepared to respond quickly.
- Spokespersons should be identified and prepared in advance of an event to minimize delays in communication.
- There will be incomplete information, misinformation, rumors, and misconceptions among the public. Social media will increase the pressure and demand for information and greatly expand the potential for rumors and misinformation to spread rapidly.
- There may be delays in obtaining and releasing verified information to the public; the longer the delay, the greater the degree of news media and public speculation.
- CDC-INFO should be aware that if the United States faces a significant outbreak, they may receive calls from pregnant women and their families who are worried about the babies' health and development, as well as physicians wanting the latest clinical guidance and fact sheets for their patients.
- Emphasize regularly in messaging that we do not know everything about Zika – clearly state that CDC's guidance and recommendations may change as CDC epidemiologists learn more about Zika and how to prevent it.
- CDC's guidance and recommendations for the United States and other highly developed regions may differ from other countries or areas. It will be important to foreshadow the reason for this expectation in communication messaging.
- Focusing on calls to action – giving the public something to do – can be very helpful in channeling fears into productive action.

## Appendix E. Surveillance

### Background

This document provides guidance on surveillance for Zika virus infection in the continental United States (CONUS) and Hawaii, with a focus on identifying cases resulting from local mosquito-borne transmission. All health departments should be prepared to identify and investigate travel-associated, sexually-transmitted, and locally-transmitted cases. Health departments in areas with relevant mosquito vectors are encouraged to enhance surveillance for Zika virus disease when mosquitoes are present and active; enhanced surveillance should be performed in areas with *Aedes aegypti* and *Aedes albopictus* mosquitoes.

Zika virus disease is a nationally notifiable condition in the United States. In February 2016, the Council for State and Territorial Epidemiologists (CSTE) approved [interim case definitions](#) for Zika virus disease and Zika virus congenital infections. Zika virus disease cases should be reported to state or local health departments by healthcare providers and laboratories performing Zika virus testing. Current guidelines recommend testing for Zika virus infection in people with a clinically compatible illness during or within 2 weeks of travel to an area with ongoing transmission or with exposure through an epidemiologic link, such as vertical transmission, sexual contact, or association in time and place (e.g., living in the same household) to a laboratory-confirmed case of recent Zika virus infection. In addition, [testing can be offered to asymptomatic pregnant women](#) with a history of travel to an area with ongoing transmission or who had exposure through condomless sexual contact with a partner who had symptoms of Zika virus disease during travel or within 2 weeks of return from an affected area.

Surveillance for Zika virus infection is challenging because symptoms, when present, are typically mild and nonspecific. The most commonly reported clinical features of Zika virus disease are a diffuse macular or papular rash, fever, arthralgia, and nonpurulent conjunctivitis. Illness usually lasts several days to a week. Severe disease requiring hospitalization is uncommon, and deaths are rare. However, Guillain-Barré syndrome and other neurologic manifestations have been reported in association with Zika virus infection. In addition, congenital Zika virus infections resulting in fetal microcephaly and intracranial calcifications have been documented, although the prevalence of these severe outcomes is not currently known.

The primary vector for Zika virus is the *Ae. aegypti* mosquito; *Ae. albopictus* is also a known competent vector for Zika virus. States with a historical presence of *Ae. aegypti* are likely at higher risk for local transmission than states with *Ae. albopictus* alone. Based on prior experience with dengue and chikungunya viruses, which are also transmitted by *Ae. aegypti*, Texas, Florida, and Hawaii are considered most likely to experience local transmission of Zika virus. Nevertheless, other states are at risk due to the presence of *Ae. aegypti* or *Ae. albopictus* mosquitoes, and enhanced surveillance (see below) for local transmission of Zika virus should be considered. In addition to mosquito-borne transmission, sexual transmission, congenital, and perinatal transmission of Zika virus have been reported. Transfusion- and transplant-associated transmission also might occur.

## Detect, investigate, and report potential travel-associated cases of Zika virus infection

All health departments should be prepared to identify and investigate potential cases in travelers and their sexual contacts. These activities are important to mitigate risk to patients and the community. Because clinicians are integral to the surveillance process, all health departments should take steps to increase healthcare provider awareness of Zika virus disease and ensure testing of potential cases.

The following information should be gathered 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 (country of travel, dates of travel, partner's clinical information if sexual transmission is suspected, receipt of any blood, organ, or tissues in previous 28 days)
  - For each confirmed case, dates of symptom onset and exposure to areas affected by Zika or sexual contacts at risk for Zika virus infection should be closely evaluated to determine that local mosquito-borne transmission can be ruled out.
  - Because of the potential for Zika virus transmission through blood products, organs, or tissues, further detailed investigation should be conducted promptly for recipients who develop illness compatible with Zika virus disease within 28 days of receiving these products.
- Hospitalization, reason for hospitalization, and disposition
- Pregnancy status and related information (e.g., estimated date of delivery, results of ultrasound and other testing, outcome including fetal loss, stillbirth, or live delivery)
  - Pregnant women with confirmed Zika virus infection and their infants, whether symptomatic or asymptomatic, should be reported to the US Zika Pregnancy Registry. Additional clinical information and pregnancy and infant outcomes information will be requested as part of the Registry process.
- If the patient is an infant, obtain maternal history as outlined above, including gestational age of pregnancy at the time of exposure. Also include infant diagnostic assessment information, including microcephaly, intracranial calcifications, or other neurologic abnormalities or birth defects.

While interacting with the patient and family

- Reinforce with the steps necessary to avoid exposure to local mosquito populations to prevent transmission to local mosquito populations (stay indoors in screened, air-conditioned rooms during first week of illness, use of personal repellents, mosquito reduction activities around home)

States should be aware if any blood donation centers in their area are conducting Zika virus nucleic acid amplification testing of blood donations, and if so, how any positive results will be communicated promptly from the blood center to the health department, and the public health response. It is possible that a first local transmission case or a travel-associated case could be identified through blood screening.

For more information on clinical evaluation and tools for healthcare providers, visit CDC's [Zika website for Healthcare Providers](#).

## Testing of clinical specimens for diagnostic and surveillance purposes

CDC has issued diagnostic testing [guidance](#) for Zika, chikungunya, and dengue viruses in US public health laboratories. Real-time reverse transcription-polymerase chain reaction (rRT-PCR) confirms Zika infection and can be performed rapidly and is highly specific; prompt confirmation and reporting of acute Zika virus infection increases the effectiveness of public health response activities. Guidance on value of rRT-PCR testing of urine specimens was recently [issued](#). Serum and urine samples for rRT-PCR testing should be collected as soon as possible after illness onset (and within 14 days of onset). In most patients, Zika virus RNA is unlikely to be detected in serum after the first week of illness. Recent reports indicate that Zika virus RNA can be detected in urine for at least 2 weeks after onset of symptoms; therefore, testing of urine specimens is important. In addition to the public health response that is necessary for a confirmed case of Zika virus disease, confirmation through rRT-PCR that an infection in a pregnant woman is due to Zika virus is clinically important because close monitoring of the pregnancy is recommended. Interpretation of serologic testing results can be difficult because cross-reactivity may occur between Zika virus and other flaviviruses (i.e., dengue, yellow fever, St. Louis encephalitis, Japanese encephalitis, and West Nile viruses) when there has been previous infection or vaccination. CDC will update guidelines for Zika virus testing as additional information becomes available.

The US Food and Drug Administration (FDA) has issued an [Emergency Use Authorization \(EUA\)](#) for the CDC Trioplex Real-time RT-PCR Assay (Trioplex rRT-PCR) and the CDC Zika IgM Antibody Capture Enzyme-Linked Immunosorbent Assay (Zika MAC-ELISA). The Trioplex rRT-PCR is intended for the qualitative detection and differentiation of RNA from Zika, dengue, and chikungunya viruses in clinical specimens (e.g., sera, urine, cerebrospinal fluid, and amniotic fluid) collected from people meeting clinical and epidemiological criteria for disease (See CSTE [Case Definitions](#)); serum samples are also to be obtained whenever one of the other specimen types is to be tested. The Zika MAC-ELISA is intended for the qualitative detection of Zika virus IgM antibodies in human sera or cerebrospinal fluid collected from people meeting clinical and epidemiological criteria for disease. CDC is distributing these assays to qualified laboratories within the Laboratory Response Network, an integrated network of domestic and international laboratories that help respond to public health emergencies.

As of June 1, 2016, commercially-available rRT-PCR assays that have received an [FDA Zika EUA](#) include the Focus Diagnostics, Inc. Zika RNA Qualitative Real-Time RT-PCR test for serum used by Quest Diagnostics, Inc., and the Altona Diagnostics RealStar Zika Virus RT-PCR Kit U.S. for serum or urine.

[Zika and dengue viruses are classified as biological safety level \(BSL\) 2 pathogens](#) and should be handled in accordance with [Biosafety in Microbiological and Biomedical Laboratories](#) guidelines and a risk assessment performed for each laboratory for the specific procedures used.

For more information on diagnostic testing for Zika, visit CDC's [website](#).

## Enhance surveillance in areas at risk of mosquito-borne transmission, for early detection of possible local transmission

In locations with relevant mosquito vectors, health departments are encouraged to enhance surveillance for Zika virus disease when the mosquitoes are present and active. Enhanced surveillance should be performed in areas with *Ae. aegypti*. The appropriate geographic scope and intensity of such increased surveillance depends on local circumstances, such as history of any previous local dengue or chikungunya virus transmission, population density, anticipated mosquito vector abundance, locations of recent travel-associated cases, local travel patterns (i.e., areas known to have 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). CDC is available to provide additional guidance to states and local jurisdictions on specific circumstances as requested.

The following are examples of steps jurisdictions should review for early and rapid detection of local mosquito-borne transmission:

1. Ensure diagnostic testing is available and maintain communication with providers on goals of testing for the current local situation.
  - Rapidly identify suspect local mosquito-borne transmission cases in areas with confirmed travel-related cases and potential for mosquito-borne transmission. This requires timely testing of patients with illnesses highly suggestive of Zika virus disease (e.g., people who have three of the four primary clinical signs/symptoms: rash, fever, arthralgia, or conjunctivitis) but who lack known travel-related exposures.
    - Encourage healthcare providers to notify public health authorities before tests results are available if Zika virus infection is suspected in a person who lacks travel-related exposures. The provider and public health authorities should educate patient on steps necessary to reduce the risk to the community.
    - Reinforce message to providers that rRT-PCR testing is recommended for urine samples collected <14 days from illness onset and for serum samples collected <7 days from illness onset. For serum collected 7 days to 12 weeks after symptom onset, testing should be performed using an approved serologic assay. Please see the [CDC website](#) for additional guidance.
    - 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 are communicated promptly through appropriate public health channels, to reach clinicians.
  - Anticipate increased demand for diagnostic testing if local Zika virus transmission is identified, and develop a plan to provide laboratory surge capacity. Ensure that the public health laboratory serving the jurisdiction is aware of any potential changes in local testing recommendations.
2. Increase surveillance for Zika virus disease in local areas with confirmed travel-associated cases and competent vector activity to identify possible local transmission cases.
- Interview household members of confirmed travel-associated cases, conduct testing of anyone with symptoms consistent with Zika virus infection, and inform household members to notify public health 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 facilitate testing of those newly symptomatic people.
    - Deliver prevention and early detection messages to nearby households.
  - Call local healthcare providers to solicit reports of clinically compatible cases, encourage testing and reporting of suspect cases and raise awareness among providers.
  - Contact local laboratories performing testing for Zika virus to monitor number and geographic location of additional suspect cases, any preliminary positive results, reconcile with reports from public health departments, and ensure laboratories are aware of reporting requirements.
  - Conduct syndromic surveillance at local healthcare facilities to detect early increases in illnesses that could be Zika virus disease, wherever possible.
3. Implement event-based surveillance for clusters of rash illness
- Educate and enlist providers to be vigilant for unexplained clusters of rash illness, report the finding to public health, and conduct further investigation and testing for Zika virus disease. This is especially important if some patients present with additional symptoms, including acute fever, arthralgia, or conjunctivitis, or if the cluster involves adults or other groups where rash illnesses are less common.
4. Ensure coordination with vector control
- 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.
  - As detailed in [CDC's interim recommendations for Zika vector control and Appendix F](#), mosquito monitoring for immature and adult mosquitoes may be intensified to guide vector control efforts and assess risk for local transmission.



## Surveillance response in the event of possible mosquito-borne transmission

Suspected clinical cases without travel-associated exposure or sexual contact with an infected person should be reported to public health authorities, including CDC, so that timely testing of clinical specimens can be facilitated and response activities can be readied. Autochthonous 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 eliminated. Under these circumstances, states and local jurisdictions should implement enhanced surveillance for Zika virus disease around the home of the confirmed, locally acquired case and any other likely sites of transmission identified through the case investigation. The principal objectives of this surveillance should be to define the frequency and geographic extent of local transmission.

The boundaries of the geographic area to be targeted for enhanced surveillance should be determined based on risk assessments for further local transmission, including the factors described above such as history of any previous local dengue or chikungunya virus transmission, population density, anticipated mosquito vector abundance, locations of recent travel-associated cases, local travel patterns (i.e., areas known to have 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 assistance with scaling up surveillance and response activities, as needed.
- Identify the physical location of the case's most likely place(s) of exposure (i.e., home, work, or other US location, if recent travel).
- Augment clinician outreach and communication activities to healthcare providers in the county or jurisdiction through existing local channels for urgent infectious disease alerts (e.g., messages through local medical societies, Health Alert Network messages [HANs], conference calls).
  - Determine if additional identified suspect cases are likely to represent a single transmission chain or separate occurrences.
  - Intensify syndromic surveillance and surveillance for clusters of rash illness.
- Implement targeted 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.
  - Household members: prompt symptom assessment and urine and serum rRT-PCR testing of household members.
  - Close neighbors/neighborhood in suspected area: house-to-house survey of any available people, or survey at local gathering place, to identify if recently symptomatic people (onset <14-21 days earlier) and, wherever possible, obtain urine and serum specimens for testing by rRT-PCR.
- Further expand laboratory testing for symptomatic people (see above) and assess laboratory surge capacity for anticipated increased testing volume.
- Implement community outreach efforts by using predeveloped messages to encourage care seeking (and testing for confirmation, when appropriate) of people with clinically compatible illnesses.

- Enhance surveillance activities 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 (see above).
- Develop standing communication channels with vector control officials to share vital information and coordinate surveillance and vector control efforts.
- 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 rule out dengue virus infection because proper clinical management of dengue can improve patient outcome for patients with dengue infection.

## Reporting to public health

- Healthcare providers and laboratories are strongly encouraged to report suspected Zika virus disease cases to their state or local health departments to facilitate diagnosis and mitigate the risk for local transmission in areas where *Ae. aegypti* or *Ae. albopictus* mosquitoes are currently active.
  - For patients with an epidemiologic link to another patient with confirmed Zika virus infection (e.g., a household member), CSTE recommends notifying public health authorities of patients with any of 4 clinically consistent findings: rash, fever, non-purulent conjunctivitis, or arthralgia.
  - Alternate criteria for case ascertainment and testing may be developed by local health authorities depending on the degree of risk for local mosquito-borne transmission (under enhanced surveillance during mosquito season).
- Healthcare providers and laboratories should [report](#) promptly all patients with laboratory evidence of Zika virus infection to state, territorial, or local health departments.
- State Electronic Laboratory Reporting (ELR) mandates should be followed so that public health authorities are aware of the Zika testing being ordered even before results are available.
- Pregnant women with Zika virus infection, whether symptomatic or asymptomatic, and their infants, should be reported to the US Zika Pregnancy Registry. Additional clinical information, contact information, and pregnancy and infant outcomes information may be requested for cases identified in pregnant women, and for all infants born to these women.
- CDC requests that suspected local transmission be reported promptly to CDC to assist with further investigation and interventions to prevent further spread.

## Appendix F. Vector Control

### Purpose of this document

This document provides guidance on immediate steps to accomplish effective vector control at varying levels of Zika virus transmission risk in the continental United States (CONUS) and Hawaii (HI). 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 the transmission of Zika virus in CONUS/HI.

This guidance is organized according to the following phased risk categories:

#### Table of Risk Categories

Stage	Phase Level	Transmission Risk Category
Pre-incident	0	<b>Preparedness</b> — vector present or possible in the state
	1	<b>Mosquito Season</b> — <i>Ae. aegypti</i> or <i>Ae. albopictus</i> mosquito biting activity. Introduced travel-related or sexually transmitted cases
Suspected/Confirmed Incident	2	<b>Limited Local Confirmed Transmission</b> — single, locally-acquired case, or cases clustered in a single household.
Incident/Response	3	<b>Widespread Local Transmission</b> — Zika virus illnesses with onsets occurring $\geq 2$ weeks apart but within an approximately 1 mile (1.5 km ) diameter
	4	<b>Widespread Multi-jurisdictional Transmission</b> — Zika virus illnesses with onsets occurring $\geq 2$ weeks apart in $>1$ jurisdictional area

State health departments and localities that have, or surmise they have, the mosquito species *Ae. aegypti* or *Ae. albopictus* (competent vectors) have Zika virus transmission potential within their state and may need to respond to higher phase levels. [Many states lack evidence of competent vectors](#) and may remain at phase 0. In addition to the presence of competent vectors, the likelihood of Zika virus transmission escalating from phase level 1 to 2 to 3, or even 4, will vary depending on local factors including season, population density, or weather. Previous local dengue virus transmission is the most relevant predictor of escalating Zika virus transmission.

The most important factors that contribute to Zika virus transmission are a combination of

- Distribution and density of *Ae. aegypti* (the importance of *Ae. albopictus* in widespread transmission is expected to be less).
- Density of human population.
- Likelihood of frequent case introduction from epidemic or endemic countries.

### Preparedness (Phase Level 0)

The goal is to reduce the threat when mosquito season begins and to be ready to effectively and rapidly respond to each level of threat. The following basic critical activities should be undertaken, ideally, before the seasonal appearance of vector mosquitoes to increase readiness to prevent or limit possible Zika virus transmission.

#### State Activities for Preparedness during Phase Level 0

1. Develop a state action plan. Each state with competent vectors is urged to have a readily referenced plan that covers all aspects of preparing for and responding to potential and real transmission of Zika virus. Vector control components of the response should be integrated into this plan and include
  - Explicit procedures for the rapid communication of laboratory evidence of local Zika virus infections to vector control from appropriate state health department laboratories and epidemiology units.
  - Procedures for systematic collection and analysis of vector distribution and insecticide sensitivity data.
    - Methods should be consistent with trapping methods and resistance testing methods [outlined by CDC](#).
    - Data should be maintained locally for periodic access and reporting locally, and summary data should be reported to CDC through a mechanism being developed.
    - Sensitivity testing should be performed at least annually since insecticide sensitivities shift over time with selective pressure.
  - Response plans for scenarios outlined in phases 1 thru 4 for localities at any risk for transmission for introduced cases (i.e., travel-associated or sexually transmitted) and those for suspected transmissions.
  - Consideration of preemptive vector control for localities considered at high risk (e.g., previous dengue outbreaks), based on an integrated vector strategy, including procedures for both adult and larval vector control.
2. Identify locations at high risk. All areas with a history of competent vectors are at risk. Population centers in these areas are at more risk than rural areas because of ideal *Ae. aegypti* habitat, greater housing density (as the mosquito vectors have short flight ranges), and international travelers. Areas with documented dengue virus transmission should be considered at highest risk for Zika virus.
3. Establish and foster communication plans with existing state and local mosquito control resources.
  - Identify state and local mosquito control professionals who can respond to transmission events within days of identification of a symptomatic patient.
  - Determine if the state has the capacity to test for virus in pooled mosquitoes to support epidemiological evaluation in the event of transmission.

- Assess the readiness and competencies of those control operations in the areas at highest risk.
  - Consider performing a needs assessment (or self-assessment) of the resources available to vector control operators including pesticides, truck mounted ultralow volume fumigation units, and aerial units.
  - Train or audit personnel to identify the vector species, conduct vector surveillance, insecticide resistance testing, equipment calibration, and the proper handling of insecticides.

### CDC Activities during Phase Level 0

1. Provide technical assistance. CDC will support state-based vector control activities and will provide technical assistance and consultation. A summary of CDC activities, including updated detailed technical advice on vector surveillance, testing, and control for vector control professionals is available on the CDC [Zika Vector Control webpage](#).
  - CDC is developing a risk model based on records, population density, international traffic, and environmental factors to predict areas at the county level with the highest potential for transmission of Zika virus.
  - CDC maintains a nationwide, county-level map of *Ae. aegypti* and *Ae. albopictus* distribution and is developing a user-friendly, web-based reporting system.
  - CDC has contracted with the American Mosquito Control Association (AMCA) to train state-based programs on these topics beginning in June 2016.
2. Support vector control preparedness and response. Through the Epidemiology and Laboratory Cooperative Agreement (ELC) to support state efforts, CDC is working to establish a process to track state capacity for and provide support of critical vector control activities.

### Mosquito Season (Phase 1)

The goals include reducing the general risk of transmission in the most vulnerable areas by preemptively reducing vector populations and initiating precautionary vector control measures within a minimum of 150 meters of introduced cases (i.e., residents with suspected symptomatic Zika virus infection acquired through travel or sexual contact). Latitude and temperature affect when and for how long sufficient *Aedes* populations are present to initiate or maintain Zika virus transmission. Southernmost states will have the longest seasons and, in some areas of certain states, the risk of transmission exists all year. Phase 1 includes development of vector control procedures for localities at any risk for transmission to respond to an introduced case (i.e., travel-associated or sexually transmitted).

### State Activities during Phase 1

1. Survey and monitor vector populations at the species level systematically.
2. Identify sampling methods. For *Ae. aegypti* and *Ae. albopictus* adults, a cost-effective and representative sampling technique is to place lethal ovitraps at set intervals in a geographic

pattern that allows representation of the entire area believed to be at risk. There are a number of such traps available but the most important consideration is that results are comparable. Fixed trapping sites should be used to determine changes in mosquito densities. Traps can be rotated throughout the area to conserve resources but each fixed site should be sampled periodically during the season.

3. Perform systematic searches for immature mosquito or larval stages. Procedures should include searching water collection containers near human habitation, which should be done frequently over as large an area as possible. Areas with high numbers of larvae should be targeted for cleanup efforts and application of larvicides.
4. Determine insecticide sensitivity. The bottle assay is inexpensive, simple, and gives results for the major active agents (e.g., organophosphates, pyrethroids) within 24 hours. It is advisable to test samples from a variety of locations. Testing once each season is sufficient.
5. Actively engage community through communication products. Outreach is important to leverage control efforts with community participation through the use of communication campaigns, including public service announcements and school programs.
  - Promote personal protection and risk avoidance measures, such as topical repellent, property sanitation, and window screens.
  - Community mobilization to reduce places mosquitos develop can significantly reduce vector populations (e.g., tire removal, trash pickup, removal/cleaning of containers). Leverage partnerships with local governments and non-profits for support.
  - Use larvicides in containers and bodies of water that cannot be removed or dumped.
6. Initiate vector control response to an introduced case. Take precautionary measures when a suspected case with history of travel or a sexual exposure is identified but there is no evidence of local mosquito-borne transmission. Depending on number of suspected cases, priority should be placed on symptomatic patients suspected of having Zika virus infections. This may be tracked or triggered by a laboratory test order or other method of communicating the presence of symptoms. Response activities should include
  - Epidemiologic evaluation led by the epidemiology unit as outlined in state guidance, with communication of findings with the vector control team.
  - Consideration about potential infection at the workplace or community place, made in consultation with epidemiology. For each case under suspicion, the assessment should consider
    - There is evidence, however, that Zika virus titers are sufficient to infect mosquitoes for only 1 week after onset of symptoms, so travelers who entered the United States more than 1 week after the onset of symptoms should pose no threat of infecting local mosquitoes.
    - Areas with only indigenous *Ae. albopictus* at low density might elect not to conduct vector control around introduced cases, due to low likelihood of transmission.

- Assessment should consider the importance of confidentiality by not directing public attention to the case address, and should be coordinated with the epidemiology unit and communication teams.
- Continued or repeated assessments. If there is no evidence of adult or immature *Aedes* within at least a 150-meter radius of the case initially, continue mosquito surveys for 2 weeks; discontinue surveys if assessments remain negative.
- Initiation of adult and larva vector control activities. This step does not require validation from vector assessment because surveillance is carried out as control activities take place. Likewise, if temperatures are not conducive to mosquito propagation, the state might elect not to implement vector control. Vector control should include
  - Covering a perimeter of at least 150 meters around the case.
  - Duration of at least 2 weeks, if no *Ae. aegypti* and *Ae. albopictus* identified, or 45 days if the vector is found assuming no further cases are identified.
  - Adulticiding, larviciding, and source reduction (e.g., clean up). Further details on surveillance can be found on CDC's [Zika Vector Control webpage](#).
  - Providing instruction and supplies for personal protection to the case household to prevent infected persons transmitting to mosquitoes.

### CDC Activities during Phase 1

- Technical assistance. CDC will be conducting several activities to support state-based vector control activities. Overarching will be the availability of technical assistance and consultation (see phase 0 above).
- Support for vector control preparedness and response through the Epidemiology and Laboratory Cooperative Agreement (ELC) Agreement to support state efforts.

## Local Transmission (Phases 2-4)

Once non-travel or non-sexually transmitted cases are identified, local transmission is presumed, and the purpose of vector control is to prevent transmission from expanding to unaffected areas and to break transmission where it exists. The basic elements of response for phases 2-4 are the same as for phase 1 with travel cases, but as the extent of transmission increases, the intensity of intervention and scale of resources committed should increase. At wider transmission, some methods not practicable for small foci, such as aerial insecticide application, might be incorporated.

### State Activities during Phases 2-4

Through epidemiologic investigation, state health officials identify an acute case or a cluster of presumed cases without apparent travel exposure (or sexual contact). When epidemiologic evaluation suggests a likely transmission event, the state health department should immediately alert local vector control that the case is likely locally acquired and initiate their plan to conduct mosquito control through contracts or other means.

1. Implement immediate vector control actions.
  - Establish limits of the affected area. Although an intervention radius of 150 meters should be sufficient to prevent transmission from individual cases, the occurrence of many cases may require entire neighborhoods. The size of the area of transmission will be unclear at the outset. Vector control teams and epidemiologists should work closely together to delineate an initial area for control efforts.
  - Use adulticides, larvicides, and source reduction to immediately control adult and larval mosquitoes. A decrease in vector density is a measure of the efficacy of treatment. Trapping and immature surveys should be used as properties are treated so the efficacy of treatment can be assessed and to drive decisions on retreatments.
    - Insecticide selection must be based on resistance testing results.
    - Area treatment with truck-mounted ultra-low volume (ULV) applicators or aerial delivery should be based on local assessment of spatial risk.
    - Interior residual spraying of open houses (no screening or air conditioning) might be made available to those in the affected area.
  - Duration of activities should be no less than 45 days after the date of onset of the last known case (the time it is possible for an *Aedes* feeding on that person to continue to transmit Zika virus. As a precaution, the state might choose to continue moderate control efforts beyond the 45 day buffer or until the end of mosquito season.
2. Evaluate the need for federal assistance. Considerations for federal assistance should be addressed and communicated to CDC.
  - Considerations for a CDC Emergency Response Team (CERT)
    - CERTs are designed to fill potential gaps in the state's capacity to respond, including all or some staff to fill functional areas of epidemiology, entomology, vector control, communication, and laboratory testing.
      1. Inviting a CERT would be prioritized if the transmission represents one of the first in CONUS/HI
      2. State recognition of gap in established vector surveillance or control infrastructure, including expertise or supplies
  - Requests for additional contracted assistance with response activities may be prioritized to phase 3 or 4. CDC has a task order in place for supporting states' needs, in addition to ELC funds, during a Zika virus epidemic once the need is verified.

### CDC Activities during Phases 2-4

1. **CERT.** CERTs include vector control specialists who can deploy with equipment and supplies to survey for the vector, monitor density during control activities, and test for insecticide resistance.
2. **Federal contractor.** CDC has a limited task order in place for supporting states' needs during a Zika virus epidemic once the need is verified. Activation on this contract will be made when local



and state resources are deemed to be insufficient for the required response. CDC will make the determination in consultation with the state after an assessment of the situation. Technical assistance includes detailed guidance on vector control procedures through the [Zika virus website](#), webinars, and 24/7 on call. Specific domains of such technical expertise include training on vector distribution data collection and insecticide sensitivity testing, including through a contract with the AMCA. In addition, CDC can perform Zika virus testing of mosquitoes during a response.

## Considerations and Assumptions

- Mosquito-borne pathogen transmission is influenced by many variables unique to given locations; these include environmental (e.g., mosquito season) and human (e.g., house construction) variables. This guidance can be modified to need.
- The infectivity of asymptomatic patients, which are the majority of Zika virus infections, is not yet known.
- *Ae. aegypti* females might bite several people before obtaining a full blood meal, potentially creating household clusters of cases with the same date of onset.
- Lifetime flight range will typically be less than 100 meters from the site of *Ae. aegypti* and *Ae. albopictus* emergence, therefore timely control within 150 meters of a case should reduce or eliminate transmission.
- Schools, workplaces, and other public venues can be transmission sites.
- The probability of longitudinal, transovarial passage of Zika virus between *Ae. aegypti* and *Ae. albopictus* generations is unknown but, based on related viruses, is expected to be insignificant.
- The lifespan of *Ae. aegypti* and *Ae. albopictus* in nature is not expected to exceed 30 days. Therefore, assuming a maximum viremic period of 2 weeks from symptom onset for an infected person, the longest interval between symptom onset of one case and acquisition of infection in a secondary case is estimated to be 6 weeks.
- The rates of mutation conferring insecticide resistance are slow enough that testing once in a season should be sufficient to base that year's insecticide selection on.

## Appendix G: Pregnancy and Birth Defects

Zika virus infection in pregnancy can cause microcephaly and severe fetal brain defects; a range of problems related to central nervous system (CNS) injury has been detected among fetuses and infants with known or suspected congenital Zika virus infection.<sup>3</sup> Due to the risk to the fetus, clinical guidance and testing recommendations are focused on women of reproductive age, with special considerations for pregnant women and women planning a pregnancy as well as infants born to women infected with Zika virus during pregnancy. CDC aims to better understand the effects of Zika virus infection during pregnancy in order to reduce the risk and impact of Zika virus infection during pregnancy in pregnant women and children. Identification of any local transmission will have urgent implications for the protection of pregnant women and their fetuses. CDC is ready to immediately assist jurisdictions with local transmission of Zika virus to protect pregnant women and track Zika infections in pregnancy.

### Objectives

CDC will assist with rapid implementation of prevention strategies and develop guidance on case identification, diagnosis, and clinical management of pregnant women, women planning a pregnancy, and infants with Zika virus infection. Strategies and activities will be implemented to achieve the following objectives:

1. Monitor Zika virus infections in pregnant women and monitor fetal and infant outcomes following Zika virus infection during pregnancy.
2. Implement rapid population-based surveillance of microcephaly and other adverse infant outcomes, especially central nervous system (CNS) defects linked to Zika virus infection during pregnancy.
3. Develop guidance on the identification, diagnosis, and clinical management of Zika virus infection in pregnant women, infants, and children. Update guidance as new data emerge.
4. Deploy targeted prevention and education strategies for pregnant women, their sex partners, women of reproductive age, and healthcare professionals.
5. Reduce the risk of unintended pregnancy among women who want to delay or avoid pregnancy.
6. Support research and surveillance efforts that assess the link between Zika virus infection during pregnancy and birth defects.
7. Conduct public health investigations of Zika virus infection and disease among pregnant women and infants, and Zika-associated pregnancy and infant outcomes, as needed.
8. Work with partners to mobilize preparedness and response efforts.

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<sup>3</sup> Rasmussen SA, Jamieson DJ, Honein MA, & Petersen LR. [Zika virus and birth defects—reviewing the evidence for causality](#). *New England Journal of Medicine* 2016;374:1981-1987.

<sup>2</sup>Oliveira Melo AS, Malinger G, Ximenes R, Szejnfeld PO, Alves Sampaio S, Bispo de Filippis AM. Zika virus intrauterine infection causes fetal brain abnormality and microcephaly: tip of the iceberg? *Ultrasound Obstet Gynecol* 2016; 47(1): 6-7.

Objective 1	<b>Monitor Zika virus infections in pregnant women and monitor fetal and infant outcomes following Zika virus infection during pregnancy.</b>
Strategy	1.1 Collaborate with state, tribal, local, and territorial health officials to collect information about pregnancy and infant outcomes among pregnant women with laboratory evidence of Zika virus infection and their infants. Report total number of pregnant women with any laboratory evidence of possible Zika virus infection to estimate the number of pregnancies at risk for adverse outcomes and facilitate in planning services for affected families.
Status	CDC established the US Zika Pregnancy Registry and the Puerto Rico Zika Active Pregnancy Surveillance System. These systems report the number of pregnant women in US states, the District of Columbia, and US territories including Puerto Rico.

Objective 2	<b>Implement rapid population-based surveillance of microcephaly and other adverse infant outcomes, especially central nervous system (CNS) defects linked to Zika virus infection during pregnancy.</b>
Strategy	2.1 In collaboration with jurisdictions, establish, enhance, and maintain a rapid population-based surveillance system to detect microcephaly and other adverse fetal and infant outcomes, with a focus on CNS defects. 2.2 Translate information collected through active case-finding methodology to inform clinical guidance and recommendations. 2.3 Link infants with CNS and other birth defects identified through the surveillance system and their families to needed medical and social support services.
Status	CDC is supporting jurisdictions' efforts to establish and enhance surveillance systems.

Objective 3	<b>Develop guidance on the identification, diagnosis, and clinical management of Zika virus infection in pregnant women, infants, and children. Update guidance as new data emerge.</b>
Strategy	3.1 Publish clinical guidance for healthcare providers caring for women of reproductive age, including pregnant women and women planning a pregnancy, and infants and children. 3.2 Update recommendations and rapidly translate new findings and data from the US Zika Pregnancy Registry and the Puerto Rico Zika Active Pregnancy Surveillance System and other sources.
Status	<ul style="list-style-type: none"> <li>In collaboration with state and local health departments, CDC is regularly updating clinical guidance and testing recommendations.</li> <li>CDC disseminates guidance through the Morbidity and Mortality Weekly Report (MMWR) and working closely with professional organizations to</li> </ul>

Objective 3	<b>Develop guidance on the identification, diagnosis, and clinical management of Zika virus infection in pregnant women, infants, and children. Update guidance as new data emerge.</b>
	ensure that guidance is being rapidly and broadly disseminated to frontline healthcare providers.

Objective 4	<b>Deploy targeted prevention and education strategies for pregnant women, their partners, parents, women of reproductive age, and healthcare professionals.</b>
Strategy	4.1 Provide and update recommendations for pregnant women to minimize the likelihood of infection due to either mosquito-borne or sexual transmission of Zika virus.
Status	<ul style="list-style-type: none"> <li>• CDC disseminates information to pregnant women, their partners, and parents, and women of reproductive age through the <a href="#">CDC Zika website</a> and works closely with partners to ensure that prevention messages and evidence-based information are being rapidly and broadly disseminated.</li> <li>• In collaboration with other federal agencies, professional societies, and other non-profit organizations, CDC disseminates to family planning service providers and obstetric and pediatric healthcare providers its recommendations for pregnant women, women of reproductive age, and parents.</li> </ul>

Objective 5	<b>Reduce the risk of unintended pregnancies.</b>
Strategy	<p>5.1 Remove unnecessary medical barriers to contraceptive use.</p> <p>5.2 Help women who want to delay or avoid pregnancy choose appropriate contraceptive methods and use them correctly and consistently to prevent pregnancy.</p> <p>5.3 Collaborate with HHS agencies on federal initiatives to increase contraceptive access for women who want to delay or avoid pregnancy during the Zika outbreak.</p>
Status	<ul style="list-style-type: none"> <li>• CDC provided input to the Office of Population Affairs (OPA) on a toolkit for Title X providers to deliver family planning care to non-pregnant clients of reproductive age in the context of Zika.</li> <li>• OPA is also working with state representatives of several HHS programs that provide direct clinical care from high-risk states to help states expand access to contraceptive and other family planning services, with an emphasis on provider training, as one component of a response to Zika.</li> </ul>

Objective 6	<b>Support research and surveillance efforts that assess the link between Zika virus infection and birth defects.</b>
Strategy	6.1 Collaborate with territorial and international partners to implement surveillance systems for Zika virus infection in pregnancy.
Status	CDC is working closely with health departments in US territories that are currently experiencing local Zika virus transmission, as well as with the Colombia National Institute of Health to implement active surveillance systems to monitor pregnant women. Data and findings from these collaborations will be used to inform clinical guidance and recommendations and guide CONUS and Hawaii preparedness and response efforts.

Objective 7	<b>Conduct public health investigations of Zika virus infection and disease among pregnant women and infants and Zika-associated pregnancy and infant outcomes, as needed.</b>
Strategy	<p>7.1 Investigate cases of public health interest such as unusual transmission circumstances or atypical clinical or laboratory manifestations among pregnant women, fetuses, or infants.</p> <p>7.2 Conduct surveillance evaluation studies to assess the performance of surveillance programs at national and sub-national levels.</p> <p>7.3 Collect supplemental data on Zika-related morbidity and mortality to evaluate the adequacy of the case definition in capturing the impact of Zika on the population.</p> <p>7.4 Conduct investigations to collect more detailed information on a sample or subset of cases to better characterize affected populations, inform prevention interventions, and identify unmet needs for programs and services.</p>
Status	The US Zika Pregnancy Registry and Puerto Rico Zika Active Pregnancy Surveillance System are currently receiving reports from state and territorial health departments, including clinical and laboratory information about pregnant women with laboratory evidence of Zika virus infection (positive or equivocal test results), regardless of whether they have symptoms, which will allow identification of cases with atypical clinical or laboratory manifestations and evaluation of the case definition.

Objective 8	<b>Work with partners to mobilize preparedness and response efforts.</b>
Strategy	<p>8.1 Work with partners including state, tribal, territorial, and local health departments; professional organizations of obstetric and pediatric health service providers; and networks of other providers serving women, children, and families.</p> <p>8.2 Serve a coordinating role to disseminate information</p>

Objective 8	<b>Work with partners to mobilize preparedness and response efforts.</b>
	8.3 Encourage the establishment of links between programs that ordinarily do not collaborate when such links strengthen the public health response to the Zika outbreak.
Status	<ul style="list-style-type: none"><li>• CDC hosted a Zika Action Planning Summit, which included workshops to engage maternal and child health and birth defects programs in state and territorial health departments and encourage them to integrate their Zika response efforts.</li><li>• CDC conducted a post-Summit webinar on pregnancy and birth defects and has scheduled an upcoming webinar on the importance of family planning in areas with active Zika transmission to continue to support preparedness and response efforts.</li><li>• CDC staff is conducting outreach activities with professional organizations, and state, tribal, territorial and local health departments to engage health care providers and health departments to support the US Zika Pregnancy Registry and the Zika Active Pregnancy Surveillance System.</li></ul>

## Appendix H: Ensuring Blood Safety and Availability

### Background

There are more than 12 million blood donors in the United States and an estimated 5 million patients who receive blood annually, resulting in approximately 20 million transfusions per year. Although U.S. blood donors are screened by questionnaire for risk of transmissible disease and each unit of donated blood is routinely checked for the presence of certain infectious pathogens, new and emerging infections pose continued threats to blood safety.

In February 2016, the Food and Drug Administration (FDA) [issued recommendations for donor screening, donor deferral, and product management to reduce the risk of transfusion-transmitted Zika virus](#). For blood centers in areas without active Zika virus transmission, FDA-recommended safety interventions include travel-related donor deferrals along with behavioral- and health-risks questionnaires. For areas with active mosquito-borne transmission of Zika virus, FDA recommends that blood centers obtain blood from U.S. areas without active Zika transmission, or, for blood collected locally, implement FDA-approved pathogen reduction technology for platelets and plasma or test donations with an FDA-licensed blood donor Zika virus screening test, when available. The guidance also notes that use of an investigational donor screening test (under an investigational new drug [IND]) or investigational pathogen reduction technology (under an investigational device exemption [IDE]) may be permitted in situations where approved technologies are unavailable. These interventions and other measures (if more stringent) may be advised and implemented by state and local health departments, blood collection centers, or other entities, as necessary.

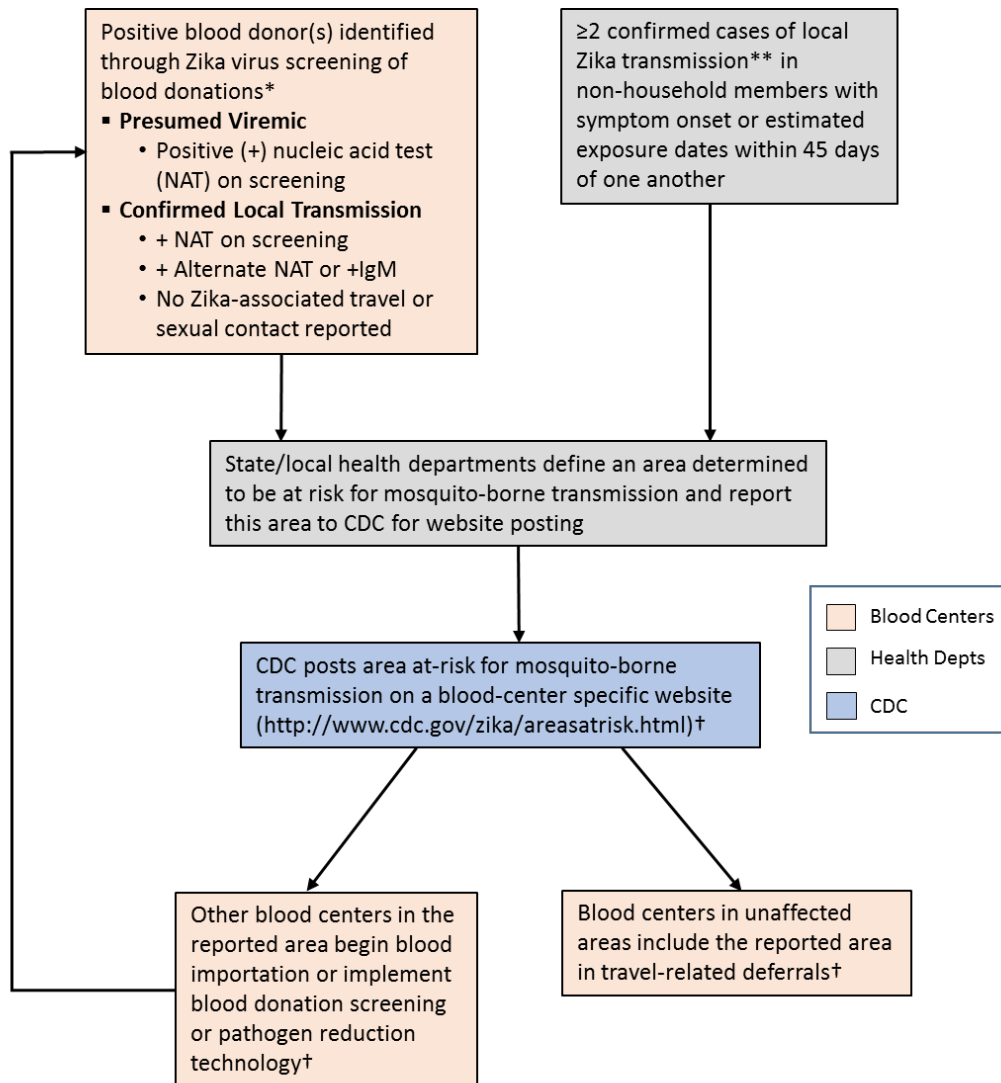
### Considerations

- Ensuring the safety and adequacy of the U.S. blood supply involves active participation by blood centers, state and local health departments, federal partners, and others.
- The Council of State and Territorial Epidemiologists (CSTE) has developed a [proposal for blood center notification of ZIKV transmission areas to reduce the risk of transfusion transmission](#).
- Per CSTE recommendations, the identification of mosquito-borne Zika virus infections (i.e., not associated with travel or sexual exposure) in two or more epidemiologically unrelated residents (e.g., not in same household) within a 2-week period will prompt blood safety interventions, including determination by states of a geographic area deemed at risk for mosquito-borne infections and communication of this area to CDC for access by blood centers.
- Health departments should ensure that blood centers can be promptly notified of any local transmission. While direct communication from health departments to blood centers is optimal, health departments should report areas at risk for local transmission to CDC for website posting to ensure availability and accessibility of information for blood centers throughout the country, as called for in FDA's recommendations.

- CDC will post information submitted from states on areas at risk for local transmission on its [website](#). The website also includes information for blood centers to enroll in a notification service to receive emails when new information on areas at risk for local transmission is posted.
- Blood centers that are conducting screening of blood donations should establish plans for prompt notification of health departments in the event of a positive blood donor to allow for epidemiologic follow up and investigation and for notification of CDC of potential local transmission.
- CDC has developed a proposed algorithm for blood center notifications to activate blood safety interventions, which builds on [CSTE's proposal](#) and [FDA's recommendations](#) (Box).
- CDC's guidance expands the timeframe during which identification of two or more locally acquired (i.e., not associated with travel or sexual exposure) cases of Zika virus infection should prompt blood center notification from 2 weeks, as proposed by CSTE, to 45 days. The 45 day period allows for three mosquito incubation periods (the time from when a mosquito acquires Zika virus from an infected human to the time it is capable of transmitting the virus to a new human host). Implementing blood center notification following detection of two or more locally acquired cases of Zika virus infection during this extended time period provides further assurance that ongoing local transmission will be detected.
- While FDA guidance to reduce the risk of transfusion transmission of Zika virus is highly effective, the risk cannot be totally eliminated. A large percentage of persons who are infected with Zika virus are asymptomatic and unaware of their infection, which has implications for blood donations and local transmission. Health departments and blood centers should review [CDC's toolkit for investigation of transfusion-transmitted infections](#).



### Box. Proposal for Blood Center Notifications



\*Includes proactive blood donor screening or blood donor screening conducted in affected areas

\*\*See Appendix B: *Defining a Zika Transmission Area*

†Per FDA Guidance

# ZIKA

## CDC Draft Interim Response Plan

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**

1600 Clifton Road NE, Atlanta, GA 30333

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