



ZIKA VIRUS DISEASE

1. **Agent:** Zika virus is a mosquito-borne Flavivirus that closely related to dengue, yellow fever, Japanese encephalitis and West Nile virus.

2. **Identification:**

a. **Symptoms:** Most common symptoms include fever, maculopapular rash which can involve the face, trunk and extremities, joint pain (usually involving the small joints of hands and feet), or non-purulent conjunctivitis. Other symptoms include muscle pain and headache. Illness is usually mild with symptoms lasting for several days to a week. Most of infections remain asymptomatic (80%). Recovery is usually complete, and fatalities are rare.

b. **Clinical Syndromes:** Congenital Zika syndrome (CZS) is a pattern of birth defects found among fetuses and babies with intrauterine exposure to Zika virus. Defects can include any of the following:

- Severe microcephaly where the skull has partially collapsed
- Decreased brain tissue with a specific pattern of brain damage
- Damage to the back of the eye
- Joints with limited range of motion, such as clubfoot
- Too much muscle tone restricting body movement soon after birth

The risk of congenital infection and microcephaly in a pregnant woman who is infected with Zika virus is unknown.

Guillain-Barré syndrome has been linked to patients following suspected Zika virus infection.

c. **Differential Diagnosis:** Viral causes of arthralgia including dengue and chikungunya though co-infection with all three have been described. Other considerations include leptospirosis,

malaria, rickettsia, group A streptococcus, rubella, measles, and parvovirus, enterovirus, adenovirus, and alphavirus infections (e.g., chikungunya, Mayaro, Ross River, Barmah Forest, o'nyong-nyong, and sindbis viruses).

d. **Diagnosis:**

Zika virus diagnosis is based on a combination of travel history, clinical signs and symptoms, vaccination history, history of flavivirus infection, and specialized laboratory tests of blood, urine, and cerebrospinal fluid (CSF). Zika testing is currently not recommended for preconception screening or for other non-pregnant persons.

Molecular Tests for Zika Virus

- For symptomatic persons, Zika virus RNA can sometimes be detected early in the course of illness using r-RT PCR testing.
- PCR testing should be performed on serum, urine, and CSF samples collected within the first two weeks and up to 12 weeks after symptom onset. Urine and CSF specimens must be accompanied by serum.
- A positive PCR result confirms Zika virus infection, and no additional testing is indicated. A negative result does not exclude Zika virus infection and serum IgM antibody (serological) testing should be done.
- For asymptomatic pregnant women who have traveled to areas with active ZIKV transmission, routine testing is not recommended. PCR testing on serum and urine can be considered up to 12 weeks after travel.
- PCR testing is also indicated for pregnant women who present for care after exposure and have been found to



be IgM positive.

Serologic Tests for Zika Virus

- Zika virus-specific IgM levels are generally positive 4 days to 12 weeks following onset. Therefore, if PCR is negative, serum IgM antibody testing for Zika, dengue, and chikungunya virus infections should be performed.
 - Serum samples collected ≥ 14 days after symptom onset, with no earlier samples collected, should be tested for Zika, dengue, and chikungunya IgM antibodies.
 - A positive IgM result does not always indicate acute infection with Zika virus. Cross-reactivity often occurs with related flaviviruses (e.g., dengue, Japanese encephalitis, West Nile, yellow fever). Zika IgM may also persistently test positive for months to years after initial infection.
 - Plaque-reduction neutralization testing (PRNT) is performed on positive IgM results to confirm primary Zika infections and differentiate from other flavivirus infections.
 - Serologic testing is not recommended for asymptomatic pregnant persons or symptomatic pregnant persons with sexual exposure to Zika.
 - Neither serum nor semen testing of men for the purpose of assessing risk for sexual transmission is recommended.
3. **Incubation:** 3–14 days.
 4. **Reservoir:** Non-human and human primates are likely the main reservoirs
 5. **Source:** Infected *Aedes* species mosquitoes: *Ae. aegypti* (main vector) and *Ae. albopictus*. These mosquitoes are distributed widely

in Los Angeles County, though none have found to be infected.

6. **Transmission:**

- Zika virus is transmitted to people primarily through the bite of an infected *Aedes* species mosquito.
 - Travelers to an area with active Zika virus transmission can be infected by mosquito bites (see [CDC Countries and Territories at Risk for Zika: www.cdc.gov/zika/geo/index.html](https://www.cdc.gov/zika/geo/index.html)).
- **Sexual:** Zika virus can be transmitted through sex by an infected person to his or her partners even if the infected person does not have symptoms at the time. Zika can remain in semen longer than in other body fluids, including vaginal fluids, urine, and blood.
- **Maternal-fetal:** Zika virus can be passed from a pregnant woman to her fetus during pregnancy or at delivery. To date, there are no reports of infants getting Zika virus through breastfeeding.
- **Laboratory exposure**
- Zika can be theoretically transmitted through blood transfusion, organ and tissue transplant and fertility treatment. Since May 2021 blood products are no longer routinely screened for Zika virus.

7. **Communicability:**

Zika virus usually remains in the blood of an infected person for about a week. There is no evidence that the virus will cause infection in a pregnancy that occurs after the virus is cleared from the mother's blood. The virus can be present in semen longer than in blood.

Currently, there is no evidence to suggest that past Zika virus infection poses a risk of birth defects for future pregnancies

8. **Specific treatment:** There is no vaccine or medicine to treat Zika virus. Treat symptoms



with supportive care that includes: bedrest, increased fluid intake, and acetaminophen (Tylenol®) to reduce fever. Aspirin or other non-steroidal anti-inflammatory drugs are not recommended until dengue can be ruled out to reduce the risk of hemorrhage.

9. **Immunity:** Once a person has been infected, he or she is likely to be protected from future infections.

REPORTING PROCEDURES

1. Report any case or suspected case within one working day (Title 17, Section 2500 and 2505. California Code of Regulations) to the Acute Communicable Disease Control Program at 213-240-7941.

2. Report Forms:

[ZIKA CASE REPORT](#)

[ZIKA CASE SUPPLEMENTAL FORM](#)

[Zika Virus Positive Blood Donor Form to CDPH](#)

3. Epidemiologic and Clinical Data:

- a. Travel history to a Zika-affected areas within 2 weeks prior to onset of symptoms (see [CDC Countries and Territories at Risk for Zika: www.cdc.gov/zika/geo/index.html](#)).
- b. Mosquito bite history including location (city, state, country).
- c. Sexual contact history including number of partners, and unprotected sexual contact.
- d. Maternal history of travel and Zika diagnosis
- e. Household contacts with symptoms of Zika and travel history
- f. Date of onset of symptoms and signs/symptoms including Guillain-Barre Syndrome.

- g. Pregnancy status and fetal ultrasound results.
- h. Previous dengue infections, and yellow fever and Japanese B encephalitis vaccination status.
- i. Hospitalized for illness

CONTROL OF CASE, CONTACTS & CARRIERS

CASE:

Precautions:

Avoid Mosquito bites:

1. Recommend symptomatic cases stay in air-conditioned/screened locations and take steps to prevent mosquito bites for at least 1 week, including wearing mosquito repellent, and wearing long sleeve shirts and pants.
2. Even if they do not feel sick, travelers returning from an area with Zika should take steps to prevent mosquito bites for 3 weeks.

Sexual Precautions:

1. Non-pregnant couples with a partner who traveled to areas with Zika should consider using condoms or abstaining from sex for a period of time after return or start of symptoms.
 - For couples traveling together or a man traveling without his partner: at least 3 months
 - For women traveling without her male partner: at least 2 months
2. Pregnant couples should consider using condoms or abstain from sex for the duration of the pregnancy

Blood Donations:

1. Avoid donating blood at least 4 weeks after symptoms have resolved

CONTACTS:

1. Inform household contacts to call ACDC if they develop Zika-like symptoms in next week.
2. Non-pregnant couples with a partner who traveled to area with Zika should consider using condoms or abstaining from sex for a period after return or start of symptoms.



- For couples traveling together or a man traveling without his partner: at least 3 months
 - For women traveling without her male partner: at least 2 months
3. Pregnant couples should consider using condoms or abstain from sex for the duration of the pregnancy.

CARRIERS: Not applicable

PREVENTION-EDUCATION

There is no vaccine to prevent Zika virus disease. The best way to prevent disease spread by mosquitos is to avoid being bitten.

Prevent Mosquito Bites

- Prevent mosquito bites by; using EPA-registered mosquito repellants, using screens on windows, use air conditioning, sleep under a mosquito bed net, wear protective clothing and treat items, such as boots, pants, socks, and tents, with permethrin or buy permethrin-treated clothing and gear.

Take steps to control mosquitoes inside and outside your home

- Eliminate mosquito breeding sites by emptying containers with stagnant water (i.e., bird baths, old tires, potted plants, swimming pools, pet bowls, and other containers).

Plan for travel

- Pregnant women are advised not to travel to areas with active Zika virus transmission. If a couple is trying to get pregnant, consider avoiding non-essential travel to areas with Zika.
- Pregnant women or women trying to get pregnant should consult with their healthcare provider before they or their partner travel.
- Travelers should check the CDC website for travel notices before traveling. (see [CDC Countries and Territories at Risk for Zika: www.cdc.gov/zika/geo/index.html](https://www.cdc.gov/zika/geo/index.html)).
- During travel to areas with Zika take steps to prevent mosquito bites and keep mosquitos

outside including using mosquito repellent, using bed nets, using air conditioner and screens on windows.

- After travel, even if asymptomatic, take steps for 3 weeks to avoid mosquito bites to avoid spreading the virus to local mosquitos
- Returning travelers from Zika affected areas should not donate organs, semen or eggs until 6 months after departure from the area.

Protection for sexual transmission

- Zika can be passed through sex even if the infected person does not have symptoms of Zika.
 - Pregnant couples with possible exposure via recent travel or sex without a condom with a partner infected with Zika should consider using condoms or abstaining from sex for the duration of the pregnancy.
4. Non-pregnant couples with a partner who traveled to area with Zika should consider using condoms or abstaining from sex for a period after return or start of symptoms.
- For couples traveling together or a man traveling without his partner: at least 3 months
 - For women traveling without her male partner: at least 2 months

DIAGNOSTIC PROCEDURES

The same type of mosquitos that transmit Zika virus also transmit dengue and chikungunya viruses. Because Zika virus symptoms are similar to those of dengue and chikungunya, concurrent testing for chikungunya and dengue are recommended.

For laboratory consultation regarding Zika virus specimen types and collection, contact the Public Health Laboratory:

- Weekdays during business hours (8:00-5:00) call 562-658-1300
- After hours call 213-974-1234. Ask for the Public Health Laboratory Director.



Requests for testing specimens of amniotic fluid, placenta, cord blood, and/or tissue from a fetus or newborn with microcephaly or intracranial calcifications should be made by phone to PHL.

1. rRT-PCR:

Collect within the first 2 weeks after onset of symptoms or for asymptomatic pregnant women within 2 weeks and up to 12 weeks of last possible exposure. Specimens from infants should be collected within 2 days of birth. CSF or EDTA whole blood MUST BE accompanied by a serum sample

Laboratory Form: [Zika Virus Testing Report Form](#) Submit a separate test request for each specimen type. **NOTE: Specimens will not be tested if this form is incomplete or if it does not accompany the specimen(s).**

Container: Serum separator tube (SST, a red-top or gold top vacutainer tube) for blood, sterile urine container for urine

Examination Requested: Arbovirus rRT-PCR

Material: Whole clotted blood, urine (infant urine can be bagged and transferred to sterile container), CSF

Amount: 0.5 mL

Storage: Centrifuge serum prior to shipping

and Ship at room temp. Ship CSF and urine with dry ice or cold packs.

2. Serology:

Collect from 4 days -12 weeks from symptom onset date or up to 12 weeks after return from travel for asymptomatic persons. Specimens from infants should be collected within 2 days of birth. CSF or EDTA whole blood MUST BE accompanied by a serum sample

Laboratory Form: [VRDL General Purpose Specimen Submittal Form](#)

Container: Serum separator tube (SST, a red-top or gold top vacutainer tube) or EDTA (lavender/purple top) for whole blood, sterile collection tube for serum and CSF

Examination Requested: Arbovirus serology panel.

Material: Whole clotted blood, serum, or CSF

Amount: 3-5 ml of whole blood (at least 1 mL in infants), 1 ml serum, 1 mL CSF

Storage: Store all specimens at 4°C and ship on cold packs if shipped within 72 hours from collection. Freeze processed specimens at -20°C and ship on dry ice if shipped after 72 hours from collection. Do NOT freeze whole blood.