National Indian Health Board

ZIKA 101 INFORMATIONAL GUIDE FOR TRIBES

Summer 2018 – National Indian Health Board

The National Indian Health Board (NIHB) is engaged in activities to combat the risks of the Zika virus in Indian Country. The implications that come with possible birth defects from infection are too great of a public health concern to be limited to those most at risk; combatting the Zika virus is a community health endeavor. Preventing and preparing for Zika transmission can protect the health of Native families and communities. This guide is intended to provide basic information and resources about Zika as a starting place for Tribes wanting to learn more and work to address this issue (prevention/response) in their communities.

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INTRODUCTION

Welcome to the National Indian Health Board's (NIHB) Zika 101 Informational Guide for Tribes! This guide is intended to provide an overview of basic Zika virus (Zika) information to Tribal communities. Throughout NIHB's Zika project, funded by the Centers for Disease Control and Prevention (CDC), NIHB has consistently heard feedback that many Tribal communities have requested additional information to help protect their communities from Zika.

Zika is typically a mild illness in adults and many people who are infected will not have any symptoms or will have only very mild symptoms. Although complications can occur – including a rare nervous system sickness called Guillain-Barré syndrome (GBS) – the primary concern with Zika virus is that the illness can cause birth defects. When a pregnant woman is infected, it is possible that her baby will be born with serious, lifelong birth defects. Most infections occur through mosquito bites or sexual transmission and a person may not know that he or she has been infected. Because of the potential effect Zika can have on the next generation of children, it is important for Tribal communities to be aware of Zika so that individual people and Tribes can be prepared to take action to prevent Zika and, if necessary, respond to any Zika cases that arise.

This guide is primarily a compilation of CDC information, resources, and materials available on the general CDC website: https://www.cdc.gov/ and also the CDC Zika-specific website: https://www.cdc.gov/zika/index.html. Any Zika information that is not specifically cited was sourced from the CDC. Additionally, information and resources from partners may be included, as well as insights and information gathered from participants of NIHB-hosted events and other NIHB work on the Zika project. This document is not intended to be an exhaustive list of all information or resources available but to help supply basic information about Zika and serve as a starting place for exploring other resources that can be used. Every effort has been taken to ensure that the information included is accurate and up-to-date as of June 2018, but Zika is an emerging disease and some information may change as experts learn more about the virus. Additionally, NIHB cannot take responsibility for the content of websites listed in the resources section. The CDC website will always have accurate and up-to-date national information. None of this information constitutes medical advice – please see a healthcare provider for medical recommendations.

Finally, NIHB hosts an online Tribal Zika Response and Planning Hub with detailed Zika information and resources. This hub is located on the NIHB website at the following address: https://www.nihb.org/public_health/tribal_zika_response_and_planning.php. This hub can also be conveniently accessed from the NIHB homepage by clicking "Zika Hub" on the right side column. The Zika hub contains recordings of webinars, fact sheets, brochures and posters that can be downloaded or printed, and other information. NIHB encourages interested individuals to explore the hub and contact NIHB with questions!

ZIKA 101

WHAT IS ZIKA?

Zika is a virus that can be spread to people primarily through the bite of infected *Aedes aegypti* (Figure 1) and *Ae. albopictus* mosquitoes. Many people infected with Zika have no symptoms or will only have mild symptoms. However, when a pregnant woman is infected with Zika, she can pass the virus to her fetus, which can lead to serious birth defects in the new baby. To date, there is no known vaccine, cure, or specific treatment for Zika.

Figure 1. Ae. aegypti *mosquito (CDC).*

WHERE HAS ZIKA BEEN FOUND?

Zika was first discovered in Uganda in 1947. Before 2015, there were Zika outbreaks in Africa, Southeast Asia, and the Pacific Islands. Beginning in 2015, Zika outbreaks were reported in many countries around the world including Africa, Asia, and the Americas. Some countries are still experiencing outbreaks and the effects of larger outbreaks can be seen today in children born to women infected during pregnancy. Many countries around the world are still identified as currently at risk of Zika. Current maps can be viewed at: https://www.cdc.gov/zika/geo/index.html/ and more information about travel is available here: https://wwwnc.cdc.gov/travel/page/zika-information.

HOW IS ZIKA SPREAD?

Zika can be spread in the following ways: from a mosquito to a person (or from a person to a mosquito), from a pregnant woman to her fetus (unborn baby), from a partner during sexual activity, through laboratory or healthcare exposure (very rare), and from blood transfusion (probable, although there have been no confirmed cases in the United States). This information is also shown in the figure below (Figure 2):

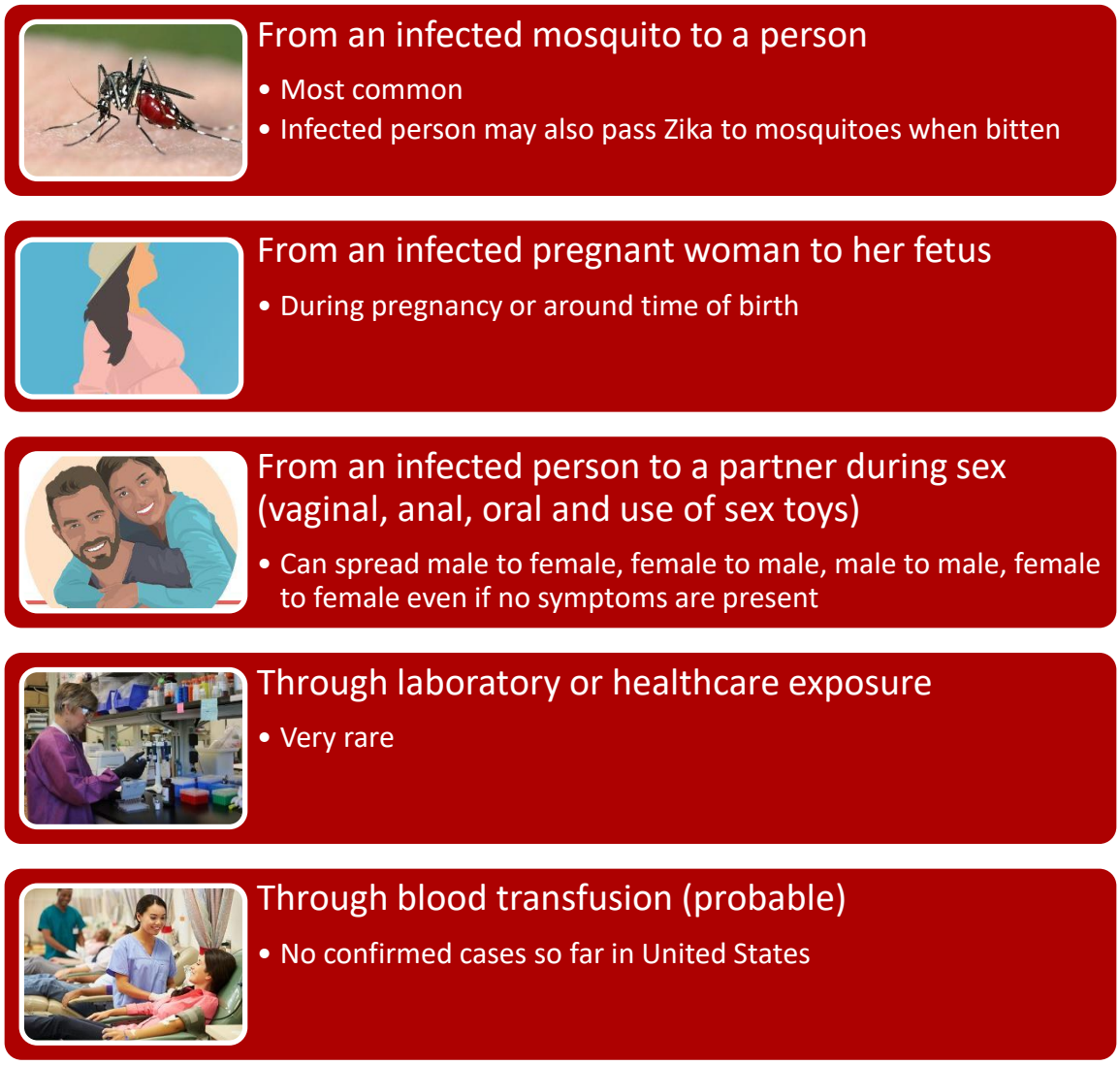

Figure 2. Types of Zika transmission.

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Most people are infected with Zika by the bite from a mosquito. Consequently, mosquito bite prevention is crucial in preventing the spread of Zika virus. The types of mosquitoes that carry Zika (*Aedes* mosquitoes) can bite day or night. If a mosquito that is not infected with Zika bites a person who is infected with Zika, that mosquito can become infected and can spread Zika to other people through bites. This is a concern because travelers returning from areas with risk of Zika can introduce Zika into their communities through mosquito bites if *Aedes* mosquitoes are present in that part of the country. It is important for travelers to protect themselves during and after travel and for returning travelers to take precautions to avoid spreading Zika during sex.

Many Tribal communities in the United States live in areas that have the mosquitoes that spread Zika. The following maps show Tribal lands and the potential range areas of *Ae. aegypti* (Figure 3) and *Ae. albopictus* (Figure 4). This is a large range of Tribal communities at risk for potential local transmission of Zika virus. Further, any community may be at risk for Zika virus because of the possibility of sexual transmission or travel-related cases. Travelers or migrants arriving from areas with risk of Zika may be infected with Zika, where it can then be spread to mosquitoes (if these mosquitoes are present locally) or to other people through sex.

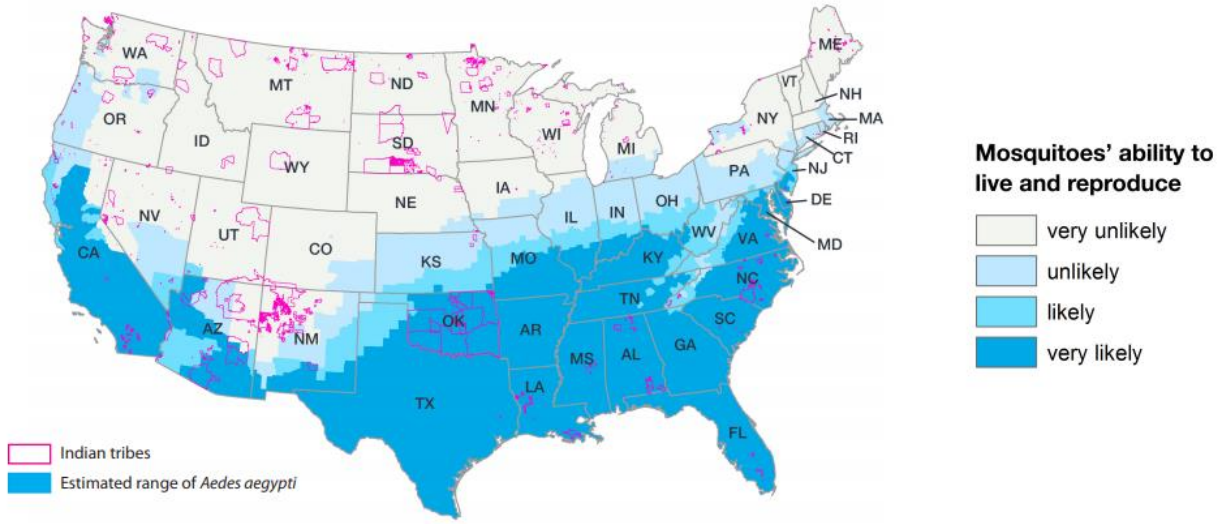


Figure 3. Estimated potential range of Ae. aegypti mosquitoes (CDC). This map represents:

- *CDC's best estimate of the potential range of Ae. aegypti in the United States. Map does not represent risk for spread of disease.*
- *Areas where Aedes aegypti mosquitoes are or have been previously found.*
- *For more information, please visit http://www.cdc.gov/zika/vector/range.html.*

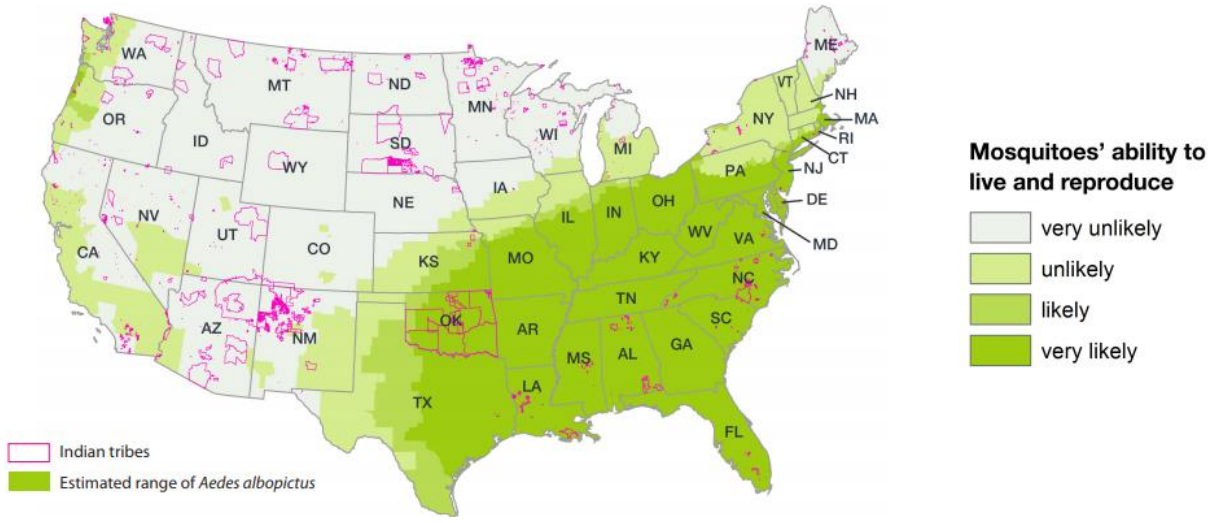


Figure 4. Estimated potential range of Ae. albopictus mosquitoes (CDC). This map represents.

- *CDC's best estimate of the potential range of Ae. aegypti in the United States. Map does not represent risk for spread of disease.*
- *Areas where Aedes aegypti mosquitoes are or have been previously found.*
- *For more information, please visit http://www.cdc.gov/zika/vector/range.html.*

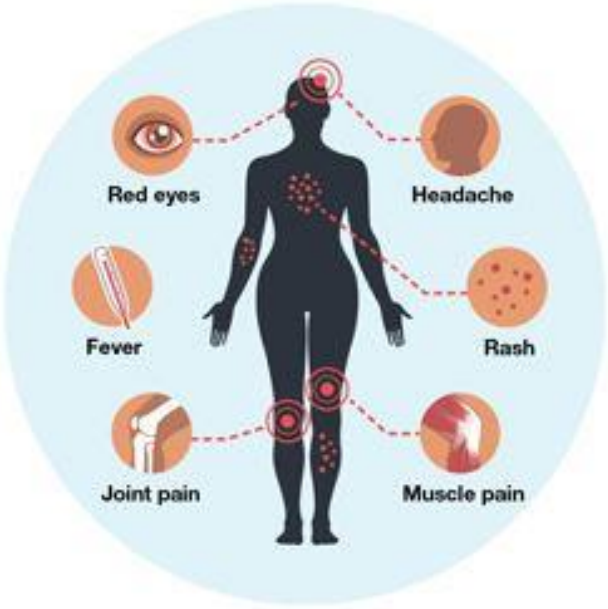
View maps online at: https://www.cdc.gov/zika/pdfs/Aedes_tribal_land_US_AKHI_CDC.pdf.

Because Zika can be spread in a variety of ways (including mosquito bites and sex), it is critical that people take steps to prevent mosquito bites and sexual transmission. It is also important to target response towards the entire community, as one infected person may be able to spread Zika to those people at most risk: pregnant women.

HOW DOES ZIKA AFFECT PEOPLE AND WHAT ARE THE SYMPTOMS?

Many people who have Zika will have no symptoms or mild symptoms. Because of this, people may not be aware that they are infected. Zika is generally a very mild illness in adults. It is very rare to die from Zika and most people with Zika do not become sick enough to go to the hospital.

The image below (Figure 5) shows the most common Zika symptoms, also listed in the text box:



Most common symptoms include:

- Fever
- Rash
- Headache
- Muscle pain
- Joint pain
- Red eyes

Figure 5. Common Zika symptoms (CDC).

Zika symptoms usually last a few days to one week. People returning from an area with risk of Zika should watch for these symptoms and see a doctor if they become ill. This is especially important if the person is pregnant. Information about Zika and pregnancy is discussed in detail in the next section.

Zika virus is also linked to an illness called Guillain-Barré syndrome (GBS). This is a rare illness that affects the nervous system. GBS can cause a person's immune system to damage the nerve cells, leading to muscle weakness in the arms and legs. It may also lead to paralysis. Most people with GBS will recover, and death from GBS is rare, but some people will have ongoing health problems. It is unclear exactly why GBS develops, but it is linked with various infections, including Zika. Learn more about GBS: https://www.cdc.gov/zika/healtheffects/gbs-qa.html.

HOW CAN ZIKA AFFECT PREGNANCIES?

Although Zika is usually a mild illness, it can cause serious health problems in a baby whose mother was infected during pregnancy. If a pregnant woman is infected with Zika, the virus can

be passed to her fetus. A woman infected with Zika during pregnancy is at risk for miscarriage, stillbirth, and congenital Zika syndrome in the fetus, a pattern of birth defects that includes:

- Severe microcephaly (abnormally small head) and partially collapsed skull (Figure 6)
- Decreased brain tissue with a specific pattern of brain damage
- Damage to the back of eyes (e.g. scarring, pigment changes)
- Joints with limited range of motion (e.g. clubfoot)
- Too much muscle tone leading to restricted body movement after birth

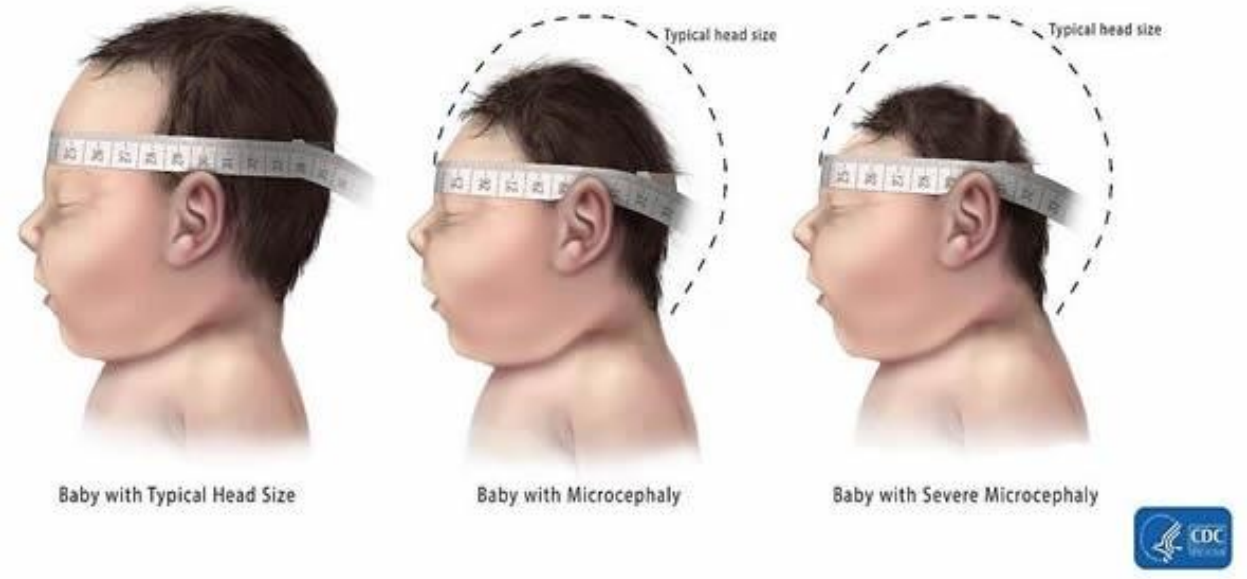


Figure 6. Microcephaly compared to typical head size – severe microcephaly is a birth defect caused by Zika virus (CDC).

Not all babies born with congenital Zika infection will experience *all* of these problems. Further, not every pregnant woman infected with Zika will have a baby with birth defects. Current evidence suggests that about 1 in 10 women infected with Zika during pregnancy will have a baby with birth defects. A woman infected with Zika during early pregnancy might have a higher risk of having a baby with birth defects, but infection at any time during pregnancy can cause health problems in the baby. Therefore, because Zika infection during pregnancy can have severe and devastating long-term consequences, it is critical to take measures to prevent Zika

infection during pregnancy. CDC recommends that pregnant women **not** travel to areas with risk of Zika. If travel cannot be avoided, talk to your doctor or other healthcare provider first and strictly follow steps to prevent mosquito bites and practice safe sex. There is no evidence that previous infection with Zika can harm future pregnancies after the virus has left the body.

Nearly half of all pregnancies in the United States are unplanned. Therefore, it is also important to prevent unplanned pregnancy for women and couples who feel that now is not the right time to have a child (or another child). This can help reduce risk of birth defects through exposure to Zika in unplanned pregnancies. Prevent unintended pregnancy by not having sex or by using a reliable and effective form of birth control correctly during every sexual encounter.

To prevent the spread of Zika during sex, condoms are recommended during vaginal, oral, and anal sex and the sharing of sex toys. Dental dams may also be used for certain types of oral sex (mouth to vagina or mouth to anus). To prevent pregnancy, it is advised to use the most effective type of birth control available that the patient can effectively use on a regular basis. This may include birth control options such as IUDs or hormonal birth control pills, but note that these only prevent pregnancy and not the spread of Zika or other sexually transmitted infections.

CDC has information for each specific case – pregnant couples, couples interested in pregnancy, and couples who are not pregnant or trying to become pregnant. CDC guidelines are available here: https://www.cdc.gov/zika/prevention/sexual-transmission-prevention.html.

It is important to talk openly with a healthcare provider about travel and pregnancy plans. Healthcare providers can offer individual counseling and recommendations. However, pregnancy plans are complex and personal and couples may make decisions about getting pregnant for various reasons. Some couples living in areas with risk of Zika may choose to delay pregnancy; others may not.

More information about Zika virus and pregnancy can be viewed online on the CDC website: https://www.cdc.gov/pregnancy/zika/index.html.

ZIKA TESTING

ASSESSING PREGNANT WOMEN FOR POSSIBLE ZIKA EXPOSURE

During each prenatal visit, all pregnant women should be assessed for possible Zika exposure. A pregnant woman may have been exposed to Zika if she lives in, or has recently traveled to, an area with risk of Zika. A pregnant woman may also have been exposed if she has had unprotected sex (including vaginal, anal, and oral sex and the sharing of sex toys) with a male or female partner who lives in or has recently traveled to an area with risk of Zika. Testing guidelines change over time based on new information and experience, so it is important to follow current recommendations: https://www.cdc.gov/zika/laboratories/lab-guidance.html.

The CDC provides guidelines for providers, including information on evaluating the need for Zika testing and other testing considerations: https://www.cdc.gov/pregnancy/zika/testing-follow-up/documents/ZikaPreg_ScreeningTool.pdf.

HOW IS ZIKA DIAGNOSED?

A healthcare provider will ask questions about possible Zika exposure or symptoms. If testing is appropriate, a blood or urine test can confirm Zika infection. However, testing fluid such as blood or urine should not be used to rule out the possibility of spreading Zika through sexual activity. Zika can remain in some body fluids, such as semen, for longer than it remains in others. However, it is not currently possible to test these fluids outside of research settings. For this reason, a man with a negative blood test may still be able to spread Zika sexually through his semen.

WHO SHOULD BE TESTED FOR ZIKA?

Any person who has Zika symptoms *and* possible Zika exposure should be tested.

Testing recommendations vary for pregnant women without Zika symptoms. Pregnant women with exposure to areas with risk of Zika should be tested if they have **ongoing** exposure to Zika – for example, by living in or frequently traveling to one of these areas. They should also be tested if there are Zika-related abnormalities found on an ultrasound. However, testing recommendations are intended to be used with a patient and provider shared decision-making model that includes

pretest counseling, individualized risk assessment, clinical judgment, patient preferences, and the jurisdiction's recommendations.

The table below shows a summary of Zika testing recommendations.

		Pregnant	Not pregnant
Potential exposure*	Symptoms	Yes, testing is recommended.	Yes, testing is recommended.
	No symptoms	It depends – testing should be offered if the exposure is/was ONGOING. No ongoing exposure: Testing should be considered using a shared decision-making model that includes pretest counseling, individualized risk assessment, clinical judgment, patient preferences, and the jurisdiction's recommendations.	No, testing is not recommended.
	Zika-related abnormalities identified on ultrasound	Testing is recommended.	N/A
No potential exposure	Symptoms	No, testing is not recommended.	No, testing is not recommended.
	No symptoms	No, testing is not recommended.	No, testing is not recommended.

*Potential exposure to Zika includes living in or traveling to an area with risk of Zika or having had unprotected sex with a partner who lives in or traveled to an area with risk of Zika.

Zika testing recommendations (based on CDC information).

The CDC provides information about which patients should be tested for Zika virus. An algorithm with this information is also available, here: https://www.cdc.gov/zika/pdfs/when-to-test-zika.pdf.

Some babies should also be tested for Zika after birth. CDC provides guidance for these situations here: https://www.cdc.gov/pregnancy/zika/testing-follow-up/evaluation-testing.html.

WHY IS ZIKA TESTING NOT RECOMMENDED FOR EVERYONE?

The concern of false positive results is one reason that Zika testing is not recommended for everyone. A false positive result means that the test incorrectly shows that a person was infected with Zika when there is actually no infection. A perfect test would give a positive result to everyone who has the disease and a negative result to everyone who does not have the disease. In reality, any test may mistakenly show that a healthy or uninfected person has a disease (this is a false positive) or may mistakenly show that a sick or infected person does not have an infection (this is a false negative). A true positive or true negative result is a test result that accurately reflects whether a person actually has infection. The CDC image below (Figure 7) is NOT specific to Zika, but helps to show how false negatives and positives work.

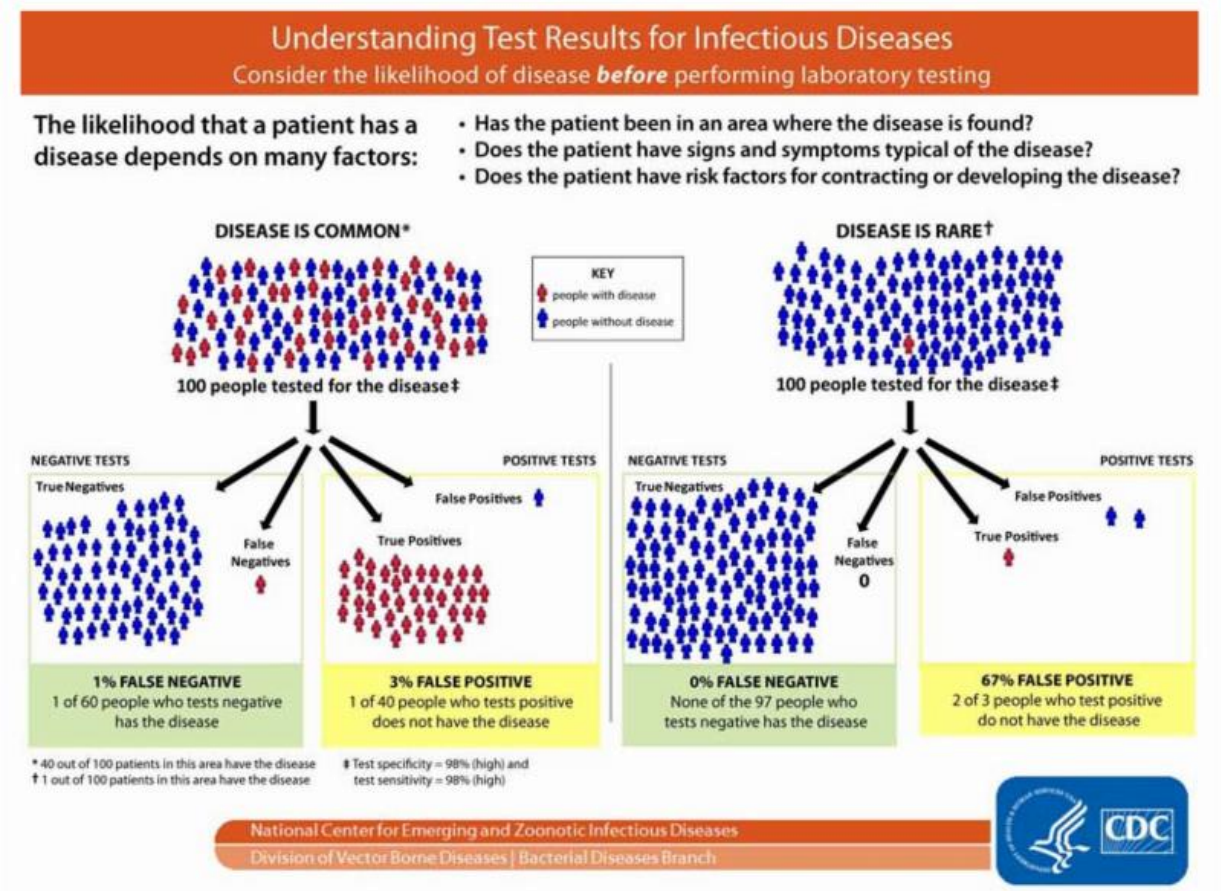


Figure 7. False positives and testing (CDC).

As shown in the image above, as a disease becomes less common, there is an increase in the percentage of false positive results among all positive test results. The benefits of testing may also decrease because fewer true positives in the community are identified. Further, even if a Zika test correctly shows positive results, the test cannot tell doctors when the infection occurred. The Zika exposure may have been so far in the past that the virus could not have affected the pregnancy.

False positive results can cause unnecessary stress and anxiety, lead to unnecessary additional lab work or medical care, and influence women's personal or medical decisions based on incorrect or incomplete information. This can also happen for true positive results if the test cannot show when the woman was infected. This means that Zika testing can cause families to worry even when there is no actual cause for concern. In other words, a

Zika test may not be recommended routinely because it may not help a woman make better, more informed decisions.

Decisions about testing may never be perfect, but it's important to weigh the benefits and drawbacks. The image below (Figure 8) shows the possible negative consequences of testing a pregnant woman when she and her baby do not have symptoms of Zika. Without ongoing exposure or any signs or symptoms of Zika for her or her baby, and with the total number of Zika cases declining in the Americas, she is less likely to have Zika even if she gets a positive test result. In this case, the drawbacks of testing may outweigh the benefits.

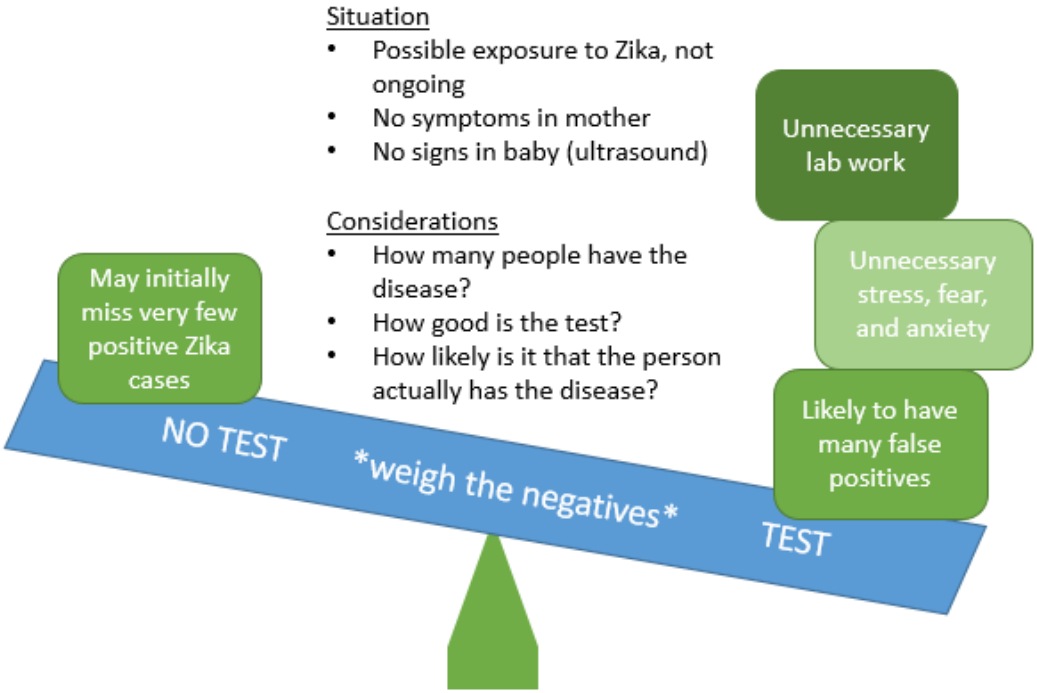


Figure 8. Weighing the benefits of testing for Zika (NIHB).

Although Zika testing is no longer recommended for all pregnant women with possible exposure to Zika, doctors and patients should discuss each case and determine whether to test for Zika based on patient preference, medical judgment, local recommendations, and other factors.

ALL ABOUT MOSQUITOES

AEDES MOSQUITOES

Although many mosquitoes bite at night, the mosquitoes that spread Zika virus (*Ae. aegypti* and *Ae. albopictus*) can bite during the night and day. *Ae. aegypti* are the primary mosquito that spreads Zika. They live near and prefer to feed on people. *Ae. aegypti* mosquitoes can live outside or inside homes. In homes, they rest in dark and humid locations such as under sinks, in laundry rooms, or in closets.

Figure 9 shows the mosquito lifecycle. Female mosquitoes can lay eggs near water after feeding on blood. Only a small amount of water is needed (a bottle cap full) and mosquito eggs can stick to the sides of containers and survive for months. Therefore, it is important to dump or cover standing water and scrub the sides of containers at least once a week.

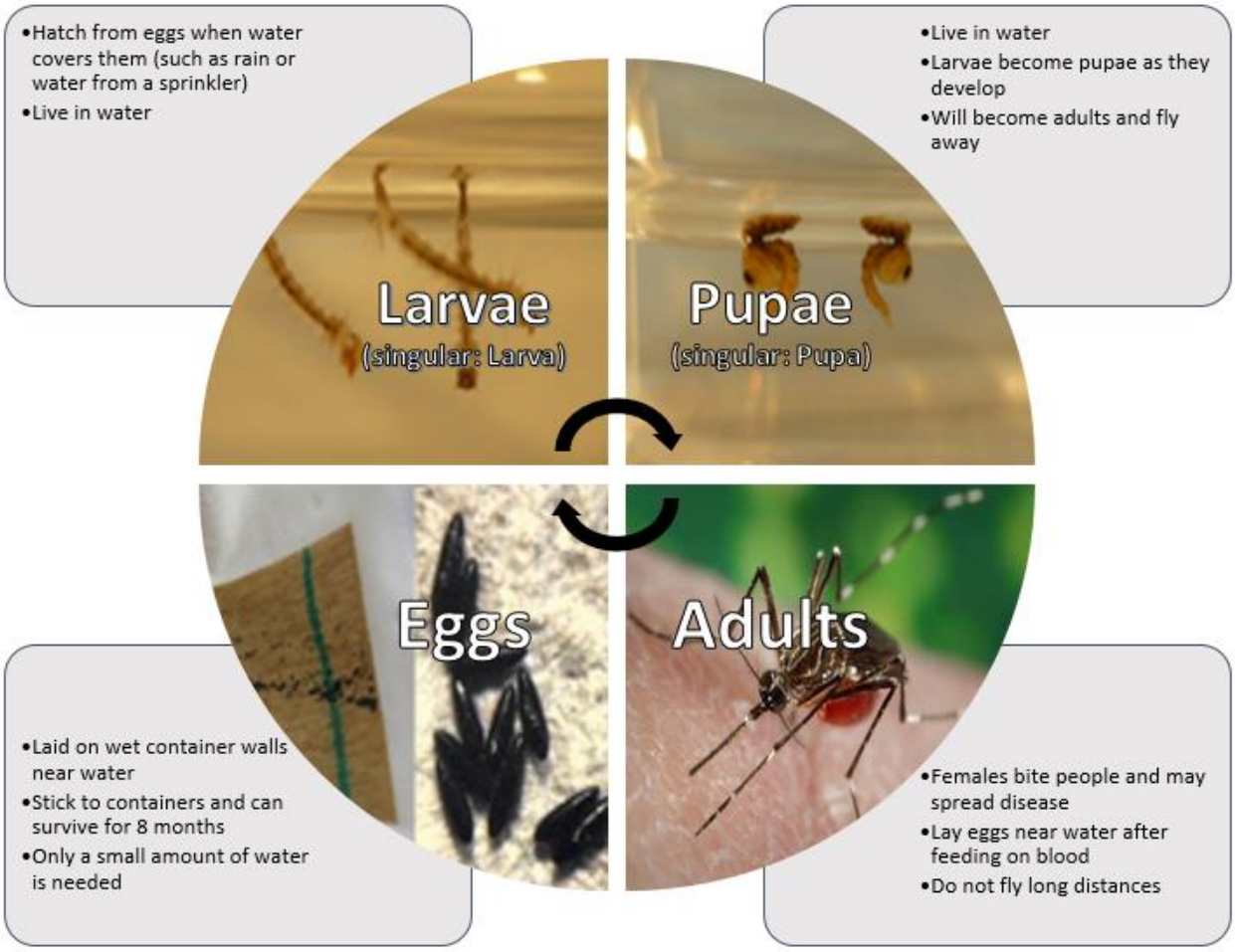


Figure 9. Mosquito lifecycle (adapted from CDC images and information).

PREVENTING BITES AND CONTROLLING MOSQUITOES

Everyone can help prevent mosquito bites and control mosquitoes.

Everyone, including individual Tribal members, can:

- Use insect repellents (see below to learn which repellents are safe and effective)
- Wear long-sleeved shirts and pants when possible to help cover up (adults and children)
- Use mosquito netting to cover cribs, strollers, and carriers to protect children
- Use permethrin spray (or purchase clothing already treated with permethrin) on clothing, boots, tents, etc. (but not skin) for extended periods of time

- Use air conditioning or keep screens (with any holes repaired) over windows and doors
- Dump standing water and scrub the containers at least once a week (e.g. tires, buckets, birdbaths, etc.)
- Use water treatment dunks or cover water that cannot be dumped or thrown away
- Kill mosquitoes inside and outside the home

It is important to use an insect repellent registered with the Environmental Protection Agency (EPA) because these repellents have been tested and found to be safe and effective when used as directed. Learn more about these repellents here: https://www.epa.gov/insect-repellents. Recommended repellents contain one of the following active ingredients:

- DEET
- Picaridin
- IR3535
- Oil of lemon eucalyptus (OLE)
- Para-methane-diol (PMD)
- 2-undecanone

The EPA has a tool to help people choose the right repellent: https://www.epa.gov/insect-repellents/find-repellent-right-you. Whatever repellent is selected, it is important to use the repellent correctly by following the label instructions.

More information about mosquito control for individuals is available here:

- https://www.cdc.gov/zika/prevention/prevent-mosquito-bites.html
- https://www.cdc.gov/zika/prevention/controlling-mosquitoes-at-home.html

Communities – including state, local, or Tribal governments – can take additional actions to control mosquito populations. This includes mosquito surveillance and vector control. Information is available here: https://www.cdc.gov/zika/vector/for-professionals.html.

CASE STUDIES

The following examples are fictional stories depicting situations that could occur in real life. These stories are used to make information about Zika easier to understand and relate to personal experiences. These stories, along with the rest of this document, are not intended as medical advice. For medical advice, see a qualified healthcare provider.

JUANA'S STORY: TRAVEL AND AVOIDING UNPLANNED PREGNANCY

Juana does not think that she is ready for a baby. She often travels to Mexico to visit family and is afraid she might get infected with Zika. She knows that Zika causes birth defects, so she decides to use birth control pills to prevent an unplanned pregnancy and reduce the possibility of having a child with serious birth defects. Juana still uses condoms and insect repellent to prevent spreading Zika to others, but she uses oral contraceptives to further prevent pregnancy. She knows that around half of all pregnancies in the US are unplanned and she wants to be sure that she does not have a baby with birth defects if she forgets to use a condom or the condom breaks.

JESSICA'S STORY: TRAVEL, SEXUAL TRANSMISSION, AND PREGNANCY

Jessica is pregnant. Jessica knows that her husband may be exposed to Zika virus through his work as he is frequently outdoors and works in an area where local Zika transmission has been reported. She and her husband use condoms every time they have sex throughout the pregnancy to prevent passing Zika to their unborn baby.

RUSSEL AND TINA'S STORY: DESIRING PREGNANCY AFTER TRAVEL

Russel and Tina want to have another baby but they just returned from vacation in an area with risk of Zika. They want to ensure that their baby is healthy. Neither Tina nor Russel felt sick, but they know that many people infected with Zika virus do not have symptoms. They read CDC recommendations online:

- https://www.cdc.gov/zika/prevention/sexual-transmission-prevention.html
- https://www.cdc.gov/pregnancy/zika/women-and-their-partners.html

and schedule a preconception visit with Tina's doctor to discuss the situation. The couple learns that Zika virus can stay in men's semen for up to six months – a longer time than it remains in women's bodies. Since Russel and Tina feel comfortable waiting a little longer to have another child, they decide to wait after speaking with Tina's doctor.

RYAN'S STORY: MALE-TO-MALE SEXUAL TRANSMISSION

Ryan's Tribe is located in an area with *Aedes* mosquitoes. He lives with his sister, who is pregnant. Ryan's partner is male and recently returned from an area with risk of Zika. Ryan knows that Zika can be transmitted sexually – from a man to a woman, a woman to a man, a woman to a woman, or a man to a man. Ryan knows that he and his partner need to use condoms during sex to prevent possible spread of Zika virus. Ryan knows that, if he is infected with Zika virus through sex, it is possible that he can spread this to his sister if a mosquito bites him, becomes infected, and then bites his sister and infects her. *Ae. aegypti* mosquitoes often live in and around the home. Ryan knows that preventing Zika and protecting the next generation is everyone's responsibility.

LISA'S STORY: ZIKA TESTING AND PREGNANCY

Lisa is pregnant and she wants to be tested for Zika. She has no Zika symptoms and she has not had ongoing exposure to Zika virus; however, she lived in an area with risk of Zika more than one year before she became pregnant. Lisa also reports that she has not had sexual exposure to Zika. However, she is very anxious about her pregnancy and wants to make sure that her baby is okay. Lisa's doctor explains that there is no reason to believe Zika could have affected her current pregnancy and that Zika does not remain in the body for long periods of time. Her doctor also explains that testing could give her a false positive result, which may cause her unnecessary stress and anxiety. Because she was in an area with Zika before she became pregnant, a test could also show that she has had Zika exposure in the past; however, it is expected that this exposure would have occurred before her current pregnancy and could not have affected it. Lisa and her doctor discuss the risks and benefits of testing and determine that testing would not help her or her baby.

BRYAN'S STORY: PROTECTING THE ENTIRE COMMUNITY

Why is it important to target the entire community, instead of just pregnant women? Bryan's community understands the seriousness of congenital Zika syndrome and the birth defects that can be caused when Zika infection occurs during pregnancy. He focuses his community's campaign on reaching out to pregnant women, which is wise, but he does not do much to educate the larger population so the Zika risk in his Tribe is not reduced very much. Families without pregnant women generally do not know very much about Zika virus and they do not take preventive measures. Some members of the community may be exposed to Zika virus and spread it to others thorough sexual activity or through mosquito bites. Families without pregnant members also do not take measures to reduce mosquito populations, such as dumping standing water. Most pregnant women in the community try to take preventive measures, but there is little effect on the local mosquito population because so few people are trying. As in the United States overall, about half of all pregnancies are unplanned. Many women in the community risk being exposed to Zika before they even know they are pregnant. Some men in the community feel that they do not play a role in preventing Zika virus because they cannot get pregnant. A few pregnant women also report that their male partners do not understand Zika or why it is important to take preventive measures. For example, some men do not think it is necessary to use condoms because they do not understand that they can spread Zika to their pregnant partners. Bryan begins targeting the larger community for outreach so that everyone can help protect pregnant women and the next generation of babies in the Tribe.

TERESA'S STORY: COMMUNITY EDUCATION

Teresa is involved in a Zika communication campaign for her Tribe. She knows that some older members in the community speak their Tribal language as their first or native language. She also knows that some of these elders do not speak English well and that many do not read English well. She has important messages about Zika translated into the Tribal language to ensure that everyone can access information. She uses audio and written messages since some older members cannot read the Tribal language. She also knows that many of the Tribal members speak Spanish and some community members identify as Hispanic and American Indian. She translates Zika outreach

materials into Spanish so everyone in the community can understand. Teresa knows that Zika may spread in her Tribe if some people do not have all the information they need.

CHAD'S STORY: MOSQUITO CONTROL

Chad's Tribe is small and does not have a lot of money or resources. He works for his Tribe but is unsure how he can help the community control mosquitoes to prevent Zika and other vector-borne diseases. Chad wants to look into additional resources and funding opportunities and ensure that Tribes are included in future funding initiatives for his state. However, he knows that his community can also take action within the existing system. Chad learns that there are ways to control mosquitoes that anyone can do – such as dumping standing water or using insect repellents. He works with his community health representatives (CHRs) to share information into the community, writes a short article about this to include in the Tribe's monthly newsletter, and shares information at a health fair. Chad also contacts his state and regional Tribal organization and learns that they have Zika prevention kits available that his Tribe can request. These kits contain information, mosquito repellents, standing water dunks, permethrin spray, condoms, and a mosquito net. Chad also downloads some Zika posters and brochures from the National Indian Health Board so he can share information about Zika with his entire Tribal community: https://www.nihb.org/public_health/zika_fact_sheets.php.

ADDITIONAL RESOURCES

National Indian Health Board (NIHB) Zika hub: https://www.nihb.org/public_health/tribal_zika_response_and_planning.php

Centers for Disease Control and Prevention (CDC): https://www.cdc.gov/

CDC Zika website: https://www.cdc.gov/zika/index.html

CDC Zika and pregnancy communication resources: https://www.cdc.gov/pregnancy/zika/materials/index.html

CDC Zika communication resources: https://www.cdc.gov/zika/comm-resources/index.html

CDC Top 5 things everyone needs to know about Zika: https://www.cdc.gov/zika/pdfs/Top5.pdf

CDC Mosquito information for children: https://www.cdc.gov/zika/pdfs/zika-activity-book-us.pdf

CDC Zika training for healthcare providers: https://www.cdc.gov/zika/hc-providers/training/training.html

American Academy of Pediatrics: https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Zika/Pages/Zika.aspx

American College of Obstetricians and Gynecologists (ACOG): https://www.acog.org/About-ACOG/ACOG-Departments/Zika-Virus

American Hospital Association: https://www.aha.org/quality-patient-safety/emergency-readiness/zika

American Public Health Association: https://www.apha.org/topics-and-issues/communicable-disease/zika

Association of State and Territorial Health Officials (ASTHO): http://astho.org/Zika/

Association of Public Health Laboratories (APHL): https://www.aphl.org/programs/preparedness/Crisis-Management/Pages/Zika.aspx

Indian Health Service (IHS): https://search.usa.gov/search?utf8=%E2%9C%93&affiliate=indianhealthservice&query=zika&commit=

The Lancet Zika Virus Resource Center: https://www.thelancet.com/campaigns/zika

March of Dimes: http://www.marchofdimes.org/complications/zika-virus-and-pregnancy.aspx#

MotherToBaby: https://mothertobaby.org/fact-sheets/zika-virus-pregnancy/

National Association of County and City Health Officials (NACCHO): http://www.naccho.org/zika-virus

National Environmental Health Association (NEHA): http://www.neha.org/zika

National Public Radio (NPR) on *Aedes aegypti*: https://www.npr.org/sections/goatsandsoda/2016/02/10/466268138/this-mosquito-likes-us-too-much-for-our-own-good

Pan American Health Organization: https://www.paho.org/hq/index.php?option=com_content&view=article&id=11585&Itemid=41688&lang=en

Risk Communication and Community Engagement for Zika Virus Prevention and Control (UNICEF): https://www.unicef.org/cbsc/files/Zika_Virus_Prevention_and_Control_UNICEF_English.pdfSociety for Maternal Fetal Medicine: https://www.smfm.org/links/zika

TRAIN Trainings in Zika virus: https://www.train.org/main/search?query=zika&type=course

World Health Organization (WHO) History of Zika: http://www.who.int/emergencies/zika-virus/history/en/

WHO Zika: http://www.who.int/csr/disease/zika/en/