Zika Virus: Characteristics of the Infection and the Public Health Response

**Highlights**

This update provides a general overview of Zika virus, including symptoms of infection, diagnosis, treatment and strategies for prevention.

All communities affected by mosquito-borne illnesses such as Zika virus infection can benefit from practicing personal protection against mosquito bites and measures to reduce mosquito populations.

People experiencing symptoms of Zika virus infection are encouraged to go to the nearest health facility to be evaluated and treated. Diagnosis and reporting of illness helps local health authorities accurately estimate the scope and impact of an infectious disease outbreak and respond appropriately. However, it is important to note that as many as 80 percent of people infected with Zika virus will not show any symptoms.

This rapidly evolving outbreak has many important implications for reproductive, maternal, newborn and child health services in affected areas.

**Background**

In recent months, concern has grown rapidly about the potential public health threat from a multicountry outbreak of Zika virus infection. Knowledge about and public health response to this virus, which previously had limited attention, are evolving quickly. Currently, outbreaks are occurring in multiple countries concentrated in Latin America and the Caribbean (Areas with Zika, [http://www.cdc.gov/zika/geo/index.html](http://www.cdc.gov/zika/geo/index.html)), but spread of Zika virus will likely continue. Understanding how Zika virus transmission occurs and how it can be prevented are important for combatting this outbreak.

**Zika Virus Infection Overview**

**Transmission**

Zika virus is transmitted primarily through the bite of an infected Aedes mosquito, the same mosquito that transmits dengue fever and chikungunya, but different from the mosquito that transmits malaria. Mosquitos that become infected when they feed on someone infected with Zika virus can spread it to other people through bites (primarily biting during the daytime hours). Zika virus has been detected in the fetuses of some women; transmission around the time of delivery has also been reported. To date, no reports suggest infants could get Zika virus from breastfeeding, and mothers are encouraged to breastfeed even in areas where Zika virus is found. Transmission of Zika virus through blood transfusion has also occurred.

Transmission of Zika virus through sexual contact from men to women has been confirmed, and transmission has occurred before the man showed any symptoms (Box 1) of Zika virus infection. It is unknown whether a woman can transmit Zika virus to her sexual partners. It is also unclear whether infected men who never experience symptoms can transmit Zika virus to sex partners, and how long Zika virus stays in semen for men who have had this infection.
Symptoms, Diagnosis and Treatment

Zika virus infection has been associated with a flu-like illness that can be similar to dengue or chikungunya and usually lasts less than a week. However, as many as 80 percent of people have no symptoms. The time between exposure to Zika virus and symptoms is not clear, but is probably a few days to a week.

Currently, diagnostic testing for Zika virus is very limited. In some settings, diagnosis may be based on symptoms and recent history (such as mosquito bites or travel to an area with Zika virus transmission). Outside of countries reporting active transmission, travelers to and from Zika virus–affected areas appear to be the group most at risk of acquiring Zika virus.

No specific antiviral treatment exists for Zika virus infection. Supportive care may include increased rest, fluids, and pain-relieving and fever-reducing medications. To reduce risk of excessive bleeding, people with suspected cases of Zika should avoid aspirin and other nonsteroidal anti-inflammatory drugs unless dengue can be ruled out. People infected with Zika virus should also protect themselves from further mosquito exposure during the first few days of illness to reduce the risk of local transmission to others. Once a person has been infected with Zika virus, it is believed that he or she is probably protected from future infection with Zika.

Prevention and Mosquito Control

No vaccine is yet available for prevention of Zika virus infection. Personal preventive measures for Zika virus are similar to those for other mosquito-borne illnesses (Box 2). Note that Aedes are primarily daytime biters and are most active about 2 hours after sunrise and before sunset, but will bite at night as well, preferring to live near people and bite indoors.

Consistent and correct use of condoms may prevent sexual transmission of Zika virus to an uninfected partner. The U.S. Centers for Disease Control and Prevention (CDC) recommends that men who have lived in or traveled to an area with active Zika virus transmission should abstain from sex or use condoms correctly every time for vaginal, anal and mouth-to-genital sex with pregnant sexual partners for the duration of the pregnancy.

Controlling mosquitoes requires removing, destroying and managing the habitats where mosquitoes reproduce. Controlling mosquito breeding sites (Box 3) can also help to reduce exposure to bites. All households and businesses can take action to contribute to mosquito control. During a Zika virus outbreak, health authorities may advise spraying of insecticides.

Box 1. Symptoms of Zika Virus Infection
- Fever
- Red, raised rash
- Conjunctivitis (red eyes)
- Headaches
- Joint and muscle pain
- Physical weakness

Note: As many as 80 percent of people infected will show no symptoms.

Box 2. Protect against Mosquito-Borne Illness
- Wear light-colored clothing covering as much of the body as possible.
- Sleep under nets. Use netting over baby carriers.
- Keep windows and doors closed and use screens.
- Use air conditioning or fans where possible.
- Use insect repellent (containing DEET, picaridin, oil of lemon eucalyptus or IR3535), if available.
- Apply repellents only to exposed skin and clothing.
- Do not apply repellents to eyes or mouth. Do not use sprays on face (spray on hands and then apply to face).
- Do not use repellent on babies under 2 months old or oil of lemon eucalyptus on children under 3 years old. Avoid applying to children’s hands.
- After returning indoors, wash treated skin.
- Repellents containing a higher percentage of active ingredient typically provide longer-lasting protection.
- If mosquitoes bite, reapply repellent per label instructions.
Possible Associations with Other Health Conditions

Zika virus is suspected (but not confirmed) as a possible cause of the following health problems:

- Guillain-Barré syndrome (a disorder that causes usually temporary muscle weakness or paralysis) and other neurologic conditions

- Microcephaly (abnormally small head size) and eye abnormalities in babies born to women infected with Zika virus during the pregnancy, particularly if the infection occurs during the first trimester

- Miscarriage

Understanding whether these problems are due to Zika virus infection will require further studies.

Jhpiego’s Response to Zika Virus

Maternal and Newborn Health

Particularly in settings with active Zika virus transmission, members of the public and health care providers may be anxious about Zika virus infection and its possible consequences. Pregnant women are susceptible to infectious diseases like Zika virus, as well as malaria and HIV; antenatal care is a key opportunity for providers to reinforce to all pregnant women the need for comprehensive care, including prevention and treatment. Health care providers should counsel their antenatal care clients on the following important actions:

- Whenever possible, postponing travel to any area where Zika virus is spreading

- Using personal protection against mosquito-borne illness (repellents registered with the U.S. Environmental Protection Agency are considered safe for use during pregnancy, provided that they are used according to instructions on the product label)

- Participating in routine antenatal care, optimally beginning in the first trimester

- Seeking appropriate care for any warning sign in pregnancy, including symptoms of Zika virus infection

Providers should stay up to date with evidence-based recommendations for the care of pregnant women (such as those provided by the CDC), as guidance documents have important details about appropriate types of laboratory testing and other aspects of clinical care. Asymptomatic pregnant women who live in places with Zika virus transmission can be offered screening for Zika virus infection at their first antenatal care visit and again in the middle of the second trimester. Those who experience Zika-like illness should be tested promptly, ideally within the first week of symptoms. If a test is negative, but new symptoms of Zika virus develop subsequently, it is appropriate for a pregnant woman to be retested.

Service providers should consider a possible Zika virus infection in women with a history of travel to an area with Zika virus transmission and who have symptoms consistent with Zika virus disease (Box 1) during or within 2 weeks of travel, or who have obstetric ultrasound findings of fetal microcephaly or intracranial calcifications. Pregnant women with confirmed Zika virus infection should be counseled on all available options for management of the pregnancy and be referred to specialist care, if available. Where capacity exists, fetuses and infants of women infected with Zika virus during pregnancy should be evaluated for possible congenital infection and neurologic abnormalities. Health facilities in regions with Zika virus transmission should be aware of potential increases in neurological syndromes and congenital malformations.
Experts are studying whether the Zika outbreak is the cause of the increase in reported cases of microcephaly in some Zika-affected countries. While ultrasound can detect some cases of microcephaly during pregnancy, measurement of head circumference after a baby is born is the most reliable way to determine if a baby has microcephaly. Measurements are then compared with growth standards as a baby grows older. While no specific treatment exists for microcephaly, early intervention may help babies improve their development.

**Family Planning**

In some countries currently affected by Zika virus transmission, the national government has called for women to avoid or postpone pregnancy, due to the possible association between Zika virus infection in pregnancy and microcephaly and other poor health outcomes in infants. Current global recommendations do not include this precaution. However, all women of reproductive age and their partners should have access to information about healthy child spacing and contraceptive options, with the option to adopt the family planning choices that are right for them, regardless of the local status of Zika virus transmission. Health care providers must, as always, maintain attention to the core principle of voluntarism in family planning. Decisions on whether to use family planning are often not in the hands of women alone, and men should be included in family planning counseling and messaging strategies, as appropriate. Demand for family planning services—including interest in long-acting reversible contraception and strain on the availability of contraceptive supplies—may increase, without a concomitant dedication of additional resources for family planning.

**Abortion and Postabortion Care**

Health care providers in areas affected by active Zika virus transmission could see an increased demand for pregnancy termination, regardless of local restrictions on abortion services, highlighting the continued importance of preventing unsafe abortion. Providers supporting postabortion care services should also be aware of the potential impact on demand for services and the need to support the quality of postabortion care in Zika-affected areas.

**Resources on Zika Virus**

Information about the Zika virus is changing rapidly. You can stay abreast of this developing public health issue and recommended public health response using the following links, which include sources for this brief and several sites that provide regular Zika virus updates.

**World Health Organization and Pan American Health Organization**


**U.S. Centers for Disease Control and Prevention**
