Zika virus overview

• Zika is an RNA virus in the Flaviridae family, closely related to dengue and yellow fever viruses
• Transmitted primarily by Aedes mosquitoes (mostly day-biting)
• Also transmitted from mother-to-child; through sexual transmission; through laboratory exposure; probably through blood transfusion and organ/tissue transplantation
• February – November 2016: Public Health Emergency of International Concern (PHEIC)
• Although cases declined from 2017 onwards globally, transmission persists at low levels in several countries in the Americas, South-East Asia, the Western Pacific and likely in the African region
• No specific antiviral drug treatment and no vaccine
• Immunity after Zika virus infection is thought to be long-lasting, for many years after infection
Zika infection

• Mostly asymptomatic infections
• Symptoms (2-7 days) include rash, fever, conjunctivitis, muscle and joint pain, malaise
• Neurological disease includes Guillain-Barré syndrome, neuropathy and myelitis in adults and children
• Infection during pregnancy can cause microcephaly* and other congenital malformations as well as preterm birth and miscarriage
• Zika can be mistaken for other diseases such as dengue and chikungunya

*Microcephaly is a condition where a baby is born with a small head or the head stops growing after birth.
Zika virus current situation

Countries across 6 WHO regions have reported local mosquito-borne transmission

90

People living in countries with Aedes populations

4 BILLION

Risk of congenital disease following infection in pregnancy is under investigation

Zika case definition criteria (under review*)

*A systematic review of symptom frequency is underway to further refine the case definition.

<table>
<thead>
<tr>
<th>Clinical</th>
<th>Epidemiological</th>
<th>Laboratory</th>
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| A patient presenting with rash, usually maculopapular and pruritic (itchy), AND/OR fever and at least one of the following signs or symptoms: | Residence in/travel to areas with Zika virus transmission or sexual exposure to someone who lived in or traveled to such areas. | **Direct:** virus isolation, detection of RNA by RT-PCR  
**Indirect:** anti-ZIKV IgM antibodies, with negative laboratory results for other flaviviruses (probable); positive anti-ZIKV IgM antibodies AND plaque reduction neutralization test for ZIKV titers \( \geq 10 \) in the absence of other flaviviruses |
| ▶ Non-purulent conjunctivitis (no pus)  
▶ Arthralgia (joint pain)  
▶ Myalgia (muscle aches and pains) | | |
### Drivers of transmission of Zika virus

<table>
<thead>
<tr>
<th><strong>Vector</strong></th>
<th><strong>Virus</strong></th>
<th><strong>Human host</strong></th>
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<tbody>
<tr>
<td>Increased numbers</td>
<td>Genotype</td>
<td>Population immunity</td>
</tr>
<tr>
<td>• Climatic factors</td>
<td>• Possible virulence factors?</td>
<td>• prior circulation</td>
</tr>
<tr>
<td>• Increased breeding sites (water containers)</td>
<td>• Enhanced transmissibility by vectors?</td>
<td>• poverty</td>
</tr>
<tr>
<td>• Absent/reduced vector control programmes</td>
<td></td>
<td>Movement/travel</td>
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<tr>
<td>• Insecticide resistance</td>
<td></td>
<td>Mosquito bite prevention</td>
</tr>
<tr>
<td>Increased biting</td>
<td></td>
<td>Human-to-human transmission (vertical and sexual)</td>
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<tr>
<td>• Environmental adaptation</td>
<td></td>
<td></td>
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<tr>
<td>Introduction into new areas</td>
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<tr>
<td>• Goods transportation (e.g., eggs/larvae in tires)</td>
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</tbody>
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Zika clinical management

• No specific antiviral drug treatment and no vaccine

• Clinical management of fever and joint pain
  ‣ anti-pyretic medication (to reduce fever)
  ‣ optimal analgesics
  ‣ drinking plenty of fluids
  ‣ and general rest

• Hospital admission for severe disease (neurological disease in adults; neonates with congenital disease complications)

• Pregnant women living in areas with Zika transmission or who develop symptoms of Zika virus infection should seek medical attention for laboratory testing, information, counselling and other clinical care

• Clinical and social support for families affected by congenital Zika virus disease
Zika prevention

- Avoidance of mosquito bites to prevent infection
  - Using approved insect repellent
  - Wearing clothing which minimizes skin exposure
- No specific antiviral drug treatment and no vaccine
- Prevention of mosquito bites in persons with infection to limit further spread to uninfected mosquitoes
- Prevention of sexual transmission (see WHO Sexual Transmission guidance)
- Blood donor screening based on risk assessment
- Pregnant women should consider delaying nonessential travel to areas with ongoing Zika virus transmission, regardless of trimester of pregnancy
Integrated approach to tackle Aedes-borne diseases

WHO GLOBAL ARBOVIRUS INITIATIVE

1. Monitor risk and anticipate
2. Reduce epidemic risk
3. Strengthen vector control
4. Prevent and prepare for pandemics
5. Enhance innovation and new approaches
6. Build a coalition of partners

Pillars of the Global Arbovirus Initiative

https://www.who.int/news-room/events/detail/2022/03/31/default-calendar/global-arbovirus-initiative
Aedes mosquito surveillance

- Effective vector surveillance requires **community engagement, social mobilization, and intersectoral integrated actions**

- **Coordinated mapping** of entomological (scientific study of insects), epidemiological, and environmental data facilitates planning, implementation, monitoring, and evaluation of vector control activities

- Entomological surveillance should emphasize **routine monitoring** of adult female Aedes indices; i.e., the life stage that is most directly linked to virus transmission risk

- **Immature mosquito indices** can be useful for assessing the entomological impact of an intervention. There is, however, limited and inconsistent evidence associating immature Aedes indices to risk of human infection and/or disease
Effective vector control programs

- Application of integrated combinations of interventions most appropriate to the local situation; no single intervention is effective across all ecological and epidemiological contexts
- Simultaneously targeting immature and adult vectors with multiple interventions
- Prevention by comprehensive intervention delivery with high coverage that is sustainable, through community involvement and programmatic continuity
- Monitoring of insecticide resistance
Effective vector control programs

- Measuring, analysing, and integrating entomological and epidemiological data
- Constant local and national government support and intersectoral collaboration
- For long-term sustainability, disease prevention will require a coordinated regional approach
- Improvements in housing (e.g., house designs that exclude mosquitoes, provision of reliable piped water, solid waste removal, and sealed water storage containers)
Zika outbreak toolbox
Updated | October 2022

https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/zika-outbreak-toolbox
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• EPI-WIN is the WHO Information Network for Epidemics: [https://www.who.int/teams/epi-win](https://www.who.int/teams/epi-win)

• Launched in 2020 during the COVID-19 pandemic

• EPI-WIN organizes regular webinars and produces digests like this one to make scientific information accessible, understandable and meaningful to all for health emergency preparedness and response.