

Fact Sheet for Healthcare Providers: Interpreting xMAP® MultiFlex™ Zika RNA Assay Test Results

Updated: January 07, 2017

Dear Healthcare Provider:

The United States (US) Food and Drug Administration (FDA) has issued an Emergency Use Authorization (EUA) to authorize the use of the xMAP® MultiFlex™ Zika RNA Assay for the *in vitro* qualitative detection of Zika virus with specified instruments. This assay tests for Zika virus RNA in human serum, plasma and urine (collected alongside a patient-matched serum or plasma specimen). Testing should be conducted on specimens from people who meet Centers for Disease Control and Prevention (CDC) Zika clinical and/or epidemiological criteria for testing and be performed by laboratories in the US that are certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, to perform high complexity tests, or by similarly qualified non-US laboratories (see www.cdc.gov/zika/hc-providers/index.html). This test should be performed according to CDC's algorithm for Zika testing (see <http://www.cdc.gov/zika/laboratories/lab-guidance.html>).

The information in this Fact Sheet is to inform you of the significant known and potential risks and benefits of the emergency use of the xMAP® MultiFlex™ Zika RNA Assay (see www.fda.gov/MedicalDevices/Safety/EmergencySituations/ucm161496.htm).

Why is this test needed at this time?

Public health officials have determined that Zika virus poses a potential public health emergency. Current information on Zika virus infection for healthcare providers, including case definitions and information about signs and symptoms, is available at www.cdc.gov/zika/hc-providers/index.html. All information and guidance, including those on Zika virus laboratory testing, may change as more data are gathered on this virus. Please check CDC's Zika virus website regularly for the most current information (www.cdc.gov/zika/index.html).

The US Secretary of Health and Human Services (HHS) has declared that circumstances exist to justify the emergency use of *in vitro* diagnostic tests for the detection of Zika virus and/or diagnosis of Zika virus infection. This EUA will terminate when the HHS Secretary's declaration terminates, unless FDA revokes it sooner.

At this time, there are no FDA approved/cleared tests available that can detect Zika virus in clinical specimens in the US. Therefore, Luminex Corporation has developed the xMAP® MultiFlex™ Zika RNA Assay to detect evidence of Zika virus infection.

When should the xMAP® MultiFlex™ Zika RNA Assay be performed?

If Zika virus infection is suspected based on CDC's published clinical and/or epidemiological criteria, the xMAP® MultiFlex™ Zika RNA Assay may be ordered and should be performed according to the CDC-issued guidance (<http://www.cdc.gov/zika/laboratories/lab-guidance.html>). The algorithms included within the guidance illustrate the appropriate Zika testing approach based

on the presence of signs and symptoms, pregnancy status, and the time between onset of symptoms or suspected exposure and specimen collection.

As disease manifestations of dengue and chikungunya virus infections can resemble those of Zika virus infection, additional testing for these viruses should be considered to aid in differentiating dengue and chikungunya virus infections from Zika virus infections or identifying possible co-infections. Please contact your state or local health department to facilitate testing.

Zika virus RNA is typically detectable in serum during the acute phase of infection (generally up to 7 days post-symptom onset). Zika virus RNA has been detected in serum up to 13 days post-symptom onset in non-pregnant patients, and up to 62 days post-symptom onset in pregnant patients. In addition, Zika virus RNA has been detected up to 53 days after the last known possible exposure in an asymptomatic pregnant woman (references 3-4).

As of January 07, 2017, serum is the primary diagnostic specimen for Zika virus RNA and serologic testing, and should be the priority specimen for collection and xMAP® MultiFlex™ Zika RNA Assay testing. The xMAP® MultiFlex™ Zika RNA Assay can also be used to test urine (collected alongside a patient-matched serum or plasma specimen). While some data from the US suggests that Zika virus RNA may be detectable for longer periods of time in urine than in serum, persistence of Zika virus RNA in urine is not well characterized.

Along with serum or plasma specimens, healthcare providers are strongly encouraged to collect and submit additional recommended specimens (per CDC guidance), such as urine, to provide additional opportunities for detection of Zika virus infection. However, a patient-matched serum specimen should always be submitted with a urine specimen to facilitate reflex testing as outlined in the current CDC-issued algorithm (<http://www.cdc.gov/zika/laboratories/lab-guidance.html>).

Specimens should be collected with appropriate infection control precautions and according to the manufacturer's instructions for the specimen collection device, handling, and storage. Serum should be collected in serum separator tubes and centrifuged after collection to reduce the likelihood of hemolysis. Additional guidance for collection of body fluid specimens for Zika diagnostic testing may be found at: <http://www.cdc.gov/zika/laboratories/test-specimens-bodyfluids.html>.

If your patient has been symptomatic but is beyond the recommended window for xMAP® MultiFlex™ Zika RNA Assay testing, serologic testing for antibodies to Zika virus may be helpful.

What does it mean if the specimen tests positive for Zika virus RNA?

A positive test result for Zika virus from the xMAP® MultiFlex™ Zika RNA Assay indicates that RNA from Zika virus was detected in the patient's specimen. A positive test result in any authorized specimen collected from a patient is indicative of Zika virus infection. Laboratory test results should always be considered in the context of clinical observations, epidemiological data, and travel history in making a final diagnosis and patient management decisions. For guidance on Zika virus, please refer to www.cdc.gov/zika/hc-providers/index.html.

The xMAP® MultiFlex™ Zika RNA Assay has been designed to minimize the likelihood of false positive test results. Cross-reactivity of any of the components of this test resulting in false positive

results is not expected. However, in the event of a false positive result, risks to patients could include any or all of the following: impaired ability to detect and receive appropriate medical care for the true source of symptoms; in the case of pregnant women, an unnecessary increase in the monitoring of a woman's pregnancy; other unintended adverse effects.

In the US and its territories, Zika virus infection and disease (non-congenital and congenital) are nationally notifiable conditions and should be reported to the local or state health department. For guidance on Zika virus, please refer to <http://www.cdc.gov/zika/hc-providers/index.html>.

While there is an established association between Zika virus infection during pregnancy and microcephaly, detection of Zika virus RNA in specimens collected from a pregnant woman does not provide definitive information about the health of her fetus and does not indicate imminent harm to her fetus. If a pregnant woman is diagnosed with Zika virus infection based on detection of Zika virus RNA, issues such as timing of infection during the course of pregnancy, presence of symptoms and other factors may help determine the risk to her fetus.

What does it mean if the specimen tests negative for Zika virus RNA?

A negative test result for Zika virus in the specimen means that RNA from Zika virus is not present in the specimen above the test's limit of detection. However, a negative result does not rule out infection with the virus and should not be used as the sole basis for treatment or other patient management decisions.

It is especially important to note that negative results in urine, which is not the recommended primary diagnostic specimen type, do not necessarily mean that a person is not infected. When results are negative for urine, the patient-matched serum specimen should be tested as outlined in the current CDC-issued algorithm (<http://www.cdc.gov/zika/laboratories/lab-guidance.html>).

A negative xMAP® MultiFlex™ Zika RNA Assay result does not exclude the possibility of Zika virus infection. In serum, negative rRT-PCR test results are known to occur in Zika virus infection, particularly if testing is conducted outside the acute phase of infection (generally up to 7 days post symptom-onset) or in asymptomatic people. When other diagnostic testing is negative, the possibility of a false negative result should be considered in the context of a patient's recent exposures and the presence of clinical signs and symptoms consistent with Zika virus infection. Such patients should have antibody testing performed on their serum sample, as per the CDC testing algorithm (found at <http://www.cdc.gov/zika/laboratories/lab-guidance.html>).

Absence of laboratory evidence of Zika virus infection cannot definitively rule out Zika virus infection in persons with epidemiological risk factors. All results should be considered in the context of clinical signs and symptoms, exposure risk and time since symptom onset, or in the absence of symptoms, time since exposure.

Guidance for healthcare providers, including those caring for pregnant women and women of reproductive age with possible Zika virus exposure, is available on the CDC website: www.cdc.gov/zika/hc-providers/index.html.

Reporting Adverse Events

You should report adverse events, including problems with test performance or results, to MedWatch at <http://www.fda.gov/Safety/MedWatch/default.htm>, by submitting a MedWatch Form 3500 (available at <http://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Forms/UCM349464.pdf>) or by calling 1-800-FDA-1088.

All patients should receive the Fact Sheet for Patients: Understanding Results from the xMAP® MultiFlex™ Zika RNA Assay

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Any significant new findings that negatively impact the performance of the test and that are observed during the course of the emergency use of the xMAP® MultiFlex™ Zika RNA Assay will be made available at www.luminexcorp.com.

References

- 1) Rasmussen, S.A., Jamieson, D.J., Honein, M.A., Petersen, L.R. Zika Virus and Birth Defects – Reviewing the Evidence for Causality. *New England Journal of Medicine*, May 19, 2016; 374:1981-1987. DOI: 10.1056/NEJMSr1604338.
- 2) CDC Website - <http://www.cdc.gov/zika/>
- 3) Driggers, R.W., et al. Zika virus Infection with Prolonged Maternal Viremia and Fetal Brain Abnormalities. *New England Journal of Medicine*, June 2, 2016; 374:2142-2151. DOI: 10.1056/NEJMoa1601824
- 4) Meaney-Delman et al. Prolonged Detection of Zika Virus RNA in Pregnant Women. *Obstetrics and Gynecology*, July 29, 2016 [epub ahead of print]. DOI:[10.1097/AOG.0000000000001625](https://doi.org/10.1097/AOG.0000000000001625)