NEW YORK STATE OF OPPORTUNITY. Department of Health

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Zika Virus: Recommendations for Day of Delivery Testing and Specimen Collection

New York State Department of Health Wadsworth Center Laboratories

I. Testing guidance

Testing guidance is based on the location of the birth facility, regardless of the patient's residence. The following guidance is for deliveries at a New York State (NYS) facility outside of New York City (NYC), and specimens should be sent to the NYS public health laboratory, Wadsworth Center, for testing. A NYS resident delivering at a NYC facility should be tested in accordance with NYC recommendations, which can be found at http://www1.nyc.gov/site/doh/providers/reporting-and-services.page.

Criteria for maternal testing on day of delivery	○ Women with symptoms of Zika virus infection who have not had Zika virus testing after their most recent potential exposure[1] ○ Women with potential exposure to Zika virus infection during pregnancy not known to have Zika virus infection who give birth to an infant with microcephaly, intracranial calcifications or other possible Zika-related brain/eye abnormalities
Criteria for infant testing	○ Infants born to mothers with laboratory evidence of Zika virus infection during pregnancy (PCR/NAAT positive *and/or* IgM positive plus PRNT positive) ○ An infant with pre- or postnatal findings of microcephaly, intracranial calcifications or other possible Zika-related brain/eye abnormalities AND mother with potential exposure (regardless of maternal test results)
Criteria for collecting formalin-fixed placenta and umbilical cord specimens	**Testing can be considered for** *1) symptomatic pregnant women or 2) mothers of infants with possible Zika virus-associated birth defects and potential exposure during pregnancy or periconception period* **if the woman is untested or has the following laboratory results**: ○ PCR/NAAT[2] negative, IgM positive, and PRNT positive for Zika and dengue (undifferentiated flavivirus) ○ PCR/NAAT negative, IgM positive, and a pending Zika PRNT result ○ PCR/NAAT negative, IgM negative, and Zika PRNT positive Testing is **NOT** recommended for any women with a laboratory confirmed diagnosis, which includes those who have been PCR/NAAT positive *or* IgM positive and PRNT positive for Zika and PRNT negative for dengue.
Specimens for infants meeting criteria ***(ideally collected within 2 days of birth)***	○ 1.5-2.0 ml blood in a serum tube ○ 0.4-1.0 mL whole blood in lavender top (EDTA-anti-coagulated) tube ○ Minimum 1 ml urine in a sterile container sealed with parafilm

[1] Exposure is defined here as travel to or residence in an area with a Zika travel notice (https://wwwnc.cdc.gov/travel/page/zika-travel-information) or unprotected vaginal, anal, or oral sexual exposure with a partner who traveled to or resided in an area with a Zika travel notice during pregnancy or in the eight weeks prior to conception. [2] rRT-PCR is a form of NAAT (nucleic acid amplification testing).

II. How should specimens be prepared and handled?

Label all specimens. Failure to properly label a specimen will result in testing delays and may result in specimen rejection.

Specimens must be labeled with:

- Patient's first and last name
- Patient's date of birth
- Date and time of collection
- Specimen type (whole blood, serum, urine, CSF, etc.)
- The container for each placental specimen should also be labeled on the outside with:
  - Mother's name and date of birth (do not include infant's information)
  - Area of placenta sampled (e.g., maternal vs. fetal side, placental disk, etc.)
  - "Formalin-fixed"

Seal Specimen Containers

- Close specimen containers tightly and seal with parafilm.
- Leaking specimens will not be tested.
- Hemolyzed specimens will not be tested.

Specimen for testing	Volume and container	Specimen handling for facilities with a -70°C freezer
Maternal specimens • **only for women who meet criteria for testing in Section I** • **whole blood and urine should be submitted only if also testing serum**	**serum: collect <u>6 ml blood</u>** in a serum separator tube*	○ Centrifuge blood within 6 hours; specimens that are not centrifuged immediately should be refrigerated immediately until centrifuged. ○ Transfer serum, using sterile technique, to separate, labeled sterile tube(s) (at least 3 ml serum required) and discard the clot that remains in the blood tube. ○ Store specimen in -70°C freezer and ship on **dry ice**.
	whole blood: collect **<u>1 ml blood</u>** in a **PLASTIC** lavender top tube**	○ Store specimen in -70°C freezer and ship on **dry ice**.
	urine: collect **<u>3-5 ml urine</u>** in a sterile leak-proof container	○ Store specimen in -70°C freezer and ship on **dry ice**.
Infant specimens • **only for infants who meet criteria for testing in Section I** • **collect directly from the infant ideally within 2 days of birth**	**serum:** collect **<u>1.5–2.0 ml blood</u>** by venipuncture in a serum separator tube*	○ Centrifuge within 6 hours of collection and transfer serum to a separate tube using sterile technique. ○ Store specimen in -70°C freezer and ship on **dry ice**.
	whole blood: collect **<u>0.4-1.0 ml blood</u>** in a PLASTIC lavender top tube**	○ Store specimen in -70°C freezer and ship on **dry ice**.
	urine: collect **<u>1 - 5 ml</u>** in a sterile leak-proof container	○ Store specimen in -70°C freezer and ship on **dry ice**.

Placenta, fetal membranes, umbilical cord • **formalin-fixed specimens only** • **Wadsworth Center submits specimens to the Centers for Disease Control and Prevention (CDC) for testing**	Place the sections in a screw top sterile cup containing formalin. Tightly screw the lid to prevent leakage.	○ At least 2 full-thickness pieces (0.5-1 cm x 3-4 cm thick) from middle third of placental disk and at least 1 piece from placental disk margin; sample maternal and fetal sides of placenta, along with any pathologic lesion, if present. In addition, please include the following: ○ fetal membranes: 5 x 12 cm strip from the area of rupture and including a small piece of the edge of the disk ○ umbilical cord: at least 2 representative segments, each 2.5 cm in length; label as proximal, middle or distal to the umbilical cord insertion site on the placenta ○ Indicate placenta weight. ○ Tissues may be refrigerated at +4°C for <24 hours until fixed in formalin. ○ Place in 10% neutral buffered formalin for a minimum of 3 days. Formalin volume should be about 10x the mass of tissue. After fixation transfer to 70% ethanol for long term storage/shipping (if not paraffin-embedded). ○ Store formalin-fixed tissues at room temperature. Ship at room temperature. ○ Paraffin blocks may be submitted as well.
Infant CSF and amniotic fluid • **specimen are *not* routinely requested for Zika testing** • **if obtained for other studies, aliquot a sample for Zika testing**	**CSF:** collect in sterile container (tube or cryovial)	○ Store specimen in -70°C freezer and ship on **dry ice**.
	amniotic fluid: collect in sterile container (15 or 50 ml conical tube).	○ Store specimen in -70°C freezer and ship on **dry ice**.

*Serum separator tube cap colors include red top, tiger top, speckle top, and gold top. These tubes contain clot activator, so that serum can be readily obtained.

**Whole blood must be collected in lavender top tubes that contain EDTA anti-coagulant.

Specimen handling for facilities with a refrigerator, but no -70°C freezer or dry ice

- ○ Process as indicated above.
- ○ Refrigerate whole blood, urine and centrifuged serum at 2-8°C immediately after collection.
- ○ Ship overnight with **cold packs** to lab for arrival within 72 hours of collection.
- ○ Preferably, specimens should arrive between Monday and Friday, between 9am and 4pm. However, specimens can arrive after business hours and on weekends and holidays.
- ○ Label the outer packaging: "Store at -70°C upon arrival." Failure to label the outer packaging correctly may result in specimens not being tested.

III. Who should I notify and what forms do I need to send with specimens?

- Through February 28, 2018, contact NYS Department of Health (DOH) via the NYSDOH Zika Information Line at 1-888-364-4723, Monday to Friday 9am to 5pm, for consultation, pre-approval, and to arrange shipment.
- As of March 1, 2018, preapproval for routine diagnostic testing will not be needed. To discuss submission of nonroutine specimen types such as CSF, please call 518-474-4177 and ask for the Virology Laboratory.
- Specimens may be collected and stored as outlined above until shipping can be arranged.
- Wadsworth's Infectious Disease Requisition (IDR) form: http://www.wadsworth.org/sites/default/files/WebDoc/1065760803/infectious_diseases_requisition_DOH_4463.pdf
    - The IDR form should be completed in full and accompany each specimen being submitted.
    - If present, symptoms should be clearly noted on the IDR.

IV. How should specimens be stored and transported?

- Serum, whole blood and urine specimens may be stored and shipped:
    1. If specimens are frozen, ship on dry ice. (Follow shipping regulations for UN 3373 Biological Substance, Category B and UN 1875, Class 9 for dry ice.)
    2. If specimens are refrigerated, shipping must occur within 48 hours of specimen collection. Prepare as above in order to arrive at the lab within 72 hours after collection.
        - Refrigerate immediately and ship on cold packs.
        - Cold packs should be *frozen* before placed in the box, not just refrigerated.
        - Sufficient cold packs should be used to keep the specimens refrigerated during shipping.
- CSF and amniotic fluid specimens should be handled in the same manner as serum, whole blood and urine specimens.
- Indicate the temperature shipment requirements on the outside of the package.
- For formalin fixed (wet) or formalin-fixed paraffin-embedded tissues, specimens should be sent at room temperature. Fixed tissues should not be shipped with refrigerated or frozen samples. The NYS Wadsworth Center will ship fixed specimens to the CDC for testing.
- Specimens must be shipped overnight with cold packs or dry ice (except formalin fixed tissues, which are shipped at room temperature) to:

  The Wadsworth Center, David Axelrod Institute
  120 New Scotland Avenue
  Albany, NY 12208
- Delivery to Wadsworth Center should occur between Monday and Friday, preferably between 9am and 4pm. However, deliveries are accepted at all hours and any day of the week.

V. How will test results be reported?

Zika test results will be sent to the provider or facility listed as the submitter. If the submitter has a NYS Health Commerce System account with Clinical Laboratory Information Management System (CLIMS) access, results will be transmitted electronically. Otherwise, results will be mailed.

Birth facilities should establish procedures for the transmission of laboratory test results, clinical assessment, and maternal Zika exposure/testing to the infant's outpatient pediatric provider to ensure appropriate ongoing care of the infant.

VI. Other Resources

- NYSDOH: https://www.health.ny.gov/diseases/zika_virus/providers.htm
- NYC DOHMH: http://www1.nyc.gov/site/doh/providers/reporting-and-services-main.page
- CDC Clinical Guidance: https://www.cdc.gov/zika/hc-providers/index.html
- MMWR, "Update: Interim Guidance for the Diagnosis, Evaluation and Management of Infants with Possible Congenital Zika Virus Infection — United States, October 2017" https://www.cdc.gov/mmwr/volumes/65/wr/mm6533e2.htm?s_cid=mm6533e2_w
- Preventing Transmission of Zika Virus in Labor and Delivery Settings Through Implementation of Standard Precautions—United States, 2016. https://www.cdc.gov/mmwr/volumes/65/wr/mm6511e3.htm