

ZIKA VIRUS: COLLECTION AND SUBMISSION OF FETAL TISSUES FOR ZIKA VIRUS TESTING



General Information

The following information applies to fetal tissue collection and submission. For cord blood and amniotic fluid analysis, please see [CDC's web page on testing body fluid specimens](#).

IMPORTANT: Pre-approval is required prior to submission of any tissue specimens. For pre-approval please contact pathology@cdc.gov and eocevent189@cdc.gov.

- **Healthcare Providers:** Please make sure that your state, territorial, tribal, or local health department has been notified and has received pre-approval from CDC for submission and shipment of specimens before they are collected and sent.
 - » **Institutions with surgical pathology available:** Please consult surgical pathology regarding appropriate collection and processing of specimens for Zika virus testing.
 - » **Institutions without surgical pathology available:** Please see table below for general guide on collection of tissue specimens for Zika virus testing.
 - » **Specimens should ONLY be sent to CDC from health departments.**
- **Health Departments:** Pre-approval is required prior to the submission of specimens to CDC. Information required for the pre-approval process includes:
 - » Maternal/neonatal state and specimen identification numbers, maternal age, Zika virus test results, travel locations and dates, illness onset (if applicable), estimated date of delivery, gestational age at delivery, pregnancy outcome, age and sex of infant, birth anthropometric measurements, any additional testing/imaging.
 - » Please specify cases that have been reported to the US Zika Pregnancy Registry and for which this information has already been provided during the pre-approval process.
- **Please Note:** [CDC Form 50.34](#) is required to be submitted with all specimens. Please write "Zika virus" in test order name after it is printed as this is not yet an option on the drop down menu.
 - » Select Test Order CDC-10371 for infant deaths (pathologic evaluation of infant death due to infection)
 - » Select Test Order CDC-10372 for pregnancy losses (pathologic evaluation of illness due to infection)

Collection of Fetal or Neonatal Tissues

- Appropriate consent from the parents or guardian must be obtained by the healthcare provider prior to collection and submission of specimens for Zika virus testing.
- To optimize evaluation of possible Zika virus infection in fetal tissues, send fixed tissues. Submission of frozen tissues may be considered on a case by case basis, please email pathology@cdc.gov and ZIKA_EPI_ADB@cdc.gov for consultation.



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- The type of tissues available for evaluation will depend on the gestational age of the fetus and the collection procedure that is performed. Effort should be made to maintain the tissue architecture, and to minimize any dissection or disruption of the tissues.
- For situations in which individual organs or tissue types cannot be identified, please provide any available tissue with minimal disruption.
- CDC Infectious Diseases Pathology Branch (IDPB) accepts microscopic or gross photos from health departments as part of either teleradiology consultation or routine tissue specimen submission for diagnostic evaluation. Photos should not contain patient names or medical record numbers. Visit the CDC ePathology teleradiology (<http://www.cdc.gov/ncezid/dhcpp/idpb/epathology/index.html>) page for more details.
- Staff who collect and handle specimens should refer to Zika biosafety guidelines for laboratory and pathology procedures www.cdc.gov/zika/state-labs/biosafety-guidance.html.

Specimen Type	Fixed Specimens	When to Consider	General Notes
Products of conception (POC)	<ul style="list-style-type: none"> • 4 or more specimens 	Generally less than 12wks gestational age	For early pregnancy loss/ miscarriage, please send POCs fixed in formalin.
Placenta and fetal membranes	<ul style="list-style-type: none"> • Several full thickness pieces including at least 3 full thickness pieces (0.5–1 cm x 3–4 cm in depth) from middle third of placental disk and at least 1 from the placental disk margin • One 5 x 12 cm strip of fetal membranes 	Any gestation for which placenta is available	<p>Please include sections of the placental disk, fetal membranes, and pathologic lesions when possible.</p> <p>Please include information about placenta weight and sample both maternal and fetal side of the placenta.</p> <p>Label all specimens to identify location of sample.</p>
Umbilical cord	<ul style="list-style-type: none"> • 2.5 cm segments of cord • 4 or more specimens 	Any gestation for which placenta is available	<p>Umbilical cord segments should be obtained proximal, middle, and distal to umbilical cord insertion site on the placenta.</p> <p>Label all specimens to identify location of sample.</p>
Brain and spinal cord	<ul style="list-style-type: none"> • 0.5–1.0 cm³ each • 5 or more specimens from different parts of brain and spinal cord 	Fetal demise	It is critical to maintain the tissue architecture to evaluate viral pathology. Certain fetal tissues require longer fixation, please fix brain specimens for 48-72 hours.
Solid organ (heart, lung, liver, kidneys, skeletal muscle, eyes, bone marrow)	<ul style="list-style-type: none"> • 0.5-1.0 cm³ each • 1 representative specimen from each solid organ 	Fetal demise	Submission of eyes is highly recommended.

Fixed Tissues

- Histopathology, immunohistochemical staining, and reverse transcription-polymerase chain reaction (RT-PCR) will be performed on fixed tissues, as needed. Fixed tissues may include formalin fixed and/or paraffin embedded tissues.
- The volume of formalin used to fix tissues should be 10x the volume of tissue. Place tissue in 10% buffered formalin for a minimum of three days or until fully fixed. After fixation, tissue can be transferred to 70% ethanol for long term storage.
- If stored prior to shipping, please transfer fixed tissues to 70% ethanol after 72 hours.
- Fixed tissues should be stored and shipped at room temperature. Additional instructions for [collecting, handling, and shipping](#) formalin-fixed tissues are also available. Paraffin blocks should be submitted in accordance with these instructions for formalin-fixed specimens.
- DO NOT FREEZE samples that have been fixed in formalin.

Submission and Shipping of Specimens

- [\[CDC Form 50.34\]](#) is required with all specimen submissions and specimens should ONLY be sent to CDC directly from health departments. Please see introduction above for further details.
- Fixed specimens can be shipped at ambient temperature to:
Infectious Diseases Pathology Branch
Centers for Disease Control and Prevention
1600 Clifton Rd. NE, MS G-32
Atlanta GA 30329-4027
- More information on shipping can be found here: <http://www.cdc.gov/ncezid/dhcpp/idpb/specimen-submission/cns.html>.

Reporting of Results

- Test results will be reported to the state health department and the submitting healthcare provider.
- Turnaround time will vary, depending on testing volume.
- Considerations for interpreting pathology results include maternal/infant epidemiologic risk factors, maternal/infant Zika testing results, and clinical presentation. For assistance with interpretation of pathology reports results please contact pathology@cdc.gov.