

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



General Information

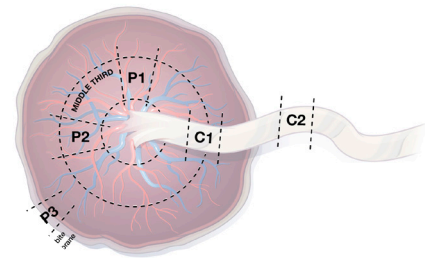
The following information applies to placental (e.g., placental disk, umbilical cord, and fetal membranes) and fetal or infant autopsy tissue collection and submission. For serum, urine, cerebrospinal fluid (CSF), and other body fluid analysis, please see [CDC's web page on testing body fluid specimens](#).

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

For guidance regarding for which Zika virus testing on placental tissues should be considered, please see [Interim Guidance for Health Care Providers Caring for Pregnant Women with Possible Zika Virus Exposure — United States \(Including U.S. Territories\)](#).

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. **Minimum information required** for the pre-approval process includes the following:
 - » Maternal/infant state and specimen identification numbers, maternal age, maternal and infant Zika virus test results (if available), dates of possible maternal Zika virus exposure and locations of exposure (if applicable), illness onset (if applicable), estimated date of delivery, gestational age at delivery, pregnancy outcome, sex of infant, birth anthropometric measurements (head circumference, weight, and length) and significant physical exam findings, any additional testing/imaging.
 - » Pre-approval and specimen processing can be delayed if required information is missing.
- **Please Note:** [CDC Form 50.34](#) is required to be submitted with all specimens. **One hard copy (per case)** of the CDC 50.34 form should be submitted with the formalin-fixed wet tissues or formalin-fixed paraffin-embedded tissue blocks at ambient temperature. Please do not submit multiple copies of the CDC 50.34 per case.
 - » Select Test Order CDC-10365 “Pathologic Evaluation of Tissues for Possible Infectious Etiologies.”
 - » Select “Zika Virus” as the suspect agent from the drop down menu.
 - » The remaining items must be completed electronically and then printed.
 - » If the placenta is submitted to surgical pathology, or a fetal or infant autopsy is conducted, a copy of the preliminary or final surgical pathology and/or fetal or infant autopsy report should be enclosed with the specimen submission paperwork.



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Collection of Placental, Fetal, or Infant Autopsy Tissues

1. To optimize evaluation of possible Zika virus infection, **send fixed tissues**. CDC's Infectious Diseases Pathology Branch is not accepting fresh or frozen tissues for Zika virus testing at this time.
2. Staff who collect and handle specimens should refer to [Zika biosafety guidelines](https://www.cdc.gov/zika/laboratories/lab-safety.html) (https://www.cdc.gov/zika/laboratories/lab-safety.html) for laboratory and pathology procedures.
3. **For fetal or infant autopsy 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.
 - » The types 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.

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 12 weeks gestational age	For early pregnancy loss/miscarriage, please send POCs fixed in formalin (wet tissues, not formalin-fixed paraffin-embedded tissue blocks), if possible.
Placenta and fetal membranes	<ul style="list-style-type: none"> • At least 2 full thickness sections (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 taken from the area of rupture and including a small bite of the edge of the disk. 	Any gestation for which placenta is available	<p>Please include sections of the placental disk, fetal membranes, and pathologic lesions when possible.</p> <p>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"> • At least 2.5 cm segments of cord 	Any gestation for which placenta is available	Label specimen to identify location of sample (e.g., if proximal, middle or distal to umbilical cord insertion site on placenta).
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 loss, stillbirth, or infant death.	It is critical to maintain the tissue architecture to evaluate viral pathology.
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 loss, stillbirth or infant death.	Submission of eyes is highly recommended.

Fixed Tissues

1. The approach to Zika virus testing on fixed tissue specimens continues to evolve as more is learned regarding this emerging virus. Currently, Zika virus testing on fixed tissues includes Zika virus reverse transcription-polymerase chain reaction (RT-PCR) on placental and fetal tissues. Zika virus immunohistochemistry (IHC) is performed on selected cases, including placental tissues from 1st and early 2nd trimester pregnancy losses, fetal tissues from pregnancy losses, and autopsy tissues from infant deaths. Microscopic examination of submitted tissues is also performed in selected cases.
2. Fixed tissues may include formalin-fixed wet tissues and/or formalin-fixed paraffin-embedded tissues. Formalin-fixed paraffin-embedded tissue blocks are preferred if formalin-fixation of the wet tissues has exceeded two weeks. Wet tissues fixed in formalin for more than four weeks **are not acceptable** for Zika virus testing.
3. Collecting tissues with the recommended dimensions provided in the table above will allow formalin to penetrate the specimen and increase the chances for appropriate tissue fixation.
4. The volume of formalin used to fix tissues should be 10x the volume of tissue. Place tissue collected according to the dimensions provided above in 10% buffered formalin for three days (72 hours). After fixation, if not paraffin-embedded, tissues **SHOULD** be transferred to 70% ethanol for long term storage and for shipping.
5. 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.
6. **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
Phone: (404) 639-3133
- 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 as well as the submitting healthcare provider if adequate contact information is provided on the CDC Specimen Submission form.
- Turnaround time will vary, depending on testing volume and individual case complexity.
- 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.