DELIVERY CHECKLIST FOR ZIKA/SUSPECTED ZIKA CASES & ZIKA ASSOCIATED BIRTH DEFECTS
Chicago Dept of Public Health/Cook County Dept Public Health

Step 1: Assess clinical status
↓
Step 2: Coordinate post-partum testing
↓
Step 3: Complete Infant assessment and US Zika Registry Form
↓
Step 4: Contact Local Health department

STEP 1: Determine Clinical Scenario

ASK EVERY PATIENT ABOUT ZIKA EXPOSURE AND TESTING IN TRIAGE! **(See Appendix A)**

A. KNOWN LABORATORY EVIDENCE OF ZIKA:
- i. **Prenatal maternal serum** or **urine** RT-PCR positive for Zika
- ii. **Prenatal maternal serology** reflects either
  (a) IgM positive where the Plaque Reduction Neutralization Test (PRNT) is pending
  (b) PRNT result indicates Zika virus infection **OR** undifferentiated flavivirus infection

B. POSSIBLE MATERNAL ZIKA: Maternal exposure AND one of the following:
- **i. No testing done**
- **ii. Testing pending**
- **iii. Negative test result, but drawn > 12 weeks post-exposure**

C. BIRTH DEFECT: Anomaly noted in Appendix B **in live birth OR fetal demise** need the following:
- **i. Assess for Zika exposure** (appendix A) and **test all infants with any Maternal Zika Exposure, regardless of prior maternal test result**
- **ii. Report ALL cases to IDPH** (**Appendix B**), regardless of Zika exposure or test history

Brief testing recommendations as follows (details to follow in Step 2)**:**
1. ALL INFANTS SHOULD BE TESTED WITHIN 2 days of life (scenarios A, B, and Ci)
2. SOME PLACENTAS SHOULD BE TESTED, depending on scenario above and per CDC preference, hence we recommend **ALWAYS SAVE PLACENTA, MEMBRANES AND CORD**
3. Maternal testing ONLY performed in scenario B.i above

Generally, the obstetric service will not be ordering these tests (with exception of scenario B.i, where maternal testing indicated). The obstetric service should communicate with the appropriate providers to request pediatric and pathology testing.

STEP 2: Coordinate Post- Partum Testing: CONTACT PEDS, PATH & LAB*

We recommend all testing at delivery be sent to the Illinois Dept of Public Health (IDPH) laboratory. Commercial testing is available for PCR (serum and urine) and serology (IgM); however, for surveillance purposes, we encourage all specimens be sent to IDPH lab.

Bottom line: Communicate with pediatrics, pathology and hospital laboratory in advance to coordinate specimen collection and submission to IDPH lab. ***Specimens may be collected prior to obtaining approval and authorization codes. But, specimens should NOT be sent to public health laboratory without prior authorization*** (See step 4 for how to obtain approval/authorization).

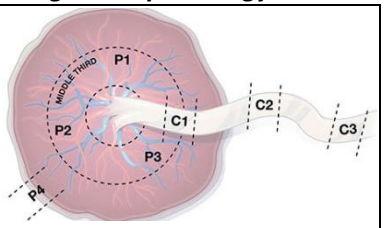
**At most hospitals, the micro lab or the "referred testing lab" manage public health send-out specimens*

a. Infant Specimen Guidelines: required for all infants from scenario a-c; pediatric service can order

Serum (should be always ordered)	Collect in serum separator tube to obtain total volume of 1.0 ml of serum (i.e., amount of whole blood required is approximately 2.5-3 ml). Centrifuge and transfer serum to a separate tube
Urine	Collect at least 1 cc of urine in a sterile leak-proof container and wrap in parafilm. A patient-matched serum specimen must accompany a urine specimen submission.
Whole blood	Minimum volume required is 1.0 ml. Collect samples in EDTA (purple top) tube. A patient-matched serum specimen must accompany a whole blood submission.
CSF	Only if obtained for other studies, aliquot a sample (minimum 1.0 ml) for Zika testing. Collect in sterile container (15 or 50 ml conical tube). Close tightly and seal with parafilm.

****NOTE**: **CDC is also recommending a head ultrasound prior to discharge for any infant tested**

b. Placenta/Tissue Guidelines: While not necessary for each scenario, please send to pathology (CDC will make ultimate decision on testing) and health department will arrange with pathology service

Placenta and membranes	• At least 4 full-thickness pieces (0.5-1 cm x3-4 cm thick) from middle third of placenta and one from placental margin, including maternal and fetal sides of placenta, along with membranes (5 x 12 cm strip), and any pathologic lesion, if present • May be refrigerated at +4°C for <24 hours until fixed in formalin • Place the sections in a two twist screw top sterile cup containing formalin. Tightly screw the lid to prevent leakage • Paraffin blocks may be submitted as well • Remainder of placenta can undergo routine, in hospital, pathologic evaluation 
Umbilical cord	≥ 3 segments (2.5 cm each) from proximal, middle, and distal to insertion site
Additional tissues (fetal demise)	*Note*: *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.* • Brain/spinal cord: 0.5–1 cm^3 each (≥ 5 specimens from different parts of each) • Solid organ (heart, lung, liver, kidneys, skeletal muscle, eyes, bone marrow): 0.5-1.0 cm^3 each (1 representative specimen from each solid organ); eye highly recommended • Fixed in formalin or paraffin • Remainder of tissue can undergo routine, in-hospital, pathologic evaluation

****NOTE: For authorization of tissue specimens only, the health department will need the following:**

- Maternal ultrasound results (if applicable, please include dates and findings)
- Birth Measurements and Percentiles (e.g., Head Circumference, Birth Weight, Birth Length)
- Newborn exam findings and any additional testing/imaging (including TORCH or genetic testing)

c. Maternal Specimen Collection Guidelines: Only for scenario c above where no maternal testing upon admission; obstetric service should order

Serum (should be always ordered)	Collect samples in serum separator tube to obtain total volume of 1.0 ml of serum (i.e., amount of whole blood required is approximately 2.5-3 ml). Centrifuge and transfer serum to a separate tube
Whole blood	Minimum volume required is 1.0 ml. Collect samples in EDTA (purple top) tube. A patient-matched serum specimen must accompany a whole blood specimen submission.
Urine	Collect 3 cc of urine in a sterile leak-proof container and wrap in parafilm. A patient-matched serum specimen must accompany a urine specimen submission.

d. How to label and store specimens

- Label specimens with **name, date of birth, date and time of specimen collection, and description of specimen type, e.g.** "formalin-fixed placenta," "infant serum," or "infant urine". For tissue samples, label these specimens with the mother's name/mother's date of birth. For specimens collected directly from the infant, label these specimens with the infant's name/infant's date of birth.
- For serum, urine, and CSF specimens, freeze to -70°C after collection. If no -70°C freezer is available, refrigerate at +4°C and transport on cold packs within 72 hours of collection.
- Store human whole blood (EDTA) specimens at 2-8°C. Do not freeze. Transport on cold packs.
- Notes on formalin fixing: Fixed tissues should be stored and shipped at room temperature.
  - 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.
  - DO NOT FREEZE samples that have been fixed in formalin.

e. How to obtain approval/authorization code: See step 4 below

---

STEP 3: Complete Infant assessment and CDC US Zika Registry Form
(for scenario A only, *other cases will be determined after lab results complete*)

a. Use the following CDC guidelines for infant evaluation:
https://www.cdc.gov/zika/pdfs/pediatric-evaluation-follow-up-tool.pdf

b. Enter data into CDC Registry "integrated neonate assessment form: "www.chicagohan.org/zforms

c. Go to step 4 for submitting registry form to health department as soon as possible after birth/diagnosis

---

STEP 4: Report case to Health Department (For ALL SCENARIOS EXCEPT C.ii)

- **CHICAGO RESIDENTS:**
  - Specimen approval/authorization code: find authorization form at www.chicagohan.org/zforms
  - Submission of authorization form: fax 312-746-4683; You will be contacted with an authorization code within 24 hours (on Monday if on weekend).
  - CDC US Zika Regsitry Neonate assessment form (Scenario A only): Fax 312-746-4683

- **COOK COUNTY (outside of Chicago) RESIDENTS:** Contact Mabel Frias; 708-836-8699; mfrias@cookcountyhhs.org ;

***NOTE:** For reporting **birth defects**, regardless of Zika exposure→ Appendix B

QUESTIONS*:*

- **CHICAGO RESIDENTS***:* 8am-4pm M-F: call CDPH Zika hotline: 312-746-4835 or email: zika@cityofchicago.org; After hours: call 311 and ask for on call communicable disease physician

- **COOK CTY (outside of Chicago) RESIDENTS:** contact Mabel Frias: 708-836-8699; mfrias@cookcountyhhs.org

https://www.cdc.gov/zika/pdfs/pediatric-evaluation-follow-up-tool.pdf (updated Aug 19, 2016)
http://www.cdc.gov/zika/pdfs/collection-submission-specimens-zika-testing-at-birth.pdf (updated August 19, 2016)
http://www.cdc.gov/zika/pdfs/collection-submission-fetal-tissues-zika-testing.pdf (updated August 5, 2016)
http://www.cdc.gov/zika/pdfs/collection-submission-fetal-tissues-zika-testing.pdf

Appendix A: Screening for Zika Exposure

HEALTHY CHICAGO
CHICAGO DEPARTMENT OF PUBLIC HEALTH

Zika Screening Tool for Pregnant Women at Labor and Delivery

Questions to assess for possible exposure to Zika virus	Response
• Do you live in or do you frequently travel (daily or weekly) to an area with active Zika virus transmission? https://www.cdc.gov/zika/geo/index.html	Yes / No
• Have you traveled to an area with Zika during pregnancy or just before you became pregnant (8 weeks before conception or 6 weeks before your last menstrual period)?	Yes / No
• Have you had sex (vaginal, anal, or oral sex) without a condom or shared sex toys with a partner(s) who lives in or has traveled to an area with Zika?	Yes / No

"Yes" to ANY = Exposure
TESTING REQUIRED

"No" to ALL =No Exposure

Assess for prior test testing

Negative*

NOTHING TO BE DONE

POSITIVE=Refer to Checklist 1A

Test Pending/Not done/Negative Result AND tested > 12 weeks post exposure* = Refer to Checklist 1B

To request **free** Zika testing through the Illinois Department of Health (IDPH), complete the **testing authorization request form** at
https://www.chicagohan.org/zforms
An **authorization code** will be provided by email to the provider contact listed on the request.

For additional information, contact the Chicago Department of Public Health (CDPH)
Zika response line: 312-746-4835 or email: zika@cityofchicago.org
For urgent matters, you may reach the Communicable Disease Physician on-call by calling 311
(or 312-744-5000 if outside the City of Chicago)

**CDC is now recommending infant evaluation for women who tested negative but were tested > 12 weeks post (Checklist 1Biii)*

Appendix B: Notifying IDPH for Birth Defects:

Birth Defect Surveillance Notification Protocol

Any baby that is born with one of the birth defects below need the following two steps completed:

1. **Assessment for Zika Exposure and Testing, if necessary**
   - *Refer to Appendix A and Delivery Checklist (pages 1-3)*

2. **Notification to IDPH of Birth Defect regardless of Zika exposure → APORS* system**
   - Notification should take place as soon as diagnosis is known
   - **Begin new submission in APORS database**
     - Electronic:
       - In the "other concerns" section of the form please include the following:
         - Provider name
         - Clinic name
         - Phone number
       - Once the available information has been entered choose "save without edits"
       - Once the baby is discharged from the hospital, finish completing the APORS referral by hitting "save," as per usual routine
     - Paper based:
       - A copy of the form marked "preliminary" can be faxed to APORS.
       - Please add provider name, clinic name and phone number
       - After the baby is discharged, the remainder of the form should be completed in usual way, and then sent to APORS. The marking "preliminary" should be crossed out before sending the second time.
       - Fax forms to: 217-557-5152 or 217-558-4122; Attn: IDPH APORS

QUESTIONS???

- Contact IDPH: Theresa Sandidge , dph.apors@illinois.gov, 217-524-3674
- Contact CDPH: 8am-4pm M-F: call CDPH Zika hotline: 312-746-4835 or email: zika@cityofchicago.org; After hours: call 311 and ask for on call communicable disease physician

CONDITIONS THAT MEET CRITERIA FOR REPORTING:

Congenital brain anomalies

- Microcephaly
- Abnormal brain structures
- Atrophy of brain structures
- Abnormal cortical formation
- Congenital hydrocephaly/ventriculomegaly
- Holoprosencephaly
- In utero IVH
- Intracranial calcifications

Congenital contractures

- Arthrogryposis

Neural tube defects

- Anencephaly
- Encephalocele
- Spina bifida

Significant eye anomalies (excluding retinopathy of prematurity)

- Anophthalmia/microphthalmia
- Coloboma
- Cataracts
- Calcifications
- Chorioretinal anomalies (e.g. atrophy, scarring, macular pallor, pigmentary mottling, retinal hemorrhage.)
- Optic nerve abnormalities (including atrophy and pallor)

***APORS:** *Adverse Pregnancy Outcomes Reporting System (APORS) is a State surveillance effort that collects information on Illinois infants born with birth defects or other abnormal conditions. Each hospital reports cases to the State within 7 days of discharge.*