



American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

New Jersey Chapter



Essential Guidance for Infants with Possible Congenital Zika Virus Infection

Funded by a grant from the New Jersey Department of Health

We must continue to monitor
babies who were infected with
Zika virus before birth.

#PREVENT2PROTECT



Download this booklet at www.njaap.org/zika

June 2018

TESTING RECOMMENDATIONS

New Jersey Department of Health (NJDOH) monitors all Zika-related guidance issued by the Centers for Disease Control and Prevention (CDC) and is responsible for determining how CDC recommendations can best be implemented in New Jersey. Zika testing is now widely available at most commercial laboratories.

Criteria for Zika Testing at the NJDOH Public Health and Environmental Laboratory (PHEL) including eligibility for testing, exposure criteria, available Zika Virus tests, timeframe for testing and testing approval steps can be found at: http://www.nj.gov/health/cd/documents/topics/zika/zika_testing_criteria.pdf.

For more information on specimen collection guidance and approvals for postnatal Zika exposure, contact the NJ local health department where the child resides. Visit <http://www.state.nj.us/health/lh/community/index.shtml#1>.

All pregnant women presenting for delivery should be screened for a history of Zika virus exposure (travel and sexual) during the current pregnancy and 8 weeks before conception. **CDC's Zika screening tool for pregnant women** can be found at the following website: https://www.cdc.gov/pregnancy/zika/testing-follow-up/documents/ZikaPreg_ScreeningTool.pdf.

NJDOH Zika Delivery Packet for Birthing Hospitals and Centers
(http://www.nj.gov/health/cd/documents/topics/zika/njdoh_zika_delivery_packet.pdf)

The NJDOH Zika Delivery Packet, revised April 2018, provides guidance for evaluating and testing mothers exposed to Zika virus and their infants at the time of delivery and prior to discharge.

The packet contains:

1. Zika Delivery Checklist for Birthing Hospitals
2. Maternal and Infant Zika Testing Recommendations at Delivery
3. Zika Delivery Testing Forms (maternal and infant)
4. Zika Delivery Specimen Collection Guidance
5. CDC Algorithm: Evaluation for Infants with Possible Congenital Zika Virus Infection (10/19/2017)
6. CDC Roadmap for Babies of Mothers Infected with Zika During Pregnancy Who Appear Healthy (11/3/2017)
7. CDC Roadmap for Babies with Congenital Zika Infection (11/3/2017)

Please note that completion of the CDC's Neonatal Assessment Form is no longer required as of April 1, 2018. Clinicians can refer to documents 5, 6 and 7 above to guide infant evaluation and assessment. The latest comprehensive CDC recommendations for infants can be found at: <https://www.cdc.gov/mmwr/volumes/66/wr/pdfs/mm6641a1.pdf>.

TESTING RECOMMENDATIONS

Testing is recommended for infants with birth defects consistent with congenital Zika syndrome born to mothers with possible Zika virus exposure during pregnancy (regardless of the mother's Zika virus testing results) and for infants without birth defects consistent with congenital Zika syndrome who were born to mothers with laboratory evidence of possible Zika virus infection during pregnancy.

Concurrent Zika virus RNA nucleic acid testing (NAT) of serum and urine and Zika virus IgM testing of serum should be performed within a few days after birth, if possible. However, testing specimens collected within the first few weeks to months after birth may still be useful in the evaluation for possible congenital Zika virus infection.

Interpretation of Results of Laboratory Testing of Infant's Blood, Urine, and/or Cerebrospinal Fluid for Evidence of Congenital Zika Virus Infection (<https://www.cdc.gov/mmwr/volumes/66/wr/pdfs/mm6641a1.pdf>)

Infant test result*

NAT	IgM	Interpretation
Positive	Any result	Confirmed congenital Zika virus infection [†]
Negative	Nonnegative	Probable congenital Zika virus infection ^{§,¶}
Negative	Negative	Congenital Zika virus infection unlikely ^{§,**}

Abbreviations: IgM = immunoglobulin M; NAT = nucleic acid test.

* Infant serum, urine, or cerebrospinal fluid.

† Distinguishing between congenital and postnatal infection is difficult in infants who live in areas where there is ongoing transmission of Zika virus and who are not tested soon after birth. If the timing of infection cannot be determined, infants should be evaluated as if they had congenital Zika virus infection.

§ Laboratory results should be interpreted in the context of timing of infection during pregnancy, maternal serology results, clinical findings consistent with congenital Zika syndrome, and any confirmatory testing with plaque reduction neutralization testing.

¶ If Zika virus plaque reduction neutralization test is negative, this suggests that the infant's Zika virus IgM test is a false positive.

** Congenital Zika virus infection is unlikely if specimens are collected within the first few days after birth and the clinical evaluation is normal; however, health care providers should remain alert for any new findings of congenital Zika virus infection.

Recommendations for Plaque Reduction Neutralization Testing (PRNT) at 18 Months of Age

Maternal antibodies to the Zika virus are expected to wane in the infant by 18 months. To assist with confirmation of congenital infection, the CDC recommends that the following children are tested at 18 months of age:

- Initial sample was Zika IgM positive or equivocal and neutralizing antibodies were detected by PRNT in either the infant's or the mother's sample.
- Initial sample was negative by both IgM ELISA and NAT but clinical concerns remain (e.g., microcephaly with negative evaluation for other known causes).

If PRNT results at 18 months are negative, the infant is considered not to have congenital Zika virus infection. If results are positive, congenital Zika virus infection is presumed, but postnatal infection cannot be excluded, especially among infants living in an area with active Zika virus transmission.

EVALUATION & MANAGEMENT

All infants born to mothers with possible Zika virus exposure during pregnancy should receive a standard evaluation at birth and at each well-child visit (<https://www.cdc.gov/mmwr/volumes/66/wr/pdfs/mm6641a1.pdf>).

Standard Evaluation Recommended at Birth and During Each Well Visit for All Infants with Possible Congenital Zika Virus Exposure During Pregnancy — United States, Oct. 2017

- Comprehensive physical exam, including growth parameters
- Developmental monitoring and screening using validated screening tools recommended by the American Academy of Pediatrics (<https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Screening/Pages/Screening-Tools.aspx>)
- Vision screening as recommended by the American Academy of Pediatrics Policy Statement “Visual System Assessment in Infants, Children, and Young Adults by Pediatricians” (<http://pediatrics.aappublications.org/content/137/1/e20153596>)
- Newborn hearing screen at birth, preferably with automated auditory brainstem response

Infants *without* Clinical Findings of Congenital Zika Syndrome Born to Mothers *with* Maternal Laboratory Evidence of Possible Zika Virus Infection During Pregnancy

Initial Evaluation

- Standard evaluation
- Zika virus NAT (serum and urine) and IgM (serum) testing within a few days after birth, if possible
- Consider Zika virus NAT and IgM testing on cerebrospinal fluid (CSF)
- Head ultrasound by 1 month of age
- Comprehensive ophthalmologic exam by 1 month of age
- Automated auditory brainstem response (ABR) by 1 month of age

Follow-up Care

- Standard evaluation with routine preventive care and immunizations at every well-child visit
- Follow-up visits with an ophthalmologist should be based on ophthalmology recommendations
- If findings consistent with congenital Zika syndrome (e.g., impaired visual acuity/function, hearing problems, developmental delay, or delay in head growth) are identified, referrals to the appropriate specialists should be made and further evaluation should follow recommendations for infants with clinical findings consistent with congenital Zika syndrome

Infants *without* Clinical Findings Consistent with Congenital Zika Syndrome and *without* Laboratory Evidence of Possible Zika Virus Infection during Pregnancy

- Standard evaluation with routine preventive care
- Remain alert for any new findings of congenital Zika virus infection

EVALUATION & MANAGEMENT

Infants *with* Clinical Findings Consistent with Congenital Zika Syndrome: Initial Evaluation

- Standard evaluation
- Zika virus NAT (serum and urine) and IgM (serum) testing within a few days after birth, if possible
- Consider Zika virus NAT and IgM testing on cerebrospinal fluid (CSF)
- Head ultrasound by 1 month of age
- Comprehensive ophthalmologic exam by 1 month of age
- Automated auditory brainstem response (ABR) by 1 month of age
- Evaluate for other causes of congenital anomalies
- Refer to developmental specialist and early intervention
- Provide family support services

Consider Consultation with the Following Specialists:

- Infectious disease specialist for evaluation for other congenital infections (e.g., rubella, toxoplasmosis, syphilis, cytomegalovirus, or herpes simplex virus) and assistance with Zika virus diagnosis, testing, and counseling
- Neurologist by age 1 month for comprehensive neurologic examination and consideration for other evaluations such as advanced neuroimaging and EEG
- Ophthalmologist for comprehensive eye exam by age 1 month
- Clinical geneticist for confirmation of the clinical phenotype and evaluation for other causes of microcephaly or congenital anomalies

Additional Possible Consultations, Based on Clinical Findings of the Infant:

- Endocrinologist for evaluation of hypothalamic or pituitary dysfunction and consideration for thyroid testing
- Lactation specialist, nutritionist, gastroenterologist, or speech or occupational therapist for evaluation for dysphagia and management of feeding issues
- Orthopedist, physiatrist, or physical therapist for the management of hypertonia, clubfoot or arthrogryptic-like conditions
- Pulmonologist or otolaryngologist for concerns about aspiration

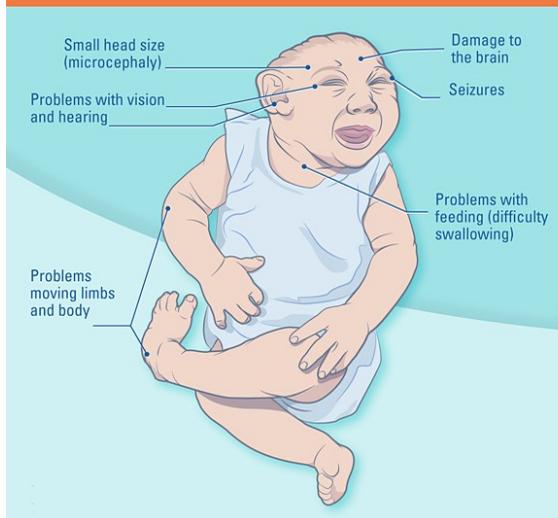
Coordinated Care and Established Medical Home Recommended

The types of services needed to care for infants with congenital Zika syndrome are complex. CDC recommends coordinated care by a multidisciplinary team and an established medical home. As critical members of the care team and important in early identification of developmental delays, families should be empowered to be active participants in their child's monitoring and care.

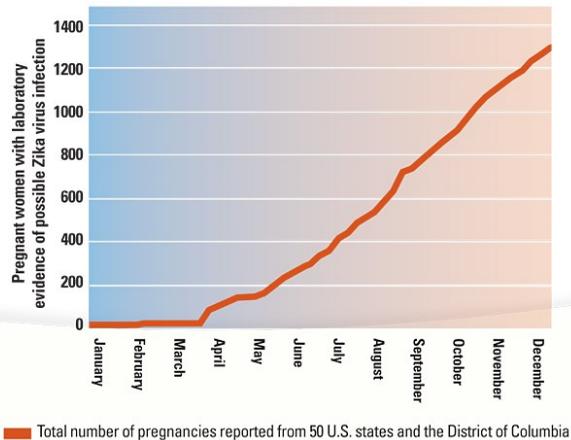
Reference for pages 3-5: Adebajo T, Godfred-Cato S, Viens L, et al. Update: Interim Guidance for the Diagnosis, Evaluation, and Management of Infants with Possible Congenital Zika Virus Infection — United States, October 2017. MMWR Morb Mortal Wkly Rep 2017;66:1089–1099. DOI: <http://dx.doi.org/10.15585/mmwr.mm6641a1>.

ZIKA & BIRTH DEFECTS

Congenital Zika syndrome is a pattern of birth defects in babies infected with Zika during pregnancy



Reported cases of pregnant women with any lab evidence of possible Zika increased in 2016



SOURCE: Vital Signs Morbidity and Mortality Weekly Report, April 4, 2017.

The CDC MMWR [Population-Based Surveillance of Birth Defects Potentially Related to Zika Virus Infection – 15 U.S. States and Territories, 2016](#) is the first report of a population-level increase in birth defects most strongly linked to Zika virus infection during pregnancy in areas with local transmission in the United States. Using information from birth records, CDC researchers found that from July to December 2016, areas with local transmission, had a 21% increase in Zika associated birth defects compared to the first half of the year. Among births in all states included in the analysis, the CDC found about 3 out of every 1,000 babies born had a birth defect caused by Zika or other factors. Among these babies:

- About half (49%) were born with brain abnormalities and/or microcephaly,
- 2 in 10 (20%) had neural tube defects and other early brain abnormalities,
- 1 in 10 (9%) had eye abnormalities without brain abnormalities, and
- Over 2 in 10 (22%) had nervous system damage, including joint problems and deafness, without brain or eye abnormalities.

These results emphasize our continued need to collaborate to protect mothers and babies.

CDC researchers plan to continue analysis with 2017 birth defects data to see if this trend continues and increases, since many pregnant women exposed to Zika virus in late 2016 gave birth in 2017.

Reference: Delaney A, Mai C, Smoots A, et al. Population-Based Surveillance of Birth Defects Potentially Related to Zika Virus Infection — 15 States and U.S. Territories, 2016. *MMWR Morb Mortal Wkly Rep* 2018;67:91–96. DOI: <http://dx.doi.org/10.15585/mmwr.mm6703a2>.

ZIKA & BIRTH DEFECTS

US Zika Pregnancy and Infant Registry and Birth Defects Surveillance Systems

Congenital Zika virus infection has been linked to microcephaly and other birth defects yet the total range of effects of Zika virus infection on these infants remains unknown. The US Zika Pregnancy and Infant Registry (USZPIR) collects information about pregnant women in the United States with laboratory evidence of possible Zika virus infection and their infants.

Pregnancies completed from December 1, 2015 to March 31, 2018 are included and tracked in the USZPIR. In early spring of 2018, the CDC shifted focus of the USZPIR to the follow up of infants with possible congenital Zika virus infection until at least their second birthday. Medical information is needed for these infants at 2, 6, 12, 18 and 24 months even if they appear healthy at birth. Data collected by the USZPIR and Birth Defects Surveillance Systems allow CDC scientists to better understand the health effects of Zika virus, update clinical guidance and connect families to services they need. More information can be found on the CDC's Registry and Zika Birth Defects Surveillance webpages (<https://www.cdc.gov/pregnancy/zika/research/registry.html> and <https://www.cdc.gov/pregnancy/zika/research/birth-defects.html>).



Prevention

- Pregnant women are advised to avoid travel to areas with risk of Zika.
- Providers can refer to CDC's interactive map of Zika risk areas when counseling patients about travel (<https://wwwnc.cdc.gov/travel/page/zika-information>).
- Pregnant women who must travel to or who live in areas with risk of Zika are advised to take precautions to prevent mosquito bites and sexual transmission (<https://www.cdc.gov/zika/prevention/plan-for-travel.html>).



Pediatricians are directed to ask about potential maternal and congenital Zika exposure for every newborn.

FAMILY SUPPORT

Families of babies affected by Zika virus face many challenges. Although some infants may be born with significant health issues, others will appear healthy and develop problems over time. Links to resources and services to promote healthy development and assist parents and providers of children with special needs can be found at: <https://www.cdc.gov/pregnancy/zika/testing-follow-up/additional-resources.html>.

The CDC offers comprehensive resources for families at <https://www.cdc.gov/pregnancy/zika/family/links.html>. The websites below provide Zika-specific guidance and support for families and caregivers.

- CDC: What Parents Should Know About Zika
<https://www.cdc.gov/pregnancy/zika/family/index.html>
- HealthyChildren.org
<https://www.healthychildren.org/English/ages-stages/prenatal/Pages/Zika-Virus.aspx>

Zika Care Connect

Zika Care Connect (ZCC) aims to improve access to specialty healthcare services for the management of Zika virus infection during pregnancy and outcomes in infants caused by Zika. Developed by CDC and maintained in collaboration with March of Dimes, ZCC provides a searchable network of healthcare professionals who care for patients affected by Zika. ZCC will help families find specialty healthcare services and identify providers whose practice meets their needs (e.g., location, language, insurance). Healthcare providers can also use ZCC as a resource for coordinating care for patients affected by Zika who need access to other specialists. Visit the ZCC NJ webpage at: <https://www.zikacareconnect.org/patients-and-family/state-and-local-resources/new-jersey/>.

MotherToBaby

MotherToBaby, a service of the non-profit Organization of Teratology Information Specialists, provides free evidence-based information to families, providers, and the public about medications and other exposures during pregnancy and breastfeeding. Experts are available to answer questions about possible Zika virus infection or diagnosis during pregnancy and risk to the baby in English or Spanish by phone or chat. Call 1-866-626-6847 or text 855-999-3525. Live chat is available on the MotherToBaby website: <https://mothertobaby.org>.



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