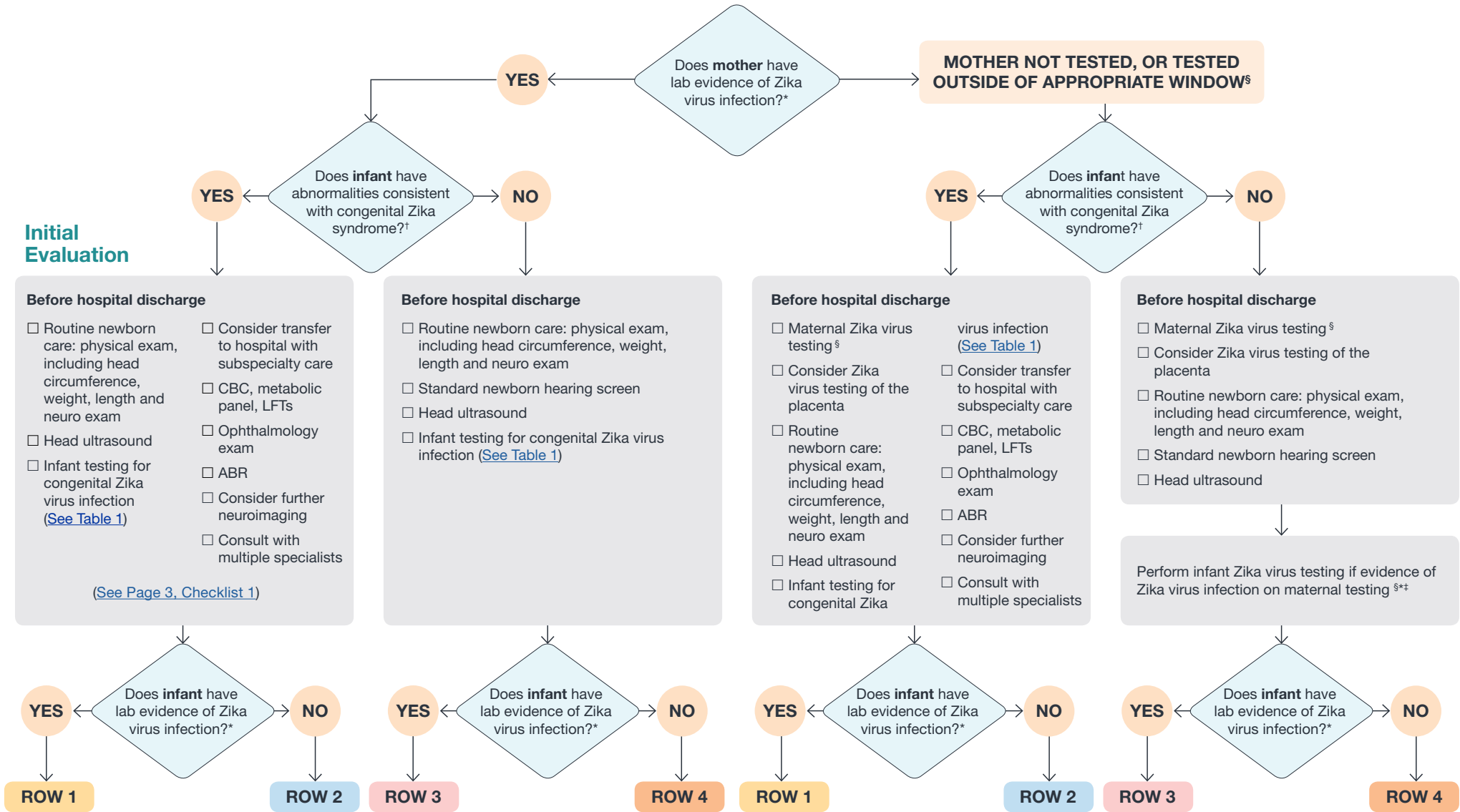




# INITIAL EVALUATION AND OUTPATIENT MANAGEMENT DURING THE FIRST 12 MONTHS OF LIFE FOR INFANTS WITH POSSIBLE CONGENITAL ZIKA VIRUS INFECTION

## Initial Evaluation



Follow management and follow-up recommendations indicated in Outpatient Management Checklist

**Outpatient Management Checklist\*\***

	2 weeks	1 month	2 months	3 months	4-6 months	9 months	12 months
<b>ROW 1</b> Infant with abnormalities consistent with congenital Zika syndrome† and laboratory evidence of Zika virus infection*	<input type="checkbox"/> Thyroid screen (TSH & T4)	<input type="checkbox"/> Neuro exam	<input type="checkbox"/> Neuro exam	<input type="checkbox"/> Thyroid screen (TSH & T4) <input type="checkbox"/> Ophthalmology exam	<input type="checkbox"/> Repeat audiology evaluation (ABR)		
	<input type="checkbox"/> Routine preventive health care including monitoring of feeding and growth <input type="checkbox"/> Routine and congenital infection-specific anticipatory guidance <input type="checkbox"/> Referral to specialists, including evaluation of other causes of congenital anomalies as needed <input type="checkbox"/> Referral to early intervention services (See Page 3, Checklist 2)						
<b>ROW 2</b> Infant with abnormalities consistent with congenital Zika syndrome† and negative for Zika virus infection	<input type="checkbox"/> Continue to evaluate for other causes of congenital anomalies <input type="checkbox"/> Further management as clinically indicated						
<b>ROW 3</b> Infant with no abnormalities consistent with congenital Zika syndrome† and laboratory evidence of Zika virus infection*	<input type="checkbox"/> Ophthalmology exam <input type="checkbox"/> ABR				<input type="checkbox"/> Consider repeat ABR	<input type="checkbox"/> Behavioral audiology evaluation if ABR not done at 4-6 months	
	<input type="checkbox"/> Monitoring of growth parameters (HC, weight, and height), developmental monitoring by caregivers and health care providers, and age-appropriate developmental screening at well-child visits (See Page 3, Checklist 3)						
<b>ROW 4</b> Infant with no abnormalities consistent with congenital Zika syndrome† and negative for Zika virus infection	<input type="checkbox"/> Monitoring of growth parameters (HC, weight, and height), developmental monitoring by caregivers and health care providers, and age-appropriate developmental screening at well-child visits						

**Abbreviations:** rRT-PCR = real-time reverse transcription–polymerase chain reaction; IgM = immunoglobulin M; CBC = complete blood count; LFTs = liver function tests, PE = physical examination; US = ultrasound; ABR = auditory brainstem response; CT = computed tomography; MRI = magnetic resonance imaging; neuro = neurologic; HC = Head (occipitofrontal) circumference

\* Laboratory evidence of Zika virus infection includes: (1) Zika virus RNA detected by real-time reverse transcription–polymerase chain reaction (rRT-PCR) in any clinical specimen; or (2) positive Zika virus IgM. Confirmatory neutralizing antibody titers are needed in addition to IgM for maternal Zika virus infection. Cord blood and testing of the placenta not recommended for infant testing for Zika virus.

\*\* Outpatient management checklist for infants born to a woman with laboratory evidence of confirmed or possible Zika virus infection.

† Findings consistent with congenital Zika virus syndrome can include microcephaly, intracranial calcifications, or other brain or eye abnormalities.

§ Mothers who travelled to or reside in an area of active Zika transmission or who had unprotected sex with a partner who had traveled to or resided in an area with active transmission should be tested by rRT-PCR within 2 weeks of exposure or symptom onset, or IgM within 2-12 weeks of exposure or symptom onset. Because of the decline in IgM antibody and viral RNA levels over time, negative maternal testing 12 weeks after exposure or symptom onset does not rule out maternal infection.

‡ Infant testing is recommended within the first two days after birth; if testing is performed later, it can be difficult to distinguish congenital infection from perinatally or postnatally acquired infection.

TABLE 1

**Interpretation of results of laboratory testing of infant's blood, urine and/or cerebrospinal fluid for evidence of congenital Zika virus infection**

Infant test results*		Interpretation
<b>rRT-PCR</b>	<b>IgM</b>	
Positive	Positive or Negative	Confirmed congenital Zika virus infection
Negative	Positive	Probable congenital Zika virus infection <sup>+</sup>
Negative	Negative	Negative for congenital Zika virus infection <sup>+</sup>

**Abbreviations:** rRT-PCR = real-time reverse transcription-polymerase chain reaction; IgM = Immunoglobulin M

\* Infant serum, urine or cerebrospinal fluid.

+ 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 (PRNT).

**CHECKLIST 1**

**Initial clinical evaluation & management of infants with laboratory evidence of Zika virus infection and abnormalities consistent with congenital Zika syndrome <sup>†</sup>**

**Consultation with:**

- Neurologist for determination of appropriate neuroimaging and additional evaluation.
- Infectious disease specialist for diagnostic evaluation of other congenital infections (e.g. syphilis, toxoplasmosis, rubella, cytomegalovirus infection, lymphocytic choriomeningitis virus infection, and herpes simplex virus infection).
- Ophthalmologist for comprehensive eye exam and evaluation for possible cortical visual impairment prior to discharge from hospital or within 1 month of birth.
- Endocrinologist for evaluation for hypothalamic or pituitary dysfunction.
- Clinical geneticist to evaluate for other causes of microcephaly or other anomalies if present.

**Consider consultation with:**

- Orthopedist, physiatrist and physical therapist for the management of hypertonia, club foot or arthrogrypotic-like conditions.
- Pulmonologist or otolaryngologist for concerns about aspiration.
- Lactation specialist, nutritionist, gastroenterologist, or speech or occupational therapist for the management of feeding issues.
- Perform ABR to assess hearing.
- Perform complete blood count and metabolic panel, including liver function tests.
- Provide family and supportive services.

**CHECKLIST 2**

**Outpatient management of infants with laboratory evidence of Zika virus infection and abnormalities consistent with congenital Zika syndrome <sup>†</sup>**

- A medical home should be established, and visits with primary care provider should occur monthly for at least the first 6 months of life.
  - Follow growth parameters, monitor development, encourage parents and other caregivers to monitor child's development, provide routine immunizations and anticipatory guidance, psychosocial support, and to ensure infants receive necessary testing and consultations.
- Neurologic examination by the primary care provider at 1 and 2 months of age. Refer to neurology for any abnormalities, or for any parental or provider concerns.
- Refer to developmental specialist and early intervention services.
- Repeat a comprehensive ophthalmologic exam at 3 months of age, and refer to ophthalmology for any abnormal findings, or for any parental or provider concerns.
- Repeat ABR testing at 4-6 months of age, and follow up on any abnormal findings, or for any parental or provider concerns.
- Repeat testing for hypothyroidism (i.e. TSH, total T4 and estimated free T4) at 2 weeks and 3 months of age, even if the initial testing was normal. Refer to endocrinology for any abnormal findings.
- Provide family and supportive services.

**CHECKLIST 3**

**Outpatient management of infants with laboratory evidence of Zika virus infection, but without abnormalities consistent with congenital Zika syndrome <sup>†</sup>**

- A medical home should be established.
  - Follow growth parameters, perform developmental monitoring at each well child visit and encourage parents and other caregivers to monitor child's development.
- Emphasize anticipatory guidance for families regarding developmental milestones, feeding and growth, sleep and irritability, and abnormal movements.
- Use a standardized, validated developmental screening tool at 9 months as currently recommended, or earlier for any parental or provider concerns.
- Referral to ophthalmology for comprehensive eye exam within one month of birth. Perform vision screening and assess visual regard at every well child visit, and refer to ophthalmology for any abnormal findings, or for any parental or provider concerns.
- Perform ABR within one month of birth. Perform behavioral diagnostic testing at 9 months of age, or consider repeat ABR at 4-6 months. Refer to audiology for any abnormal findings, or for any parental or provider concerns.
- Provide family and supportive services.