



# **ZIKA— An obstetric perspective**

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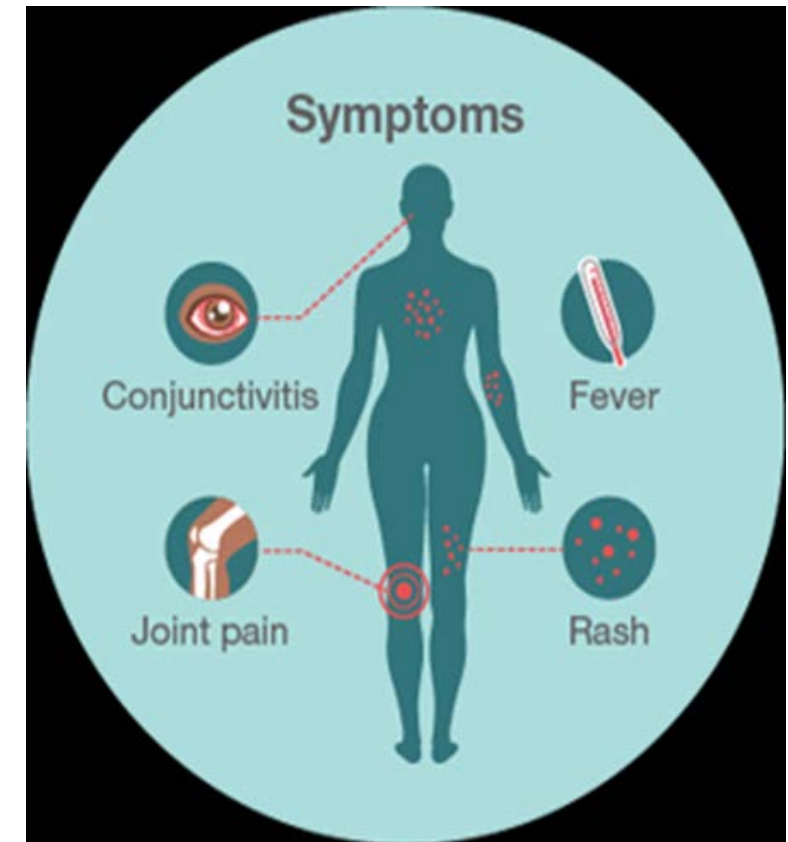


# Objectives

- Determine when to test pregnant women for Zika virus
- Understand how to complete U.S. Zika Pregnancy Registry Maternal Health History forms and submit to the local health department correctly
- Understand the management of pregnant women with lab evidence of Zika
- Coordinate care for testing and follow-up management of infant with the infant's pediatrician and local health department
- Prevention...

# Zika Virus Disease

- A mild viral disease spread primarily through the bite of an infected mosquito
- Many people infected with Zika virus won't have symptoms or will only have mild symptoms
- The most common symptoms of Zika are:
  - Fever
  - Rash
  - Joint pain
  - Conjunctivitis (red eyes)
  - Muscle pain
  - Headache



# Zika Virus Disease

## The Good News:

- Symptoms only last for several days to a week.
- People usually don't get sick enough to go to the hospital, and they very rarely die of Zika.
- Once a person has been infected with Zika, they are likely to be protected from future infections.

## The Bad..and Scary..News:

- Late in 2015, Zika disease in pregnant women was linked fetal malformations, miscarriage and still birth.
- There have also been increased reports of Guillain-Barre syndrome in areas affected by Zika



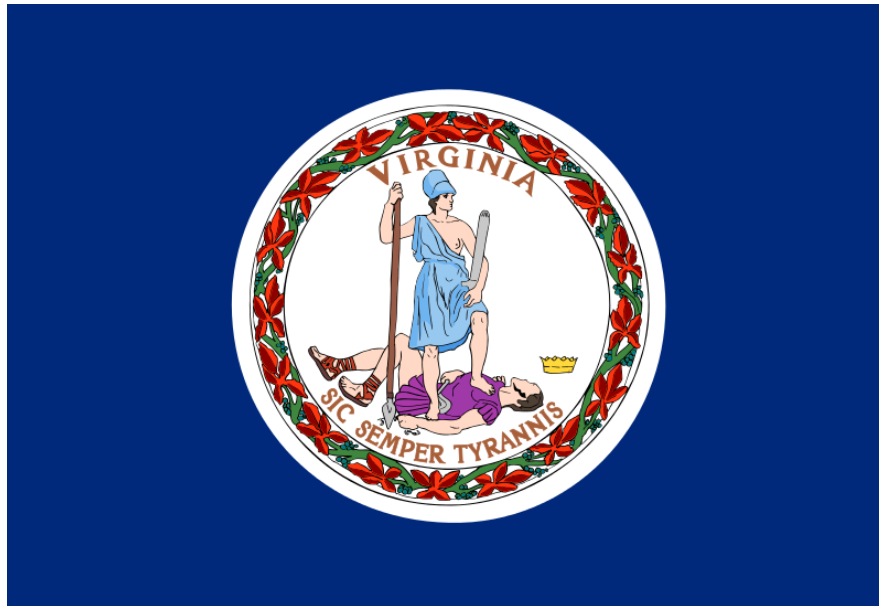
# The Risks....

- Zika virus infection in pregnant women has been linked with a fetal birth defect called microcephaly
- Other defects linked to Zika infection in pregnant women include:
  - Miscarriage
  - Stillbirth
  - Eye defects
  - Hearing defects
  - Poor fetal growth



Zika Is Linked To Microcephaly, Health Agencies Confirm  
March 31, 2016  
NPR Morning Edition

- What does this mean for Virginia?
  - Overall risk of wide-spread Zika transmission via infected mosquitos is low
  - Probably reasonable for pregnant women to take measures to decrease risk of bites, but overall risk of contracting Zika currently in Virginia is very, very low.
  - No local transmission yet in Virginia (all cases associated with travel).



**When and how should pregnant women with possible sexual transmission or travel exposure to Zika virus be tested?**

# CDC Recommendations: Who Should be Tested



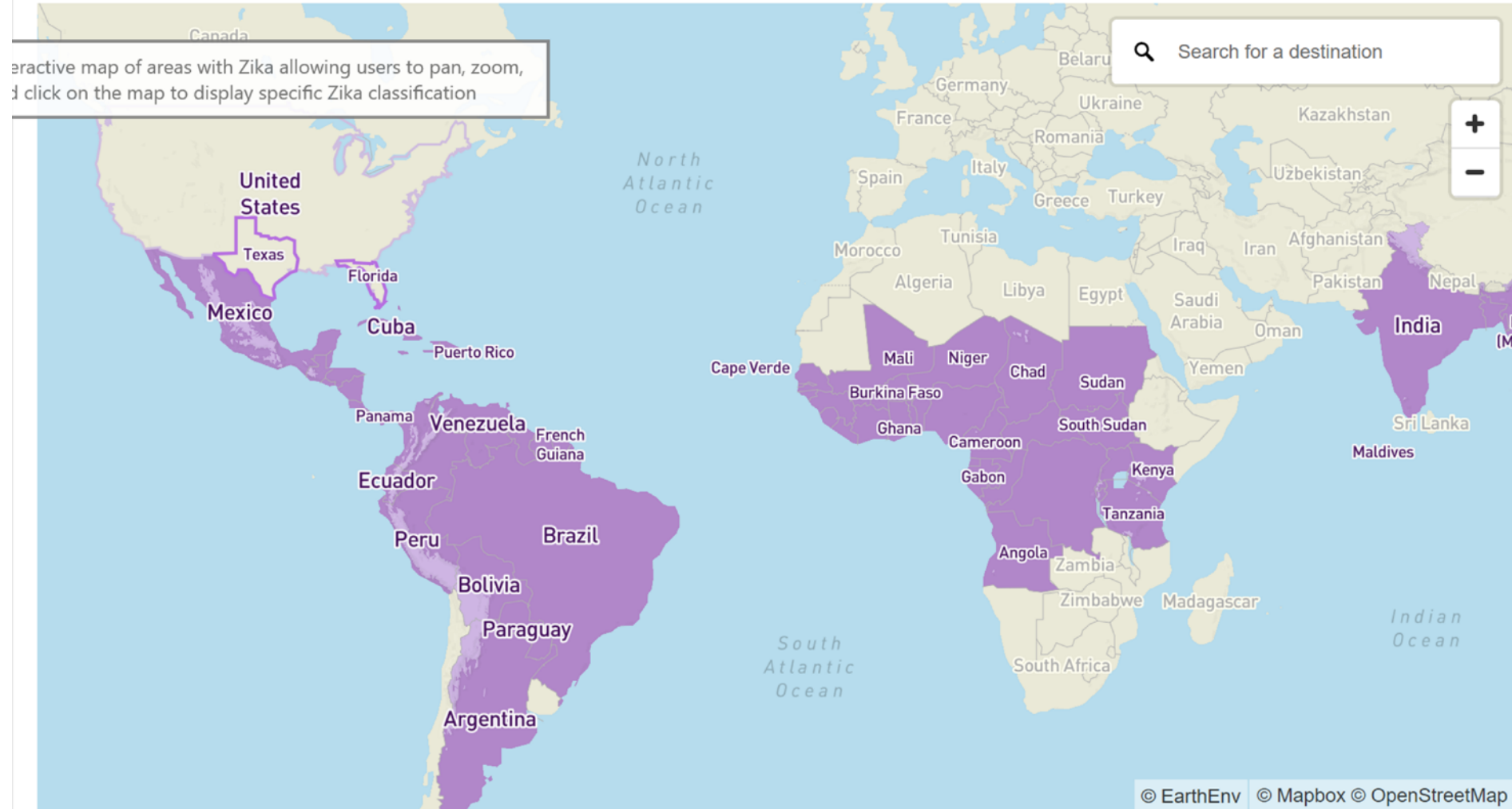
**Pregnant women with possible exposure to Zika virus and signs or symptoms should be tested for Zika virus infection**

**Pregnant women with possible exposure to Zika virus who do not report symptoms also should be tested**

**Pregnant women with ongoing risk of Zika virus exposure and who do not report symptoms should be tested in the 1<sup>st</sup> and 2<sup>nd</sup> trimesters of pregnancy**


## World Map

Search for a place by name or zoom and click on the map to see CDC's travel recommendations for Zika in that country. Follow the link in the pop-up message to read CDC's Zika travel health notice for that country.



## International areas

Zika Travel Recommendation: ☒ Low elevation ☐ High elevation

No Known Zika: 

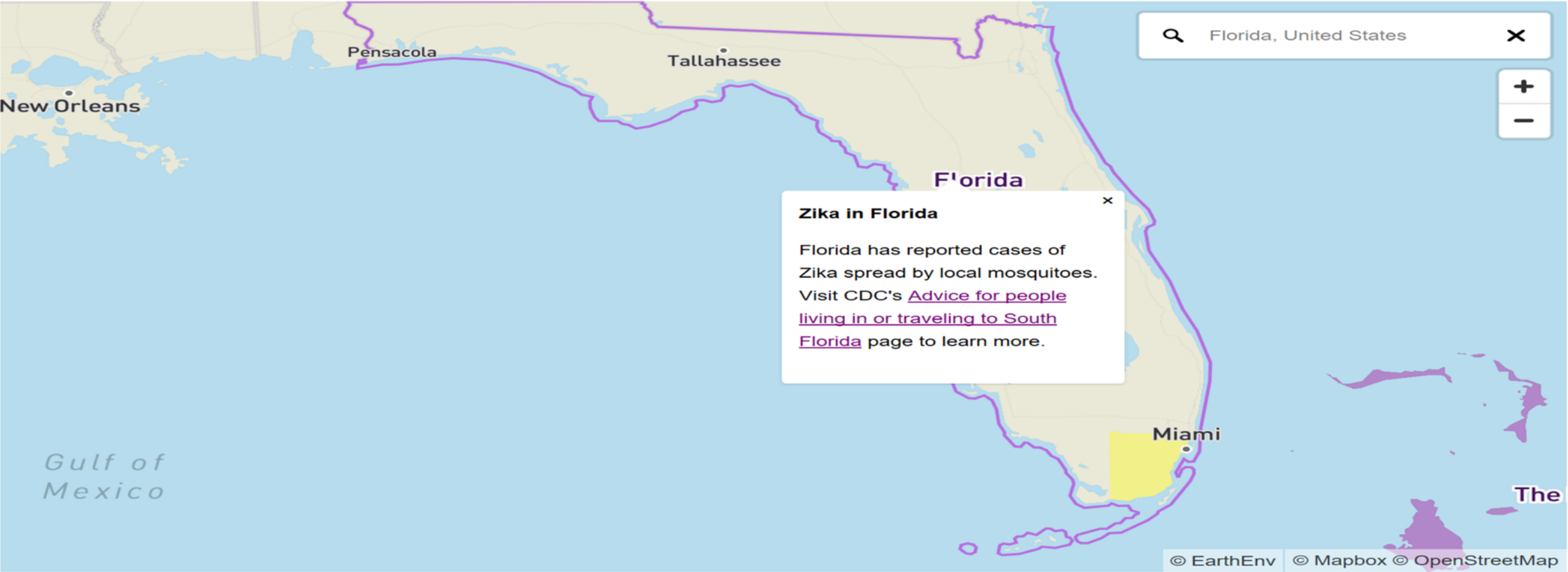
# World Map of Areas with Risk of Zika



Search by location to find out if it's safe to travel.

## World Map

Search for a place by name or zoom and click on the map to see CDC's travel recommendations for Zika in that country. Follow the link in the pop-up message to read CDC's Zika travel health notice for that country.





## Zika Virus Home

About Zika +

Prevention +

Transmission +

Symptoms, Testing, & Treatment +

Areas with Risk of Zika -

All Countries and Territories

Country Classification

US Zika Guidance

Advice for People Living In or Traveling to Brownsville, Texas

Advice for People Living In or Traveling to South Florida

South Florida Maps

Zika Is In Your Area: What to Do

Reporting and Surveillance +

Mosquito Control +

Health Effects & Risks +

Pregnancy +

[CDC](#) > [Zika Virus Home](#) > [Areas with Risk of Zika](#)

## Advice for people living in or traveling to South Florida



CDC has issued guidance for people living in or traveling to Miami-Dade County, Florida. CDC designates areas for Zika virus transmission prevention in the continental United States and Hawaii as red or yellow. Miami-Dade County is designated as a Zika cautionary (yellow) area. See CDC's [travel, testing, and pregnancy planning guidance](#) for areas with reported mosquito-borne spread of Zika virus.

### Travel

- Pregnant women should consider postponing travel to Miami-Dade County.

### Prevention

- Women and men who live in or travel to Miami-Dade County should remain aware of active Zika virus transmission and strictly follow steps to [prevent mosquito bites](#).
- Pregnant women and their partners who live in or travel to Miami-Dade County should [consistently and correctly use condoms](#) every time they have sex (including vaginal, anal, and oral sex) to prevent Zika virus infection, or they should not have sex during the pregnancy. For more information, see CDC's [travel, testing, and pregnancy planning guidance](#) for areas with reported mosquito-borne spread of Zika virus.

### Testing and Diagnosis

- Pregnant women who lived in, traveled to, or had sex without a condom with someone who lived in or traveled to Miami-Dade County after August 1, 2016, should be [tested for Zika virus](#)

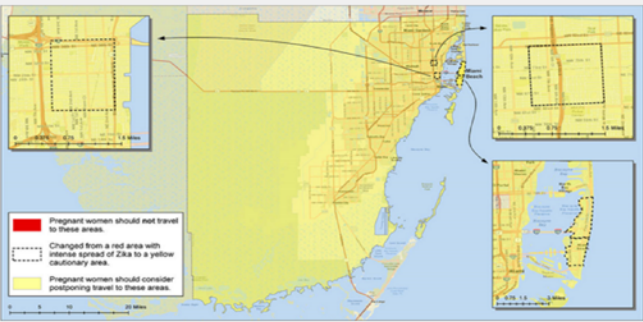
### Pregnancy Planning

Language: English ▼

## See Also

[Guidance for Areas with Local Zika Virus Transmission in the US](#)

[Advice for people living in or traveling to Brownsville, Texas](#)



Miami-Dade County, FL. Red shows areas where pregnant women should not travel. Yellow shows areas where pregnant women should consider postponing travel.

# Confirmation of Zika Infection

- Via blood test
  - Not all pregnant women who contract Zika have fetal malformations or abnormalities
  - Ultrasound can help detect some malformations prior to birth
- Who do we test?
  - Pregnant women living in or who have travelled to area with ongoing Zika transmission regardless of symptoms
    - Screening for Zika as a routine part of care in pregnancy in endemic areas
  - Pregnant women who have had sexual intercourse without barrier contraception with someone who has recent travel to area of ongoing Zika transmission
  - Newborns of Zika positive mom's
    - Breastfeeding okay!!



# Testing pregnant women

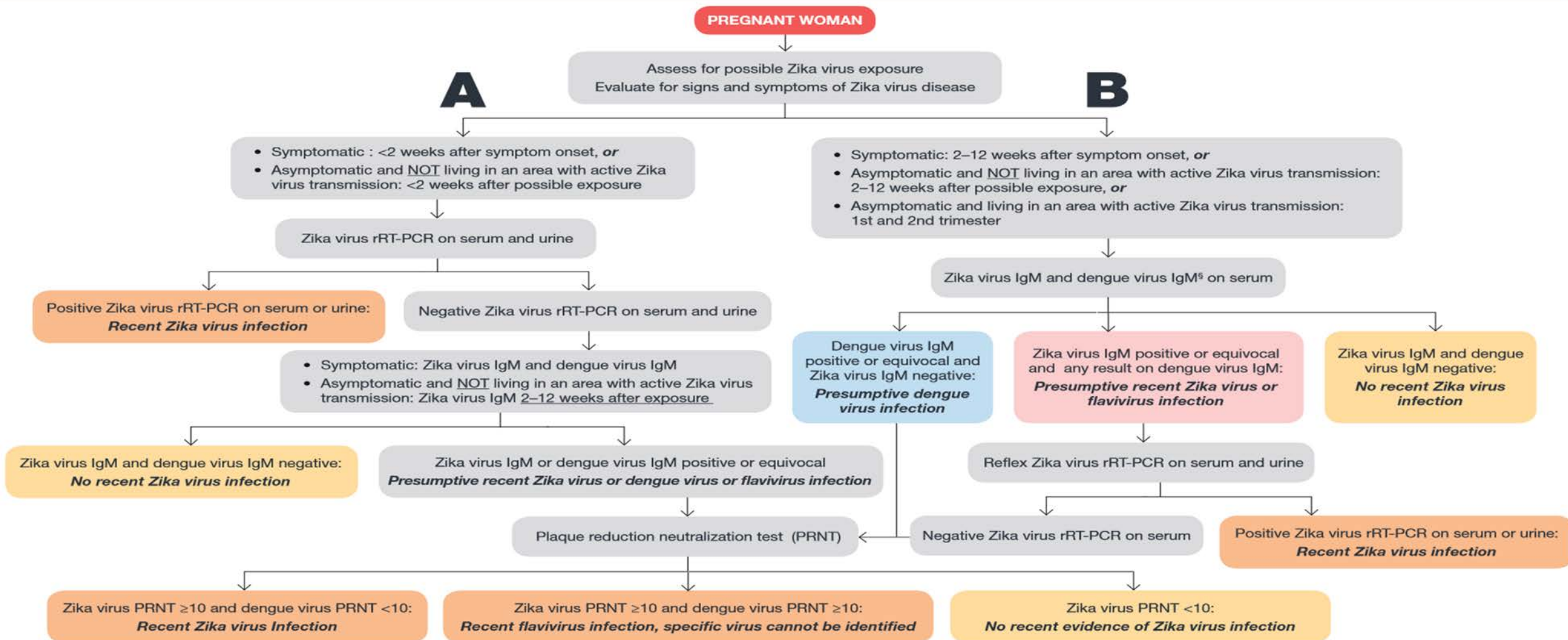
- Symptomatic:
  - *rRT-PCR of serum and urine up to 2 weeks after symptom onset*
  - *Zika IgM → if positive, rRT-PCR 2-12 weeks after symptoms onset*
- Asymptomatic: living in area of ongoing Zika transmission
  - Zika IgM included as part of routine serum screening in both the 1<sup>st</sup> and 2<sup>nd</sup> trimesters
    - *Reflex rRT-PCR for any woman who is Zika IgM positive*
- Asymptomatic: travel to area with ongoing Zika transmission OR sexual intercourse without barrier contraception with someone who has recent travel to area of ongoing Zika transmission:
  - <2 weeks since last date of possible exposure?
    - *rRT-PCR, followed by Zika IgM testing 2 weeks later*
  - 2-12 weeks after last date of possible exposure?
    - *Zika IgM → if positive, rRT-PCR*

Symptom Status	Timing <sup>b</sup>	Ongoing Exposure	First Test	Follow-On Test	Comments
Symptomatic	< 2 weeks	No or Yes  (Applies to patients with or without ongoing exposure)	Zika RNA NAT (urine, serum, whole blood) <sup>L, M</sup>	If ZIKV RNA NAT negative, IgM for Zika and dengue <sup>d</sup>	IgM done (preferably same sample as ZIKV RNA NAT or ideally sample drawn at same time as ZIKV RNA NAT)
Symptomatic	2–12 weeks	No or Yes  (Applies to patients with or without ongoing exposure)	IgM for Zika and dengue <sup>e</sup>	If Zika IgM positive or equivocal, Zika RNA NAT (preferably same sample) <sup>c,k</sup>  If Zika IgM negative but dengue IgM positive or equivocal, PRNT <sup>N</sup> testing.	If ZIKV RNA NAT negative, do PRNT <sup>N</sup> on same ZIKV RNA NAT sample
Asymptomatic <sup>f</sup>	< 2 weeks	No	Zika RNA NAT (urine, serum, whole blood) <sup>L,M</sup>	If ZIKV RNA NAT negative, IgM for Zika ONLY <sup>d</sup>	IgM done (different sample drawn at a later date, 2 and 12 weeks after exposure)
Asymptomatic <sup>f</sup>	2–12 weeks	No	IgM for Zika <sup>e</sup>	If Zika IgM positive or equivocal, Zika RNA NAT (preferably same sample) <sup>c,k</sup>	If ZIKV RNA NAT PCR negative, do PRNT <sup>N</sup> on same ZIKV RNA NAT sample
Symptomatic OR asymptomatic <sup>f</sup>	> 12 weeks <sup>g</sup>	No	<b>Consider</b> IgM <sup>h</sup>	ZIKV RNA NAT (serum and urine) if fetal abnormalities present	<b>Consider</b> serial ultrasound <sup>i</sup>
Asymptomatic <sup>f</sup>	Ongoing exposure <sup>j</sup>	Yes	IgM for Zika in 1 <sup>st</sup> trimester; repeat in 2 <sup>nd</sup> trimester <sup>j</sup>	If Zika IgM positive or equivocal, Zika RNA NAT (preferably same sample) <sup>c</sup>	If ZIKV RNA NAT negative, do PRNT <sup>N</sup> on same ZIKV RNA NAT sample

# UPDATED INTERIM PREGNANCY GUIDANCE:



Testing and interpretation recommendations<sup>†, §, ¶</sup> for a pregnant woman with possible exposure to Zika virus<sup>\*\*</sup> — United States (including U.S. territories)



**Abbreviations:** IgM = immunoglobulin M; PRNT = plaque reduction neutralization test; rRT-PCR = real-time reverse transcription–polymerase chain reaction.

\* A pregnant woman is considered symptomatic if one or more signs or symptoms (fever, rash, arthralgia, or conjunctivitis) consistent with Zika virus disease is reported whereas a pregnant woman is considered asymptomatic if symptoms are NOT reported.

† Testing includes Zika virus rRT-PCR on serum and urine samples, Zika virus and dengue virus Immunoglobulin

§ Dengue IgM antibody testing is recommended only for symptomatic pregnant women.

¶ If Zika virus rRT-PCR testing is requested from laboratories without IgM antibody testing capacity or a process to forward specimens to another testing laboratory, storing of additional serum samples is recommended for IgM antibody testing in the event of a rRT-PCR negative result.

\*\* Possible exposure to Zika virus includes travel to or residence in an area with active Zika virus transmission (<http://www.wnc.cdc.gov/travel/notices/>), or sex (vaginal sex (penis-to-vagina sex), anal sex (penis-to-anus sex), oral

# How to order the test?

- Contact your local Health Department
  - Tell them you have a patient who you believe needs to be screened for Zika virus
  - Fax Test approval form to them (please include call back phone number!!)
  - Form will be reviewed (quick turnaround times during business hours) and you will get a call approving your patient for screening
  - Complete the DCLS “Green Form” from OUR LAB!
  - Blood drawn at our lab and sent to state lab for processing
    - Turnaround ~10-15 days



# Test Approval Form

# DCLS Green Sheet

## Virginia Department of Health Zika Virus Patient Test Approval Form

**Instructions:** Complete one form for each patient approved for Zika virus testing. The completed form should be sent with the specimen to DCLS for testing. A copy of the form should be provided to the health department; if emailing the completed form, please encrypt the document with a password and send the password in a separate email.

### PATIENT INFORMATION

Last name:	First name:	Middle Initial:	Telephone numbers: Home: _____ Work: _____	Cell: _____ - _____ - _____
Address:		City or county of residence:	Date of Birth: ____ / ____ / ____	
		State: _____ Zip code: _____	Sex: <input type="radio"/> Male <input type="radio"/> Female <input type="radio"/> Unknown	

Pregnant woman: Yes ☐ No ☐

If yes, then specify:

- ☐ Has a symptomatic sexual partner with (1) Travel to Zika-affected area, or (2) Lab-confirmed Zika infection  
☐ Has had fetal ultrasound detecting microcephaly or intracranial calcifications in current pregnancy  
☐ Experienced miscarriage or fetal loss, specify date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

### Check all that apply for suspected exposure to Zika virus:

- ☐ Residence in or travel to an area with ongoing Zika virus transmission  
☐ Sexual contact  
☐ Congenital infection  
☐ Local vector-borne transmission  
☐ Other exposures or special situations (circle those that apply or describe): (1) Lab exposure, (2) Blood/organ recipient, or (3) Developed Guillain-Barré syndrome not associated with another diagnosed etiology, or (4) Other situation, describe: \_\_\_\_\_

### CLINICAL SIGNS AND SYMPTOMS

	Yes	No	Unk		Yes	No	Unk
Is/was patient symptomatic?				Vomiting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If yes, then specify				Nausea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Onset date: ____ / ____ / ____				Retro-orbital eye pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duration of symptoms (days) ____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Myalgia (muscle aches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fever (either subjective or measured)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Arthritis (joint pain and swelling)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If measured, specify max temp: ____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Leukopenia (low WBC count)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Arthralgia (joint pain)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Thrombocytopenia (low platelet count)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rash	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Other, specify: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conjunctivitis (red eyes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				

### TRAVEL HISTORY (Within past 12 weeks)

	Yes	No	Unk	Location	Dates	Describe
Have relevant travel outside U.S.?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
Have travel within U.S. or Virginia?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			

### LABORATORY FINDINGS (Provide lab results below and attach a copy of lab results)

Specimen #	Specimen Collection Date	Specimen Source (e.g., serum, urine, CSF, etc)	Test (e.g., chikungunya, dengue, Zika)	Test Type (e.g., EIA-IgM, EIA-IgG, RT-PCR, PRNT)	Test Result (Pos, Neg, Equiv), Quantify:	Lab Name-- City, State

### NOTES

Chik/Denque/Zika Testing

COMMONWEALTH OF VIRGINIA - DEPARTMENT OF GENERAL SERVICES  
Division of Consolidated Laboratory Services  
600 N 5<sup>th</sup> St. Richmond, Va. 23219

## Clinical Microbiology/Virology Request Form

### Patient Information (Please Print)

Please complete all highlighted sections. Thank you

Name	_____ Last First Middle Initial	DOB	____/____/____ mm dd yyyy	Age	____	Sex	<input type="radio"/> M <input type="radio"/> F
Pt Address	_____ City State Zip Code						
City/County of Residence _____							
Medical Record/Chart/Accession# _____				Patient ID _____			
Marital Status: <input type="radio"/> single <input type="radio"/> married <input type="radio"/> separated <input type="radio"/> divorced <input type="radio"/> widowed <input type="radio"/> unknown							
Race: <input type="radio"/> Black <input type="radio"/> White <input type="radio"/> Asian <input type="radio"/> AI/AN <input type="radio"/> NH/PI <input type="radio"/> Other _____ Ethnicity: <input type="radio"/> Hispanic/Latino <input type="radio"/> Not-Hispanic/Latino							
(check all that apply)							

### Submitter Information

Submitter Code #	760	Site code	760	FIPS code	760
Send Report to:					
Submitter	RICHMOND CITY HEALTH DISTRICT			Submitter Phone # 804-205-3752	
(Name of Health Dept, Hospital &/or private Clinician)					
Submitter Address	400 E. CARY STREET		City	RICHMOND	State VA Zip code 23219
Attending Clinician _____					
Attending Clinician Phone # _____					
District or PH Contact OKEY UTAH					
District or PH Contact Phone # 804-205-3752					

<input type="checkbox"/> STD	<input type="checkbox"/> ATS	<input type="checkbox"/> DCJ	<input type="checkbox"/> EP	<input type="checkbox"/> GYN	<input type="checkbox"/> Priv Phys
<input type="checkbox"/> OB/prenatal care	<input type="checkbox"/> AHC	<input type="checkbox"/> Field	<input type="checkbox"/> IMM	<input type="checkbox"/> Job Corp	<input type="checkbox"/> Peds
<input type="checkbox"/> TB	<input type="checkbox"/> GMC	<input type="checkbox"/> CHC	<input type="checkbox"/> DTC	<input type="checkbox"/> Refugee	<input type="checkbox"/> SOI
<input checked="" type="radio"/> Hospital	<input type="checkbox"/> OCMC	<input type="checkbox"/> Student HC	<input type="checkbox"/> Other _____		

### Patient Medical History

Disease suspected/Diagnosed	ZIKA VIRUS INFECTION
Signs/Symptoms	
<input type="checkbox"/> Asymptomatic <input type="checkbox"/> Fever <input type="checkbox"/> Respiratory <input type="checkbox"/> Bloody sputum	Date of Onset: ____ / ____ / ____ mm dd yyyy
<input type="checkbox"/> Cough <input type="checkbox"/> Productive cough <input type="checkbox"/> Rash <input type="checkbox"/> Vomiting	Decreased Date: ____ / ____ / ____ mm dd yyyy
<input type="checkbox"/> Diarrhea <input type="checkbox"/> Stool + Blood <input type="checkbox"/> Stool + Mucous <input type="checkbox"/> Abdominal Pain	
<input type="checkbox"/> Apnea <input type="checkbox"/> SIDS <input type="checkbox"/> Sudden Unexplained Death	
<input type="checkbox"/> Other _____	
Recent Exposure (if applicable) <input type="checkbox"/> Birds <input type="checkbox"/> Ticks <input type="checkbox"/> Mosquitoes	Vaccine Administered _____ (Please specify) Vaccine Administration Date ____ / ____ / ____ mm dd yyyy
	Antibiotics/Anti-Viral Used _____ (Please specify) Antibiotics/Antiviral Start Date ____ / ____ / ____ mm dd yyyy

- **NOTE:**

Testing information must include the following:

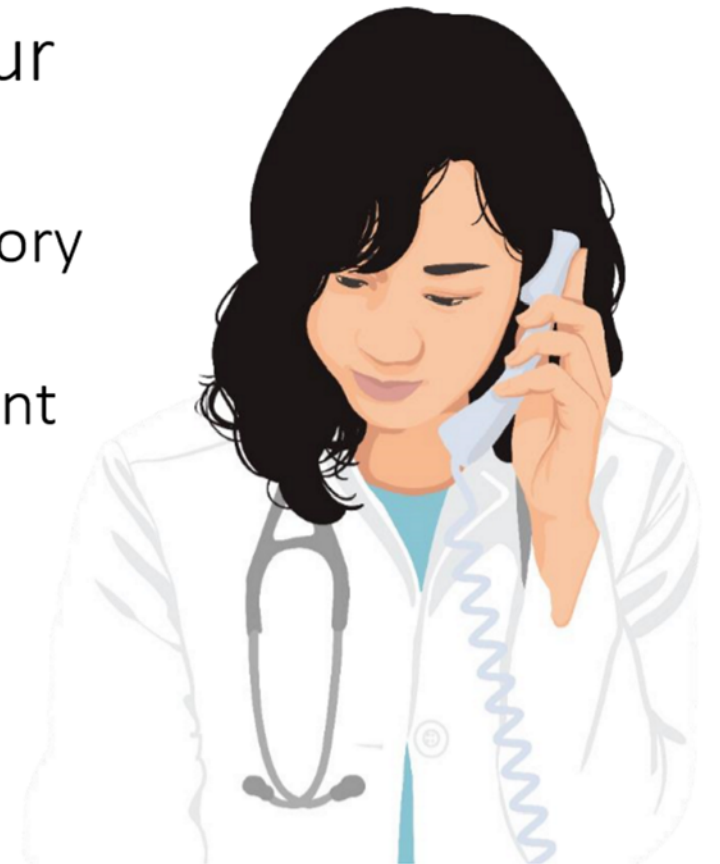
- **Date of onset of symptoms**
- **Date of specimen collection**
- **Any pertinent travel history** (Travel in the last 12 weeks)
- **The patient's name (REQUIRED for submitting specimens)**

# **Complete U.S. Zika Pregnancy Registry Maternal Health History forms and submit to LHD correctly and at the appropriate time**

- Including supplemental Imaging for 2<sup>nd</sup> and 3<sup>rd</sup> trimester ultrasounds

# Report Cases

- Zika virus infection and disease are nationally notifiable conditions
- The following cases should be reported to your state health department
  - Symptomatic and asymptomatic cases with laboratory evidence of Zika virus infection
  - Babies born with or without abnormalities consistent with congenital Zika syndrome and laboratory evidence of Zika virus infection





# Report Information to US Zika Pregnancy Registry

- **Purpose of registry**

- To monitor pregnancy and infant outcomes following Zika virus infection during pregnancy and to inform clinical guidance and public health response

- **More information**

- Available on the [US Zika Pregnancy Registry website](#)
  - To contact CDC Registry staff, call the CDC Emergency Operations Center watch desk at 770-488-7100 and ask for the Zika Pregnancy Hotline or email [ZIKApregnancy@cdc.gov](mailto:ZIKApregnancy@cdc.gov)
  - For non-urgent requests, call 800-CDC-INFO (800-232-4636)



## Roles of Health Department and Healthcare Providers

Health departments and healthcare providers play a critical role in ensuring the success of the US Zika Pregnancy Registry. Specific roles for health departments and healthcare providers are summarized in the table below.

Group	Identify pregnant women and infants who may be eligible for the USZPR	Report to the USZPR	Collect information about pregnancy and infant outcomes
Health Departments	Yes	Yes, report to CDC	Yes, collaborate with CDC
Healthcare Providers*	Yes	Yes, report to state, tribal, territorial or local health department	Yes, collaborate with state, tribal, territorial or local health department

## Zika Virus

Zika Virus Home	
About Zika	+
Prevention	+
Transmission	+
Symptoms, Testing, & Treatment	+
Areas with Risk of Zika	+
Reporting and Surveillance	–
Zika Cases in the US – 2017	+
Cases in Pregnant Women	

[CDC](#) > [Zika Virus Home](#) > [Reporting and Surveillance](#)

### US Zika Pregnancy Registry



Language: English ▾

Summary

To understand more about Zika virus infection, CDC established the US Zika Pregnancy Registry and is collaborating with state, tribal, local, and territorial health departments to collect information about pregnancy and infant outcomes following [laboratory evidence](#) of Zika virus infection during pregnancy. The data collected through this registry will be used to update recommendations for clinical care, to plan for services for pregnant women and families affected by Zika virus, and to improve prevention of Zika virus infection during pregnancy.

If you are a healthcare provider or health department and you have questions about the registry, please [email](#) or call [770-488-7100](tel:770-488-7100) and ask for the Zika Pregnancy Hotline.

## Health Departments: How to Participate

State, tribal, local, and territorial health departments can participate in the US Zika Pregnancy Registry. They can

- Identify pregnant women and infants eligible for Zika virus testing in accordance with state or CDC guidelines.
- Coordinate testing at a state public health laboratory or CDC for those eligible.
- Report information about pregnant women in the United States with laboratory evidence of Zika virus infection (positive or equivocal test results, regardless of whether they have symptoms) and information about periconceptionally, prenatally or perinatally exposed infants born to these women, including infants with congenital Zika virus infection
- Collect enhanced surveillance data about pregnant women and their infants who are eligible for the Registry.
- Work with CDC to determine state-specific methods for collecting and sharing data.

# Healthcare Providers: How to Participate

CDC and state, tribal, local, and territorial health departments request that healthcare providers participate in the US Zika Pregnancy Registry.

## *Obstetric healthcare providers can:*

- Report information about pregnant women with laboratory evidence of Zika virus to their state, tribal, local, or territorial health department.
- Collect pertinent clinical information about pregnant women and their infants on the Pregnancy and Zika Virus Disease Surveillance forms.
- Provide the information to state, tribal, local or territorial health departments or directly to CDC registry staff if asked to do so by local health officials.
- Notify state, tribal, local, or territorial health department staff or CDC registry staff of adverse events (e.g., spontaneous abortion, termination of pregnancy).

## *Pediatric healthcare providers can:*

- Identify and report suspected congenital Zika virus exposure to their state, tribal, local, or territorial health department for possible testing.
- Collect pertinent clinical information about infants born to women with laboratory evidence of Zika virus infection or infants with congenital Zika virus infection.
- Provide the information to state, tribal, local or territorial health departments or directly to CDC registry staff if asked to do so by local health officials.
- Notify state, tribal, local, or territorial health department staff or CDC registry staff of adverse events (e.g., perinatal or infant deaths).

Healthcare providers practicing in Puerto Rico should report information to the [Puerto Rico Zika Active Pregnancy Surveillance System \(ZAPSS\)](#) rather than to the US Zika Pregnancy Registry.

# **Medically manage pregnant women with lab evidence of Zika**

- Consider serial ultrasounds every 3-4 weeks to assess fetal anatomy and growth
- Decisions regarding amniocentesis should be individualized for each clinical circumstance



## Morbidity and Mortality Weekly Report (*MMWR*)

[CDC](#) > [MMWR](#)

### Vital Signs: Update on Zika Virus–Associated Birth Defects and Evaluation of All U.S. Infants with Congenital Zika Virus Exposure — U.S. Zika Pregnancy Registry, 2016

*Weekly* / April 7, 2017 / 66(13):366-373

#### **Key Points**

- In 2016, total of 1297 pregnancies with possible Zika infection reported to U.S. Zika Pregnancy Registry
- ~10% with lab confirmed Zika resulted in fetus/infant with Zika virus-associated birth defect
- Highest proportion of birth defects associated with 1<sup>st</sup> trimester infection
- Only 25% of infants from pregnancies with possible Zika infection reported post-natal imaging
- Identification and f/u of infants born to mother with lab confirmed Zika infection and infants with congenital Zika virus infection can ensure appropriate intervention services
- Additional information available at:
  - <http://www.cdc.vitalsigns/>



# Clinical management of a pregnant woman with suspected Zika virus infection

Interpretation of Laboratory Results*	Prenatal Management	Postnatal Management
<u>Recent Zika virus infection</u>	<ul style="list-style-type: none"><li>Consider serial ultrasounds every 3–4 weeks to assess fetal anatomy and growth<sup>†</sup></li><li>Decisions regarding amniocentesis should be individualized for each clinical circumstance<sup>§</sup></li></ul>	<b>LIVE BIRTHS:</b> <ul style="list-style-type: none"><li>Infant serum and infant urine should be tested for Zika virus Zika RNA NAT. Infant serum should be tested for Zika IgM. If CSF is obtained for other reasons, it can also be tested.**</li><li>Zika virus Zika RNA NAT and IHC staining of umbilical cord and placenta is recommended.<sup>‡</sup></li></ul> <b>FETAL LOSSES:</b> <ul style="list-style-type: none"><li>Zika virus Zika RNA NAT and IHC staining of fetal tissues is recommended.<sup>‡</sup></li></ul>
<u>Recent flavivirus infection; specific virus cannot be identified</u>		
<u>Presumptive recent Zika virus Infection***</u>	<ul style="list-style-type: none"><li>Consider serial ultrasounds every 3–4 weeks to assess fetal anatomy and growth<sup>†</sup></li><li>Amniocentesis might be considered; decision should be individualized for each clinical circumstance<sup>§</sup></li></ul>	<b>LIVE BIRTHS:</b> <ul style="list-style-type: none"><li>Infant serum and infant urine should be tested for Zika virus Zika RNA NAT. Infant serum should be tested for Zika IgM. If CSF is obtained for other reasons, it can also be tested. **</li><li>Zika virus Zika RNA NAT and IHC staining of umbilical cord and placenta should be considered.<sup>‡</sup></li></ul> <b>FETAL LOSSES:</b> <ul style="list-style-type: none"><li>Zika virus Zika RNA NAT and IHC staining of fetal tissues should be considered.<sup>‡</sup></li></ul>
<u>Presumptive recent flavivirus Infection***</u>		
<u>Recent dengue virus infection</u>	<ul style="list-style-type: none"><li>Clinical management in accordance with existing guidelines (<a href="http://apps.who.int/iris/bitstream/10665/44188/1/9789241547871_eng.pdf">http://apps.who.int/iris/bitstream/10665/44188/1/9789241547871_eng.pdf</a>).</li></ul>	
<u>No evidence of Zika virus or dengue virus infection</u>	<ul style="list-style-type: none"><li>Prenatal ultrasound to evaluate for fetal abnormalities consistent with congenital Zika virus syndrome.<sup>†</sup><ul style="list-style-type: none"><li>Fetal abnormalities present: repeat Zika virus Zika RNA NAT and IgM test; base clinical management on corresponding laboratory results.</li><li>Fetal abnormalities absent: base obstetric care on the ongoing risk of Zika virus exposure to the pregnant woman.</li></ul></li></ul>	

# Prenatal Management: Confirmed or Presumptive Recent Zika Virus or Flavivirus Infection

- Consider serial ultrasounds every 3-4 weeks to assess fetal anatomy and growth
- Amniocentesis
  - Individualized for pregnant women with confirmed recent Zika virus or flavivirus infection
  - Can be considered for pregnant women with presumptive recent Zika virus or flavivirus infection



# IMPACT OF ZIKA-- MICROCEPHALY





# IMPACT OF ZIKA-- MICROCEPHALY

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# **Coordinate care for testing and follow-up management of infant with the infant's pediatrician and local health department:**

- Live births:
  - Infant serum and urine should be tested for Zika virus by rRT-PCR, and for Zika IgM and dengue virus IgM antibodies
- Fetal losses:
  - Zika virus rRT-PCR and IHC staining of fetal tissues are recommended
- Complete Neonate Assessment form upon delivery of infant

# MANAGEMENT GUIDANCE FOR ZIKA EXPOSED MOTHERS AND BABIES



## COMMONWEALTH of VIRGINIA Department of Health

MARISSA J. LEVINE, MD, MPH, FAAFP  
STATE HEALTH COMMISSIONER

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July 14, 2016

The following **are three key points** for your awareness:

- VDH recommends that labor and delivery care teams develop protocols to **identify mothers potentially infected with Zika virus during pregnancy**, and ensure that relevant clinical information is passed on to all team members, including your pediatric providers.
- For infants born to mothers with Zika positive or inconclusive lab results, we request that the labor and delivery nursing team and clinicians work together to ensure that **Zika Virus rRT-PCR and IgM serology testing is performed** on serum specimens collected **within two days of birth** from the umbilical cord or directly from the infant.
- **Infants diagnosed with a birth defect, such as those associated with Zika virus exposure, are eligible to receive care coordination and child development services** through the VDH's Children and Youth with Special Health Care Needs (CYSHCN) programs.



# U.S. Zika Pregnancy Registry and Birth Defects Surveillance — Integrated

## Neonate Assessment Form

These data are considered confidential and will be stored in a secure database at the Centers for Disease Control and Prevention and the Virginia Department of Health

[Reset Form](#)

Healthcare Provider: Please return completed form to the local health department by secure fax  
703-653-1347 or encrypted email (password protected) [hdcd@fairfaxcounty.gov](mailto:hdcd@fairfaxcounty.gov)

NAD.1. Infant's State/Territory ID _____	NAD.2. Mother's State/Territory ID _____	NAD.3. DOB: _____ <input type="checkbox"/> Live birth <input type="checkbox"/> Stillbirth ≥20 weeks	NAD.4. Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Ambiguous/undetermined
NAD.5. Gestational age at delivery: _____ weeks _____ days	NAD.6. Based on: (check all that apply) <input type="checkbox"/> LMP Date: _____ <input type="checkbox"/> 1 <sup>st</sup> trimester ultrasound <input type="checkbox"/> 2 <sup>nd</sup> trimester ultrasound <input type="checkbox"/> 3 <sup>rd</sup> trimester ultrasound <input type="checkbox"/> Other _____	NAD.7. Maternal age at delivery _____ years	
NAD.8. State/Territory reporting: <u>Select State</u>		NAD.9. County reporting: _____	
NAD.10. Delivery type: <input type="checkbox"/> Vaginal <input type="checkbox"/> Caesarean section NAD.11. Delivery complication: <input type="checkbox"/> No <input type="checkbox"/> Yes NAD.12. If yes, please describe: _____		NAD.13. Arterial cord blood pH (if performed): _____  NAD.14. Venous cord blood pH (if performed): _____	
NAD.15. Placental exam (based on path report): <input type="checkbox"/> No <input type="checkbox"/> Yes NAD.16. If yes, <input type="checkbox"/> Normal <input type="checkbox"/> Abruptio <input type="checkbox"/> Inflammation <input type="checkbox"/> Other abnormality (please describe)			
NAD.17. Apgar score: 1 min _____ / 5 min _____		NAD.18. Infant temp (if abnormal): _____ °F or _____ °C	
Physical Examination (record earliest measurements taken)			
NAD.19. Birth head circumference: _____ <input type="checkbox"/> cm    _____ <input type="checkbox"/> in NAD.20. <input type="checkbox"/> Molding present NAD.21. Physican report: <input type="checkbox"/> Normal <input type="checkbox"/> Abnormal NAD.22. HC percentile: _____		NAD.23. Birth weight: _____ <input type="checkbox"/> grams _____ <input type="checkbox"/> lbs/oz NAD.24. Birth weight percentile: _____	NAD.25. Birth length: _____ <input type="checkbox"/> cm _____ <input type="checkbox"/> in NAD.26. Birth length percentile: _____
NAD.27. Repeat head circumference: _____ <input type="checkbox"/> cm    _____ <input type="checkbox"/> in NAD.28. Date performed: _____ or Age _____ day(s)		NAD.31. Admitted to Neonatal Intensive Care Unit: <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, reason: _____  NAD.32. Neonatal death: <input type="checkbox"/> No <input type="checkbox"/> Yes	
NAD.29. Physican report: <input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		NAD.33. Date: _____ or Age at death: _____ days	

# Newborns.....

- Testing should be done when mother is Zika positive– communication with pediatrics is key!
- ..... Also, breastfeeding okay. CDC encouraging Zika positive moms to breastfeed at this time.

# Prevention

# Recommendations for Pregnant Women

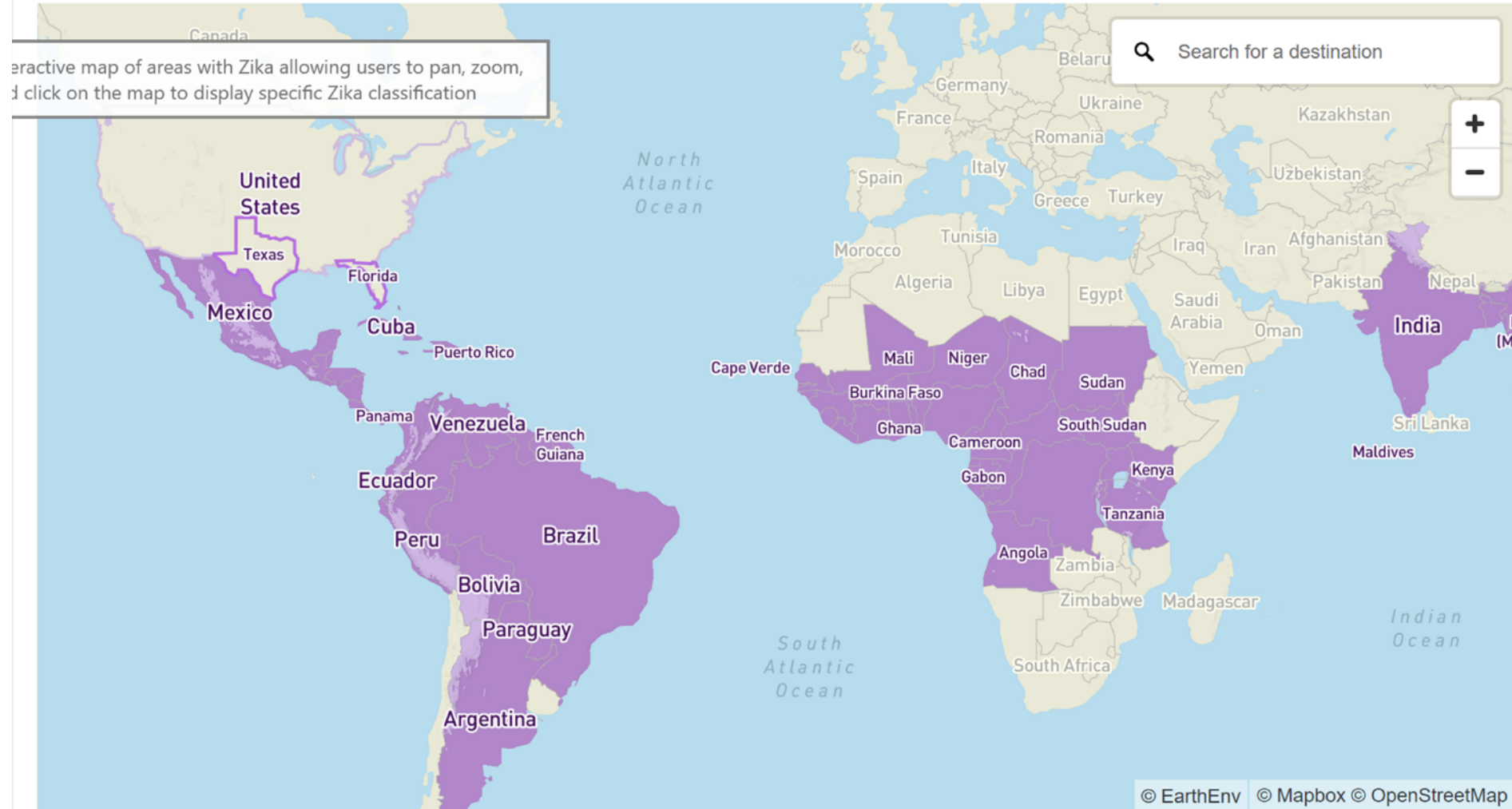
- Don't travel to areas with ongoing Zika transmission.
- If travelling, take measures to avoid bites.
- If the partner of a pregnant woman has travelled to an area with ongoing Zika transmission, the couple should use condoms for the duration of the pregnancy.
- Check CDC website for updates!

The screenshot displays the CDC's Zika Virus webpage. At the top, the CDC logo and tagline "Centers for Disease Control and Prevention" are visible, along with a search bar and a "CDC A-Z INDEX" dropdown. The main header reads "Zika Virus" with social media icons for Facebook, Twitter, and a general share button. A language selector is set to "English". The central banner features a world map with South America highlighted in orange, a mosquito illustration, and the text "ZIKA VIRUS UPDATE" and "Zika Cases in Florida". Below the banner are four informational boxes: "ABOUT ZIKA" (Overview of Zika and top questions about Zika answered...), "TRANSMISSION & RISKS" (Transmitted to people primarily through the bite of an infected mosquito...), "SYMPTOMS, TESTING, & TREATMENT" (Most common symptoms are fever, rash, joint pain, or red eyes...), and "AREAS WITH ZIKA" (Countries and territories with active Zika virus transmission...). On the right side, there are two sections: "At-A-Glance" with a link to "Pregnant Women with Any Lab Evidence of Zika Virus Infection\*" and statistics (US States and DC: 731; US Territories: 1,156) as of September 8, 2016; and "Zika Virus Disease Cases Reported to ArboNET\*" with statistics (US States and DC: 3,176; US Territories: 17,694) as of September 14, 2016. Below these are "Communication Resources" (Video Resources, Print Resources, Infographics, Zika Communication Toolkits, and a "More >" link) and a "What's New" section.



## World Map

Search for a place by name or zoom and click on the map to see CDC's travel recommendations for Zika in that country. Follow the link in the pop-up message to read CDC's Zika travel health notice for that country.



### International areas

Zika Travel Recommendation:  Low elevation  High elevation

No Known Zika:



- A woman is considering pregnancy but is not yet pregnant
  - Asymptomatic women with possible exposure who do not reside in areas with ongoing transmission: Wait 8 weeks after possible exposure to try to conceive (condoms in interim).
- Known positive Zika infection
  - Women wait 8 weeks after symptoms to become pregnant
  - Men wait 6 months after symptoms (condom use in the interim)
- You aren't pregnant, aren't thinking of becoming pregnant but travelled to an area where Zika transmission is ongoing.
  - Even if you do not feel sick, you should take steps to prevent mosquito bites for 3 weeks so you do not spread Zika to uninfected mosquitoes.



What if...?

# Prevention of Mosquito Bites—

## *All residents in areas with Zika should take these steps*

Cover exposed skin by wearing long-sleeved shirts and long pants.

Use insect repellents that are registered with the EPA and contain DEET, picaridin, IR3535, oil of lemon eucalyptus or para-menthane-diol, or 2-undecanone (methyl nonyl ketone). Always use as directed.

Pregnant and breastfeeding women can use all EPA-registered insect repellents, including DEET, according to the product label.

Most repellents, including DEET, can be used on children older than 2 months of age (OLE and PMD should not be used on children younger than 3 years). Adults should spray insect repellent onto their hands and then apply to a child's face.

Use [permethrin-treated clothing and gear](#) (boots, pants, socks, tents).\* You can buy pre-treated items or treat them yourself.

Stay and sleep in screened-in or air-conditioned rooms.

Sleep under a mosquito bed net if air conditioned or screened rooms are not available or if sleeping outdoors.

Mosquito netting can be used to cover babies younger than 2 months old in carriers, strollers, or cribs to protect them from mosquito bites.

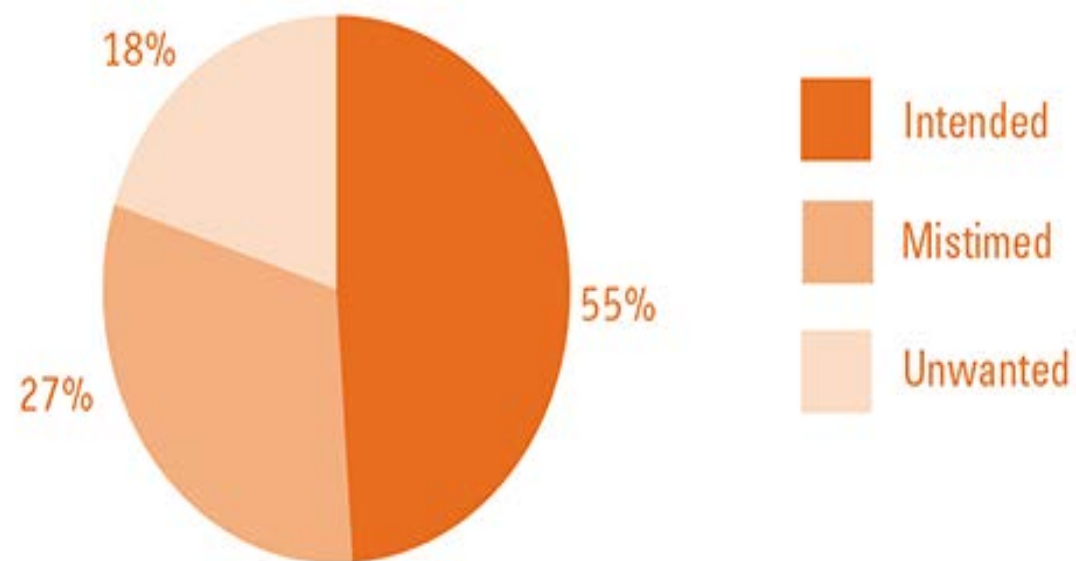
# Interventions

- Treatment: none at this time
- Vaccine: coming...?
- Prevention:
  - Prevent Mosquito Bites
    - Use Insect Repellent
    - Protect Your Child
    - Wear long-sleeve shirts and pants
    - Take steps to control mosquitos outside your home
  - Protected Sex
  - Contraception....



# Pregnancies by Intention Status

Nearly half of U.S. pregnancies are unintended.

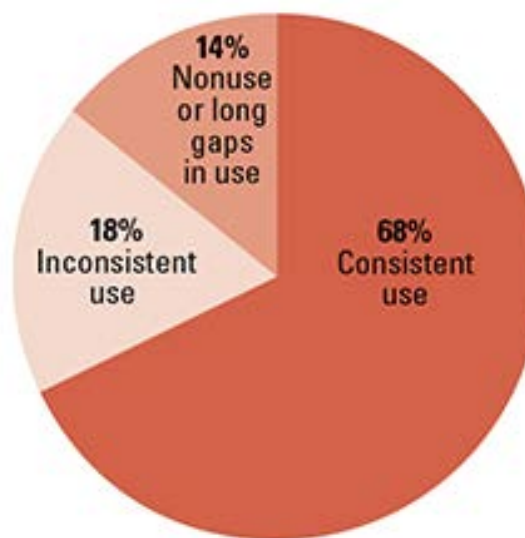


[www.guttmacher.org](http://www.guttmacher.org)

## Modern Contraception Works

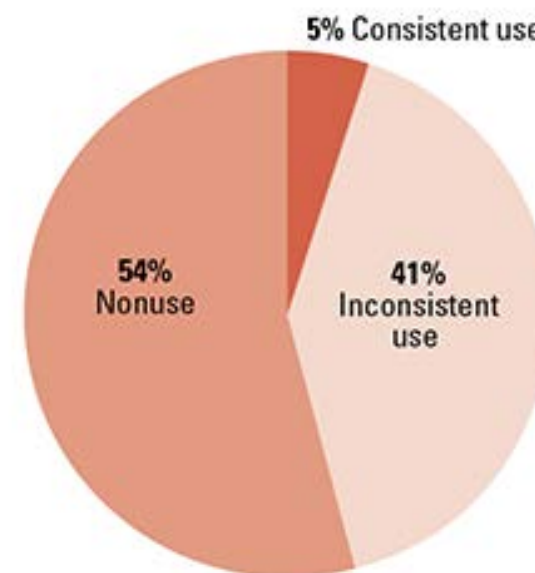
The two-thirds of U.S. women at risk of unintended pregnancy who practice contraception consistently and correctly account for only 5% of unintended pregnancies.

Women at Risk  
(43 Million in 2008)



By consistency of method use all year





Unintended Pregnancies  
(3.1 Million)



By consistency of method use during month of conception

# Your Body. Your Birth Control.

Use this chart to review all available methods and understand which one best meets your priorities & preferences.

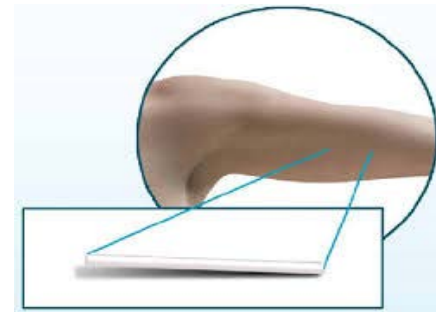
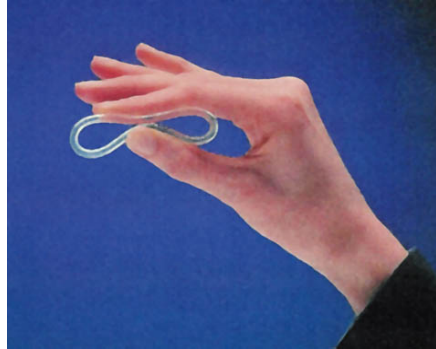
METHOD Options	 IUD (Non-hormonal)	 IUD (Hormonal)	 Implant	 Shot	 Vaginal Ring	 Patch	 Pill	 Condom
TYPICAL USE Effectiveness	99% effective	99% effective	99% effective	94% effective	91% effective	91% effective	91% effective	82% effective
HOW LONG Does it last	Up to 10 years	Up to 3 or 5 years	Up to 3 years	Up to 3 months	Up to 1 month	Up to 1 week	For 1 day	For 1 sex act
HOW DO YOU Get Started	Inserted by your provider	Inserted by your provider	Inserted by your provider	Shot given by your provider	Prescription from provider	Prescription from provider	Prescription from provider	Buy over the counter
WHAT DO YOU Need to Do	No action required	No action required	No action required	Get shot of provider every 3 months	You insert ring into vagina and replace every month	You place patch on body and replace every week	You take pill every day	You use condom for each sex act
POSSIBLE Bleeding Changes	Heavier periods that may return to normal after 3-6 months	Irregular, lighter, or no period at all	Infrequent, irregular, prolonged, or no period	Irregular or no period	Shorter, lighter, more predictable periods	Shorter, lighter, more predictable periods	Shorter, lighter, more predictable periods	None
POSSIBLE Side Effects	Cramping, that usually improves after 3-6 months, spotting	Cramping, during and after insertion, spotting	Insertion site pain	Weight changes	Nausea or breast tenderness	Nausea, breast tenderness, application site reaction	Nausea or breast tenderness	Allergic reaction to latex
IF STOPPED When Can you Get Pregnant	Immediately, schedule removal with provider	Immediately, schedule removal with provider	Immediately, schedule removal with provider	Immediately, but may have 6-12 month delay. No action required	Immediately, must remove ring from body	Immediately, must remove patch from body	Immediately, stop taking pills	Immediately, no action required

[http://caiglobal.co/j\\_cap/index.php/tools-and-resources-menu-item/cap-birth-control-options-grid](http://caiglobal.co/j_cap/index.php/tools-and-resources-menu-item/cap-birth-control-options-grid)

Only the condom protects against STIs and HIV. Talk with your provider about the best method for you.



# Contraceptive Options



- Oral Contraceptive Pills
- Ortho Evra Patch
- NuvaRing
- Depo-Provera
- Nexplanon
- Mirena IUD



# More Information about Zika

More information on caring for pregnant women, infants, or children with Zika virus infection is available at [CDC's Zika website](https://www.cdc.gov/zika).

The screenshot shows the CDC Zika website homepage. At the top left is the CDC logo with the text "Centers for Disease Control and Prevention" and "CDC 24/7: Saving Lives. Protecting People™". To the right is a search bar labeled "SEARCH" with a magnifying glass icon. Below the search bar is a "CDC A-Z INDEX" dropdown menu. A dark blue banner across the top contains the text "Zika Virus". Below the banner are social media icons for Facebook, Twitter, and a plus sign. To the right of the icons is a "Language: English" dropdown menu. The main content area features a large graphic on the left with a map of the Americas, a mosquito, and the text "ZIKA VIRUS UPDATE" and "Zika Cases in Florida". Below this graphic is a "Zika Cases in Florida" section. To the right of the graphic is an "At-A-Glance" section with two sub-sections: "Pregnant Women with Any Lab Evidence of Zika Virus Infection\*" and "Zika Virus Disease Cases Reported to ArboNET\*". Each sub-section contains a bulleted list of statistics and a source note.

**Zika Cases in Florida**

**At-A-Glance**

Pregnant Women with Any Lab Evidence of Zika Virus Infection\*

- US States and DC: 808
- US Territories: 1,490

\*Source: Pregnancy Registries as of September 22, 2016

More on Outcomes

Zika Virus Disease Cases Reported to ArboNET\*

- US States and DC: 3,625
- US Territories: 22,069

\*Source: ArboNET as of September 28, 2016

[www.cdc.gov/zika](https://www.cdc.gov/zika)

ZIKA VIRUS

Medicaid & Insect Repellent

Zika Virus Update

Zika in the US



Zika Response Plan



Get the Facts



Español

Expectant Mothers

Travelers



Clinicians

Spread the Word

ZIKA VIRUS



GET THE FACTS



SPREAD THE WORD



ESPAÑOL



EXPECTANT MOTHERS



TRAVELERS



CLINICIANS



ZIKA IN THE U.S.



**ZIKA VIRUS**

You can prevent the spread of the Zika virus. Find out what simple steps you can take to protect yourself and your family this summer.

**VDH** VIRGINIA DEPARTMENT OF HEALTH