



TRACIE

HEALTHCARE EMERGENCY PREPAREDNESS
INFORMATION GATEWAY

Zika Virus Disease
Topic Collection
10/6/2016

Topic Collection: Zika Virus Disease

Healthcare providers and emergency medical professionals need to be able to recognize and treat disease caused by novel pathogens. Zika virus can be more difficult than many other diseases to recognize and, though it has less implications for emergency care, it can result in severe health consequences.

This Topic Collection contains resources that can help our audience: learn more about managing patients at risk of or infected by Zika virus disease (particularly pregnant women who contract the virus during pregnancy); understand related infection control principles; and develop plans based on research and existing materials. Note: Jurisdictional Zika plans generally reflect a focus on vector control and risk communication without significant information about clinical information or coordination with the healthcare system. Where these issues are mentioned they are mentioned in passing.

For more information, we encourage you to access our frequently-updated factsheet [Zika: Resources at Your Fingertips](#). Information on Zika is constantly evolving. If you are a clinician treating a patient, please check the [Centers for Disease Control and Prevention \(CDC\) Zika site](#) for the most current information and clinical guidance.

Each resource in this Topic Collection is placed into one or more of the following categories (click on the category name to be taken directly to that set of resources). Resources marked with an asterisk (*) appear in more than one category.

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Must Reads

ASPR TRACIE. (2016). [Zika: Resources at Your Fingertips](#).

This Assistant Secretary for Preparedness and Response (ASPR) Technical Resources, Assistance Center, and Information Exchange (TRACIE) document provides Zika virus disease resources and an overview of public health and healthcare system considerations and implications that are applicable to professionals in those systems, emergency management stakeholders, and other audiences.

Centers for Disease Control and Prevention. (2016). [State and Local Health Departments](#).

The Centers for Disease Control and Prevention provide links to planning and preparedness, resources, posters, door hangers, and other items that can be used by state and local health department staff to communicate the risk of Zika with communities

Centers for Disease Control and Prevention. (2016). [Zika Virus](#).

This website provides the Centers for Disease Control and Prevention resources related to Zika Virus disease including current transmission and spread information, current clinical recommendations, and prevention and mitigation information. This page is updated regularly.

Centers for Disease Control and Prevention. (2016). [Zika Virus Disease in the United States, 2015–2016](#).

This webpage provides current counts of locally-acquired, travel-associated, and laboratory-acquired Zika virus disease in the U.S.

Center for Infectious Disease Research and Policy. (2016). [Zika Resource Page](#).

This webpage offers a compilation of resources on Zika virus disease including governmental publications, academic publications, research pieces, and popular media mentions. The compilation is updated regularly.

National Library of Medicine. (2016). [Zika Virus Health Information Resources](#).

This is a comprehensive collection of Zika virus disease-related resources from the U.S. and abroad. It is compiled and updated regularly by the National Library of Medicine.

Rasmussen, S., Jamieson, D., Honein, M., and Petersen, L. (2016). [Zika Virus and Birth Defects – Reviewing the Evidence for Causality](#). The New England Journal of Medicine. 374:1981-1987.

The authors evaluated available data to determine causality of Zika infection and birth defects, most notably microcephaly. This evidence included Zika virus infection during

specific times in pregnancy, a specific rare phenotype involving microcephaly, and data that support biologic plausibility. The researchers concluded that the evidence supports a causal relationship between Zika virus infection and birth defects.

World Health Organization. (2016). [Zika: Strategic Response Plan \(Revised for July 2016-December 2017\)](#).

This World Health Organization (WHO) plan provides the basis for coordination and collaboration among WHO and its partners to ensure international preparedness and response capacities are supported to the fullest extent possible. The plan focuses on preventing and managing medical complications caused by Zika virus infection (with a focus on pregnant women, their partners, and their households) and integrated mosquito management, sexual and reproductive health counselling, and related health education and care.

Zika Overview Resources

American Medical Association. (2016). [Zika Virus Resource Center](#).

This webpage provides a compilation of resources related to Zika virus disease.

ASPR TRACIE. (2016). [Zika: Resources at Your Fingertips](#).

This Assistant Secretary for Preparedness and Response (ASPR) Technical Resources, Assistance Center, and Information Exchange (TRACIE) document provides Zika virus disease resources and an overview of public health and healthcare system considerations and implications that are applicable to professionals in those systems, emergency management stakeholders, and other audiences.

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Centers for Disease Control and Prevention. (2016). [State and Local Health Departments](#).

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Centers for Disease Control and Prevention. (2016). [Zika Virus](#).

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Centers for Disease Control and Prevention. (2016). [Zika Virus Disease in the United States, 2015–2016](#).

This webpage provides current counts of locally-acquired, travel-associated, and laboratory-acquired Zika virus disease in the U.S.

Centers for Medicare & Medicaid Services. (2016). [Medicaid Benefits Available for the Prevention, Detection and Response to the Zika Virus](#). U.S. Department of Health and Human Services.

This Informational Bulletin is geared towards Medicaid agencies and other stakeholders and highlights how Medicaid services and authorities can help states and territories prevent, detect, and respond to the Zika virus.

* Disaster Technical Assistance Center. (2016). [Behavioral Health Resources on Zika](#). Substance Abuse and Mental Health Services Administration.

This webpage includes links to two types of resources: those focused on reducing stress and anxiety related to Zika and resources that highlight risk communication strategies for public health officials.

Lucey, D.R. and Gostin, L.O. (2016). [The Emerging Zika Pandemic: Enhancing Preparedness](#). Journal of the American Medical Association. 315(9):865-866.

The authors discuss the current outbreak of Zika virus disease and why it is a concern for the U.S. public health and healthcare systems. They also describe steps that should be taken now to prevent and mitigate spread and steps that should be taken to prepare. The article also includes an outline for a Zika virus disease research agenda.

National Library of Medicine. (2016). [Zika Multi-Language Resources](#).

This webpage provides links to Zika-related resources in a variety of languages.

National Library of Medicine. (2016). [Zika Virus Health Information Resources](#).

This is a comprehensive collection of Zika virus disease-related resources from the U.S. and abroad. It is compiled and updated regularly by the National Library of Medicine.

Office of Human Services Emergency Preparedness and Response. (2016). [Fact Sheet: What Head Start or Child Care Programs Need to Know About Zika Virus](#). Administration for Children and Families.

This fact sheet, also available in Spanish, includes information on symptoms, transmission, and prevention of Zika for head start and child care programs.

Office of Minority Health. (2016). [Zika Resources](#). U.S. Department of Health and Human Services.

This webpage includes links to Zika resources for individuals/families, pregnant women, men, and healthcare providers. It also provides links to state-specific pages and resources in the following languages: Spanish, Portuguese, Chinese, French, Russian, and Haitian Creole.

Pan American Health Organization. (2016). [Zika Virus Infection](#).

This website provides an outline of the disease and its progression specifically in the Americas. It provides information for the general public and health professionals on disease spread, identification, treatment and prevention.

Schuchat, A. (2016). [Zika 101](#). Centers for Disease Control and Prevention.

Written by Dr. Anne Schuchat, Principal Deputy Director of the Centers for Disease Control and Prevention, this blog provides a clear and easy-to-read question and answer format on Zika virus disease. The blog describes Zika virus disease, how it is spread, signs and symptoms, prevention and protective measures, spread in the U.S., and what the U.S. Department of Health and Human Services is doing to prepare for Zika virus.

*U.S. Food and Drug Administration. (2016). [Zika Virus Response Updates from FDA](#).

This page, provided by the U.S. Food and Drug Administration, includes links to Zika-specific information in English, Spanish, and Portuguese. Links to resources on emergency use authorization (which allows the use of certain medical products for emergencies based on scientific data); information regarding the blood supply; and information on the safety and use of insect repellants are also provided.

*World Health Organization. (2016). [Zika Virus](#).

This World Health Organization website provides an outline of Zika and an overview of its progression around the world. Links to Situation Reports and information on signs and symptoms, transmission, diagnosis, treatment, and prevention are included on the page.

World Health Organization. (2016). [Zika Virus and Complications: Questions and Answers](#).

This webpage provides responses to commonly asked questions about Zika virus and mosquito protection and surveillance, sexual transmission, travel, neurological syndromes, pregnancy, and government response.

Blood, Organ, and Tissue Donation and Transfusion/Transplant Issues

U.S. Food and Drug Administration. (2016). [Donor Screening Recommendations to Reduce the Risk of Transmission of Zika Virus by Human Cells, Tissues, and Cellular and Tissue-Based Products.](#)

The U.S. Food and Drug Administration released this guidance for establishments that make donor eligibility determinations for donors of human cells, tissues, and cellular and tissue-based products for screening donors for evidence of, and risk factors for, infection with Zika virus.

U.S. Food and Drug Administration. (2016). [FDA Allows Use of Investigational Test to Screen Blood Donations for Zika Virus.](#)

This news release announces the availability of an investigational test to screen blood donations for Zika virus.

U.S. Food and Drug Administration. (2016). [Questions and Answers Regarding Recommendations for Donor Screening, Deferral, and Product Management to Reduce the Risk of Transfusion-Transmission of Zika Virus: Guidance for Industry.](#)

The U.S. Food and Drug Administration released this guidance in response to questions from blood establishments asked regarding the original recommendations for donor screening, deferral, and product management to reduce the risk of transfusion-transmission of Zika virus.

U.S. Food and Drug Administration. (2016). [Revised Recommendations for Reducing the Risk of Zika Virus Transmission by Blood and Blood Components.](#)

The U.S. Food and Drug Administration released this guidance for blood establishments to assist with donor screening, deferral, and product management to reduce the risk of transfusion-transmission of Zika virus.

U.S. Food and Drug Administration. (2016). [Safety of the Blood Supply.](#)

Resources on this page are focused primarily on the impact of Zika on the blood supply, blood donation guidance, and testing the supply for the virus.

UNOS Transplant Pro. (2016). [Guidance for Organ Donation and Transplantation Professionals Regarding the Zika Virus.](#)

The author highlights the risk of Zika virus transmission for the organ transplant community.

Vasquez, A., Sapiano, M., Basavaraju, S., et al. (2016). [Survey of Blood Collection Centers and Implementation of Guidance for Prevention of Transfusion-Transmitted Zika Virus Infection – Puerto Rico, 2016](#). Morbidity and Mortality Weekly Report. 65(14): 375–378.

The authors gathered information on blood collection operations in Puerto Rico to assess the impact the Zika-related restriction on blood collection is having and what would be needed to replace the affected products.

Clinical Management – General

* Centers for Disease Control and Prevention. (2016). [For Healthcare Providers](#).

The Centers for Disease Control and Prevention provide Zika virus medical management guidance on this webpage. Resources are categorized thusly: clinical guidance, clinical evaluation and disease, diagnostic testing, U.S. Zika pregnancy registry, tools for healthcare providers, and HIV infection and Zika virus.

* Centers for Disease Control and Prevention. (2016). [HIV Infection and Zika Virus](#).

This article highlights the research on HIV-infected patients who also contract Zika virus.

* Centers for Disease Control and Prevention. (2016). [Symptoms, Diagnosis, and Treatment](#).

This webpage includes information on the symptoms of Zika, how it is diagnosed, and how it is treated.

Centers for Disease Control and Prevention. (2016). [Zika and Guillain-Barré Syndrome](#).

This webpage includes information on the relationship between Zika and Guillain-Barré Syndrome (e.g., symptoms, causes, links to related resources).

U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Guillain-Barré Syndrome and Other Neurological Deficits Planning Resource](#).

This planning resource can enhance healthcare coalition and healthcare system preparedness and response to a domestic Zika virus disease outbreak, as it highlights some of the anticipated hospital resource needs essential to caring for Guillain-Barré syndrome and other neurological deficits.

Clinical Management – Infants and Children

* Centers for Disease Control and Prevention. (2016). [Clinical Guidance](#).

The Centers for Disease Control and Prevention provide guidance related to Zika virus and: pregnant women and women of reproductive age, infants and children, and sexual transmission.

*Centers for Disease Control and Prevention. (2016). [Congenital Microcephaly Case Definitions](#).

The Centers for Disease Control and Prevention share information and definitions for definite and possible congenital microcephaly related to Zika on this webpage.

*Centers for Disease Control and Prevention. (2016). [Facts about Microcephaly](#).

This webpage includes a definition and links to information on microcephaly. It also includes a link to the page "Zika Virus and Pregnancy."

Centers for Disease Control and Prevention. (2016). [Resources and Guidance for Healthcare Providers Caring for Infants Affected by Zika Virus](#).

This resource provides information on clinical and social support services available to children with special medical needs.

Centers for Disease Control and Prevention. (2016). [Support for Families of Newborns Affected by Zika](#).

This resource page provides information on agencies and organizations that can help support families of children affected by Zika.

Centers for Disease Control and Prevention. (2016). [Surveillance & Services for Babies Affected by Zika](#).

This factsheet includes links to information on Zika and children and encourages healthcare providers to share information at the local and state level.

Centers for Disease Control and Prevention. (2016). [Webcast Recordings: Clinical Evaluation and Management of Infants with Congenital Zika Infection](#).

Sponsored by the Centers for Disease Control and Prevention and the American Academy of Pediatrics, this meeting provided information to clinicians on congenital Zika virus infection including the evaluation, diagnosis and management of infants.

- * Costello, A., Dua, T., Duran, P., et al. (2016). [Defining the Syndrome Associated with Congenital Zika Virus Infection](#). Bulletin of the World Health Organization.

The authors provide an overview of the congenital abnormalities associated with Zika.

- Da Silva, A., Ganz, J., Sousa, P., et al. (2016). [Early Growth and Neurologic Outcomes of Infants with Probable Congenital Zika Virus Syndrome](#). Emerging Infectious Diseases. 22(11).

This article describes findings from a study of 48 infants up to eight months of age with probable congenital Zika virus syndrome. The study found that additional neurological symptoms emerged with age and that head circumference measurements fell further from the mean, suggesting that affected infants may continue to fall further behind non-affected children.

- Fleming-Dutra, K., Nelson, J., Fischer, M., et al. (2016). [Update: Interim Guidelines for Health Care Providers Caring for Infants and Children with Possible Zika Virus Infection — United States, February 2016](#). Morbidity and Mortality Weekly. 65(7):182–187.

This document summarizes interim guidelines for U.S. healthcare providers caring for infants born to mothers who traveled to or resided in areas with Zika virus transmission during pregnancy. While the guidance on infants with congenital infection has been superseded (as highlighted in Russell, Nelson, Oliver, et al., 2016), the guidelines for treating infants and children with possible acute Zika virus disease are valid as of October 4, 2016.

- Goodman, A., Dziuban, E., Powell, K., et al. (2016). [Characteristics of Children Aged <18 Years with Zika Virus Disease Acquired Postnatally — U.S. States, January 2015–July 2016](#). Morbidity and Mortality Weekly Report. 65.

This early release examined 158 cases of confirmed or probable Zika virus disease in children under 18 reported to the CDC by 30 states. All cases were acquired postnatally and most had mild symptoms, with 2 hospitalizations and no deaths reported. Nearly half of the cases were aged 15-17, which the authors attributed to healthcare-seeking or testing bias (five cases were pregnant) or a greater likelihood of exposure through travel.

- * Russell, K., Nelson, J., Oliver, S., et al. (2016). [Update: Interim Guidelines for Health Care Providers Caring for Infants and Children with Possible Zika Virus Infection — United States, August 2016](#). Morbidity and Mortality Weekly. 65(33):870-878.

This document summarizes interim guidelines for U.S. healthcare providers caring for infants born to mothers who traveled to or resided in areas with Zika virus transmission during pregnancy. It also includes guidelines for treating infants and children with possible acute Zika virus disease.

- * U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Supporting Children with Special Healthcare Needs Planning Resource](#).

This matrix highlights some of the existing federal and national services and programs for supporting children with special healthcare needs in the context of Zika. It includes guidance and links to helpful resources.

- * U.S. Food and Drug Administration. (2016). [Insect Repellent Use and Safety in Children](#).

This webpage includes information on insect repellent, including safety, application, and use on children. It also includes links to other pages featuring information on insect repellent.

- World Health Organization. (2016). [Psychosocial Support for Pregnant Women and for Families with Microcephaly and other Neurological Complications in the Context of Zika Virus: Interim Guidance for Healthcare Providers](#).

This resource provides a framework for healthcare providers to work with other sectors, such as social work and education to provide a comprehensive support network for pregnant women and their families following a diagnosis of congenital Zika infection.

- World Health Organization. (2016). [Screening, Assessment, and Management of Neonates and Infants with Complications Associated with Zika Virus Exposure in Utero](#).

This guidance is designed to support the development of national and local clinical protocols and policies to address infants and children's medical, developmental, and social needs following Zika virus exposure in utero.

Clinical Management – Maternal/Fetal

- American College of Obstetricians and Gynecologists and the Society for Maternal-Fetal Medicine. (2016). [Practice Advisory: Updated Interim Guidance for Care of Women of Reproductive Age During a Zika Virus Outbreak](#).

This joint message from the American College of Obstetricians and Gynecologists and the Society for Maternal Fetal Medicine mirrors the interim guidance issued by the Centers for Disease Control and Prevention for the management of pregnant women presenting with symptoms consistent with Zika virus disease infection and is updated as required. This publication includes an algorithm for assessment, diagnosis, and treatment of a pregnant woman.

Brasil, P., Pereira, J., Gabaglia, C., et al. (2016). [Zika Virus Infection in Pregnant Women in Rio de Janeiro – Preliminary Report](#). The New England Journal of Medicine.

Researchers in Rio de Janeiro enrolled 88 pregnant women in a prospective study, where they were tested for Zika virus and then followed throughout their pregnancies. Seventy-two of the 88 women enrolled tested positive for Zika virus infection. The authors concluded that “despite mild clinical symptoms, Zika virus infection during pregnancy appears to be associated with grave outcomes, including fetal death, placental insufficiency, fetal growth restriction, and CNS injury.”

* Centers for Disease Control and Prevention. (2016). [Clinical Guidance](#).

The Centers for Disease Control and Prevention provide guidance related to Zika virus and: pregnant women and women of reproductive age, infants and children, and sexual transmission.

*Centers for Disease Control and Prevention. (2016). [Congenital Microcephaly Case Definitions](#).

The Centers for Disease Control and Prevention share information and definitions for definite and possible congenital microcephaly related to Zika on this webpage.

*Centers for Disease Control and Prevention. (2016). [Facts about Microcephaly](#).

This webpage includes a definition and links to information on microcephaly. It also includes a link to the page "Zika Virus and Pregnancy."

* Centers for Disease Control and Prevention. (2016). [For Healthcare Providers](#).

The Centers for Disease Control and Prevention provide Zika virus medical management guidance on this webpage. Resources are categorized thusly: clinical guidance, clinical evaluation and disease, diagnostic testing, U.S. Zika pregnancy registry, tools for healthcare providers, and HIV infection and Zika virus.

* Centers for Disease Control and Prevention. (2016). [Guidelines for U.S. Citizens and Residents Living in Areas with Ongoing Zika Virus Transmission](#).

This webpage includes tips for preventing mosquito bites, information on pregnant women and Zika, tips for practicing safe sex, and links to related information.

* Centers for Disease Control and Prevention. (2016). [HIV Infection and Zika Virus](#).

This article highlights the research on HIV-infected patients who also contract Zika virus.

* Centers for Disease Control and Prevention. (2016). [Infographic: Zika Virus Testing for any Pregnant Woman Not Living in an Area with Zika](#).

The Centers for Disease Control and Prevention provide an easy to read infographic that depicts the testing algorithm for pregnant women NOT living in an area with Zika.

- * Centers for Disease Control and Prevention. (2016). [Insect Repellent Use & Safety](#).

This webpage includes information on insect repellent, including safety, application, and use by pregnant/nursing women.

- * Centers for Disease Control and Prevention. (2016). [Preconception Counseling](#).

The Centers for Disease Control and Prevention share guidance for women and men who live in areas where Zika virus has spread and are interested in conceiving.

- * Centers for Disease Control and Prevention. (2016). [Symptoms, Diagnosis, and Treatment](#).

This webpage includes information on the symptoms of Zika, how it is diagnosed, and how it is treated.

- * Costello, A., Dua, T., Duran, P., et al. (2016). [Defining the Syndrome Associated with Congenital Zika Virus Infection](#). Bulletin of the World Health Organization.

The authors provide an overview of the congenital abnormalities associated with Zika.

- * Fleming-Dutra, K., Nelson, J., Fischer, M., et al. (2016). [Update: Interim Guidelines for Health Care Providers Caring for Infants and Children with Possible Zika Virus Infection — United States, February 2016](#). Morbidity and Mortality Weekly. 65(7):182–187.

This document summarizes interim guidelines for U.S. healthcare providers caring for infants born to mothers who traveled to or resided in areas with Zika virus transmission during pregnancy. While the guidance on infants with congenital infection has been superseded (as highlighted in Russell, Nelson, Oliver, et al., 2016), the guidelines for treating infants and children with possible acute Zika virus disease are valid.

- Martines, R., Bhatnagar, J., Keating, M.K., et al. (2016). [Notes from the Field: Evidence of Zika Virus Infection in Brain and Placental Tissues from Two Congenitally Infected Newborns and Two Fetal Losses — Brazil, 2015](#). Morbidity and Mortality Weekly. 65(06):159-160.

The authors share evidence regarding the link between Zika virus infection and microcephaly and fetal demise based on viral RNA and antigens in brain tissues from infants with microcephaly and placental tissues from early miscarriages.

- Mlakar, J., Korva, M., Tul, N., et al. (2016). [Zika Virus Associated with Microcephaly](#). *New England Journal of Medicine*. 374(10): 951-958.

This article discusses a case report of an expectant mother infected with Zika during the end of her first trimester while in Brazil. Serial ultrasounds at 14 and 20 weeks showed normal fetal growth and anatomy. An ultrasound performed at 29 weeks confirmed intrauterine growth retardation and fetal anomalies. Medical termination of the pregnancy occurred at 32 weeks of gestation. Fetal autopsy findings detail the severe brain injury and placental damage associated with the infection. Genome sequence identity was also performed.

Oduyebo, T., Igbinsola, I., Petersen, E., et al. (2016). [Update: Interim Guidance for Health Care Providers Caring for Pregnant Women with Possible Zika Virus Exposure — United States, July 2016](#). *Morbidity and Mortality Weekly Report*. 65(29):739–744.

The authors list guidelines healthcare providers can use to evaluate pregnant women with possible Zika virus exposure.

Rasmussen, S., Jamieson, D., Honein, M., and Petersen, L. (2016). [Zika Virus and Birth Defects — Reviewing the Evidence for Causality](#). *The New England Journal of Medicine*. 374:1981-1987.

The authors evaluated available data to determine causality of Zika infection and birth defects, most notably microcephaly. This evidence included Zika virus infection during specific times in pregnancy, a specific rare phenotype involving microcephaly, and data that support biologic plausibility. The researchers concluded that the evidence supports a causal relationship between Zika virus infection and birth defects.

* Reefhuis, J., Gilboa, S., Johansson, M., et al. (2016). [Projecting Month of Birth for At-Risk Infants after Zika Virus Disease Outbreaks](#). *Emerging Infectious Diseases*. 22(5).

This article looked at Zika virus occurrence and surges of microcephaly births to determine if projections could be made. Researchers developed a modifiable spreadsheet tool that public health officials can use to plan for delivery of infants from mothers infected with Zika virus.

*Russell, K., Nelson, J., Oliver, S., et al. (2016). [Update: Interim Guidelines for Health Care Providers Caring for Infants and Children with Possible Zika Virus Infection — United States, August 2016](#). *Morbidity and Mortality Weekly*. 65(33):870-878.

This document summarizes interim guidelines for U.S. healthcare providers caring for infants born to mothers who traveled to or resided in areas with Zika virus transmission during pregnancy. It also includes guidelines for treating infants and children with possible acute Zika virus disease.

* Tepper, N., Goldberg, H., Vargas Bernal, M., et al. (2016). [Estimating Contraceptive Needs and Increasing Access to Contraception in Response to the Zika Virus Disease Outbreak — Puerto Rico, 2016](#). *Morbidity and Mortality Weekly*. 65(12):311–314.

The authors explain how increased access to contraception could reduce the rates of unintended pregnancy and fewer adverse Zika-related pregnancy and birth outcomes.

- * U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Gaps in Contraception Access and Zika: Interactive Map](#).

This map depicts the areas of the country that are at higher risk from unplanned pregnancies due to access to birth control.

- * U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Maternal-Fetal Health Planning Resource](#).

This matrix illustrates some of the anticipated hospital and healthcare system resources needs essential to caring for high-risk pregnancies and children born with microcephaly or other birth defects that may be associated with Zika virus infection.

- U.S. Department of Health and Human Services, Office of the Assistant Secretary of Preparedness and Response. (2016). [Promoting Stress Management for Pregnant Women during the Zika Virus Disease Outbreak](#).

The guidance on this webpage includes strategies healthcare providers can use to help their pregnant patients manage stress during a Zika virus update. Guidance includes communication tips, actual strategies for stress reduction, and links to related resources. The document is available in both English [and Spanish](#)

- * U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Supporting Children with Special Healthcare Needs Planning Resource](#).

This matrix highlights some of the existing federal and national services and programs for supporting children with special healthcare needs in the context of Zika. It includes guidance and links to helpful resources.

- * U.S. Food and Drug Administration. (2016). [Insect Repellent Use and Safety in Children](#).

This webpage includes information on insect repellent, including safety, application, and use on children. It also includes links to other pages featuring information on insect repellent.

Clinical Management – Testing

Centers for Disease Control and Prevention. (2016). [Collection and Submission of Body Fluids for Zika Virus Testing](#).

The Centers for Disease Control and Prevention provide guidelines for collecting, testing, and shipping spinal fluid, urine, and other body fluids for Zika virus. Guidelines for reporting results are also included.

Centers for Disease Control and Prevention. (2016). [Diagnostic Testing](#).

The Centers for Disease Control and Prevention share information and related links on Zika diagnostic testing. Instructions for specimen collection and submission are also included.

* Centers for Disease Control and Prevention. (2016). [For Healthcare Providers](#).

The Centers for Disease Control and Prevention provide Zika virus medical management guidance on this webpage. Resources are categorized thusly: clinical guidance, clinical evaluation and disease, diagnostic testing, U.S. Zika pregnancy registry, tools for healthcare providers, and HIV infection and Zika virus.

* Centers for Disease Control and Prevention. (2016). [Infographic: Zika Virus Testing for any Pregnant Woman Not Living in an Area with Zika](#).

The Centers for Disease Control and Prevention provide an easy to read infographic that depicts the testing algorithm for pregnant women NOT living in an area with Zika.

Centers for Disease Control and Prevention. (2016). [Interim Guidance for Zika Virus Testing of Urine — United States, 2016](#). Morbidity and Mortality Weekly. 65(18).

The Centers for Disease Control and Prevention provide guidelines for testing urine for Zika virus.

Centers for Disease Control and Prevention. (2016). [State & Local Public Health Laboratories](#).

This webpage provides links to Zika-related Emergency Use Authorizations.

Gaynor, A. (2016). [3 Zika Tests Explained](#). Association of Public Health Laboratories.

The author summarizes three tests being used to test patients for Zika virus: Polymerase Chain Reaction, Enzyme Linked Immunosorbent Assay, and Plaque Reduction Neutralization Test.

Rabe, I., Staples, E., Villanueva, J., et al. (2016). [Interim Guidance for Interpretation of Zika Virus Antibody Test Results](#). Morbidity and Mortality Weekly. 65(21).

The authors provide guidelines for interpreting Zika virus antibody test results and managing patients with suspected Zika or Dengue virus infection.

U.S. Food and Drug Administration. (2016). [Fact Sheet for Health Care Providers: Interpreting RealStar® Zika Virus RT-PCR Kit U.S. Test Results](#).

This fact sheet summarizes the U.S. Food and Drug Administration's release of an Emergency Use Authorization to interpret "RealStar RT-PCR" testing for the in vitro detection of Zika virus.

U.S. Food and Drug Administration. (2016). [Fact Sheet for Health Care Providers: Interpreting Zika Virus RNA Qualitative Real-Time RT-PCR Test Results](#).

This fact sheet summarizes the U.S. Food and Drug Administration's release of an Emergency Use Authorization to allow "special Real-Time RT-PCR" testing for the in vitro detection of Zika virus.

Education and Training

Centers for Disease Control and Prevention. (2016). [Training Resources](#).

The Centers for Disease Control and Prevention provides links to select training resources on the Zika virus and related topics for health professionals including videos, webinar archives, and other materials.

Epidemiology and Surveillance

Centers for Disease Control and Prevention. (2016). [2016 Nationally Notifiable Conditions](#).

This webpage lists "Nationally Notifiable Conditions," including Zika (added in 2016).

Centers for Disease Control and Prevention. (2016). [Areas with Zika](#).

This webpage provides updated information on areas in the U.S. and abroad where cases of Zika virus have been reported.

Centers for Disease Control and Prevention. (2016). [Possible Zika Virus Infection Among Pregnant Women – United States and Territories, May 2016](#). Morbidity and Mortality Weekly Report. 65(20).

This article discusses the establishment of a comprehensive surveillance system to monitor pregnant women with Zika virus in the United States.

Centers for Disease Control and Prevention. (2016). [Pregnant Women with Any Laboratory Evidence of Possible Zika Virus Infection in the United States and Territories, 2016.](#)

The Centers for Disease Control and Prevention maintains a current count of cases of Zika virus infected pregnant women in the U.S. by state and territory.

Centers for Disease Control and Prevention. (2016). [Surveillance and Control of Aedes Aegypti and Aedes Albopictus in the United States.](#)

This document--written for state and local public health officials and vector control specialists--provides guidance for Aedes aegypti and Aedes albopictus surveillance and control with regards to the risk of dengue, chikungunya, Zika, and yellow fever viruses in the United States and its territories.

Centers for Disease Control and Prevention. (2016). [Zika Active Pregnancy Surveillance System \(ZAPSS\)/Sistema de Vigilancia Activa de Zika en Embarazos \(SVAZE\).](#)

This webpage highlights the Zika surveillance program developed by the Puerto Rico Department of Health and Centers for Disease Control and Prevention. This system will be used to examine the relationship between Zika virus infection during pregnancy and adverse outcomes during pregnancy, birth, and early childhood up to 3 years old.

Centers for Disease Control and Prevention. (2016). [Zika Travel Information.](#)

The Centers for Disease Control and Prevention provide Zika-specific current travel notices on this webpage. Information is available by country, for special populations, and for clinicians.

Pan American Health Organization. (2016). [Epidemiological Update: Neurological Syndrome, Congenital Anomalies, and Zika Virus Infection.](#)

This document is the latest in a series of epidemiological updates provided by the Pan American Health Organization. It highlights the specific issues related to the correlation between Zika virus disease outbreaks and the increase in neurological syndromes, including Guillain-Barre syndrome and congenital anomalies, specifically microcephaly. The document details recommendations for management, increased surveillance and other public health recommendations.

* Reefhuis, J., Gilboa, S., Johansson, M., et al. (2016). [Projecting Month of Birth for At-Risk Infants after Zika Virus Disease Outbreaks.](#) Emerging Infectious Diseases. 22(5).

This article looked at Zika virus occurrence and surges of microcephaly births to determine if projections could be made. Researchers developed a modifiable spreadsheet tool that public health officials can use to plan for delivery of infants from mothers infected with Zika virus.

- * U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Gaps in Contraception Access and Zika: Interactive Map](#).

This map depicts the areas of the country that are at higher risk from unplanned pregnancies due to access to birth control.

- Vestin, N. (2015). [Zika Outbreak Expands in West Africa, Americas](#). Center for Infectious Disease Research and Policy.

This article highlights the Zika virus outbreak in Cape Verde, and includes information on the outbreak in Panama and Honduras.

Ethical Considerations

- MacDonald, N. (2016). [Zika Outbreak Raises Familiar Ethical Questions](#). Impact Ethics.

The author summarizes four ethical issues related to Zika: research, travel, healthcare, and prevention.

- Nuffield Council on Bioethics. (2016). [Zika: Ethical Considerations](#).

This document highlights Zika-specific ethical considerations related to public health ethics, research in developing countries, solidarity, the sharing of biological and health data, and the regulation of emerging biotechnologies.

- Pan American Health Organization and World Health Organization. (2016). [Experts Analyze Ethics of the Response to Zika Virus in the Americas](#).

A group of bioethicists who formed the Zika Ethics Consultation concluded that that countries are obliged to share all available information on Zika, including what is not known.

- Zielinski, A. (2016). [The Ethical Risks of Engineering Mosquitoes Into Extinction to Stop Zika](#).

The author highlights the ethical considerations associated with altering/genetically engineering and/or entirely destroying the mosquito.

Legal/Regulatory Issues

- Centers for Disease Control and Prevention. (2016). [Executive Orders and Emergency Declarations for the West Nile Virus: Applying Lessons from Past Outbreaks to Zika](#).

This document provides an overview of Executive Orders and Emergency Declarations issued by states and territories in the past (specific to West Nile Virus), and how those

authorities may be used to support prevention, response, and recovery actions for Zika virus.

The Network for Public Health Law. (2016). [Primer: Emergency Legal Preparedness Concerning Zika Virus](#).

This primer, presented in a PowerPoint format, outlines public health concerns from Zika Virus disease and discusses potential legal issues in the U.S. and abroad.

* U.S. Food and Drug Administration. (2016). [Zika Virus Response Updates from FDA](#).

This page, provided by the U.S. Food and Drug Administration, includes links to Zika-specific information in English, Spanish, and Portuguese. Links to resources on emergency use authorization (which allows the use of certain medical products for emergencies based on scientific data); information regarding the blood supply; and information on the safety and use of insect repellants is also provided.

World Health Organization. (2016). [WHO Announces a Public Health Emergency of International Concern](#).

This statement includes the official statement from the World Health Organization Director-General declaring Zika virus disease a Public Health Emergency of International Concern. The declaration was made on February 1, 2016 after a meeting of the International Health Regulations (2005) Emergency Committee.

Occupational Safety

Centers for Disease Control and Prevention. (2016). [Biosafety Guidance for Transportation of Specimens and for Work with Zika Virus in the Laboratory](#).

Guidance related to Zika virus in the laboratory is provided on this Centers for Disease Control and Prevention webpage.

Mavity, H. and Rivera, M. (2016). [The Zika Virus: Answers to Employers' FAQs](#). EHS Today.

The authors--attorneys who specialize in labor and employment law--explain what the World Health Organization's declaration of Zika as a global health emergency could mean for employers.

National Institute for Occupational Safety and Health. (2016). [Mosquito-Borne Diseases](#). Centers for Disease Control and Prevention.

The information on this webpage is geared towards employers and workers, and includes tips for preventing mosquito-borne diseases such as Zika and West Nile.

Occupational Safety and Health Administration. (2016). [Interim Guidance for Protecting Workers from Occupational Exposure to Zika Virus](#). U.S. Department of Labor.

This guidance is geared towards employers and workers who are interested in preventing occupational exposure to the Zika virus.

Olson, C., Iwamoto, M., Perkin, K., et al. (2016). [Preventing Transmission of Zika Virus in Labor and Delivery Settings Through Implementation of Standard Precautions — United States, 2016](#).

The authors note the potential for exposure to large volumes of body fluids during the labor and delivery process and encourage the use of Standard Precautions to prevent possible transmission of Zika virus from patients to healthcare personnel.

U.S. Office of Personnel Management. (2016). [Human Resources Flexibilities and Authorities for Federal Employees Affected by the Zika Virus](#).

The U.S. Office of Personnel Management issued this guidance on protecting workers from occupational exposure to the Zika virus. The attachments can help federal employees learn more about human resources flexibilities and helpful authorities.

Wilkie, D. (2016). The Zika Virus: [What Employers Should Not Do](#). Society for Human Resource Management.

The author shares a human resources perspective on what employers should and should not do with regards to employees and potential occupational exposure to Zika.

World Health Organization. (2016). [Protecting the Health and Safety of Workers in Emergency Vector Control of Aedes Mosquitoes](#).

This document--developed for use by vector control managers, public health workers, healthcare providers, and the like--provides recommendations on essential measures to protect the health and safety of those involved in emergency vector control of Aedes spp. mosquitoes (e.g., space spraying of insecticides and larvicide application).

Plans, Tools, and Templates

* Centers for Disease Control and Prevention. (2016). [CDC Emergency Vector Control Request Form](#).

This Excel file can be used to request vector control services from the Centers for Disease Control and Prevention. Different tabs are offered, allowing requests to be tailored to need and location.

Centers for Disease Control and Prevention. (2016). [Key Zika Considerations for Healthcare Settings](#).

This document provides preparedness considerations for urgent care, hospitals, and doctor's offices in planning for patient diagnosis and symptom management.

- * Centers for Disease Control and Prevention. (2016). [Zika Communication Planning Guide for States](#).

This planning guide provides resources that can help develop Zika-specific communication strategies and messages. The Centers for Disease Control and Prevention also include links to factsheets, infographics, and other materials that can be used in communication efforts.

- Centers for Disease Control and Prevention. (2016). [Zika Virus Risk-Based Preparedness and Response Guidance for States](#).

This document is designed to provide public health officials with actions to consider in the first hours or days upon laboratory confirmation of the first locally acquired case of Zika virus infection.

- Centers for Disease Control and Prevention. (2016). [Zika: CDC Draft Interim Response Plan](#).

This document describes the Centers for Disease Control and Prevention response plan for the first locally acquired cases of Zika virus infection in the continental United States and Hawaii.

- Commonwealth of Virginia. (2016). [Zika Virus Disease, Response Annex](#).

This Annex addresses how the Virginia Zika Task Force (led by Virginia Department of Health), will use the powers of state, local, and federal government and the private and non-profit sectors to meet public health needs in response to threat of the Zika virus.

- Department of Public Health and Wellness, Office of Emergency and Public Health Planning. (2016). [Louisville \(KY\) Zika Response Plan](#).

This plan highlights actions that will be taken in the event of locally-acquired/transmitted by the bite of a local vector cases of Zika virus disease in Kentucky, and more specifically, within the Louisville Metro jurisdiction.

- Texas Department of State Health Services. (2016). [Regional Response Teams: Zika Response](#).

This document highlights the roles and responsibilities of Zika response teams in Texas. It can serve as a model for other states and jurisdictions.

Texas Department of State Health Services. (2016). [Zika Virus Preparedness and Response Plan](#).

Developed by and for the State of Texas, this Zika preparedness and response plan can be used by others charged with creating related guidance.

U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [About the Zika Virus Planning Resources](#).

This document provides an overview of the planning resources documents designed to enhance healthcare coalition and healthcare system preparedness and response to a domestic Zika virus disease outbreak.

* U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Guillain-Barré Syndrome and Other Neurological Deficits Planning Resource](#).

The planning resource can enhance healthcare coalition and healthcare system preparedness and response to a domestic Zika virus disease outbreak, as it highlights some of the anticipated hospital resource needs essential to caring for Guillain-Barré syndrome and other neurological deficits.

U.S. Department of Health and Human Services, Office for the Assistant Secretary for Preparedness and Response. (2015). [HHS Response and Recovery Resources Compendium](#).

The HHS Response and Recovery Resources Compendium is an easy to navigate, comprehensive, web-based repository of HHS resources and capabilities available to federal, state, local, territorial and tribal stakeholders before, during, and after public health and medical incidents.

* U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Maternal-Fetal Health Planning Resource](#).

This matrix illustrates some of the anticipated hospital and healthcare system resources needs essential to caring for high-risk pregnancies and children born with microcephaly or other birth defects that may be associated with Zika virus infection.

* U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Supporting Children with Special Healthcare Needs Planning Resource](#).

This matrix highlights some of the existing federal and national services and programs for supporting children with special healthcare needs in the context of Zika. It includes guidance and links to helpful resources.

U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2016). [Zika Virus Planning Considerations for Healthcare Facilities and Coalitions](#).

This document highlights some of the anticipated hospital and healthcare system planning issues essential to caring for suspect Zika cases, complicated Zika cases, pregnancies associated with Zika virus infection, and children born to Zika-infected mothers who have birth defects that may be associated with Zika virus infection.

World Health Organization. (2016). [Zika App](#).

Healthcare providers and others can download this app to access the latest World Health Organization information Zika virus disease.

World Health Organization. (2016). [Zika: Strategic Response Plan \(Revised for July 2016-December 2017\)](#).

This World Health Organization (WHO) plan provides the basis for coordination and collaboration among WHO and its partners to ensure international preparedness and response capacities are supported to the fullest extent possible. The plan focuses on preventing and managing medical complications caused by Zika virus infection (with a focus on pregnant women, their partners, and their households) and integrated mosquito management, sexual and reproductive health counselling, and related health education and care.

Prevention and Vector Control

Centers for Disease Control and Prevention. (2016). [Avoid Mosquito Bites](#).

The Centers for Disease Control and Prevention share information on mosquito bite protection, focusing on Zika, dengue, chikungunya, and how to prevent bites when traveling.

Centers for Disease Control and Prevention. (2016). [Controlling Mosquitoes at Home](#).

The Centers for Disease Control and Prevention share tips for mosquito control outside and inside the home. This webpage also includes links to related graphics.

Centers for Disease Control and Prevention. (2016). [Information on Aerial Spraying](#).

This webpage explains aerial spraying (to control disease such as Zika virus), when and how it is used, and includes links to related resources.

* Centers for Disease Control and Prevention. (2016). [Insect Repellent Use & Safety](#).

This webpage includes information on insect repellent, including safety, application, and use by pregnant/nursing women.

Centers for Disease Control and Prevention. (2016). [Interim CDC Recommendations for Zika Vector Control in the Continental United States](#).

This webpage includes guidance related to what can be done by state, local, and tribal vector control specialists before and during mosquito season to prepare for Zika virus activity.

Centers for Disease Control and Prevention. (2016). [Prevention](#).

The Centers for Disease Control and Prevention share strategies for preventing Zika, including how to prevent mosquito bites, how to prevent others from getting sick, and information on sexual transmission.

Centers for Disease Control and Prevention. (2016). [Technical Statement on the Role of Disinsection in the Context of Zika Outbreaks, 2016](#).

The Centers for Disease Control and Prevention discuss the use of insecticides (i.e., disinsection) to curb the spread of Zika virus.

Centers for Disease Control and Prevention. (2016). [Zika and Animals](#).

This webpage contains information about Zika and animals and emphasizes that there have not been any reports of pets or other types of animals becoming sick with the virus.

* Organization of Teratology Information Specialists. (2016). [DEET \(N,N-ethyl-m-toluamide\) and Pregnancy](#). MotherToBaby.

This factsheet includes a definition of DEET (the ingredient found in many insect repellents), explains how it is absorbed by humans, and provides information on safety of use by pregnant women and women who have recently given birth.

Texas Department of State Health Services. (2016). [Texas Integrated Vector Management Capacity](#).

The Texas Department of State Health Services surveyed 46 Public Health Emergency Preparedness (PHEP) participating local health departments to understand the state's integrated vector management capacity in the context of Zika. The primary finding was that 65% of the state's population lives in a PHEP jurisdiction that has an integrated vector management plan and/or activities.

Texas Department of State Health Services. (2016). [Zika Prevention](#).

These 15- and 30- second videos were developed by and for the State of Texas. Available on YouTube, in English and Spanish, these videos encourage residents to visit www.texaszika.org to learn more about preventing Zika.

* U.S. Department of Health and Human Services, Office of Population Affairs. (2016). [Providing Family Planning Care for Non-Pregnant Women and Men of Reproductive Age in the Context of Zika](#).

This toolkit was developed to help providers of family planning services share information with non-pregnant clients about the risk of Zika infection.

U.S. Food and Drug Administration. (2016). [Draft Environmental Assessment and Preliminary Finding of No Significant Impact Concerning Investigational Use of Oxitec OX513A Mosquitoes; Availability](#).

This notice published by the U.S. Food and Drug Administration requests public feedback on the investigational release of genetically engineered (GE) mosquitoes under an investigational new animal drug exemption.

* U.S. Food and Drug Administration. (2016). [Insect Repellent Use and Safety in Children](#).

This webpage includes information on insect repellent, including safety, application, and use on children. It also includes links to other pages featuring information on insect repellent.

Reproductive Health (Prevention/Transmission)

Atkinson, B., Hearn, P., Afrough, B., et al. (2016). [Detection of Zika Virus in Semen. \(Letter.\)](#) Emerging Infectious Disease.

The authors tested serum, urine, and semen from a Zika-positive patient and found that only semen was positive for Zika virus by rRT-PCR, at 27 and 62 days after onset of febrile illness. The authors discuss the implications of this finding.

* Centers for Disease Control and Prevention. (2016). [Clinical Guidance](#).

The Centers for Disease Control and Prevention provide guidance related to Zika virus and: pregnant women and women of reproductive age, infants and children, and sexual transmission.

Centers for Disease Control and Prevention. (2016). [Clinical Guidance for Healthcare Providers for Prevention of Sexual Transmission of Zika Virus.](#)

The Centers for Disease Control and Prevention shares updated interim guidance for those with possible Zika virus exposure who are planning to conceive and interim guidance to prevent transmission of Zika virus through sexual contact.

Centers for Disease Control and Prevention. (2016). [Contraception to Prevent Unintended Pregnancy during the Zika Virus Outbreak.](#)

The guidance on this webpage can help healthcare providers provide Zika-related contraceptive information to their patients.

* Centers for Disease Control and Prevention. (2016). [Guidelines for U.S. Citizens and Residents Living in Areas with Ongoing Zika Virus Transmission.](#)

This webpage includes tips for preventing mosquito bites, information on pregnant women and Zika, tips for practicing safe sex, and links to related information.

* Centers for Disease Control and Prevention. (2016). [Preconception Counseling.](#)

The Centers for Disease Control and Prevention share guidance for women and men who live in areas where Zika virus has spread and are interested in conceiving.

Centers for Disease Control and Prevention. (2016). [Zika and Sexual Transmission.](#)

Resources on this page are focused primarily on the sexual transmission of Zika, including knowns and unknowns. Links to resources in English and Spanish are also provided.

Centers for Medicare & Medicaid Services. (2016). [Re: Medicaid Family Planning Services and Supplies.](#) U.S. Department of Health and Human Services.

This letter was sent from the Centers for Medicare and Medicaid Services to all State Health Officials (SHOs) to clarify previous guidance on the delivery of family planning services and supplies to all Medicaid beneficiaries.

Deckard, D.T., Chung, W., Brooks, J., et al. (2016). [Male-to-Male Sexual Transmission of Zika Virus — Texas, January 2016.](#) Morbidity and Mortality Weekly Report. 65(14).372–374.

This case report highlights how Zika virus can be transmitted through anal and vaginal sex.

Mansuy, J.M., Dutertre, M., Mengell, C., et al. (2016). [Zika Virus: High Infectious Viral Load in Semen, a New Sexually Transmitted Pathogen?](#) The Lancet Infectious Diseases. 16(4): 405.

The authors tested a Zika patients' semen two weeks after system onset and found viral load was nearly 100,000 times that of his blood or urine. The authors discuss implications regarding sexual transmission.

Oster, A., Russell, K., Stryker, J., et al. (2016). [Update: Interim Guidance for Prevention of Sexual Transmission of Zika Virus — United States, 2016](#).

The recommendations in this guidance document apply to men who have traveled to or reside in areas with active Zika virus transmission and their female or male sex partners.

Petersen, E., Meaney-Delman, D., Neblett-Fanfair, R., et al. (2016). [Update: Interim Guidance for Preconception Counseling and Prevention of Sexual Transmission of Zika Virus for Persons with Possible Zika Virus Exposure—United States, September 2016](#). Morbidity and Mortality Weekly Report. 65.

The Centers for Disease Control and Prevention issued this interim guidance for couples planning to conceive and couples who are not pregnant or planning to become pregnant, but who want to maximally reduce their risk of sexual transmission.

*Tepper, N., Goldberg, H., Vargas Bernal, M., et al. (2016). [Estimating Contraceptive Needs and Increasing Access to Contraception in Response to the Zika Virus Disease Outbreak — Puerto Rico, 2016](#). Morbidity and Mortality Weekly. 65(12):311–314.

The authors explain how increased access to contraception could reduce the rates of unintended pregnancy and fewer adverse Zika-related pregnancy and birth outcomes.

* U.S. Department of Health and Human Services, Office of Population Affairs. (2016). [Providing Family Planning Care for Non-Pregnant Women and Men of Reproductive Age in the Context of Zika](#).

This toolkit was developed to help providers of family planning services share information with non-pregnant clients about the risk of Zika infection.

World Health Organization. (2016). [Prevention of Sexual Transmission of Zika Virus: Interim Guidance Update](#).

The World Health Organization explains updated guidance regarding prevention of sexual transmission of the Zika virus.

Research

Bingham, A., Cone, M., Mock, V., et al. (2016). [Comparison of Test Results for Zika Virus RNA in Urine, Serum, and Saliva Specimens from Persons with Travel-Associated Zika Virus Disease – Florida, 2016](#). Morbidity and Mortality Weekly Report. 65(18).

The Florida Department of Health Bureau of Public Health Laboratories conducted testing on samples from 913 persons who met the state criteria for testing. Test results for urine and serum samples showed that approximately twice as many urine specimens tested positive for Zika virus than serum specimens, suggesting that urine might be a more useful specimen for identifying acute Zika virus infection.

Bogoch, I., Brady, O.J., Kraemer, M., et al. (2016). [Anticipating the International Spread of Zika Virus from Brazil](#). The Lancet. Volume 387:335-336.

Through evaluation of travel patterns from current countries with Zika virus disease spread and mosquito habitation patterns, the authors have predicted possible Zika virus disease spread throughout the Americas, including the U.S. The authors also included a predictive map.

Lima, A, Lovin, D.D., Hickner, P.V., et al. (2015). [Evidence for an Overwintering Population of Aedes aegypti in Capitol Hill Neighborhood, Washington, DC](#). The American Journal of Tropical Medicine and Hygiene. 94(1):231-5.

This article describes a research study demonstrating that Aedes aegypti mosquitoes were present in samples taken in Capitol Hill, Washington, DC throughout 2011-2014. These mosquitoes were not previously thought to travel further north than the average 10 degree Celsius isotherm.

Lucey, D. (2016). [Will Zika Virus and Microcephaly Epidemics Emerge After Ebola in West Africa? The Need for Prospective Studies Now](#). Health Security.

The author discusses the emerging cases of Zika virus in Cape Verde, West Africa and the need to begin surveillance and mosquito control to prevent more transmission. The author also discusses the timeline of the epidemic, beginning in October 2015 and predicting an increase in cases of microcephaly in May/June 2016, from mothers infected with Zika virus who have not been properly screened and evaluated.

Tang, H., Hammack, C., Ogden, S., et al. (2016). [Zika Virus Infects Human Cortical Neural Progenitors and Attenuates Their Growth](#). Cell Stem Cell. 18(5):1-4.

Researchers working with Zika virus and human neural cells demonstrated that Zika virus does infect the neural cells and affects their ability to replicate and survive.

Risk Communications

* Centers for Disease Control and Prevention. (2016). [CDC Emergency Vector Control Request Form](#).

This Excel file can be used to request vector control services from the Centers for Disease Control and Prevention. Different tabs are offered, allowing requests to be tailored to need and location.

Centers for Disease Control and Prevention. (2016). [Make Sure to Get Your Zika Test Results](#).

Healthcare providers can download, print, and complete this card and share it with patients as a reminder to follow up on Zika testing results.

Centers for Disease Control and Prevention. (2016). [Mosquito Control and Bite Prevention](#).

Speakers can use this flipbook when communicating about Zika risk to community members.

Centers for Disease Control and Prevention. (2016). [Print Resources](#).

This webpage includes links to Zika-specific factsheets, posters, palm cards, and other resources in several languages.

Centers for Disease Control and Prevention. (2016). [Top 10 Zika Response Planning Tips: Brief Information for State, Tribal, Local, and Territorial Health Officials](#).

This summary of key Zika virus resources is a ready reference and aid for response planning for state, local, and territorial public health officials.

* Centers for Disease Control and Prevention. (2016). [Zika Communication Planning Guide for States](#).

This planning guide provides resources that can help develop Zika-specific communication strategies and messages. The Centers for Disease Control and Prevention also include links to factsheets, infographics, and other materials that can be used in communication efforts.

* Disaster Technical Assistance Center. (2016). [Behavioral Health Resources on Zika](#). Substance Abuse and Mental Health Services Administration.

This webpage includes links to two types of resources: those focused on reducing stress and anxiety related to Zika and resources that highlight risk communication strategies for public health officials.

Texas Department of State Health Services. (2016). [Zika Communications Toolkit](#).

This Zika toolkit includes posters, push cards, and fact sheets--specific to Texas and available in English and Spanish--that can be tailored to other states and jurisdictions.

The Partnership Center. (2016). [Zika Action Guide: Health Ministers are a Community Resource](#). U.S. Department of Health and Human Services.

This guidance can help community health ministers communicate about Zika virus with residents. It includes communication strategies that can be used before mosquito season,

at the start of the season, after the first case of local transmission, and during active transmission.

The Partnership Center. (2016). [Health Ministers Guide: On Zika](#). U.S. Department of Health and Human Services.

This guide was written for health ministers (who may serve as residents' first point of contact when it comes to Zika virus) and provides an overview of the virus, explains how it is spread, and lists symptoms and prevention strategies.

World Health Organization. (2016). [Dispelling Rumours Around Zika and Complications](#).

The World Health Organization shares information that dispels rumors about Zika virus and issues such as repellants, Wolbachia, and genetically modified mosquitoes.

Agencies and Organizations

Note: The agencies and organizations listed in this section have a page, program, or specific research dedicated to this topic area.

American Medical Association. [Zika Virus Resource Center](#).

Center for Infectious Disease Research and Policy. [Zika Resource Page](#).

Centers for Disease Control and Prevention. [Zika Virus](#).

National Library of Medicine. [Zika Virus Health Information Resources](#).

Pan American Health Organization. [Zika Virus Infection](#).

U.S. Food and Drug Administration. [Zika Virus Response Updates from FDA](#).

World Health Organization. [Zika Virus](#).

*This Topic Collection contains all of the resources found in the ASPR TRACIE document [Zika: Resources at Your Fingertips](#). That document is updated regularly and reviewed by the following subject matter experts, listed in alphabetical order (an asterisk indicates the expert also reviewed this Topic Collection): **Marion Danis**,* MD, Department of Bioethics, National Institutes of Health; **Dan Hanfling**, MD, Contributing Scholar, UPMC Center for Health Security, Member, InterAgency Board, Health and Medical Responder Safety, Attending Physician, BestPractices, Inc. (a division of EmCare), Clinical Professor of Emergency Medicine, George Washington University, and Strategic Advisor, U.S. Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response (HHS/ASPR), Hospital Preparedness Program; **John Hick**,* MD, HHS ASPR and Hennepin County Medical Center; **Alicia Livinski**, Biomedical Librarian, HHS National Institutes of Health; **Gavin***

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