

**Chapter 1 : Zika Virus Information, Help for Babies with Zika | Zika Care Connect**

*Zika virus produces a mild illness with non-specific symptoms and may be symptomatic in just one in four cases The link between infection in pregnancy and microcephaly is not fully characterised Offer pregnant women at risk of infection a monthly fetal scan, and discuss those with symptoms with an.*

Received Aug 6; Accepted Sep This article has been cited by other articles in PMC. Abstract A panel of national experts was convened by the Brazilian Infectious Diseases Society in order to organize the national recommendations for the management of zika virus infection. Zika virus infection, Guideline, Diagnosis, Therapeutics Background The Zika virus is an arbovirus of the genus Flavivirus, in the family Flaviviridae, which was first identified in , in the Zika Forest in Uganda during a monitoring program on wild yellow fever [ 1 – 4 ]. It is related to other flaviviruses, including the viruses that cause dengue, yellow fever and West Nile fever. Outbreaks of the disease were first notified in the Pacific region in and , respectively in the Yap islands and in French Polynesia, and then in the Americas Brazil and Colombia and in Africa Cape Verde in [ 2 , 3 , 5 , 6 ]. Rapid geographical expansion has been observed since then, with 40 countries in the Americas reporting autochthonous transmission as sporadic cases or outbreaks. It is also important to mention the growing number of countries on other continents that have been notifying occurrences of imported cases of Zika virus infection, thus demonstrating its great potential for dissemination on a worldwide scale [ 7 ]. Through occurrences of Zika outbreaks, the central nervous system and autoimmune complications that were previously reported in French Polynesia have also come to be observed in the Americas. Zika infection during pregnancy has been correlated with congenital microcephaly, fetal malformations and fetal losses. This led the Brazilian Ministry of Health to declare a state of public health emergency of national importance in November , after observation of changes to the epidemiological pattern of occurrences of microcephaly in Pernambuco and other states in northeastern Brazil [ 8 , 9 ]. In the light of the significant increase in the incidence of neurological syndromes and cases of microcephaly that were potentially related to the Zika virus, the World Health Organization WHO declared an international public health state of emergency in February To put the importance of this event into context, this was the fourth time that WHO has ever declared a worldwide state of emergency in relation to a viral epidemic. The previous decisions were made in relation to H1N1 , poliomyelitis and Ebola On February 18, , the Brazilian Ministry of Health issued an ordinance that made it compulsory to notify suspected cases of Zika throughout the country. This disease has thus been added to other arboviruses, such as dengue, yellow fever, West Nile fever and chikungunya, which were already on the national list of diseases with compulsory notification [ 10 ]. Epidemiology Geographical distribution In humans, the Zika virus was first identified in Uganda and Tanzania, in [ 11 ]. Between and , a variety of serological evidence regarding infection by this virus was reported from countries in Africa and some parts of Asia [ 4 ]. The first epidemic outside of Africa and Asia occurred in , in the Yap islands of Micronesia. Another large outbreak of Zika fever occurred concomitantly with a dengue epidemic serotypes 1 and 3 in French Polynesia in , affecting around 32, people [ 3 ]. In , cases of Zika virus infection were reported on Easter Island, which is Chilean territory [ 12 ]. In May , some months after reports of increased incidence of exanthematous febrile disease in states of northeastern Brazil, which until then were of unidentified cause, presence of Zika virus circulation was confirmed in this country. Since then, rapid expansion of the areas of circulation and autochthonous transmission of the virus has been observed, notably in states of the northeastern region of Brazil. It is estimated that more than one million Brazilians became infected with the Zika virus in , thus reflecting the capacity of the virus to cause large-scale outbreaks in places where the biological vector is present. Worldwide, the virus is now circulating in 65 countries and territories, mostly in the Americas [ 15 ]. Transmission methods Zika is transmitted primarily through the bites of infected mosquitos of the genus Aedes, especially Aedes aegypti and Aedes albopictus [ 16 ]. In humans, except for pregnant women, the period of viremia is short and it is most frequently identified by the 5th day after the symptoms start. In addition to vector transmission, other forms of transmission that so far are just theoretical or anecdotal have started to receive greater attention. The RNA of the Zika virus has now been detected in

blood, urine, semen, saliva, female genital tract secretions, cerebrospinal fluid, amniotic fluid and breastmilk [ 16 , 19 – 25 ]. Eleven countries have reported evidence of person-to-person transmission of Zika virus, probably via a sexual route [ 15 ]. Tests conducted on the amniotic fluid of pregnant women with possible Zika virus infection whose fetuses had been diagnosed as presenting microcephaly have been found to be positive for the Zika virus [ 27 ]. This shows that the virus has the capacity to cross the placental barrier and, increasingly evidently, that it causes fetal malformations. Presence of the virus has already been shown through detection of viral RNA in the breastmilk of mothers with conditions of acute infection. It is expected a higher viral load of Zika virus in maternal milk for women infected near delivery, and not expected to occur with first trimester infections. In New Caledonia it has been reported the presence of infectious Zika virus particles in breast milk with substantial viral loads [ 28 ]. However, since there have not been any confirmed cases of transmission through breastfeeding, the guidance continues to be that breastfeeding should be maintained, given that the benefits of breastfeeding override the risks of virus transmission through breastmilk, which remains unproven [ 22 ]. In the light of present knowledge, identification of the virus in urine, breastmilk, saliva and semen is potentially useful in diagnosing the disease, but the possibility of importance of such findings for virus transmission to other people cannot be confirmed. Hence, asymptomatic infection occurs more frequently. These estimates have been based on a single study that was conducted through a household serological survey involving serological tests for Zika IgM [ 2 ]. The clinical condition typically includes a maculopapular rash, frequently accompanied by pruritus, low fever. Other manifestations that have commonly been reported include myalgia, headache, retro-orbital pain and asthenia. Periarticular edema, oral lymphadenopathy, oral ulcers, abdominal pain, nausea and diarrhea may also occur [ 2 , 13 , 14 ]. So far, the length of the immunity conferred through natural infection with the Zika virus remains unknown. The temporal and spatial relationship between Zika outbreaks and higher incidence of microcephaly in states with documented autochthonous transmission has started to indicate that the existence of a causal relationship between these two epidemiological events is increasingly likely [ 30 ].

**Chapter 2 : A Literature Review of Zika Virus**

*Are you a healthcare professional treating women or babies affected by Zika? Please consider enrolling in the healthcare professional network if you are licensed and can offer the clinical services recommended in the CDC Clinical Guidance for Evaluation and Management of Pregnant Women or Infants with Possible Zika Virus Infection.*

What laboratory studies should you order and what should you expect to find? Results consistent with the diagnosis Peripheral WBC with differential may be normal; mild thrombocytopenia has been reported. Chemistries, including liver function tests, may be normal. Results that confirm the diagnosis Zika-specific RT-PCR can be done on serum within the first week of symptom onset. Virus may be detectable for longer periods in urine and semen. Local and state health departments should be contacted to facilitate testing. Zika is a nationally notifiable condition in the U.S. What imaging studies will be helpful in making or excluding the diagnosis of Zika? For mild disease in a nonpregnant individual, no imaging is indicated. If the test is positive, serial ultrasounds every weeks should be considered to evaluate for brain anomalies such as microcephaly and intracranial calcifications. At delivery, histopathological examination of the placental and umbilical cord, and Zika RNA testing of the placental and cord tissue as well as cord serum is recommended. If the woman tests negative for Zika, she should receive routine prenatal care including a fetal anatomy ultrasound at weeks gestation. This ultrasound should be evaluated for the presence of microcephaly or intracranial calcifications, and should any doubt exist, additional fetal ultrasounds can be considered later in the pregnancy. If fetal microcephaly or intracranial calcifications are noted on prenatal ultrasound, Zika testing of the amniotic fluid should be considered. Referral to a maternal-fetal specialist is recommended for pregnant women testing positive or inconclusive for Zika. What complications can be associated with Zika infection and are there additional treatments that can help to alleviate these complications? Of those who are symptomatic, the vast majority have a mild self-limited illness of 2 to 7 days duration. There have been case reports of meningoencephalitis, myelitis and hematospermia. Congenital infection may be linked to microcephaly and other neurological abnormalities in the neonate. Mortality due to Zika is very rare, but has been reported in patients with sickle cell disease, congenital Zika infection and post-Zika Guillain-Barre syndrome. Patients developed neurological symptoms after a median of 6 days following a viral syndrome. All patients received intravenous immunoglobulin IVIG. Outcomes were favorable, with no deaths and most patients able to walk without assistance 3 months after hospital discharge. The incidence of GBS in Polynesia was estimated to be 0. These abnormalities included intrauterine growth restriction with and without microcephaly, cerebral calcifications, cerebral atrophy, agenesis vermis, abnormal arterial flow in cerebral or umbilical arteries, oligohydramnios and anhydramnios. The CDC recommends the following for the management of pregnant women with a history of travel to an area with ongoing Zika transmission: Test symptomatic women by RT-PCR during the first week of illness, or by Zika IgM and plaque reduction neutralization test if more than 3 days after illness onset. Testing may be offered to asymptomatic women Zika IgM and plaque reduction neutralization test 2 to 12 weeks after travel. If the woman tests negative, a fetal anatomy ultrasound is recommended. If there is evidence of microcephaly or intracranial calcifications, retest the woman for Zika and consider amniocentesis for Zika testing. If the woman tests positive, consider serial fetal ultrasounds and amniocentesis for Zika testing. The CDC recommends the following for the management of pregnant women residing in an area with ongoing Zika transmission: If asymptomatic, Zika virus IgM testing is recommended at the initiation of prenatal care and again mid-second trimester. What is the epidemiology of Zika? It is thought that Zika was originally transmitted between non-human primates by sylvatic Aedes mosquitoes in central Africa. In the current epidemic in the Pacific islands and the Americas, humans are the main amplifying hosts. The primary vectors are thought to be Aedes species mosquitoes Aedes aegypti, Ae. Sexual transmission of Zika has also been reported, and the virus is noted to persist for weeks to months in semen. Zika virus also is found in other body fluids such as saliva and urine, and can be detected in these fluids even after it is no longer detectable in blood. It is likely that there will be seasonality, as seen in dengue infections, but data are not yet available. The vector Aedes aegypti breeds in peridomestic containers and tree holes.

Assuming that this vector is playing an important role, lack of running water and sanitation are likely to be important environmental factors predisposing communities to Zika. Zika virus was associated with only sporadic human cases until 2013, when it caused an outbreak on the Micronesian island of Yap. From there, it spread to French Polynesia and Easter Island, and then the Americas in early 2014. Recent Zika infection in returning travelers from Thailand and Indonesia also has been reported. People who have not been exposed to Zika previously are thought to be susceptible. Prior exposure to the related dengue virus does not appear to confer protection. It appears that transmission has died down on many of the islands that were initially affected, likely due to herd immunity. In countries with much larger populations, however, it is unclear what the transmission dynamics will be. No postexposure prophylaxis is available. No vaccines are available, though several different candidates are in development. The best strategy to prevent infection is by avoiding mosquito bites. The suspected mosquito vectors *Aedes* spp. Therefore, precautions should be taken by applying insect repellent, wearing permethrin-impregnated clothing, remaining in screened or air-conditioned environments, and using mosquito netting, especially during the day time. Mosquito control strategies also include eliminating larval breeding sites. This consists of emptying or covering containers around the home and applying larvicide to bodies of water that cannot be drained. Indoor residual spraying also may offer benefit. Transgenic mosquitoes have been developed that render male *Aedes aegypti* sterile, thus reducing the total *Aedes aegypti* population within the release area. It is unclear what role these mosquitoes may play in modifying Zika transmission. How does this organism cause disease? It has been recently shown that human embryonic neural progenitor cells derived from pluripotent stem cells are targets for Zika virus. Once infected, these cells experience increased cell death, cell cycle and transcription dysregulation, and are able to produce infectious viral particles. This provides a plausible mechanism for the congenital neurological abnormalities seen following in utero Zika infection. Good epidemiological evidence of the link between Zika and Guillain-Barre syndrome, with a detailed discussion of the clinical features of GBS cases. In vitro demonstration that human neural progenitor cells, derived from pluripotent stem cells, are targets for Zika virus. Once infected, these cells experience increased cell death, cell cycle and transcription dysregulation, and are able to produce infectious viral particles. Brasil, P, Perreira, JP, Raja Gabaglia, C. N Engl J Med.. Algorithm for testing women with a history of travel to Zika endemic areas and women residing in an area with ongoing Zika transmission. N Engl J Med. Description of the first substantial outbreak and clinical features. Details cases of sexual transmission of Zika and guidelines for prevention. No sponsor or advertiser has participated in, approved or paid for the content provided by Decision Support in Medicine LLC.

### Chapter 3 : WHO | Pregnancy management in the context of Zika virus infection

*Local governments and mosquito control programs often use an integrated mosquito management (IMM) or integrated vector management (IVM) approach to control mosquitoes. IMM uses a combination of methods to prevent and control mosquitoes that spread viruses, like Zika, dengue, and chikungunya. IMM.*

How does it spread? Is there a cure? The Signs and Symptoms! How is it different from typhoid or dengue or malaria? How can homeopathy help? All of this answered in this post. But, if you are suffering from it, or seeing some signs and symptoms, just fill in your details in the form down below and we will answer all your questions for FREE! Zika virus is a mosquito-borne viral disease which causes a condition associated with fever. It is very similar to dengue fever. Get help from our expert team of doctors! Looking for answers, help for the disease? Fill in some of your info below and we will answer all your questions. We will call you back within 48 hours! We are always here to help you. Just take one step towards Dr. It is caused by an arbovirus of the flavivirus family, which causes disease like dengue, West Nile, fever, and Japanese encephalitis. This virus was first isolated from a rhesus monkey in Uganda in The virus is common in the west and central Africa but also occurs in Pakistan, India, Thailand, Malaysia, and Indonesia. A pregnant mother can pass it to her baby during pregnancy or around the time of birth. It can spread through sexual contact. There have also been reports that the virus has spread through blood transfusions. It causes illness in about one in five people, but particularly dangerous for pregnant women, it can cause a condition called microcephaly, which means that children are born with an abnormally small head. Age and Incidence of Zika Virus Zika virus mainly affects the years of age group and females are more affected than males. Transmission of Zika Virus Zika virus transmitted through mosquito bites Aedes mosquito. It usually bites during the day, peaking during early morning and late afternoon and evening. This is the same mosquitoes that transmit dengue, chikungunya and yellow fever. Sexual transmission of Zika virus is also possible. From a pregnant woman to her fetus. Other modes of transmission such as blood transfusion. Signs and Symptoms of Zika Virus The symptoms of the disease occur after days of a mosquito bite.

**Chapter 4 : Zika Refresher Webinar - ACOG**

*The mosquito vector that carries the Zika virus thrives in warm climates and particularly in areas of poor living conditions. Pregnant women living in or travelling to such areas are at equal risk as the rest of the population of being infected by viruses borne by this vector. Maternal infection.*

Virology[ edit ] The Zika virus belongs to the family Flaviviridae family and the genus Flavivirus , thus is related to the dengue , yellow fever , Japanese encephalitis , and West Nile viruses. Like other flaviviruses, Zika virus is enveloped and icosahedral and has a nonsegmented, single-stranded, kilobase , positive-sense RNA genome. It is most closely related to the Spondweni virus and is one of the two known viruses in the Spondweni virus clade. The capsid proteins orange are shown interacting with the RNA genome yellow at the center of the virus. As in other flaviviruses, such as the similarly sized West Nile virus, the RNA genome encodes seven nonstructural proteins and three structural proteins. This protein is the flavivirus envelope glycoprotein, that binds to the endosomal membrane of the host cell to initiate endocytosis. The nucleocapsid, in turn, is enveloped within a host-derived membrane modified with two viral glycoproteins. This swelling becomes so severe, it results in cell death, also known as paraptosis. This form of programmed cell death requires gene expression. IFITM3 is a trans-membrane protein in a cell that is able to protect it from viral infection by blocking virus attachment. Once the cell has been infected, the virus restructures the endoplasmic reticulum, forming the large vacuoles, resulting in cell death. Infrequently, however, other arboviruses have become established as a human disease and spread in a mosquito–human–mosquito cycle, like the yellow fever virus and the dengue fever virus both flaviviruses , and the chikungunya virus a togavirus. Zika is primarily spread by the female *Aedes aegypti* mosquito, which is active mostly in the daytime. Zika has been detected in many more species of *Aedes*, along with *Anopheles coustani*, *Mansonia uniformis*, and *Culex perfuscus* , although this alone does not incriminate them as vectors. A much cheaper and faster method involves shining a light at the head and thorax of the mosquito, and detecting chemical compounds characteristic of the virus using near-infrared spectroscopy. The global distribution of the most cited carrier of Zika, *A. A.* The study authors conclude that mosquitos are adapting for persistence in a northern climate. The virus is thought to be infectious for a longer period of time after infection at least 2 weeks when transmitted via semen. However, rising global temperatures would allow for the disease vector to expand their range further north, allowing Zika to follow. Severe progressions of infection have been linked to the development of microcephaly in the unborn child, while mild infections potentially can lead to neurocognitive disorders in adulthood. Eleven of the positive donors reported symptoms of Zika fever after their donation, but only three of 34 samples grew in culture. The pathogenesis of the virus is hypothesized to continue with a spread to lymph nodes and the bloodstream. Zika fever Rash on an arm due to Zika Zika fever also known as Zika virus disease is an illness caused by the Zika virus. Zika virus vaccine The World Health Organization has suggested that priority should be to develop inactivated vaccines and other nonlive vaccines, which are safe to use in pregnant women. This vaccine consists of a small, circular piece of DNA, known as a plasmid, that expresses the genes for the Zika virus envelope proteins. As the vaccine does not contain the full sequence of the virus, it cannot cause infection.

*The Zika virus is an arbovirus of the genus Flavivirus, in the family Flaviviridae, which was first identified in , in the Zika Forest in Uganda during a monitoring program on wild yellow fever [1 - 4].*

ShareCompartir Integrated Mosquito Management for *Aedes aegypti* and *Aedes albopictus* mosquitoes Local governments and mosquito control programs often use an integrated mosquito management IMM or integrated vector management IVM approach to control mosquitoes. IMM uses a combination of methods to prevent and control mosquitoes that spread viruses, like Zika, dengue, and chikungunya. IMM uses methods to control mosquitoes based on an understanding of mosquito biology, the mosquito life cycle, and the way mosquitoes spread viruses to develop plans for controlling mosquitoes. IMM uses methods that, when followed correctly, are safe and have been scientifically proven to reduce mosquito populations. Everyone can help control mosquitoes. Professionals from local government departments or mosquito control districts develop mosquito control plans, perform tasks to control larvae and adult mosquitoes, and evaluate the effectiveness of actions taken. You, your neighbors, and the community can also take steps to reduce mosquitoes in and around your home and in your neighborhood. Estimated range of *Aedes aegypti* and *Aedes albopictus* More Conduct mosquito surveillance Mosquito control plans include taking steps to control mosquito populations before people start getting sick with a virus spread by mosquitoes. Professionals need to understand what types and numbers of mosquitoes are in an area. In order to find out this information, mosquito control experts conduct surveillance. Surveillance activities can include Finding and monitoring places where adult mosquitoes lay eggs. The larvae that hatch from eggs are found in these same places Tracking mosquito populations and the viruses they may be carrying Determining if EPA-registered insecticides will be effective These activities help professionals determine if, when, and where control activities are needed to manage mosquito populations before people start getting sick. If professionals discover that local mosquitoes are carrying viruses like dengue, Zika, or others , they start implementing other activities identified in their mosquito control plans. Remove places where mosquitoes lay eggs Removing places where mosquitoes lay eggs is an important step. Mosquitoes lay eggs near water because larvae need water to survive. Professionals and the public can remove standing water to reduce mosquito larvae before they become adult flying mosquitoes. Professionals at local government agencies and mosquito control districts may collect and dispose of illegally dumped tires, clean up and maintain public spaces like parks and greenways, and clean up illegal dumps and roadside trash. You, your neighbors, and community can remove standing water. Once a week, items that hold water like tires, buckets, planters, toys, pools, birdbaths, flower pot saucers, and trash containers should be emptied and scrubbed, turned over, covered, or thrown away. If needed, a community clean up event can be held to remove large items like tires that collect water. Control larvae and pupae Once mosquito eggs hatch, they become larvae and then pupae. Both larvae and pupae live in standing water. Dumping or removing standing water in and around your home is one way to control larvae. For standing water that cannot be dumped or drained, a larvicide can be used to kill larvae. Larvicides [PDF â€” 1 page] are products used to kill larvae before they become biting adults. Professionals treat water-holding structures and containers in public places, like storm drains or urns in cemeteries. They may also treat standing water on private property as part of a neighborhood cleanup campaign. People can treat fountains, septic tanks, and pool covers that hold water with larvicides. Controlling larvae and pupae before they become adults can minimize widespread use of insecticides that kill adult mosquitoes Control adult mosquitoes Adult mosquitoes can spread viruses like dengue, Zika, or others that make you sick. When surveillance activities show that adult mosquito populations are increasing or that they are spreading viruses, professionals may decide to apply adulticides [PDF â€” 1 page] to kill adult mosquitoes. Adulticides help to reduce the number of mosquitoes in an area and reduce the risk that people will get sick. If mosquitoes are spreading viruses over larger areas, professionals spray adulticides by using backpack sprayers, trucks [PDF â€” 1 page] , or airplanes [PDF â€” 1 page] People can buy adulticides and use them inside and outside their homes. Monitor control programs To make sure that mosquito control activities are working, professionals monitor the effectiveness of their efforts to control both larvae and adult

mosquitoes. For example, if an insecticide did not work as well as predicted, professionals may conduct additional studies on insecticide resistance or evaluate the equipment used to apply insecticides.

**Chapter 6 : Management of zika virus | StratOG**

*Preventing Other Modes of Zika Virus Transmission. Until recently, the mosquito was the only known vector for Zika virus transmission. As the infection spreads, new possible routes of transmission facilitating human-to-human spread of the virus without an intermediate vector have been discovered.*

Zika virus exposure in pregnancy: It was only in , with an outbreak in Brazil, that congenital Zika syndrome was identified. Zika virus is transmitted by mosquitoes, predominately Aedes mosquitoes A. Albopictus but also Anopheles and Mansonii, and can also spread through sexual contact, blood transfusions and laboratory exposure. Aedes mosquitoes have not been found in NZ. Zika virus is a notifiable disease. Definitions Confirmed Zika virus infection: Possible Zika virus infection: Symptoms Zika virus usually causes a mild self-limited illness, with acute onset of fever, rash, arthralgia and conjunctivitis. Incubation period is estimated as days. Serology needs to be interpreted with caution due to cross reactions with other related flaviviruses eg. Negative testing 12 weeks after exposure does not rule out maternal infection. Rt-PCR test may remain positive for longer in pregnant women. Major risk period - infection in the late first trimester and early 2nd trimester, but adverse outcomes have been associated with infection diagnosed in the third trimester. Reports suggest it can take from a median of weeks from symptom onset to prenatal diagnosis of microcephaly on ultrasound. Zika virus has been detected in breast milk but there are no reported cases of Zika virus in association with breastfeeding. Current evidence suggests that the benefits of breastfeeding outweigh the risks of Zika virus transmission and should be encouraged. Congenital infection The clinical spectrum of congenital Zika virus infection is not fully known. Zika virus appears to target neural progenitor cells disrupting neuronal proliferation, migration and differentiation, resulting in microcephaly and other serious brain anomalies. The neurologic anomalies seen have a pattern that enables distinction from the lesions commonly seen in other congenital infections. Other findings include ocular abnormalities such as chorioretinitis, hemorrhagic retinitis, optic nerve hypoplasia, clubfoot and arthrogryposis, likely as a consequence of the neurological abnormalities. More data is awaited regarding long term outcomes of those apparently unaffected or mildly affected. Laboratory Investigations for infants Diagnostic testing for congenital Zika virus can be difficult. Amniotic fluid should be collected at delivery - 2ml of amniotic fluid in a sterile tube, submit promptly to the Virus Laboratory. Testing from the infant not cord blood in first 2 days of life is recommended. Placenta can be considered for testing in a symptomatic pregnant women and when an infant has Zika virus associated birth defects without a definitive laboratory confirmed diagnosis in pregnancy. If the infant is clinically well, further testing as per below can be deferred until maternal test results have come back positive for Zika virus. If there is concern about follow-up of the infant or testing of the mother is 12 weeks after exposure do all Zika virus testing on the infant blood, urine and consider CSF as well as ophthalmology and head USS. Mother confirmed positive for Zika virus in pregnancy. Check head USS, hearing screen as per universal screening. Infant should receive routine care including regular OFC monitoring , neurological examination and age appropriate developmental screening. Infant confirmed positive for Zika virus. As per the above plus comprehensive ophthalmological examination and ABR hearing testing by one month of age. These infants should be followed for the first 12 months of life, by Neonatal Service in consultation with SSH -ID including repeat audiology at 6 months of age if initial screen negative. Appropriate referral and management if any abnormalities are found. Infants with clinical findings consistent with congenital Zika infection. Extensive evaluation as per point 4 needed in consultation with a paediatric neurologist. Infant requires ongoing follow-up. Interim guidance for the evaluation and management of infants with possible congenital Zika virus infection – United States, August Aug 19th 3.

## Chapter 7 : Management of infection by the Zika virus

*Treatment information on Zika virus. Provided by the U.S. Centers for Disease Control and Prevention. Treat Zikas symptoms by drinking fluids, getting rest, and taking acetaminophen for fever and pain.*

Zika Refresher Webinar Recommendations on Counseling, Testing, and Management of Zika Virus in Pregnant Women This webinar, originally presented on June 14, , explains how Zika virus is contracted, prevention methods, who should be assessed for Zika virus exposure, current testing recommendations, and what follow-up is recommended for the infants of women with possible Zika virus exposure during pregnancy. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the American Academy of Pediatrics. The CDC also has a variety of Zika resources , including fact sheets for patients and providers and testing algorithms. Hello and thank you for joining us today. My name is Don from Blue Sky. This webinar is supported by the cooperative agreement from the Centers for Disease Control and Prevention and the American Academy of Pediatrics. The faculty and planning committee wish to disclose the following information. Oduyebo, the audience is all yours. Good afternoon everyone and good morning to those who are behind the Eastern Standard Time. Thank you all so much for taking time to attend this talk and thank you to the American College of Obstetrics and Gynecology for organizing this webinar. First, I would like to briefly provide an overview of Zika virus which most likely is a review for most, if not all of you. Zika virus is a single-stranded RNA virus which is closely related to dengue, yellow fever, Japanese encephalitis and West Nile viruses. It is primarily transmitted by two Aedes species mosquitoes, Aedes aegypti and Aedes albopictus mosquitoes. As you know, and will be discussed later, the Zika virus may also be transmitted through several other routes including intrauterine and perinatal transmission, sexual transmission, laboratory exposure and probable blood transfusion. However, prior to the most recent outbreak, these modes of transmission were not discovered. Although research is underway, there is currently no vaccine or specific antiviral treatment for Zika virus. Particularly about the Zika virus vaccine, there are now greater than 40 vaccines that have been developed by the US government agencies, commercial vaccine manufacturers and academic research labs. The cornerstone of clinical management is supportive care. Patients should be advised to treat the symptoms including recommending rest, drinking fluids, taking medicine such as acetaminophen to reduce fever and pain. Aspirin and other non-steroidal anti-inflammatory drugs or NSAIDs should be avoided until dengue has been ruled out as a cause of illness in order to reduce the risk of bleeding and it should also be avoided in children aged less than six months. In terms of Zika virus infection during pregnancy, prior to the outbreak, the limited information that we had demonstrated that there were no evidence of increased susceptibility of Zika virus among pregnant women. Zika virus infection could occur in any trimester. However, the incidence of Zika virus infections in this group were not known and that the clinical course is similar among pregnant women and non-pregnant individuals. So everyone kept asking if the clinical symptoms that typically mount, if present at all, why is there so much concern about Zika virus infection? This brings us to the lessons learned from the most recent Zika virus outbreak. Although Zika virus has existed for almost 70 years, the potentially devastating effects on pregnancy have only been recently observed. To quote our former CDC director, Dr. This was before an effective vaccine became available. Early in this response, we all were faced with many questions, and in a short amount of time, we had to learn a lot about the association of Zika virus and the poor pregnancy outcomes. The data from the surveillance systems were used and continue to be used to inform the clinical guidance and to direct public health actions. We just wanted to say a big, special thank you to all of you on the phone. These two systems I just discussed are very complementary. The US Zika Pregnancy and Infant Registry prospectively follows pregnant women with any laboratory evidence of Zika and their infants, while the Zika-related Birth Defects Surveillance system monitors for brain abnormalities including microcephaly and other central nervous system defects to better understand Zika exposure during pregnancy and adverse outcomes. This is more done retrospectively. Using the data from these surveillance systems as well from other published reports, CDC and other scientists have established that the Zika virus is a cause of

serious brain abnormalities, microcephaly, and other birth defects. Also recognize the pattern of birth defects associated with Zika virus, congenital Zika virus infections, now called congenital Zika syndrome. The distinct pattern of birth defects among the fetuses and infants born to women infected during pregnancy, which is called congenital Zika syndrome, include severe microcephaly with partially collapsed skull; thin cerebral cortex with calcifications noted in the subcortical region; eye anomalies including macular scarring, focal pigmentary retinal mottling; congenital contractures; and marked early hypertonia and symptoms of extrapyramidal involvement. When stratified by trimester infection, as you can see here in this slide, the first column is for the data using the surveillance system from the US states and Washington D. When you look at these stratified by infections, the first trimester infection has the highest proportion of infants with Zika-related birth defects. Prior to the Zika virus outbreak in the Americas, sexual transmission of Zika was suggested by two reports. However, this group of transmission has been supported through multiple case reports from at least 13 countries including the United States. Zika virus can be transmitted from asymptomatic persons or from symptomatic persons before, during, or after the onset of symptoms. Sex includes vaginal, anal, oral sex and also the sharing of sex toys. As of May 2nd, 52 cases from sexual transmission of Zika virus have been reported, and this is a small fraction of the total number of Zika cases reported. However, it is unclear if this is an accurate estimate because it is difficult to enumerate the total cases for sexual transmission in assessing of concurrence mosquito-borne Zika virus transmission. Other modes of Zika virus transmission that have been highlighted during the most recent outbreak was through breast milk. Zika virus has been cultured from breast milk and they have been multiple case reports describing possible Zika virus transmission from breast milk. However, these cases have not been confirmed. From to , local transmission of Zika virus has been identified from 48 countries and territories in the Americas. As you can see from the slide, a much smaller number of cases have been reported to date in with most cases from the South American region. Specifically in the United States, this graph shows the number of Zika virus disease cases reported from the US states and Washington, D. The peak occurred in July and August of and declined over the following four months. Very few cases were reported in and even fewer in This trend reflects the overall decline in Zika virus transmission in the Americas. And this change in the epidemiology of Zika virus has indications and implications for the interpretation of test results, particularly serologic tests. This graph shows countries and territories with risk of Zika virus transmission. Areas with risk of Zika are designated by the purple color. It means that Zika virus spread by local mosquitoes have been reported in at least one area of that country. Some countries in purple shading may have had Zika virus transmission in the past, are likely to have Zika virus transmission, or currently have low rates of steady Zika virus transmission. I encourage everyone to visit the CDC website for the most updated information. For the US territories including Puerto Rico, US Virgin Islands, and American Samoa, there are 4, pregnant women with any laboratory evidence of Zika virus infections, of which infants and pregnancy losses with Zika-associated birth defects. And so it is important that health care providers know how to counsel about, evaluate for, and manage Zika virus infection during pregnancy given the severe adverse effects of Zika virus infection and also in assessing of people traveling in summertime and people who are traveling to some areas with risk with Zika. Very briefly, I want to go over what the definition for possible Zika virus exposure entails. It includes travel to an area with risk for Zika virus transmission, residence in an area with risk for Zika virus transmission, and sex without a condom with a partner who traveled to or lives in an area with risk of Zika virus transmission. Before we delve in the particulars of the guidance, I want to stress the importance of shared decision-making in terms of testing and screening of pregnant women. This is very important in light of the decline in the prevalence of Zika virus infections and the limitations of the available test. We will now go through various clinical scenarios to highlight some of the guidelines. In the first scenario, a patient presents to your office practice and says she really wants to go to the beach on vacation and what she should be cautious about. If she must travel to, or in another situation, she lives in an area with Zika, she should first speak with a health care provider and strictly follow steps to avoid mosquito bites and to prevent sexual transmission. In addition, the use of condoms consistently and correctly during sex or abstaining from sex for the duration of the pregnancy is advised for pregnant women who have partners with possible Zika virus exposure. Moving to the next scenario, here, we have a pregnant woman who had traveled

to an area with risk for Zika, which in this scenario is Panama. So what would everyone be thinking before we go through, what is everyone working through their minds, what will you be considering for evaluation given her travel history, her current signs of symptoms? Evaluation for Zika virus should be considered in conjunction with the tailored recommendation, evaluation. The current Zika virus interim pregnancy guidance has two algorithms, and here is the image of the algorithm, which you see on your slides. The algorithm on the left is for pregnant women with symptoms of Zika virus disease and the algorithm on the right is for those without. To begin, health care providers should ask about the type and duration of Zika virus exposure before and during the current pregnancy. The health care provider should also ask about a diagnosis of laboratory-confirmed Zika virus infection before the current pregnancy. Based on experience with other flaviviruses, previous Zika virus infection is likely to confer prolonged, possibly lifelong immunity. Testing is not routinely recommended for pregnant women with a previous diagnosis of laboratory-confirmed Zika virus infection. For symptomatic pregnant women like this pregnant woman in this scenario, testing is recommended, of course, as soon as possible through 12 weeks after symptom onset. Once the decision is made to test, the question is what type of test should be performed? What I would like to do is to quickly divert from the guidance to discuss and also to refresh our memory of the types of Zika virus testing that is available. So diagnostic testing for Zika virus infection can be accomplished using both molecular and serologic methods. Serologic tests include the Zika virus immunoglobulin M or IgM enzyme-linked immunosorbent assay to detect IgM antibodies in serum or CSF and the plaque reduction neutralization test or PRNT which measures virus-specific neutralizing antibody titers. Briefly, since Zika virus RNA in serum or urine are usually short-lived, negative results do not preclude infection, and further testing is recommended, usually by serology test. Secondly, testing for Zika virus IgM can result in false positive results because of significant cross-reactivity with other flaviviruses such as dengue. Zika virus IgM can persist beyond 12 weeks in some infected people making it difficult to determine the timing of infection. So sometimes the detection of IgM may not always indicate a recent infection. Testing for Zika virus IgM may yield false positive results depending on the timing of exposure in relation to when the test was performed. Last, PRNT may not distinguish the type of infecting virus in people previously infected with or vaccinated against a related flavivirus. Now, moving back to this clinical scenario into the guidance, so question is what test should be performed? We have a table on the interpretation for the different combinations that I recommend you refer to. Switching gears to discuss the recommendations for asymptomatic pregnant women with possible Zika virus exposure, the testing recommendations for this population differ based on the circumstances of possible exposure. On the right side, the right arm of this algorithm, it contains guidance for testing asymptomatic pregnant women with recent possible exposure to Zika virus, but without ongoing exposure. In assessing the decreased prevalence of Zika cases and to reduce the possibility of false positive results and assessing of the lower pre-test probability, testing is not recommended. Jurisdictions may recommend testing of asymptomatic pregnant women for clinical decision-making or as part of Zika virus infection surveillance. Now, moving to the left arm of this algorithm, which is for asymptomatic pregnant women with ongoing possible exposure, and ongoing possible Zika virus exposure is defined as those who reside in or frequently travel to an area with Zika virus transmission. Testing for Zika virus should be offered to these asymptomatic pregnant women. And then Zika IgM testing is not recommended because of the emerging data that indicates challenges in determining whether positive results represent an infection that occurred during the current pregnancy versus prior to conception.

### Chapter 8 : Treatment | Zika virus | CDC

*A collection of articles and other resources on the Zika virus outbreak, including clinical reports, management guidelines, and commentary.*

### Chapter 9 : Zika Virus - Signs, Symptoms Treatment and Management | Dr. Thind

## DOWNLOAD PDF MANAGEMENT OF ZIKA VIRUS

*Zika virus transmitted through mosquito bites (Aedes mosquito). It usually bites during the day, peaking during early morning and late afternoon and evening. This is the same mosquitoes that transmit dengue, chikungunya and yellow fever.*