

# ZİKA VİRÜS

**Doç. Dr. Vicdan KÖKSALDI MOTOR**  
**Mustafa Kemal Üniversitesi**  
**Tayfur Ata Sökmen Tıp Fakültesi**  
**Enfeksiyon Hastalıkları ve Klinik Mikrobiyoloji AD**  
**HATAY**

# SUNUM PLANI

- Etyoloji ve Arbovirüsler
- Tarihçe
- Klinik
- Komplikasyonlar
- Tanı
- Tedavi
- Korunma

# Zika virüs-Etyoloji

- *Flaviviridae* ailesinin
- *Flavivirus* cinsinden
- Zarflı
- Pozitif polariteli
- Tek iplikçikli
- RNA virüsü



*Lazear HM and Diamond MS. J Virol, Mar 9, 2016*

- *Aedes spp.* cinsi sivrisinekler



ARBOVIRUS  
(arthropod-borne virus)

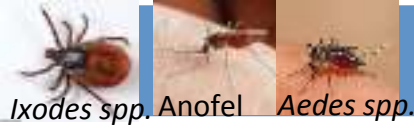
# ARBOVİRÜSLER



*Aedes spp.* *Culex spp.*

## Togaviridae

- **Alfaviirüsler:** Batı At Ensefaliti, Doğu At Ensefaliti, Venezuela At Ensefaliti, **Chikungunya**, O'nyong nyong, Ross Irmağı, Sindbis



*Ixodes spp.* Anofel *Aedes spp.*

## Flaviviridae

- **Flavivirüsler:** Sarı Humma, **Deng**, Batı Nil, St.Louis Ensefalit, Japon Ensefalit, **Zika**



*Hyalomma spp.*

## Bunyaviridae

- **Bünyavirüsler:** Bunyamwera , Kalifornia Ensefaliti
- **Filebovirüsler:** Rift Vadisi Ateşi, Tatarcık Humması
- **Nairovirüsler:** Kırım Kongo Kanamalı Ateşi
- Hantavirüsler: ROBOVİRÜS



*Dermacentor andersoni*

## Reoviridae

- **Koltivirüs:** Kolorado kene ateşi



Tatarcık *Culex spp.*

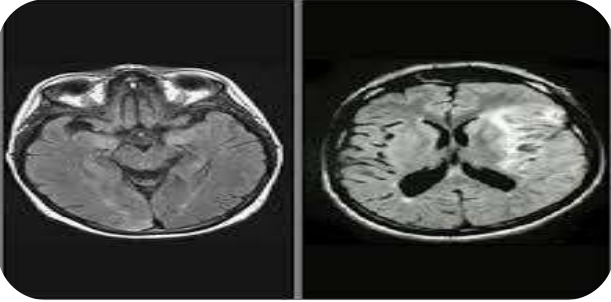
## Rhabdoviridae

- **Vezikülovirüsler**
- **Lissavirüsler**



*Aedes spp.*

# Arbovirusların Neden Olduđu Hastalıklar



- Ensefalit



- Kanamalı ateş



- Ateşli-döküntülü hastalık





# The NEW ENGLAND JOURNAL of MEDICINE

Perspective  
FEBRUARY 18, 2016

## Zika Virus in the Americas — Yet Another Arbovirus Threat

Anthony S. Fauci, M.D., and David M. Morens, M.D.

**T**he explosive pandemic of Zika virus infection occurring throughout South America, Central America, and the Caribbean (see map) and potentially threatening the United States is the most

recent of four unexpected arrivals of important arthropod-borne viral diseases in the Western Hemisphere over the past 20 years. It

mosquitoes and ticks. Arboviruses are often maintained in complex cycles involving vertebrates such as mammals or birds and blood-

Asia. The virus circulated predominantly in wild primates and arboreal mosquitoes such as *Aedes africanus* and rarely caused recognized “spillover” infections in humans, even in highly enzootic areas.<sup>2</sup> Its current explosive pandemic reemergence is therefore truly remarkable.<sup>3</sup> Decades ago, African researchers noted that

# Zika virüs-Tarihçe

- Zika virüsü ilk kez 1947'de Uganda'da Zika ormanında sarı humma için rutin sürveyans yapan bilim adamları tarafından rhesus maymunlarında saptanmış
- 1948'de aynı ormanda sivrisineklerden izole edilmiş
- 1952'de Uganda ve Tanzanya'da insanlarda Zika virüsüne karşı nötralizan antikolar tespit edilmiş
- 1954'de Nijerya'da ilk defa bir insandan virüs izole edilmiş

*Kindhauser MK et al. Bull World Health Organ E-pub: 9 Feb 2016.*



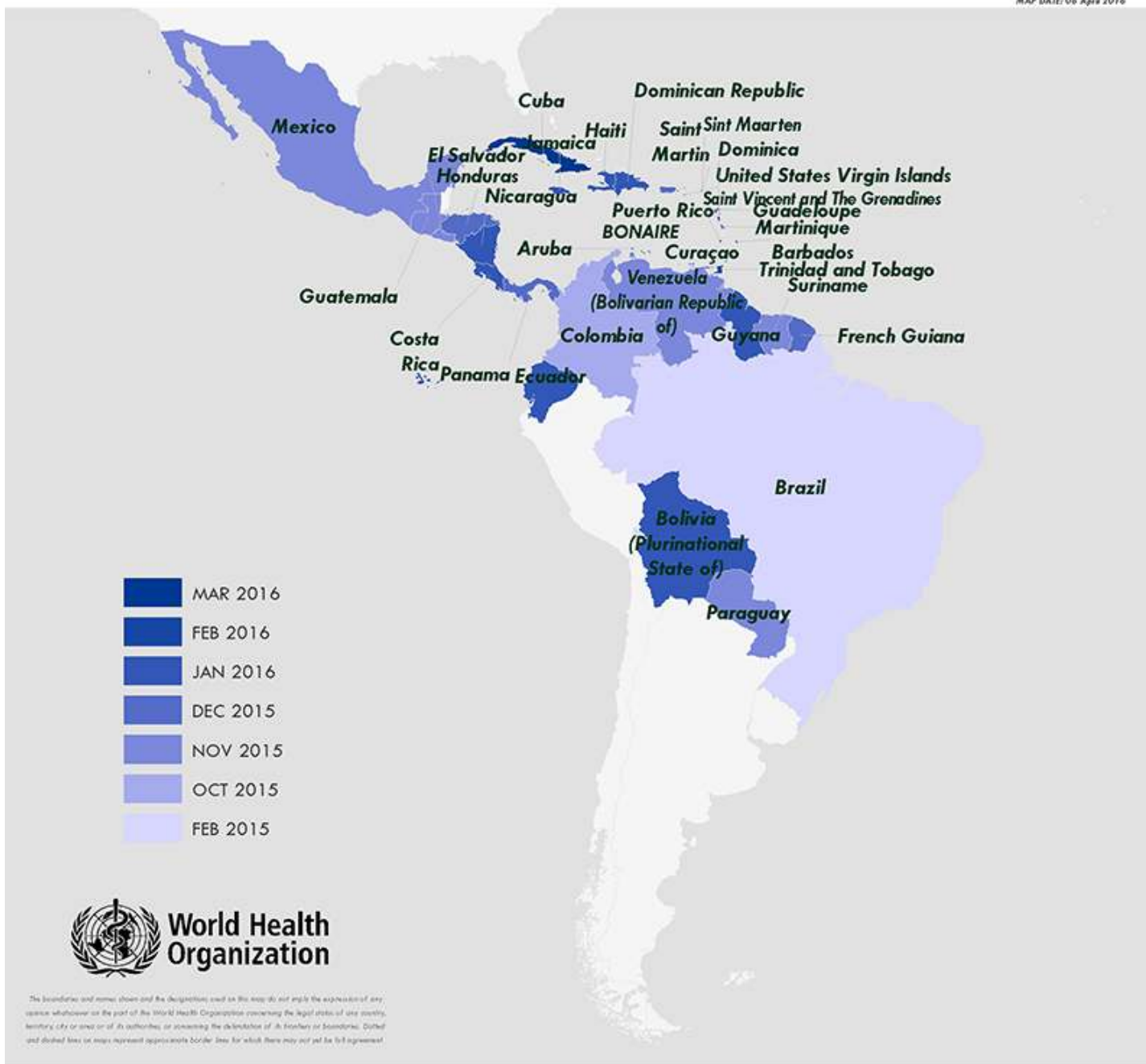
- 2007 yılına kadar Afrika ve Güneydoğu Asya'nın bazı bölgelerinden vakalar bildirilmiştir.
- 2007 yılında Pasifik Okyanusu'ndaki Yap Adasında önemli bir salgın olmuştur (6700 kişilik nüfusun yaklaşık 5000'i enfekte olmuş).
- 2013-2014 yıllarında Fransız Polinezyası'nda büyük bir salgın yaşanmıştır (yaklaşık 32000 kişi etkilenmiş).
- 2015 yılında ise Brezilya'da salgın başlamıştır. Mart 2016 itibari ile Amerika kıtasında en az 33 ülke ve bölgeye virüs yayılmıştır.

# Countries and territories showing historical time-line of Zika virus spread (1947 - 2016)



# Distribution of Zika virus in the Americas, 2015 - 2016

MAP DATE: 06 April 2016



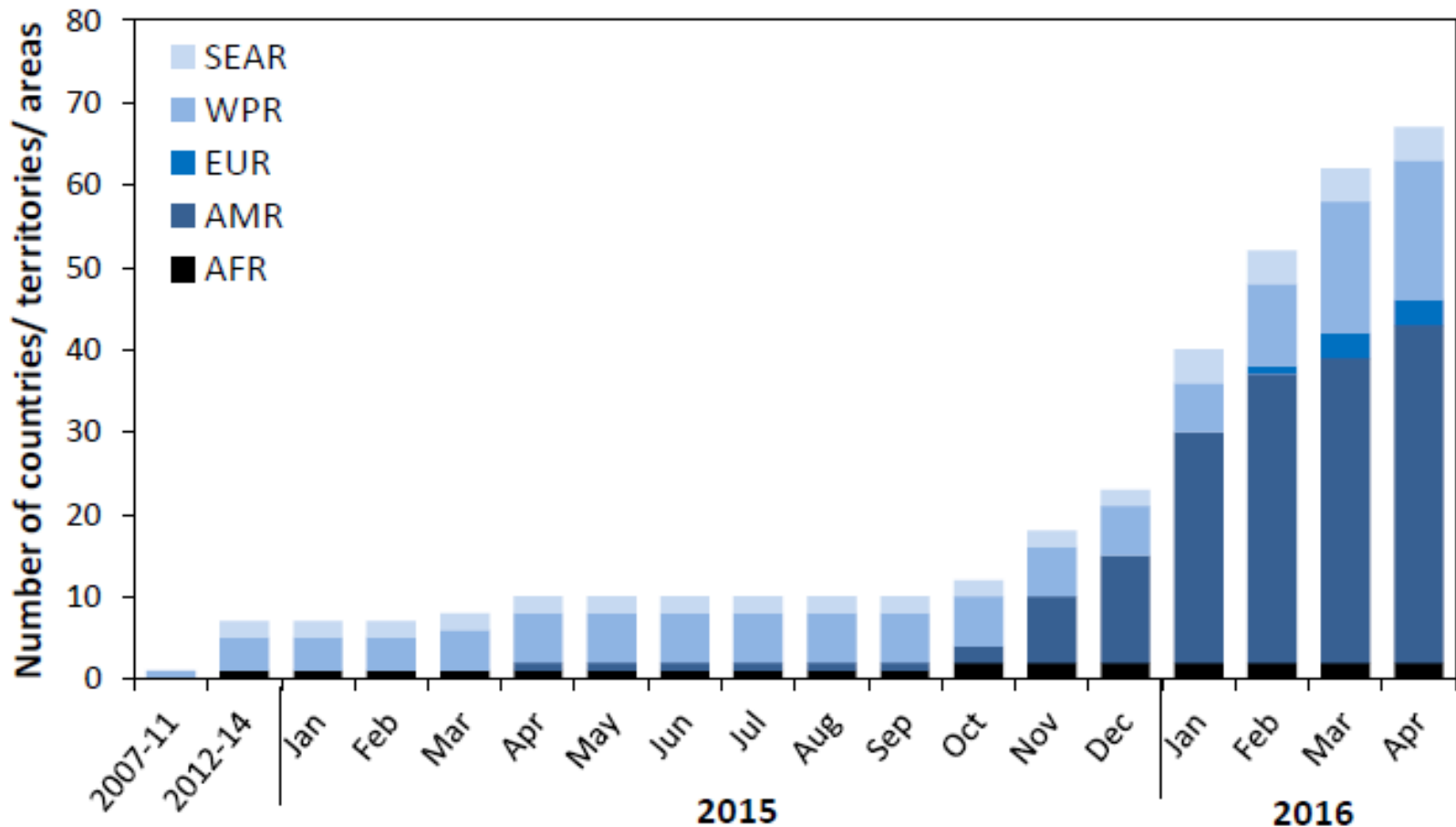
**World Health Organization**

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

# 2007-2016 arası Zika virüs yayılımı bildirilen ülke ve bölgelerin sayısı

Figure 1. Cumulative number of countries, territories and areas by WHO region<sup>3</sup> reporting Zika virus transmission in years, 2007-2014, and monthly from 1 January 2015 to 27 April 2016.

*Who situation report, 28 april 2016*



# Bulaş yolları

- Sivrisinekle bulaş
  - *Aedes spp*
    - *A. aegypti*
    - *A. albopictus*
    - *A. africanus*
    - *A. hensilli*
    - *A. polynesiensis*
    - *A. unilineatus*.....
  - *Anopheles coustani*
  - *Mansonia uniformis*
  - *Culex perfuscus*

*Petersen LR et al. N Engl J Med, Mar 30, 2016*  
*Chan JFW et al. Journal of Infection, 2016*



# Bulaş yolları

- **Sivrisinek dışı potansiyel bulaş yolları**

- Cinsel yolla bulaş
  - 2008 yılında Senegal'den Kolorado'ya dönen bir bilim adamınının hastalığı eşine cinsel temasla bulaştırdığı bildirilmiş
  - 2013 yılında semenden virüs izole edilmiş
  - Semende 62 gün sonra tespit edilmiş
- Kan transfüzyonu
  - Kanda 3-5 gün
- Perinatal/Transplasental
- Anne sütünde tespit edilmiş
- Tükürükte tespit edilmiş
- Maymun ısırığı



*Foy BD et al. Emerg Infect Dis, 2011*

*Musso D et al. Emerg Infect Dis, 2015*

*Chan JFW et al. Journal of Infection, 2016*

*www.thelancet.com/infection Published online March 3, 2016*

*www.thelancet.com Vol 387 March 12, 2016*

# Global status of Zika virus

MAP DATE: 06 April 2016



-  Countries experiencing a first outbreak of Zika virus, with no previous evidence of circulation, and with ongoing transmission by mosquitos
-  Countries where there is evidence of Zika virus transmission in the past, with or without ongoing transmission
-  Countries with evidence of person-to-person transmission of Zika virus, other than mosquito-borne transmission

-  Disputed Areas
-  Disputed Borders



The information and names shown on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its borders or boundaries. Shaded and dotted lines on maps represent approximate borders for which there may not yet be full agreement.

# Zika virüs-Klinik

- Vakaların %80'i asemptomatik olarak seyreder.
- En sık görülen semptomlar; ateş, baş ağrısı, döküntü, eklem ağrısı ve konjonktivitir.



*Chan JFW et al. Journal of Infection, 2016*

- İnkübasyon süresi; sivrisinekle bulaşan diğer filavivirüslerde olduğu gibi 2-14 gün olduğu düşünülüyor.
- Klinik belirtiler 3-7 gün sürmekte.
- Genellikle hastaneye yatış gerekmemekte.
- Hastalıktan ölüm çok nadir
  - SLE, RA'li ve alkol kullanan yetişkin erkek
  - 15 yaşında orak hücre anemisi olan ve ağır yaygın enfeksiyon geçiren kız
  - Mikrosefali, fetal anazarka ve polihidramnionozlu bir yenidoğan

# Zika virüs-Komplikasyonlar

## Sistemik Zika ateşi

- Nörolojik/Oftalmolojik
  - Guillaine Barre sendromu
  - Ensefalit
  - Meningoensefalit
  - Parestezi
  - Fotofobi
  - Vertigo
  - Hipersensitif iridosiklit
  - Fasial paralizi
  - Miyelit

## Konjenital Zika sendromu

- Nörolojik
  - Mikrosefali
  - Beyin sapı disfonksiyonu
  - Yutma güçlüğü



Figure 3. Countries, territories and areas reporting Zika virus, microcephaly and Guillain-Barré syndrome, 2013-2016.



Available to [view here](#) does not reflect assessment of the risk of infectious disease transmission among countries as not represented on this map.

# Guillain-Barré Syndrome outbreak associated with Zika virus infection in French Polynesia: a case-control study



Van-Mai Cao-Lormeau\*, Alexandre Blake\*, Sandrine Mons, Stéphane Lastère, Claudine Roche, Jessica Vanhomwegen, Timothée Dub, Laure Baudouin, Anita Telssier, Philippe Larre, Anne-Laure Vial, Christophe Decam, Valérie Choumet, Susan K Halstead, Hugh J Willison, Lucile Musset, Jean-Claude Manuguerra, Philippe Despres, Emmanuel Fournier, Henri-Pierre Mallet, Didier Musso, Arnaud Fontanet\*, Jean Neil\*, Frédéric Ghawché\*

## Summary

**Background** Between October, 2013, and April, 2014, French Polynesia experienced the largest Zika virus outbreak ever described at that time. During the same period, an increase in Guillain-Barré syndrome was reported, suggesting a possible association between Zika virus and Guillain-Barré syndrome. We aimed to assess the role of Zika virus and dengue virus infection in developing Guillain-Barré syndrome.

Published Online  
February 29, 2016  
[http://dx.doi.org/10.1016/S0140-6736\(16\)00562-6](http://dx.doi.org/10.1016/S0140-6736(16)00562-6)  
See Online/Comment

**Interpretation** This is the first study providing evidence for Zika virus infection causing Guillain-Barré syndrome. Because Zika virus is spreading rapidly across the Americas, at risk countries need to prepare for adequate intensive care beds capacity to manage patients with Guillain-Barré syndrome.

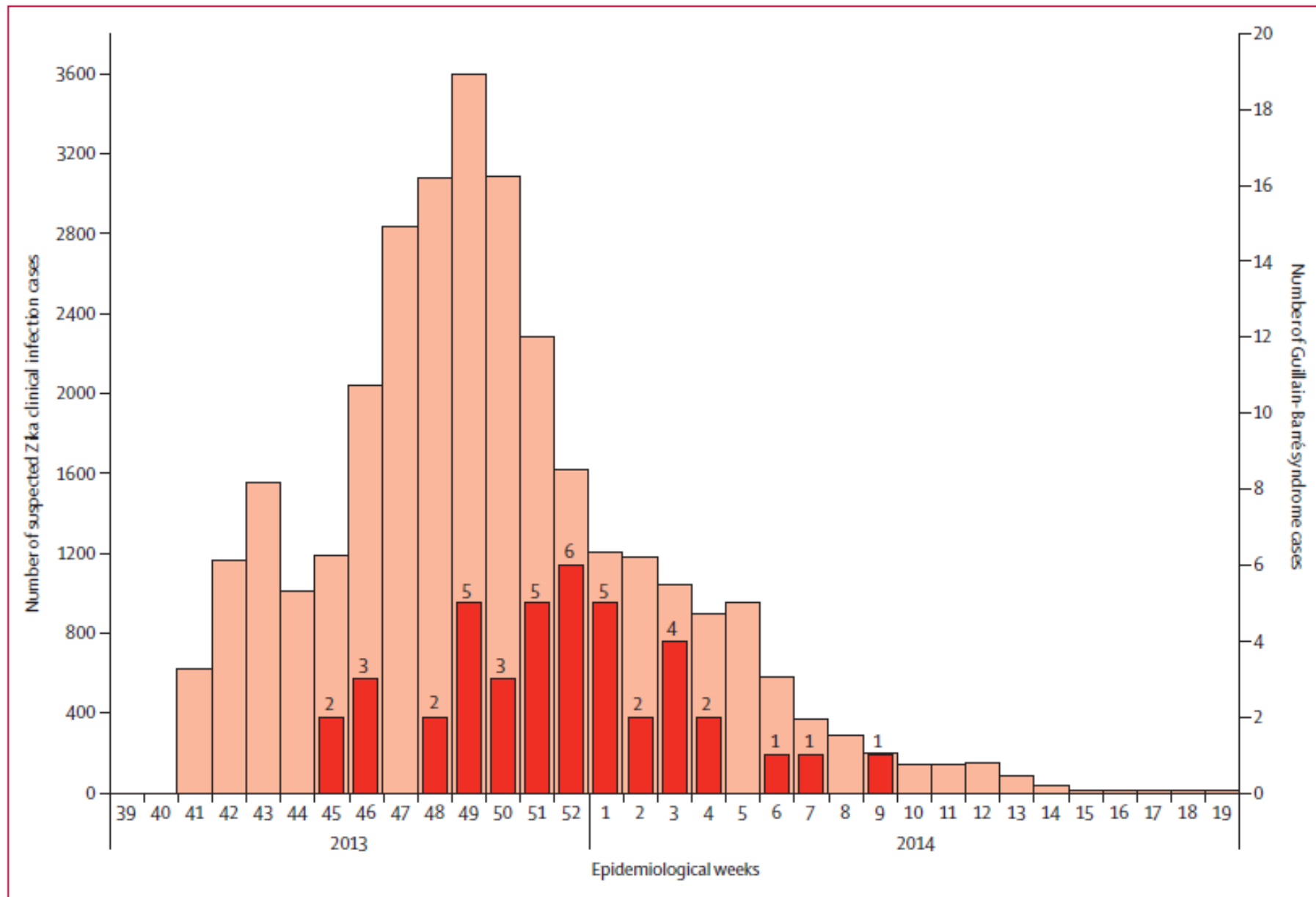


Figure: Weekly cases of suspected Zika virus infections and Guillain-Barré syndrome in French Polynesia between October, 2013, and April, 2014

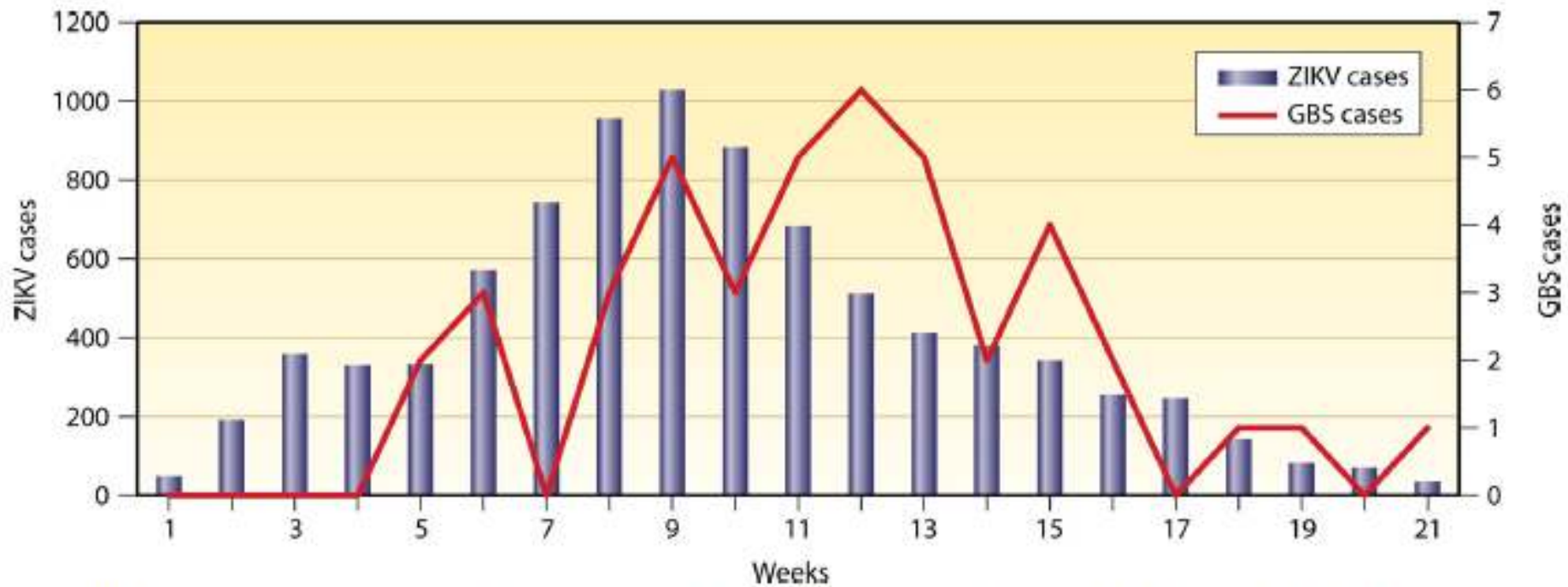


FIG 9 Temporal association between cases of Zika fever (blue columns) and GBS (red line) during the French Polynesian outbreak.

*Musso D and Gubler DJ. Clinical Microbiology Reviews 2016; 29(3): 487-524.*

# Guillain-Barré syndrome associated with the Zika virus outbreak in Brazil

Síndrome de Guillain-Barré associada ao surto de infecção por vírus Zika no Brasil

*Lucas Masiêro Araujo<sup>1</sup>, Maria Lucia Brito Ferreira<sup>2</sup>, Osvaldo JM Nascimento<sup>1</sup>*

---

## ABSTRACT

Zika virus (ZIKV) is now considered an emerging flavivirus, with a first large outbreak registered in the Yap Islands in 2007. In 2013, a new outbreak was reported in the French Polynesia, with associated cases of neurological complications including Guillain-Barré syndrome (GBS). The incidence of GBS has increased in Brazil since 2015, what is speculated to be secondary to the ZIKV infection outbreak. The gold-standard test for detection of acute ZIKV infection is the polymerase-chain reaction technique, an assay largely unavailable in Brazil. The diagnosis of GBS is feasible even in resource-limited areas using the criteria proposed by the GBS Classification Group, which is based solely on clinical grounds. Further understanding on the relationship of ZIKV with neurological complications is a research urgency.

**Keywords:** Guillain-Barre syndrome, GBS, Zika virus, Zika virus infection outbreak, neurological complications.

*Arq Neuropsiquiatr. 2016 Mar;74(3):253-5.*



**Table 4. Countries, territories or areas reporting Guillain-Barré syndrome (GBS) potentially associated with Zika virus infection.**

<b>Classification</b>	<b>Country / territory / area</b>
<b>Reported increase in incidence of GBS cases, with at least one GBS case with confirmed Zika virus infection</b>	Brazil, Colombia, Dominican Republic, El Salvador*, French Polynesia, Honduras, Suriname, Venezuela (Bolivarian Republic of)
<b>No increase in GBS incidence reported, but at least one GBS case with confirmed Zika virus infection</b>	French Guiana, Haiti, Martinique, Panama, Puerto Rico

\* GBS cases with previous history of Zika virus infection were reported by the International Health Regulations (2005) National Focal Point in United States of America.



**Table 3. Countries, territories and areas reporting microcephaly and /or CNS malformation cases potentially associated with Zika virus infection.**

Reporting country or territory	Number of microcephaly and /or CNS malformation cases suggestive of congenital infections or potentially associated with a Zika virus infection	Probable location of infection
Brazil	1198 <sup>4</sup>	Brazil
Cabo Verde	3	Cabo Verde
Colombia	7	Colombia
French Polynesia	8	French Polynesia
Martinique	3	Martinique
Panama	4	Panama
Slovenia <sup>5</sup>	1	Brazil
United States of America <sup>6,7</sup>	2	Brazil; Mexico, Belize or Guatemala (undetermined)

# Distribution of cumulative confirmed cases of microcephaly, Brazil as of 02 April 2016

MAP DATE: 06 April 2016



# Zika virüs-Tanı

- Anamnezde riskli bölgeye seyahat
- Deng ateşi ve chikungunya ateşi aynı sivrisineklerle bulaştığı ve benzer klinik tablo oluşturdıkları için ayırıcı tanıda önemli

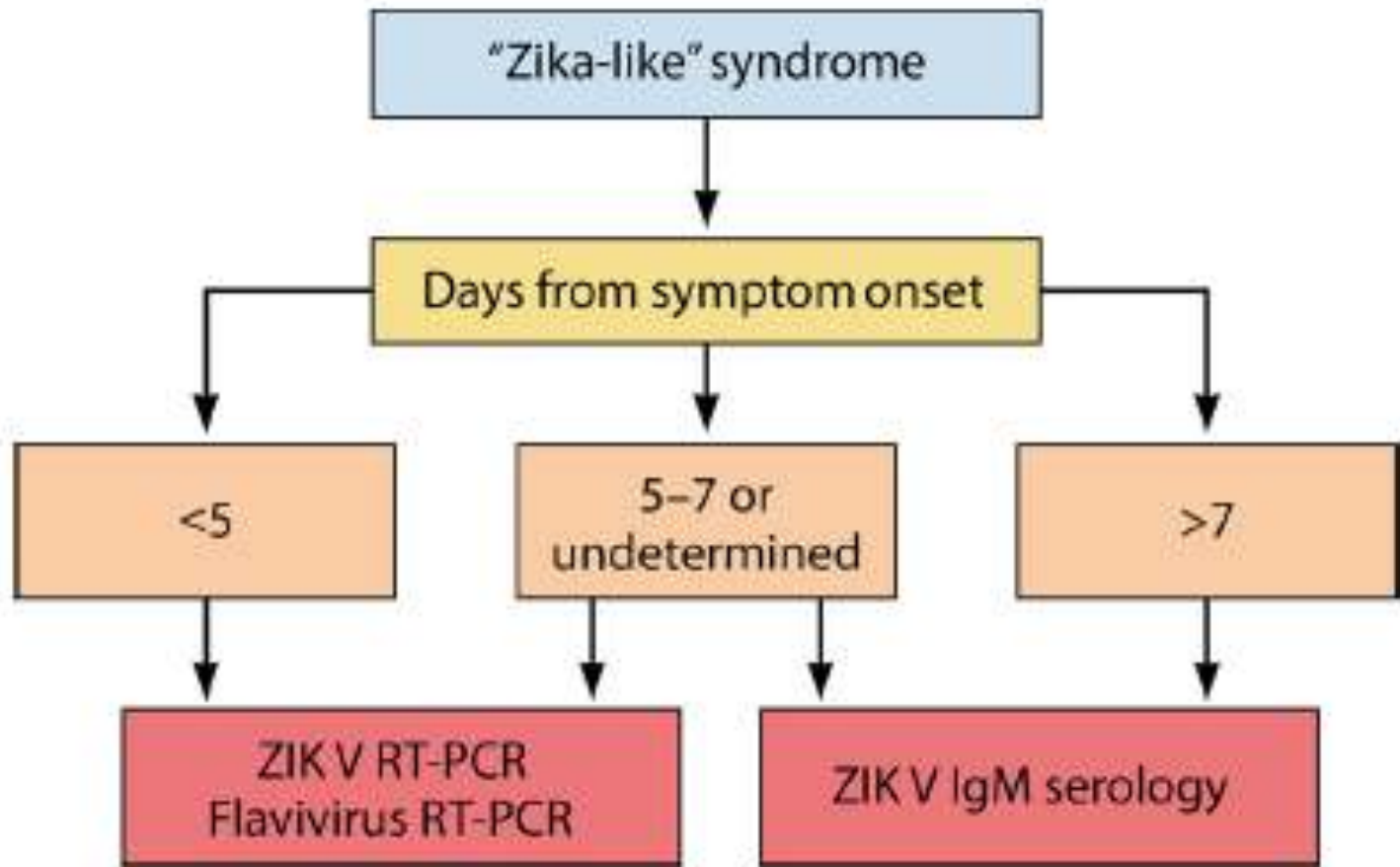


## Clinical features: Zika virus compared with dengue and chikungunya

Features	Zika	Dengue	Chikungunya
Fever	++	+++	+++
Rash	+++	+	++
Conjunctivitis	++	-	-
Arthralgia	++	+	+++
Myalgia	+	++	+
Headache	+	++	++
Hemorrhage	-	++	-
Shock	-	+	-

Reproduced from: Centers for Disease Control and Prevention. Zika virus - What clinicians need to know? Clinician Outreach and Communication Activity (COCA) Call, January 26, 2016. Available at: [http://emergency.cdc.gov/coca/ppt/2016/01\\_26\\_16\\_zika.pdf](http://emergency.cdc.gov/coca/ppt/2016/01_26_16_zika.pdf) (Accessed February 1, 2016).

- RT-PCR ile viral nükleik asitler,
- ELİSA ile virüse spesifik IgM antikorlar tespit edilebilir.
- Plak Redüksiyon Nötralizasyon Testi (PRNT) ile antikorların doğrulaması yapılır.



Musso D and Gubler DJ. *Clinical Microbiology Reviews* 2016; 29(3): 487-524.

# Zika virüs-Tedavi

- Hastalığın spesifik bir tedavisi veya antiviral bir ilacı yok.
- Semptomatik tedavi önerilir
  - Ateş ve ağrı için asetaminofen
  - Kaşıntılı döküntü için antihistaminik
  - Hidrasyon ve istirahat
- Asetilsalisilik asit ve diğer nonsteroid anti-inflamatuarlar hemorajik sendrom riskini arttırdığı için önerilmemekte.

*Musso D and Gubler DJ. Clinical Microbiology Reviews 2016; 29(3): 487-524.*

# Zika virüs-Korunma

- Virüs için aşı bulunmamakta
- Vektör kontrolü önemli
- Sivrisinek ısırmasına karşı koruyucu önlemler alınmalı
- Hastalığın ilk haftasında hasta kişiyi sivrisineğin ısırması engellenmeli
- Cinsel yolla bulaşa dikkat edilmeli

# SPRING BREAK ON YOUR MIND?



## Protect yourself from Zika!

Zika is a disease primarily spread by mosquitoes, but a man with Zika can spread it to his sex partners as well.

## Know before you go

Learn about Zika at [cdc.gov/zika](http://cdc.gov/zika). Find out if your destination has Zika, check the CDC Travelers' Health site for current travel notices: [cdc.gov/travel](http://cdc.gov/travel)

## Pack to prevent

- Insect repellent (Look for these ingredients: DEET, picaridin, IR3535, OLE, or PMD.)
- Long-sleeved shirts and long pants
- Clothing and gear treated with permethrin
- Bed net (if mosquitoes can get to where you're sleeping)
- Condoms (if you might have sex)



## STOP the spread

- Watch for symptoms after you get home.
- Call your doctor immediately if you suspect Zika.
- Use insect repellent for 3 weeks after travel.
- Use condoms when you have sex.



## Zika symptoms

Most people with Zika don't know they have it. The illness is usually mild with symptoms lasting about a week.



# Mosquito Bite Prevention (United States)



Not all mosquitoes are the same. Different mosquitoes spread different viruses and bite at different times of the day.

Type of Mosquito	Viruses spread	Biting habits
 <i>Aedes aegypti</i> , <i>Aedes albopictus</i>	Chikungunya, Dengue, Zika	Primarily daytime, but can also bite at night
 <i>Culex</i> species	West Nile	Evening to morning

## Protect yourself and your family from mosquito bites

### Use insect repellent

Use an Environmental Protection Agency (EPA)-registered insect repellent with one of the following active ingredients. When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breastfeeding women.

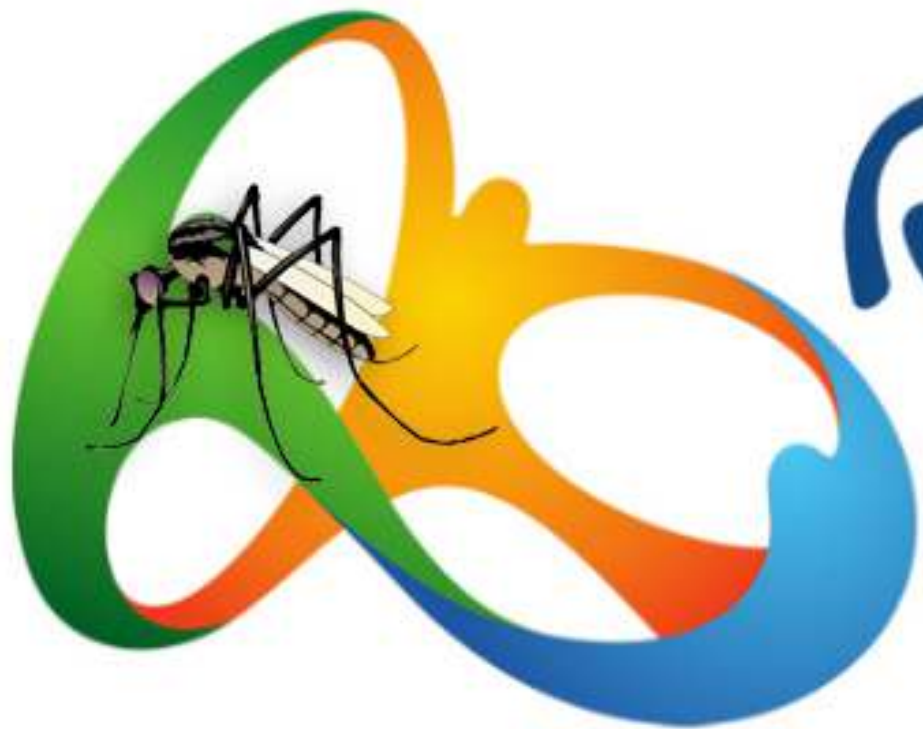
Active ingredient	Some brand name examples*
Higher percentages of active ingredient provide longer protection	
DEET	Off!, Cutter, Sawyer, Ultrathon
Picaridin, also known as KBR 3023, Bayrepel, and Icaridin	Cutter Advanced, Skin So Soft Bug Guard Plus, Autan (outside the United States)
Oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD)	Repel
IR3535	Skin So Soft Bug Guard Plus Expedition, SkinSmart



\* Insect repellent brand names are provided for your information only. The Centers for Disease Control and Prevention and the U.S. Department of Health and Human Services cannot recommend or endorse any name brand products.







Rio 2016™



# Sonuç

- Zika virüs salgını beklenmedik bir şekilde ve hızla gelişen bir sağlık problemi olarak ortaya çıkmıştır.
- Salgının geleceği öngörülememekle birlikte son yirmi yılda dünya çapında yayılan Deng ve Chikungunya ateşini izleme potansiyeline sahiptir.
- Dünya nüfusunun yarısından fazlası *Aedes spp.* cinsi sivrisineklerin bulunduğu alanlarda yaşamaktadır.
- Bu durum virüsün pandemik potansiyeline işaret etmektedir.

# TEŞEKKÜRLER

