EPI Monthly Report

Florida Department of Health in Miami-Dade County

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A New Public Health Challenge: Chikungunya Fever

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Introduction

On December 6, 2013, the Pan American Health Organization (PAHO) and the World Health Organization (WHO) received confirmation of the first local transmission of chikungunya virus on the Caribbean island of Saint Martin. Local transmission means that mosquitoes in the area have been infected with chikungunya and are spreading it to people[1]. Since then it has become the first outbreak in the Americas. Large outbreaks in the past have occurred in Africa, Asia, Europe, and the Indian and Pacific Oceans. As of May 12, 2014, 15 Caribbean countries have reported cases of chikungunya. Currently, chikungunya virus is not found in the United States but there is a risk that the virus will be imported by infected travelers and spread to local residents by mosquitoes that are present in Miami-Dade. For a current list of countries where cases have been reported visit: http://www.cdc.gov/chikungunya/geo/index.html.

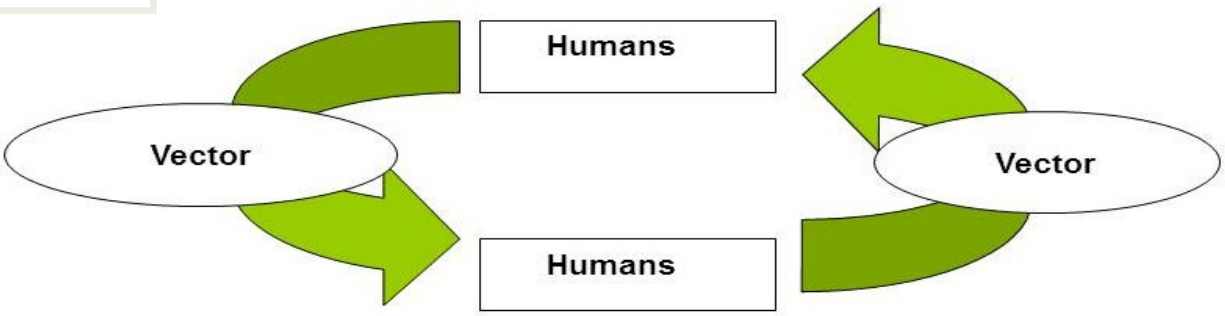
Background

Chikungunya virus is also referred as CHIKV and is pronounced \chik-en-gun-ye. The name chikungunya derives from a word in Makonde, the language spoken by the Makonde ethnic group living in southeast Tanzania and northern Mozambique. It roughly means "that which bends" describing the stooped appearance of persons suffering with characteristic painful arthralgia[2].

Epidemiology

CHIKV is an RNA virus that belongs to the *Alphavirus genus* in the family *Togaviridae*. It is a viral disease that was first discovered in Tanzania, East Africa in 1953. Chikungunya is a vector-borne disease generally spread through bites from *Aedes aegypti* mosquitoes and *Aedes albopictus* (Asian tiger mosquito) as shown in Figure 1.

Figure 1



Both mosquitoes can be identified by the white stripes on their black bodies and legs. They are aggressive daytime biters, with crepuscular peak feeding activity. These mosquito species are present in many regions of the United States, including Miami-Dade.

Aedes aegypti characteristics

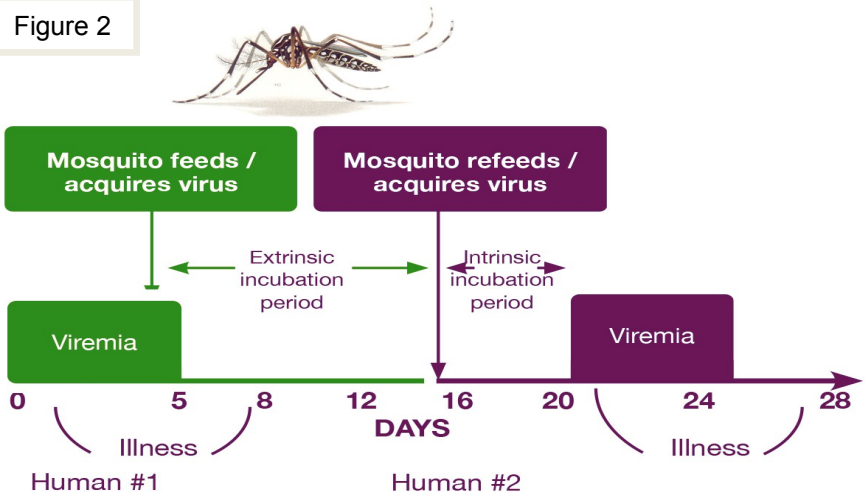
- An important vector in urban areas
- Closely associated with humans and their homes
- Adult mosquitoes are commonly found indoors
- Larval habitats are typically artificial containers around houses

Aedes albopictus characteristics

- More likely to play a larger role in transmission in the United States due to its wide distribution
- Biting adults are found both indoors and outdoors, but are most commonly found outdoors
- Larvae occur in peridomestic habitats as well as surrounding natural habitats

A mosquito acquires the chikungunya virus from a viremic host. Following an average extrinsic incubation of 10 days, the mosquito is then able to transmit the virus to a naïve host, such as a human. In humans bitten by an infected mosquito, disease symptoms typically occur after an average intrinsic incubation period of 3-7 days (range 1-12 days). See Figure 2.

Figure 2



Clinical manifestations

Humans are the primary host during epidemic periods and the majority of the people become symptomatic. Chikungunya fever affects all people of all ages can become infected with CHIKV and those with underlying illness are at greater risk for severe illness. People infected present with common symptoms fever (typically >39°C [102°F]) and joint pain

(arthralgia/arthritis-87%, backache-67%, and headache 62%). The joint pain tends to be worse in the morning, relieved by mild exercise and exacerbated by aggressive movements. Other symptoms may include headache, nausea/vomiting, muscle pain, joint swelling, conjunctivitis, or rash.

In a majority of the patients, symptoms resolve in 1 to 3 weeks. However, some patients might have relapse of rheumatologic symptoms (e.g., polyarthralgia, polyarthritis, and tenosynovitis) in the months following acute illness. Some people experience a relapse of joint pain two to three months after the initial illness that may become chronic and last for 3-5 years. People at risk for developing severe disease include newborns infected around the time of birth, adults > 65 years, and people with medical conditions such as high blood pressure, diabetes, or heart disease. Neurological, emotional and dermatologic sequelae have also been described with the illness. Mortality is rare and occurs mostly in older adults[3]. Once a person has been infected, they will have protection in future infections.

Diagnosis and Reporting

The symptoms of chikungunya are similar to those of dengue and other mosquito-borne disease. **Chikungunya virus infection should be considered in patients with acute onset of fever and polyarthralgia, especially travelers who recently returned within 14 days from areas with known virus transmission (current list of countries where cases have been reported visit: http://www.cdc.gov/chikungunya/geo/index.html).**

Dengue and chikungunya viruses are transmitted by the same mosquitoes and have similar clinical features. The two viruses can circulate in the same area and can cause occasional co-infections in the same patient. It is important to rule out dengue virus infection because proper clinical management of dengue can improve outcome. There is no medicine to treat the chikungunya virus infection or disease. The symptoms can be decreased by getting plenty of rest, fluids, and take analgesics and antipyretics.

Laboratory testing can be evaluated at the Florida Department of Health Bureau of Laboratories (BPHL). Serum or plasma is needed for testing by:

- Viral culture to detect virus in first 3 days of illness
- RT-PCR to detect viral RNA in first 8 days of illness
- Serology to detect IgM (≥ 4 days post onset), IgG (>8 days post onset), and neutralizing antibodies that develop towards the end of the 1st week.
    - To definitively rule out the diagnosis, convalescent-phase samples should be obtained from patients whose acute-phase samples test negative.

Healthcare providers report suspected chikungunya cases to the Florida Department of Health in Miami-Dade at 305-470-5660 (24/7) to facilitate diagnosis and mitigate the risk of local transmission.

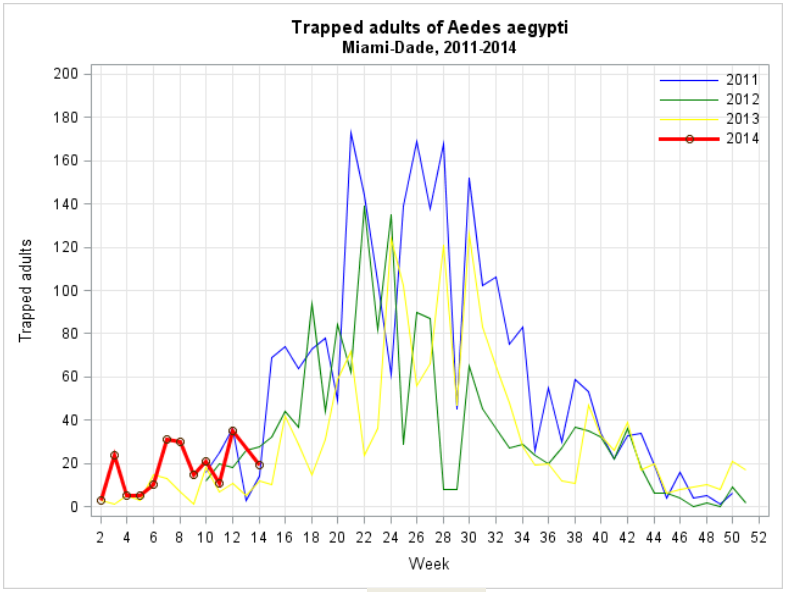
Surveillance and preventing CHIKV outbreaks

Miami-Dade County is a gateway to the United States. During 2012, the Miami International Airport annual international traffic was 19.4 million passengers. A large number originated from countries in South America, Central America and the Caribbean, most notably Brazil (1 665 491), Mexico (1 205 667), Colombia (1 181 476), the Dominican Republic (1 006 188), Venezuela (957 893), Cuba (674 295), Argentina (654 187), Panama (647 356), Peru (631 546), Bahamas (594 045), Jamaica (584 571), Ecuador (580 567), Haiti (562 026) and Costa Rica (541 391) [4]. Miami-Dade County has had four imported cases; December 2006, January 2010, November 2013, and the most recent in May 2014.

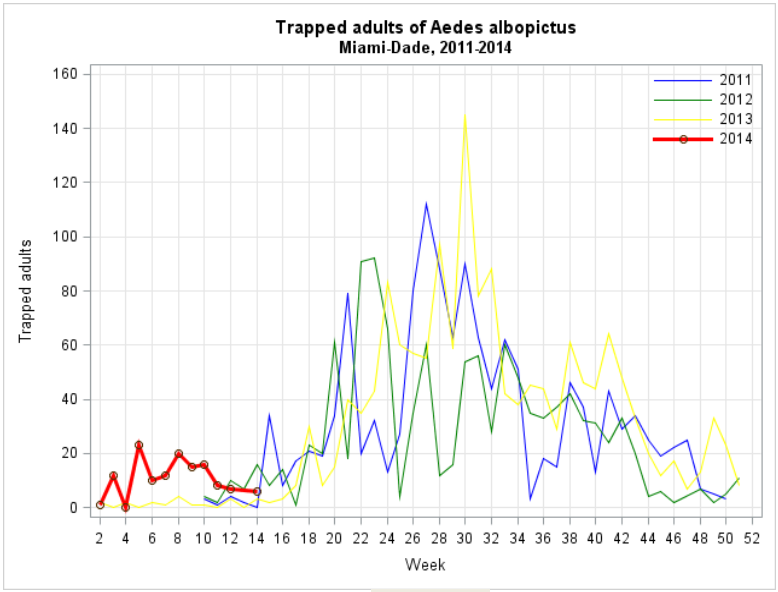
On 01/27/2014, the Florida Department of Health in Miami-Dade released a Health Advisory with information of chikungunya for clinicians and to report suspect cases for patients with acute onset of high fever and polyarthralgia with or without recent (2 weeks prior to onset) travel to an endemic area, including the Caribbean.

On 05/16/2014, the Florida Department of Health sent out a press release providing awareness on chikungunya fever after three imported cases were reported among travelers to Florida from the Caribbean islands. To view the press release please visit: http://newsroom.doh.state.fl.us/wp-content/uploads/newsroom/2014/01/051614-Chikungunya.pdf

As both *Aedes* species are present in the county, Miami-Dade County Mosquito Control routinely collects mosquito surveillance data. The population of adult *Aedes aegypti* and *Aedes albopictus* has remained low so far in 2014. However, it is expected that once the rainy season begins, around mid-June, the number of adults will sharply increase. This has been the pattern over the last three years as shown in the two graphs below. (See Graph 1 & 2.)



Graph 1



Graph 2

Prevention and Control

No vaccine or preventive drug is available against the disease. The best way to prevent chikungunya virus infection is to avoid mosquito bites. Use insect repellents and wear long sleeves and pants when outdoors. Home doors and windows should be well screened to prevent entry of mosquitoes. *Aedes aegypti* and *Aedes albopictus* can lay eggs in containers of water that are outdoors around the home. The elimination of larval habitats around your home and on neighboring properties is the most effective way to reduce the number of mosquitoes locally. Discard or empty old tires, buckets, toys, tarps, and other containers around the home that can hold water and breed mosquitoes. Due to their daytime activity behavior and habit of spending most of their time resting on vegetation, adults of both species are not effectively controlled with insecticides sprayed from trucks or aircraft-mounted equipment.

For additional information:

- Visit the Centers for Disease Control and Prevention (CDC) Chikungunya website: http://www.cdc.gov/chikungunya/
- Call the Florida Department of Health in Miami-Dade at 305-470-5660

Acknowledgments

We are grateful to the Mosquito Control Division at the Miami-Dade Public Works & Waste Management Department for their excellent job in protecting our community. Special thanks to Chalmers Vasquez and Mario Porcelli for keeping us updated with the latest mosquito surveillance data on a weekly basis.

References:

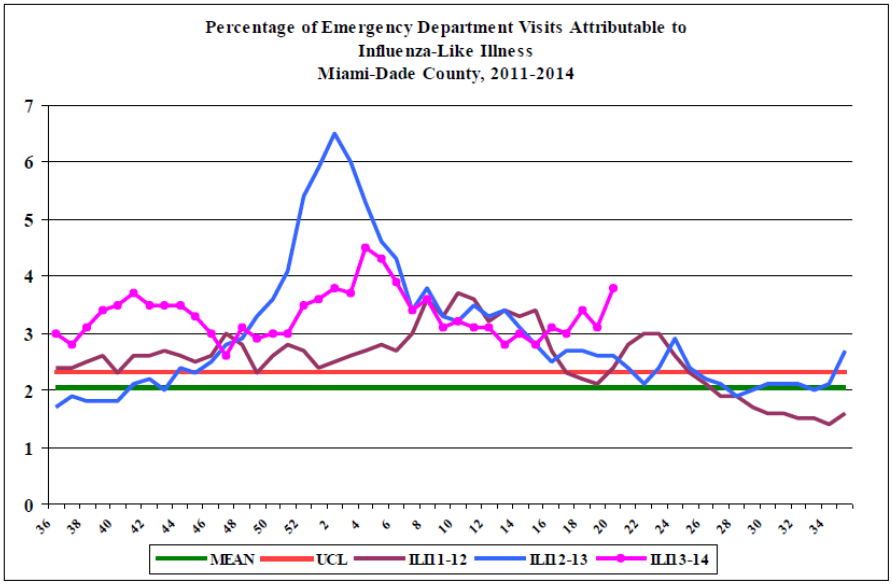
1. Chikungunya in the Caribbean: In: http://wwwnc.cdc.gov/travel/notices/watch/chikungunya-saint-martin
2. Preparedness and Response for Introduction in the Americas Chikungunya Virus. PAHO/CDC.
3. Chikungunya virus. In: http://www.cdc.gov/chikungunya/
4. Miami-Dade Aviation Department. Miami-International Airport passenger hub 2013-2014. In: http://www.miami-airport.com/pdfdoc/MIA_Passenger_Services_brochure.pdf

Memorial Day is Monday, May 26, 2014

Memorial Day *is a US Federal holiday of which we remember those who died while serving in the United States Armed Forces. The holiday is celebrated every year on the final Monday of May.*

For more information go to: http://www.va.gov/opa/speceven/memday/

Influenza-Like-Illness, All Age



During this period, there were 25,052 ED visits; among them 945 (3.8%) were ILI. At the same week of last year, 2.6% of ED visits were ILI.

TO REPORT ANY DISEASE AND FOR INFORMATION CALL:
Epidemiology, Disease Control & Immunization Services

Childhood Lead Poisoning Prevention Program 305-470-6877
Hepatitis 305-470-5536
Immunizations or outbreaks 305-470-5660
HIV/AIDS Program 305-470-6999

STD Program 305-575-5430
Tuberculosis Program 305- 575-5415

Immunization Service 305-470-5660

To make an appointment.....786-845-0550

PARTICIPATE IN INFLUENZA SENTINEL PROVIDER SURVEILLANCE

Florida Department of Health in Miami-Dade County NEEDS Influenza Sentinel Providers!

Sentinel providers are key to the success of the Florida Department of Health's Influenza Surveillance System. Data reported by sentinel providers gives a picture of the influenza virus and ILI activity in the U.S. and Florida which can be used to guide prevention and control activities, vaccine strain selection, and patient care.

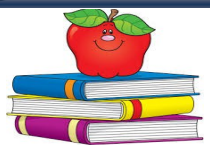
- Providers of any specialty, in any type of practice, are eligible to be sentinel providers.
- Most providers report that it takes **less than 30 minutes a week** to compile and report data on the total number of patients seen and the number of patients seen with influenza-like illness.
- Sentinel providers can submit specimens from a subset of patients to the state laboratory for virus isolation **free of charge**.

For more information, please contact

Lakisha Thomas at 305-470-5660.

About the Epi Monthly Report

The Epi Monthly Report is a publication of the Florida Department of Health in Miami-Dade County: Epidemiology, Disease Control & Immunization Services. The publication serves a primary audience of physicians, nurses, and public health professionals. Articles published in the Epi Monthly Report may focus on quantitative research and analysis, program updates, field investigations, or provider education. For more information or to submit an article, contact Kathleen Ochipa at (305) 470-6918.



Miami-Dade County Monthly Report
Select Reportable Disease/Conditions
April 2014

Diseases/Conditions	2014 Current Month	2014 Year to Date	2013 Year to Date	2012 Year to Date
HIV/AIDS				
AIDS*	57	183	251	189
HIV	102	444	511	362
STD				
Infectious Syphilis*	27	108	98	106
Chlamydia*	757	3205	3329	3135
Gonorrhea*	161	666	829	817
TB				
Tuberculosis**	14	36	30	22
Epidemiology, Disease Control & Immunization Services				
Epidemiology				
Campylobacteriosis	41	104	84	88
Ciguatera Poisoning	0	4	0	1
Cryptosporidiosis	1	7	6	6
Cyclosporiasis	0	0	1	0
Dengue Fever	1	6	10	3
Escherichia coli, Shiga Toxin-Producing	0	3	2	3
E. coli, Non-O157	0	0	0	0
Encephalitis, West Nile Virus	0	0	0	0
Giardiasis, Acute	18	71	84	53
Influenza Novel Strain	0	0	0	0
Influenza, Pediatric Death	0	1	0	2
Legionellosis	1	5	10	3
Leptospirosis	0	0	0	0
Listeriosis	1	1	1	1
Lyme disease	0	1	0	0
Malaria	0	1	5	2
Meningitis (except aseptic)	1	7	7	8
Meningococcal Disease	0	3	10	6
Salmonella serotype Typhy (Typhoid Fever)	1	1	0	1
Salmonellosis	30	133	124	111
Shigellosis	127	317	17	18
Streptococcus pneumoniae, Drug Resistant	9	28	39	33
Toxoplasmosis	1	1	0	2
Vibriosis	1	2	2	1
West Nile Fever	0	0	0	0
Immunization Preventable Diseases				
Measles	0	0	0	0
Mumps	0	0	0	0
Pertussis	1	8	16	15
Rubella	0	0	0	0
Tetanus	0	0	0	0
Varicella	8	19	36	18
Hepatitis				
Hepatitis A	2	8	10	7
Hepatitis B (Acute)	1	6	6	8
Lead				
Lead Poisoning	5	19	34	22

*Data is provisional at the county level and is subject to edit checks by state and federal agencies.

** Data on tuberculosis are provisional at the county level.