NEW ZEALAND BIOSECURE

BORDER HEALTH NEWSLETTER – November 2014

WELCOME!

No doubt, the mosquito season has started and numbers are rising rapidly. In South America, the Caribbean and the South Pacific the numbers of Chikungunya reports are rising too. Therefore this issue is all about the disease "that which bends up". The good news is that the development of a vaccine is on its way; the bad news is that it will come too late for millions of people.

SAMPLES

During October 615 samples were collected by staff from 12 DHBs with 102 positive. The numbers of the adults are well below those of November last year, especially of *Ae. notoscriptus* and *Cx. pervigilans*. However the higher number of *Ae. notoscriptus* larvae this year perhaps indicates that this years season has just started a little later than last years. The number of *Cx. pervigilans* larvae is about the same as last year at the same time but much higher than last month

Species	Adults		Larvae	
New Zealand Mozzies	**Nov 2014**	**Nov 2013**	**Nov 2014**	**Nov 2013**
Aedes antipodeus (winter mosquito)	Nil	17	Nil	Nil
Ae. australis (saltwater mosquito)	Nil	Nil	4	1
Ae. notoscriptus (striped mosquito)	1	71	1225	633
Coq. iracunda	Nil	1	Nil	Nil
Coq. tennuipalpis	2	Nil	Nil	Nil
Cx pervigilans (vigilant mosquito)	2	9	1050	1355
Cx. quinquefasciatus (southern house mosquito)	7	40	34	262
Opifex fuscus (saltpool mosquito)	Nil	Nil	30	83
Total	**12**	**139**	**2343**	**2303**

INCURSIONS/INTERCEPTIONS

We have had 5 Interceptions in November:

8.11.2014: A *Culex australicus* was found, dead in a container of honeydew and rock melons from Queensland Australia, at Turners and Growers Mt. Wellington.

11.11.2014: Two days later the same result (*Cx. australicus*) was found under the exact same conditions.

11.11.2014: Another dead mosquito was found in a container of milk powder from Germany at Cornell Bros Importing in Auckland and was identified as *Culiseta annulata*.

12.11.2014: A live specimen was found in the MPI inspection area at Turners and Growers in Auckland and was identified as the introduced species *Cx. quinquefasciatus*.

26.11.2014: A dead mosquito found in a container with apples from the USA in Auckland and was identified as *Cx (pipiens) quinquefasciatus*.

NEW ZEALAND BIOSECURE

WEBSITE

We've had a bit of facelift for the website, everything is still there, just the layout design has been modernised. The New Zealand BioSecure pages can now be accessed from the main header (Click NZBEL) to give easier access from the home page.

A Dengue Virus fact sheet has been added to the Laboratory's Virus section and more fact sheets and general information on pests of public health significance are coming. (http://www.smsl.co.nz/Services/New+Zealand+BioSecure/Viruses.html). If there is something in particular you'd like to see emails us at enquiries@smsl.co.nz

NEWS OF THE MONTH

A major step forward in fight against Chikungunya fever: Themis Bioscience's vaccine candidate successful in phase 1

Vienna, November 20, 2014

Results presented at international conferences in Philadelphia and in New Orleans.
The induction of neutralizing antibodies by a prophylactic Chikungunya vaccine candidate has now been confirmed by the final results of a phase 1 clinical trial, as well as its tolerability and safety. Detailed information of the trial has been presented at two international conferences. The vaccine candidate was developed under a R&D collaboration between Themis Bioscience GmbH and the Institut Pasteur (Paris) based upon a measles vaccine vector technology. Following this positive trial outcome both parties agreed to broaden the scope of their collaboration.

The Vienna-based biotech company Themis Bioscience GmbH ('Themis') today received final results of a phase 1 clinical study of its prophylactic Chikungunya fever vaccine. The study was carried out on 42 subjects at the Department of Clinical Pharmacology of the Vienna General Hospital (Allgemeines Krankenhaus der Stadt Wien) and confirms the previous interim results: the candidate not only proved to be well tolerated and safe, but also exhibited the required immune response in the form of neutralizing antibodies in all vaccinated subjects. Remarkably, the immune response was clearly dose-dependent with even the lowest dose being effective. Details on the clinical trial were recently presented at two international conferences, namely the 26–28 October "8th Vaccine & ISV Congress" in Philadelphia, USA and the 2–6 November "ASTMH 63rd Annual Meeting" in New Orleans, USA. Commenting on the success of this Chikungunya Phase I study, Themis founder and CEO, Dr. Erich Tauber, states: "We could confirm that our Chikungunya vaccine candidate is well tolerated, safe and elicits the expected immune response. Considering the ongoing spread of Chikungunya epidemic, we now focus on making the vaccine available as soon as possible. We will also strengthen our already successful alliance with the Institut Pasteur."

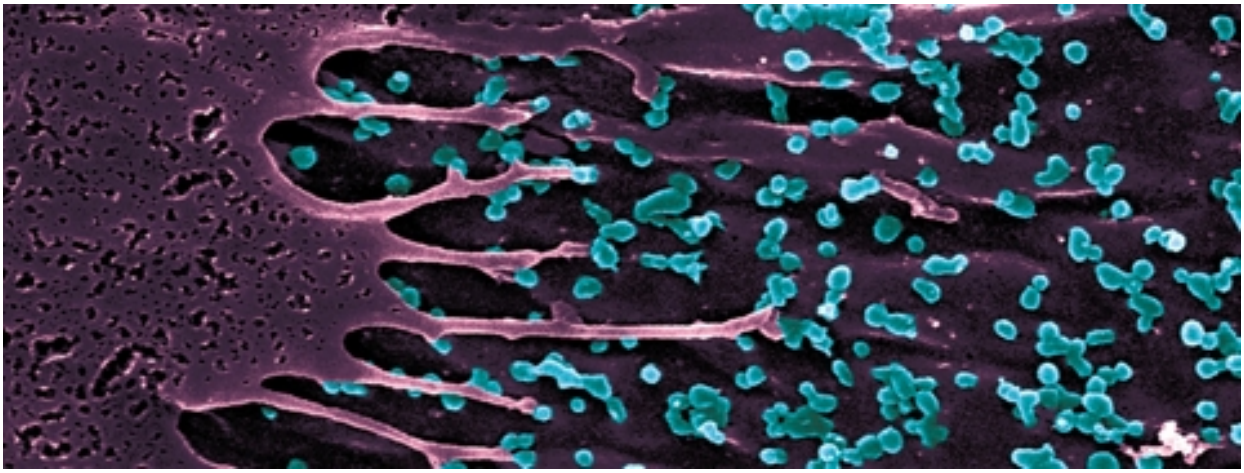
The now confirmed success of the trial rests on the measles vector platform, which core technology has been developed at the Institut Pasteur in Paris using a standard commercialised measles vaccine as a vector. Genes coding for selected antigens from the Chikungunya virus have been inserted into the genome of the well-established measles vaccine delivering those new antigens into the cells, thereby triggering a specific immune response against the Chikungunya virus.

Such phase 1 achievement with the Chikungunya vaccine candidate further validates this core technology, clinically and regulatory-wise, gearing it as well towards large scale, low cost production – a significant advantage for the development of vaccines against epidemic infectious diseases.

Themis and the Institut Pasteur will extend their collaboration towards a common goal of developing vaccines against numerous infectious diseases based on that promising vector. The long standing excellence of the world renowned Institut Pasteur in research, diagnosis and prevention of infectious diseases stands out as a welcome contribution to this process. The pipeline already includes a dengue fever vaccine candidate, and the two partners will now collaborate on using Themaxyn® for additional targets. Frederic Tangy, Institut Pasteur, states: "The phase I results of the Chikungunya vaccine candidate prove that the measles vector vaccine platform can be used successfully to develop a new generation of prophylactic vaccines, and the Institut Pasteur, which developed its core technology is keen to strengthen its alliance with Themis to develop those innovative vaccine candidates".

Dr. Erich Tauber adds: "Themis' expertise rests in translating into the clinic the programs based on the measles vector platform, in a variety of indications. Once the clinical proof of concept has been established, the rights to license, manufacture and market any of the company's vaccines will be signed with third parties. Therefore, the strengthening of the alliance with the Institut Pasteur in applying the Themaxyn® platform to new indications offer an ideal fit for Themis' business model. We are grateful to the Institut Pasteur for such confidence and continued successful collaboration".

PICTURE OF THE MONTH



Chikungunya virus particles on the surface of an infected cell © Institut Pasteur/Thérèse Couderc

Mosquitoes 'Hum' Corporation to Sleep

By Express News Service, Published: 03rd December 2014

KOCHI: Kochi is well known for its mosquito density, which skyrockets at the fag end of the year. This year, however, the mosquitoes invaded the city a bit early prompting a series of complaints from the resident's associations. But the Mayor seems to be sleeping peacefully oblivious to the fact that even the usual mosquito eradication measures that were supposed to begin in July or August have not been carried out yet. Usually, mosquito eradication drives begin with the de-silting of canals and drains in order to prevent water-logging. The tenders for de-silting work were supposed to be floated from May onwards so that the work will be finished before December. But the local body is yet to kick-start this preliminary step to control the mosquito population. "It's too late. Even if the corporation calls of tenders now, it will take about 20 to 30 days for the work to begin. By then, the insidious period will be over," said councilor Anil Kumar. Commenting on this, corporation health standing committee chairperson T K Ashraf said that the delay is due to the fund shortage which has hit the civic body badly.

"We are facing a fund crunch this time. However, the de-silting works will be carried out very soon," said Ashraf. The purchase of medicines and fogging, another crucial measure in reining in the mosquito population, has also been hit. Ashraf said that the civic body will only be fogging a few selected areas this time, due to fund shortage. Promises drone on One will be surprised to see the lackadaisical attitude of the civic body, if one takes into consideration the tall promises made in the last two budgets about exterminating the mosquito menace. `20 crore had been allocated in the last two budgets. The last budget saw some lovely promises- a separate wing for mosquito eradication programme, roping in international experts to assist the wing, an international mosquito control and research lab, the list goes on and on.

Mosquito virus cases soar by 432% in UK as holidaymakers return from Caribbean where major chikungunya outbreak is spreading

By CHRIS KITCHING FOR MAILONLINE, 29 November 2014

Chikungunya outbreak in the Caribbean was first reported last December Public Health England has been made aware of nearly 200 cases of those, 162 involve tourists who visited the Americas. Most are associated with travel to Jamaica, Barbados or Grenada:

Public health officials in the UK are grappling with a skyrocketing number of cases of a debilitating mosquito virus as British holidaymakers return from countries where an outbreak is rapidly spreading.

Nearly 200 British tourists have been diagnosed with chikungunya in 2014 as the number of cases has quintupled in a little more than two months, according to figures released by Public Health England on Friday.

Of those, 162 have been associated with travel to the Caribbean and South and Central America, where health experts say the deadly outbreak is likely to get worse.

Public Health England has been made aware of 197 cases of chikungunya in 2014 as holidaymakers are encouraged to cover their skin and wear mosquito repellent if they are travelling to the Caribbean to beat the winter blues.
The latest figures represent a 432 per cent increase from the last update on September 16, when just 37 cases had been reported in the UK.

The countries from which cases have been most frequently reported include Jamaica, Barbados and Grenada.
Dr Jane Jones, travel and migrant health expert at Public Health England, said: 'Chikungunya is an unpleasant viral illness that can cause fever and joint pains which in some patients may persist for a prolonged period.
'It is spread by mosquitoes and is more usually found in parts of Asia and Africa but in recent years we have seen new areas of the world becoming affected, including the Caribbean and other parts of the Americas.'
Dr Dipti Patel, director of the National Travel Health Network and Centre, added: 'There is no vaccine to prevent chikungunya.
'Anyone returning from affected areas with symptoms such as fever and joint pain should seek medical advice.'

The chikungunya virus, transmitted through infected mosquito bites, has spread to more than 30 Caribbean nations since it was first reported by the World Health Organisation in December 2013, when a case was discovered in St Martin, a French overseas territory.
With more than 700,000 suspected cases and approximately 120 deaths reported, experts are telling tourists to protect themselves if they are heading to the region for winter sun.
Earlier this month, the United States Centers for Disease Control and Prevention (CDC) reported more than 1,600 travellers returning to the US with chikungunya as of November 4.
More cases are being reported every day on the island as victims arrive at hospitals or surgeries with chikungunya symptoms, including fever, headaches, rashes and muscle and joint pain.
The worst of the outbreak in the Caribbean is occurring in the Dominican Republic, Guadeloupe, Haiti and Martinique, where more than 600,000 suspected cases have been reported.
Dr Tim Brooks, head of Public Health England's rare and imported pathogens laboratory, said: 'Chikungunya is now a common infection in travelers from the Caribbean, and is currently reported more frequently than dengue.

'The Aedes mosquitoes which spread the disease are most active during daylight hours.
'Particular vigilance with bite avoidance should be taken around dawn and dusk.
'Doctors should consider chikungunya in patients with a fever who return from the Caribbean, especially if they have symptoms of arthritis, and test them for the disease.'
Dr Laith Yakob, an infectious disease ecologist with the London School of Hygiene and Tropical Medicine, told MailOnline Travel earlier this month that people should speak to their GP or a travel doctor before their trip.
Once they arrive, they should keep their skin covered during the day, as mosquitoes are 'day

biters', and regularly apply insect repellent containing DEET, he said.
And they should seek immediate medical attention at the onset of symptoms.
He said: 'For most people within three to seven days they'll have fever, then joint pain in the hands and wrists can persist for weeks or even months.
'The joint pain can spread and can be quite debilitating.'
Patients are often left bedridden but they can recover within three to five days with proper treatment. Dr Yakob said the elderly are at particular risk of developing severe symptoms that can result in death.

Trials of an anti-viral drug in the US have had positive results, but there is currently no vaccine commercially available.
A small number of cases result in death and up to 10 per cent of patients suffer from arthritis, chronic joint pain and fatigue.
Complications can include hepatitis, myocarditis (inflammation of the heart muscle), and neurological and ocular disorders.
Dr Yakob said the symptoms of chikungunya and dengue fever, also spread by infected mosquitoes, are similar, so people who believe they are infected should seek a proper lab diagnosis.
The virus does not occur in the UK but Public Health England has been monitoring for signs of infected blood-suckers.

Despite the rise in cases involving tourists who visited the Americas, a majority of UK cases are associated with travel to South and South East Asia, NaTHNaC says.
In October, lab tests confirmed four people contracted the virus in Montpellier, France – prompting fears it could spread to the UK.

VECTOR-BORNE DISEASES

Recent Local News

Mosquito-Borne Chikungunya Now Spreading Rapidly through South Pacific

December 2, 2014 By Cecile Lefort

Chikungunya, a debilitating mosquito-borne viral disease, has taken hold in French Polynesia, spreading rapidly and threatening neighboring Pacific nations, regional health authorities said on Wednesday:

SYDNEY (Reuters) - Chikungunya, a debilitating mosquito-borne viral disease, has taken hold in French Polynesia, spreading rapidly and threatening neighboring Pacific nations, regional health authorities said on Wednesday.
The disease, typically found in low levels in Africa and Asia, this year has infected almost a million people in Latin America and the Caribbean, according to the World Health Organization.
French Polynesia, with a population of more than 268,000, said four people had died and more than 18,000 people had sought treatment for the disease since October, the first outbreak in the archipelago.
"We think that about half of the population will be affected in this cycle," said public health surveillance head Henri-Pierre Mallet, adding that the start of the rainy season would help the disease spread.
Samoa has reported more than 2,500 cases since July, while American Samoa and Tokelau had also suffered outbreaks, the Secretariat of the Pacific Community (SPC), based in New Caledonia, said.

"We are only half way through the chikungunya wave," said Dr Adam Roth, an epidemiologist at the SPC. "And there is certainly a big risk of infection for the (14) countries which have not had it yet," he said. SPC is a regional organization that helps the development of 22 countries.
Chikungunya is spread by two mosquito species and can cause severe symptoms including fever, headache and joint pain. There is no treatment nor vaccine.
Among mosquito-borne diseases, chikungunya has the longest period of illness with some people developing long-term debilitating joint pain that can keeping them away from work for months.
"It's not only a big burden for healthcare systems but also for the economy," Roth said.
French Polynesia's $5 billion economy was hit by the global financial crisis which caused a severe drop in tourism, the nation's lifeblood.

Americas

Chikungunya: Ebola pushes South American epidemic out of the spotlight

Nina Lakhani in Mexico City Monday 24 November 2014

With global media attention focused on the Ebola outbreak in Africa, the spread of the Chikungunya virus has largely gone unnoticed outside of Latin America

People wait to be tested for Chikungunya at a health centre on the outskirts of Tegucigalpa, Honduras. Photograph: Jorge Cabrera/Reuters

The Americas are experiencing an epidemic that has been largely ignored by the rest of the world as it focuses on west Africa's Ebola outbreak.
The debilitating mosquito-borne Chikungunya virus has infected almost one million people since it first emerged in South America and the Caribbean less than a year ago. The virus has rapidly spread across the Americas, causing huge pressure on health services in some of the poorest countries in the western hemisphere.
The Dominican Republic, the most popular Caribbean island for tourists last year with 4.7 million visitors, has recorded 500,000 cases. A third of the population lives on 80 pence ($1.25) a day. Central America has also been affected, with 123,000 cases in El Salvador.
The epidemic has failed to attract international media attention amid the Ebola crisis, as deaths

from Chikungunya are relatively rare: . About 150 people have died among nearly 931,000 cases in the Americas – the US has had more than 1,830 cases.

But Chikungunya causes painful and debilitating symptoms in more than 80% of those infected, and can exacerbate poverty due to missed work and medical expenses (pdf).

Patients most commonly suffer painful and swollen joints, fever, headache, fatigue and a rash within three to seven days after an infected bite. The symptoms usually disappear within three weeks. However, arthritis, especially in the wrists and hands, can last for months, or years in some people, causing long-term disabilities. "Chikungunya" means "bent over" in the Makonde language of Tanzania, where the virus was first detected in 1952, and describes the stooped appearance of those with joint pain.

The virus can also cause diarrhoea and vomiting, mouth ulcers, visual problems and meningitis, which pose the greatest threat to vulnerable groups including elderly people, babies, pregnant women and those with existing conditions such as high blood pressure or diabetes, according to the Pan American Health Organisation, which is monitoring the epidemic. There is no treatment or vaccine and the first human clinical trials are at least several years away.

"[Chikungunya] has clearly become a global virus," said Dr Alain Kohl, head of the University of Glasgow Centre for Virus Research, where scientists recently made an important breakthrough in preventing transmission.

He added: "Short-term infections that affect large numbers of people can have a very significant impact on the economy and health services, and long-term issues such as arthritis that are associated with Chikungunya can very badly affect patients. Public health impact is not just a measure of death rates."

Mosquito larvae carrying the Chikungunya virus in a laboratory in Santo Domingo, the capital of the Dominican Republic. Photograph: Erika Santelices/AFP/Getty Images

Chikungunya is spread by two particularly aggressive mosquito species – Aedes aegypti and Aedes albopictus – which bite during daylight hours, breed in stagnant water and favour biting humans. These mosquitoes, which also spread dengue and west Nile fever, are recognised by the white stripes around their legs.

But humans are key to transmission. A mosquito only becomes a carrier by biting an infected human, such as a holidaymaker returning home. Chikungunya cannot normally be transmitted from one person to another, although a few cases of mother to baby transmission have been reported.

Dr Jean Staples, epidemiologist and arboviral disease expert at the US Centers for Disease Control and Prevention, told the Guardian: "With viruses like Chikungunya, dengue and even Ebola, where people are a main route of transmission, globalisation and international travel definitely impacts on the spread."

The first locally transmitted cases of the virus in the western hemisphere were detected last December on Saint Martin.

It rapidly spread as the virus is new to the Americas, which means it is attacking people with no immunity against it. The mosquitoes responsible thrive in the region's tropical wet and warm climate. Chikungunya, which is more debilitating than dengue, is also easier to spread as sufferers are infectious for much longer.

Small outbreaks in France, Italy and, most recently Florida, have been contained by well-planned and well-resourced public health responses. This is much harder for countries like the Dominican Republic, Haiti and El Salvador where health services are already strained.

This epidemic is not unprecedented. In 2005-06, a third of people on the French La Reunion Island were infected over a few months – 266,000 of 785,000 habitants – in an outbreak that originated in Kenya. This led to millions of cases in India, Europe and across the Indian Ocean over the next two years.

Dr Laith Yakob, who studies the links between human-induced environmental changes and infectious diseases at London School of Hygiene and Tropical Medicine, told the Guardian that "globalisation through massively increased international travel" helps viruses migrate.
"There is also a tendency for the most connected places on Earth to have very large human populations, providing excellent opportunities for newly introduced pathogens to successfully invade," he added.
It's too early to predict the final human and economic costs of the epidemic, but he 2005-06 outbreak cost La Reunion £35m – 60% in direct medical costs.
It is unclear whether Chikungunya will become endemic in the Americas, and therefore another long-term drain on economies and health services. It has in India, but not in La Reunion. "It will depend on the virus's ability to find a niche in non-human primates to sustain it and keep it circulating; only time will tell," Staples said.

Chikungunya virus infects 20,000 across Colombia

Dec 2, 2014 posted by Piotr Wojciak

Authorities in the north of Colombia have reported a dramatic rise in cases of the dangerous Chikungunya virus in the past days.
After an initial outbreak of the virus affecting 5,000 in September, the virus is reportedly spreading again.
In the past few days, multiple cases have been reported in more than 40 municipalities in the Norte de Santander state, located on the Venezuelan border.
The sudden rise in the number of patients has driven several medical centers in the capital of the state, Cucuta, to the verge of collapse.
In the city of Santa Marta on the Caribbean coast, local reports revealed whole neighborhoods infected with the virus.

In order to combat further expansion of the virus, local authorities have announced measures such as fumigation campaigns and pest control, as well as improved waste water management in order to avoid the spread of mosquitoes.
The National Association of Hospital Workers of Colombia (Anthoc) in the Santander state indicated that the preventive actions have to be taken as soon as possible to anticipate the proliferation of mosquitoes.
The president of Anthoc, Aristides Hernandez, told Caracol Radio: "we are not doing enough. The fault should be attributed to the sanitary authorities in municipalities which haven't even fully committed themselves to fumigation, let alone other preventive measures."
Hernandez expressed his deep concern with the situation, suggesting that according to the Anthoc data the number of Chikungunya cases has now reached 20,000 people of various age.
In Santa Marta around 350 people from the Luis Carlos Galan neighborhood were diagnosed with the virus. On Monday, the District Department of Health has ordered to isolate the neighborhood and sent doctors to carry out home visits. Clinics, health centers and hospitals in Santa Marta and Magdalena present alarming reports about the virus spread in different areas in this region.
The Health Institute of the Norte de Santander called on the residents and citizens of the state to be alert to any flu-like symptoms, and to constantly clean their water containers.
Chikungunya, meaning "to bend up" in reference to the joint pain the virus causes, was originally transmitted to humans in southern Tanzania in 1952.
The virus transmitted by mosquitoes and symptoms similar to that of dengue fever, such as fever, joint pain, muscle pain, headaches, nausea, lethargy and hives. Despite the symptoms, the World

Health Organization claims that the virus is rarely ever fatal, although symptoms can last for years in some cases.
The virus is most often found in Sub-Saharan Africa, the Indian subcontinent and southeast Asia, while cases in the Americas have been few and far between.

Carribean

St. Croix at Peak of Chikungunya Outbreak; St. Thomas Cases Decline

BY SUSAN ELLIS — DECEMBER 2, 2014

Dr. Esther Ellis, V.I. Health Department epidemiologist, speaks on chikungunya Tuesday at UVI (Susan Ellis photo).

St. Thomas has likely seen beyond its peak of chikungunya cases, but on St. Croix residents may have not yet seen the worst of the mosquito-borne virus, the territory's expert in tropical medicine told a standing room only audience Tuesday at the University of the Virgin Islands, Albert Sheen campus. The seminar was teleconferenced to St. Thomas and St. John.

"On St. Croix, we're right at the exponential increase. We need to see a drop two weeks in a row before we consider the outbreak on the decline," said Dr. Esther Ellis, the new epidemiologist with the V.I. Department of Health.

According to Health Department's records, St. Croix's cases reached an all-time high at the end of October. The number dropped the next week and rose slightly the week of Nov. 2-8, the last week reported. Most people in the audience either had had or knew someone who had chikungunya.

Ellis explained the cycle of the chikungunya virus carried by the aedes aegypti mosquito and how to prevent infection, which is easier said than done – avoid mosquito bites. She suggested treating clothing with insecticides such as permethrin, Picardin or IR 3535, which she has not found for purchase on St. Croix. Some mosquito traps work well, Ellis said, and suggested a model at www.bioquip.com.

There is no cure or vaccination for chikungunya. The only treatment is to alleviate symptoms with pain and fever medications. Ellis said ibuprofen should not be taken until the fever is gone, but then the pain reliever should help.

The onset of chikungunya is abrupt, Ellis said. Symptoms manifest in three to seven days after being infected. Joint pain and/or swelling and fever are the most common symptoms. If the victim doesn't have a fever, he/she doesn't have chikungunya. Some cases are accompanied by nausea, headaches, a rash and muscle pain. Symptoms usually subside within seven to 10 days.

Unlike dengue, chikungunya rarely causes hemorrhage and death, according to Ellis. Also unlike dengue, there can be relapses with pain for months and up to two years.

"I'd much rather have dengue, although both are painful," Ellis commented after someone in the audience said they were still having painful symptoms two months later.

However, once cured, victims cannot contract chikungunya again.

"You can't get it again, but you can have it forever," said a chikungunya victim in the audience.

Once the fever is gone, usually in two to five days, the virus can no longer be transmitted to another human by a mosquito bite. Within two to three weeks, Ellis said there should be no risk of new infections.

Although there is no cure, Ellis said testing and reporting are important to determine what the

response should be.
Results of blood tests to identify the virus take three months because they are conducted off-island, by the U.S. Centers for Disease Control. Ellis said the CDC covers the cost of the testing, but the patient pays for having blood drawn.
Ellis encouraged people to send reports to the Health Department online or by fax if they have had the virus. Forms can be found at www.healthvi.org and www.cdc.gov/chikungunya/.
Not all chikungunya infections have been reported and some cases were possibly misdiagnosed as dengue fever. Until recently, physicians and laboratories in the territory have administered the test for dengue not chikungunya, Ellis told the group.
Currently there are 12 confirmed/probable cases reported on St. Croix and 374 other incidents of suspected chikungunya. The most affected neighborhoods are also those with high incidence of dengue: Williams Delight, Mon Bijou, Kingshill and Frederiksted.
According to Ellis, the Health Department has been spraying larvacides and has notified all schools of symptoms and care for patients.
On St. Thomas, there have been 102 confirmed or probable cases, and 857 suspected cases of the virus. St. John reports four probable/confirmed and 41 suspected cases.
One person has died, Ellis said, but had other severe medical issues that may have contributed to the fatality.
The first case of chikungunya in the Caribbean was found in 2013 on St. Martin. Prior to that, the virus was confined mainly to Africa and Southeast Asia.

India

Not reds, mosquitoes hospitalize 13 in Jharkhand

Anbwesh Roy Choudhury, Hindustan Times Jamshedpur, December 02, 2014

Not red rebels but mosquitoes have delivered a deadly strike on elite paramilitary forces deputed across poll bound Jharkhand with at least 13 jawans battling the virulent malaria in hospitals here while one jawan has died during the course of treatment.
Eight jawans were admitted to Jamshedpur's MGMCH and five at RIMS, Ranchi since Sunday in critical condition.
At Jamshedpur the ailing arrived from the malaria endemic West Singhbhum district that saw polling on Tuesday. Three were from the state's elite anti-naxal division Jharkhand Jaguar, two each from Indian Reserve Battalion (IRB) and Jharkhand Police and one from Border Security Forces (BSF).
"Maoists are threat is belittled by mosquitoes. In the last three months more than twenty personnel were rushed to hospitals with malaria," said ailing Sunil Kumar Gupta, an IRB constable posted at Timra picket.
West Singhbhum has 39.75% of its land covered by forest. Spread over 805 square kilometers, the Saranda forests in this district is one of the biggest rain-fed Sal forests in the country. These forests breed the female anopheles mosquitoes that carry the virulent disease.
Requesting anonymity jawans said that they had not received anti-malarial pills or repellant.
"Our old mosquito nets are in tatters. Bites are threat not bullets in jungles," said an ailing constable, adding that drinking water from rivers often spread dysentery and fever in camps sans filters.
"There is an acute dearth of medicines in camps," said Budhi Ram Oraon, posted in Chaibasa.
Police officials, however, said that arrangements had been made to keep the disease at bay.
"Every personnel have been given mosquito nets and repellants, Cvil surgeons have been alerted to take on an emergency," said police spokesperson Anurag Gupta.
More than 50 jawans posted in West Singhbhum, and 100 in Khunti and Ranchi have undergone

malaria tests in the past one-week.
Director-in-chief health services, Dr Sumant Mishra, said, "District prone to malaria have been kept on alert."
"Required health arrangements have been made for personnel posted in malaria endemic districts," said state programme officer for malaria control Pushpa Maria Bake.
In neighbouring state of Chattisgarh's Bastar disvions, six jawans from the CRPF died and 100 were hospitalized with malaria in the past one week.

WORLD OF MOSQUITO-SCIENCE

Meant for Malaria: Why Some Mosquitoes Carry it Better

By Brian Stallard Dec 02, 2014

It's not just all about location. Past research has shown that certain species of mosquitoes are better at transmitting malaria than even their close relatives. Now a new genetic assessment has revealed why exactly this is, and potentially offers new options for containing the spread of the deadly parasite.
According to the World Health Organization (WHO), malaria is a life-threatening disease caused by parasites that find their way into humans through the bites of infected mosquitoes. The resulting infection causes between 470,000 and 789,000 deaths each year - mostly among poor children in Africa.

Photo : Pixabay

And while the illness is both preventable and curable, the Plasmodium parasite, spread by female Anopheles mosquitoes, is vicious and aggressive, causing chill, vomiting, and fever on the first day of symptoms, and quickly escalating into severe anaemia, respiratory distress, or even cerebral problems.
Of a whopping 450 different Anopheles species around the world, only 20 are "locally important, according to the WHO. Recent research has revealed that from this group only 16 species have varying capabilities for transmitting malaria and adapting to new environments.

That's why Daniel Neafsey, a scientist with the Broad Institute; Robert Waterhouse, a Marie Curie International Outgoing Fellow at the Massachusetts Institute of Technology; and Nora Besansky, a professor from the University of Notre Dame, got together to lead a team on an investigation of the mosquito makeup, determining just what makes a select few of these insects the ideal malaria delivery system.
"We now have the exciting opportunity to significantly improve our understanding of these important malaria vectors and develop new strategies to combat malaria and other mosquito-borne

diseases," Zhijian Tu, a biochemist who worked on the team, said in a statement.
This understanding of genetic factors comes in the form of two papers recently published in the journal Science. The second study, led by Besansky and Matthew Hahn, also details how the most dangerous species, Anopheles gambiae, is able to increase its transmission capabilities by swapping genes at the chromosomal level.
This is but a baby step in the direction of one day utterly eliminating malaria, but it is still progress towards a goal of one day controlling the disease in a way beyond treatment or wiping out mosquito populations entirely

DID YOU KNOW?

How Mosquitoes Acquired a Taste for Human Blood

Mosquitoes weren't always annoyingly biting us, so how is it that they acquired a taste for human blood?
"It was a really good evolutionary move," Leslie B. Vosshall, lead author of a new study, said in a statement. "We provide the ideal lifestyle for mosquitoes. We always have water around for them to breed in, we are hairless, and we live in large groups."
Ancestors of these pesky insects fed on furry forest animals, that is, until thousands of years ago they made the smart switch to humans. Now, female mosquitoes like those that spread dengue and yellow fever use our blood to nourish their eggs.
To understand the evolutionary basis for their attraction to us, Vosshall and her colleagues examined the genes that drive some mosquitoes to prefer humans. Described in the journal Nature, they note that our scent is what is particularly mouth-watering.
Researchers focused on two species of mosquitoes in Kenya, the subjects of previous research - *Aedes aegypti formosus,* a subspecies of black mosquito that tends to lay its eggs outdoors and prefers to bite forest animals, and their light-brown cousins, *Aedes aegypti aegypti*, which mostly bite humans.
"We think we can get a glimpse of what happened thousands of years ago by looking at this little village in Kenya because the players are still there," Vosshall explained.
To zero in on the genes responsible for the human-loving mosquitoes' preference, the researchers crossbred the mosquitoes, creating thousands of genetically diverse grandchildren and separating them based on odor preference.

(Photo : Flickr: dr_relling)

"We knew that these mosquitoes had evolved a love for the way we smell," Vosshall added.
The research team ended up finding 14 genes strongly linked to liking humans, with one odor receptor gene in particular, Or4, standing out. Vosshall and her colleagues believe that Or4 is used to hone in on human scents specifically.
"There's a whole suite of things that mosquitoes have to change about their lifestyle to live around humans," Vosshall said. "This paper provides the first genetic insight into what happened thousands of years ago when some mosquitoes made this switch."