

# TPAIDA Case Studies

Jayson Bonelli

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# Zika Virus

# Zika Virus

- The Zika virus is a single-stranded RNA flaviviridae virus, deriving its name from the Zika Forest of Uganda.
- Humans and mammals serve as natural hosts.
- Aedes species of mosquitos are the primary carriers of the zika virus .
- First isolated in 1947, with the first human case reported in 1952.

**Centre issues guidelines on Zika virus disease including travel advisory urging pregnant women to defer travel to affected countries**

# ZIKA VIRUS

The virus that may cause deformities in new born children is 'spreading explosively' and could affect as many as 4 million people in the Americas

Infected women in Brazil have reportedly given birth to children with unusually small heads



Though India offers a fertile environment to the virus, so far no case relating to it has been reported in the country. The best prevention is to control the spread of the Aedes mosquito that breeds in clean water and spreads the Zika virus

## Symptoms



Transmitted to people through the bite of an infected Aedes mosquito. This is the same mosquito that transmits dengue and chikungunya



There is a possible link between maternal Zika virus and infant microcephaly

## Treatment

Treatment consists of relieving pain, fever, and any other symptom of inconvenience. Controlling the fever, rest, and drinking plenty of water is recommended.

**There is no vaccine or specific drug for this virus**

## Active with Zika Transmission



# Symptoms and Signs

- Fever, rash, joint pain, and conjunctivitis are the most common signs.
- Symptoms last anywhere from a days to a week.
- Very mild symptoms, rarely requires hospitalization.
- Similar to a mild form of dengue fever.



# Vector to Host Transmission

- Infected *Aedes aegypti* and *Aedes albopictus* mosquitos transmit the zika virus to humans.
- These mosquitos also carry other flaviviruses, such as the dengue and chikungunya viruses.
- Mosquitos become infected when they bite humans already infected with the zika virus.
- These mosquitos are most aggressive during the day and reproduce near stagnant water.

# Human to Human Transmission

- Zika virus can spread through sexual contact through an infected male, because zika survives longer in semen than blood.
- Zika is may also be passed through pregnancy.
- Microcephaly and other severe brain defects occur from this transmission.



Baby with Microcephaly



Baby with Typical Head Size

# Treatments

- No vaccine or cure.
- Plenty of rest and fluids.
- Take acetaminophen or paracetamol to reduce fever and pain.
- Only take aspirin or NSAIDS when positive it is zika and not dengue.
- Prevent any further mosquito bites.
- Zika virus can potentially cause Guillain-Barre syndrome.





# Zika in Peru

- Zika infected mosquitos have began showing up in Peru and infecting people.
- Infected mosquitos usually below 6500 ft.



# Gullain-Barre Syndrome

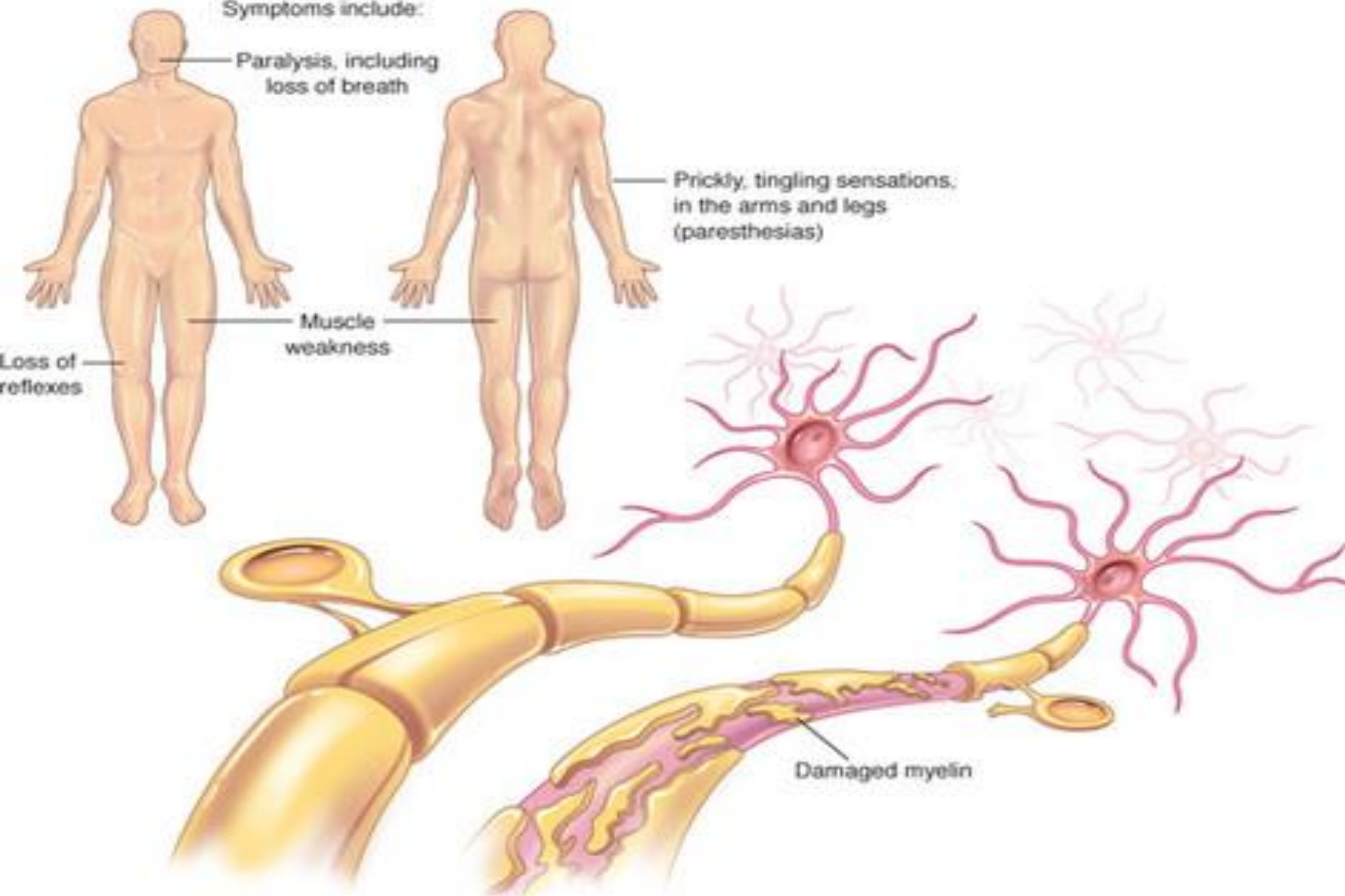
# Gullain-Barre Syndrome

- GBS is a rare autoimmune disorder where an individual's own immune system attacks their peripheral nervous system.
- GBS can affect nerves controlling muscle movement and those that transmit pain, temperature, and touch.
- 3,000-6,000 cases are reported yearly in the US.

## Cause and symptoms of Guillian-Barre syndrome

Guillain-Barre syndrome is caused by the destruction of myelin, known as demyelination.

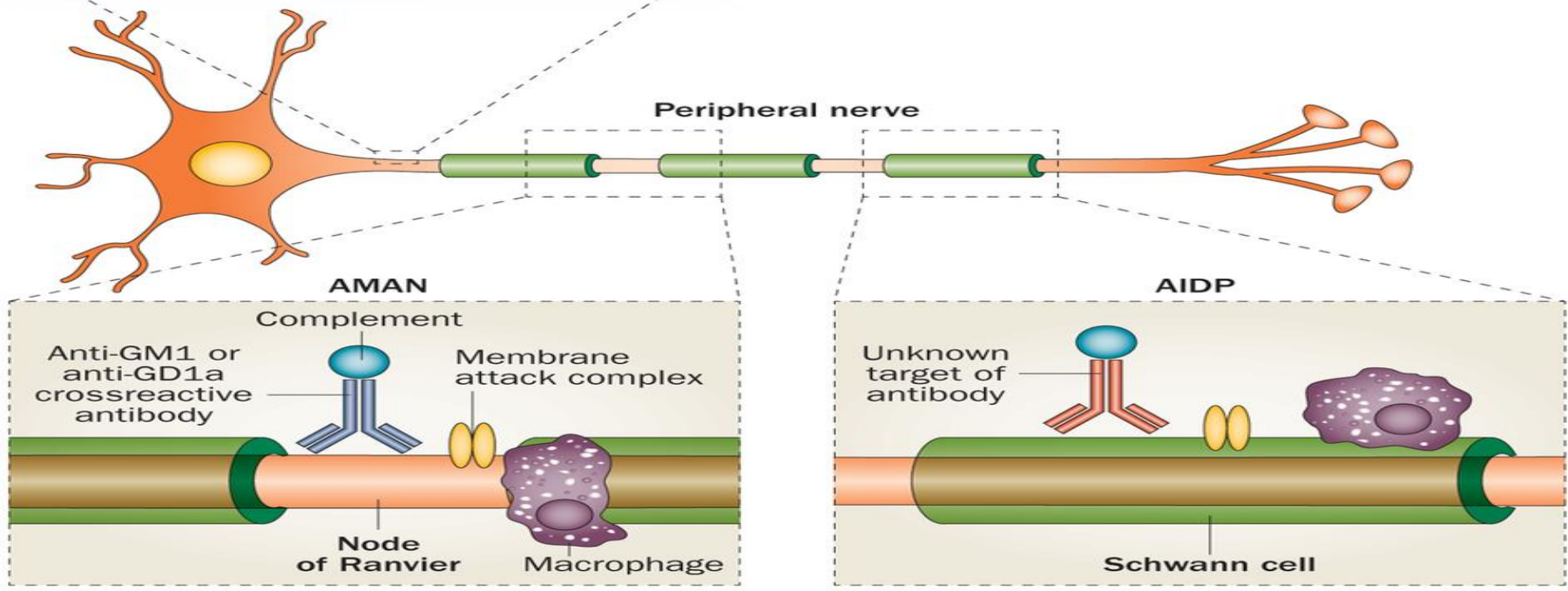
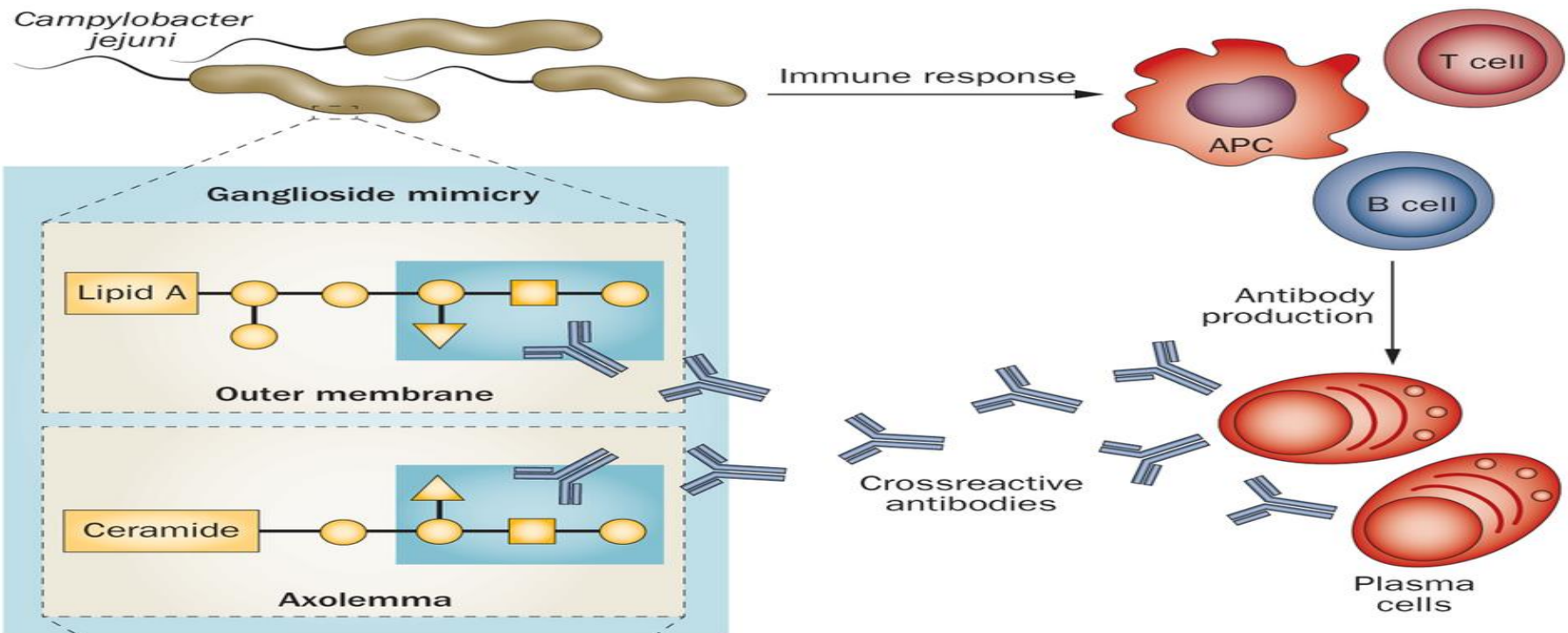
Symptoms include:



# Signs and Symptoms

- First, a person will have a tingling sensation or weakness.
- In more severe cases people can develop paralysis of the limbs, chest muscles, or facial muscles.
- In extreme cases people developed total paralysis, or death.
- Symptoms typically only last a few weeks, with most persons fully recovering.







# Causes and Diagnosis

- GBS usually onsets after an infection such as; HIV, dengue, and influenza.
- Over half of the cases develop after a respiratory illness or diarrhea.
- A surge of GBS cases are being studied to try and determine if there is a link with the rise in zika.
- GBS may also appear after immunization, surgery, or trauma.
- Diagnosis based upon appear of symptoms and blood tests.

# Treatment

- Hospitalization is recommended.
- No known cure.
- Immunotherapy such as plasmapheresis is often effective.
- Plasmapheresis is the removal, treatment, and return of blood plasma (includes antibodies).
- Plasma exchange is also effective. The removed plasma is discarded and donor plasma, or albumin and saline, is given to the therapy recipient.

# GBS in Peru

- The government has issues that all local water should be considered contaminated.
- All water should be boiled.
- Avoid pork. All meat should be thoroughly cooked.
- Milk should be boiled.
- Diarrhea is a leading cause of GBS onset.
- The Peruvian food and water supply can be hazardous. Caution should be taken.

# Chikungunya Virus

# Chikungunya Virus

- Chikungunya is a single-stranded RNA alphavirus.
- Monkeys, birds, cattle, rodents, and humans can all be infected.
- Characterized by sudden onset of fever within 2-4 days of being bit by an infected mosquito.

# Signs and Symptoms

- Symptoms usually onset 3-7 days after being bitten.
- High fever, rash, headaches and joint pain are common.
- Symptoms often last a few days to a week, however joint pain may linger for months.
- Newborns and the elderly are the most affected age groups.
- People with hypertension, diabetes, and heart disease are also more susceptible.



# Treatments

- No known cure.
- No vaccine or cure.
- Plenty of rest and fluids.
- Take acetaminophen or paracetamol to reduce fever and pain.
- Only take aspirin or NSAIDS when positive it is zika and not dengue.
- Prevent any further mosquito bites.

## PREVENTION

### YOU CAN PREVENT CHIKUNGUNYA BY:

- ✓ Covering exposed skin, by wearing long sleeved shirts, long pants, and hats, especially at dusk and dawn.
- ✓ Using mosquito nets for infants and ill people during the day, along with insect repellents to protect your family from mosquito bites.
- ✓ Putting screens at windows and doors to prevent the entry of adult mosquitoes into homes.
- ✓ If you are also using sunscreen, apply sunscreen first and insect repellent second.



### Course of Illness and Outcomes:

Most patients feel better within a week.

- Some people may develop longer-term joint pain.
- People at increased risk for severe disease include newborns exposed during delivery, older adults ( $\geq 65$  years), and people with medical conditions such as high blood pressure, diabetes, or heart disease.
- Deaths are rare.

## TREATMENT

It is recommended that you drink plenty of water and take panadol (*do not take aspirin*).

### COMMUNITIES CAN STOP CHIKUNGUNYA FEVER?

Learn about the mosquito which causes Chikungunya Fever. Note where it breeds and how to eliminate its breeding sites.



Keep your community clean and encourage your neighbors to do the same.

Spread the word about the dangerous *Aedes aegypti* mosquito that causes Chikungunya Fever.

Stop mosquitos from breeding in your community. Get everyone in your neighborhood involved - parents, children, teachers, church members and other groups.

People at increased risk for severe disease should consider not traveling to areas with ongoing chikungunya outbreaks.

If you are sick with Chikungunya Fever, avoiding mosquito bites will help prevent further spread of the virus.

For more information about Chikungunya Fever, contact the **Surveillance Unit** at 242-502-4790, or visit your nearest community health clinic.

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See [www.cdc.com/health/chikungunya](http://www.cdc.com/health/chikungunya)  
for more information



HEALTH EDUCATION DIVISION  
Ministry of Health, P. O. Box N-3729  
Telephone: [242] 322-1025  
Fax: [242] 322- 6088  
[healtheducationdivision@bahamas.gov.bs](mailto:healtheducationdivision@bahamas.gov.bs)  
[www.bahamas.gov.bs/health](http://www.bahamas.gov.bs/health)

# CHIKUNGUNYA FEVER



## WHAT YOU NEED TO KNOW



*Community help is important because anyone can get Chikungunya Fever.*



# Chikungunya in Peru

- The first local case came in June of 2015. A child was diagnosed by the NIH.
- The child was treated at a local hospital for her symptoms.
- In 2014, Peru had 14 imported cases of chikungunya.
- Surrounding countries such as Ecuador, Colombia, and Bolivia have a significant number of chikungunya infections, so it can be spread.

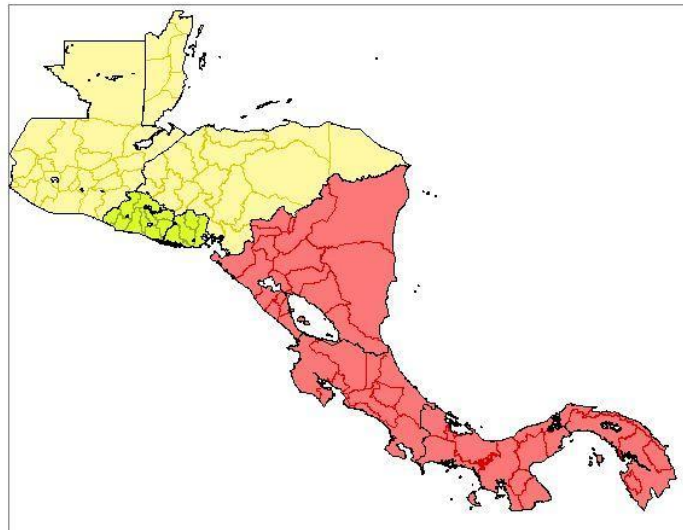
# American Trypanosomiasis

# Chagas Disease

- Chagas disease is an inflammatory, infection caused by protozoan parasite, *Trypanosoma cruzi*.
- Approximately 8-11 million infected in warm climates where people live in primitive conditions.
- Transmitted in the feces of triatomine bugs (kissing bugs).
- Usually appears in three stages; acute and chronic.
- Not contagious

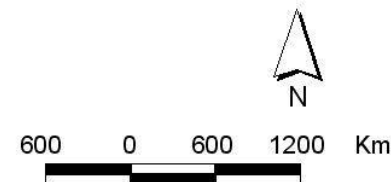


## Neglected Diseases



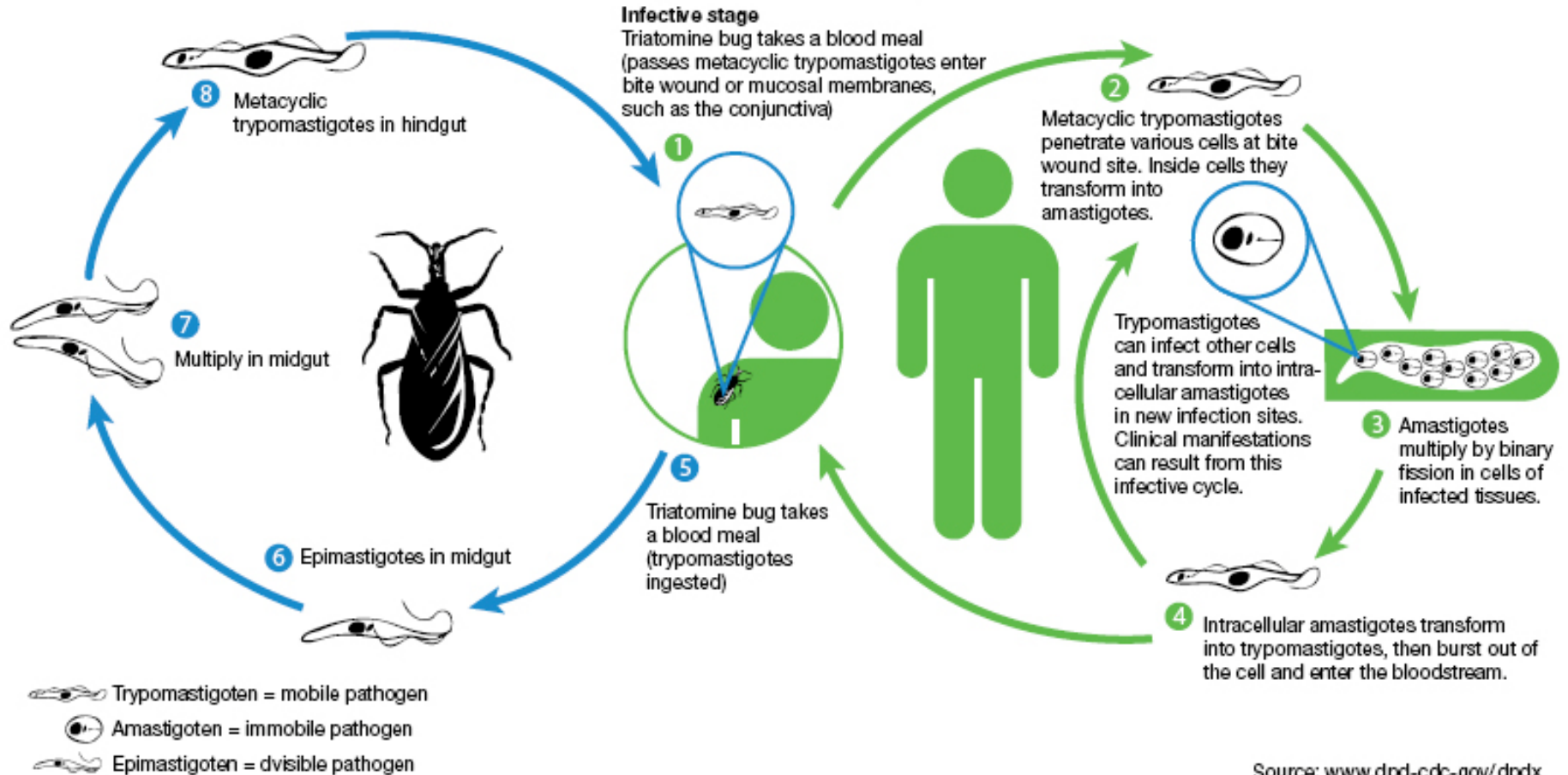
### Chagas Disease: Vector-borne transmission of the major vector interrupted

- Area participating in the Initiative where transmission by the major vector has not been interrupted
- Area participating in the Initiative where transmission by the major vector has been interrupted
- Non-endemic area with no evidence of vector-borne transmission
- Area participating in the Initiative where interruption of vector-borne transmission is not a goal
- Area participating in the Initiative where the main vector was eliminated
- Countries not included in the study
- Country limits



Lambert Azimuthal Equal Area Projection

# Infection cycles of Chagas disease

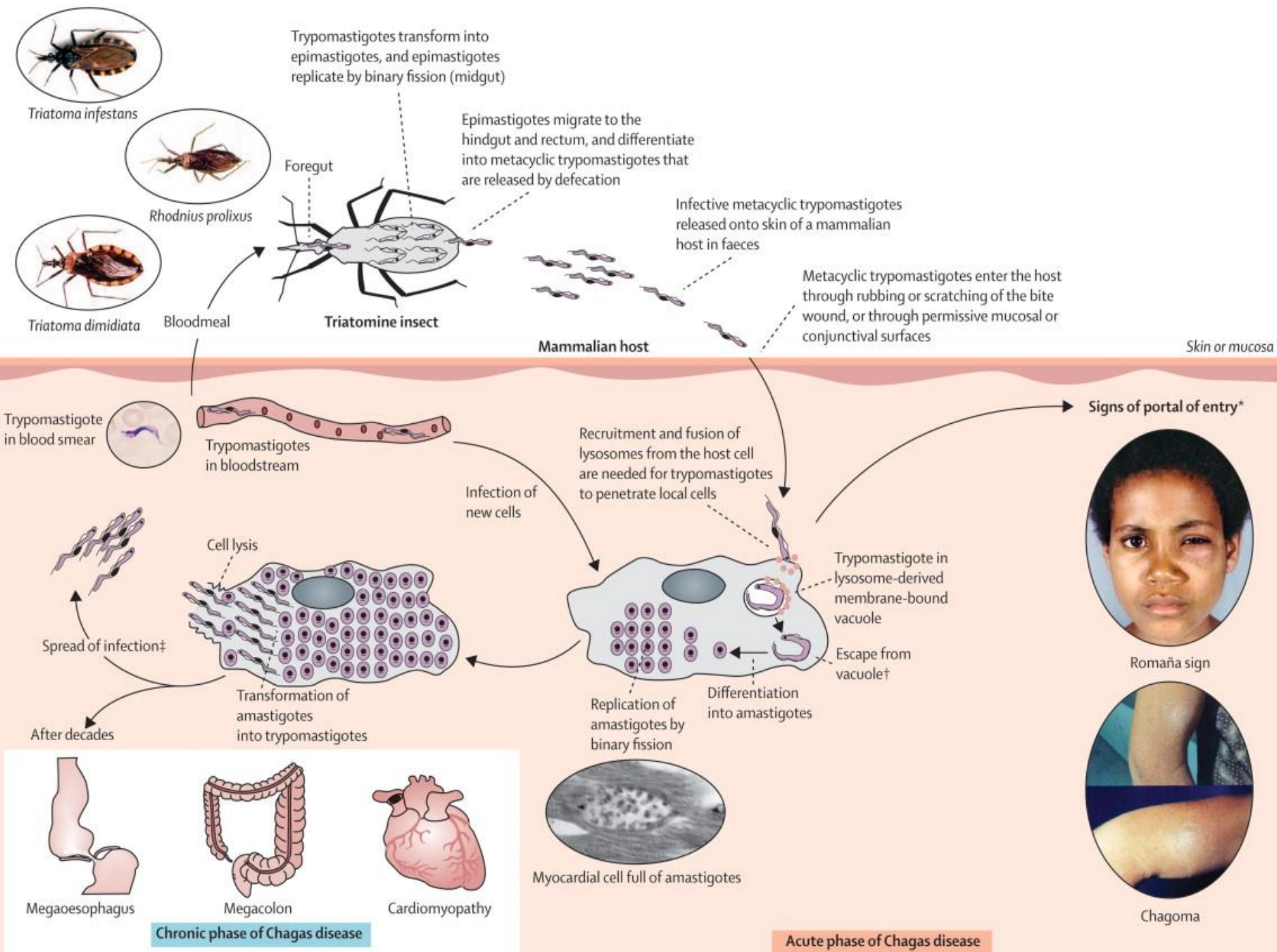


Source: [www.dpd-cdc-gov/dpdx](http://www.dpd-cdc-gov/dpdx)

# Signs and Symptoms

- Acute- Ramona sign, swelling and redness of the skin (chagoma), rash, swollen lymph nodes, fever, fatigue, vomiting, diarrhea, spleen or liver enlargement.
- Chronic- irregular heartbeat, EKG changes, palpitations, fainting (syncope), cardiomyopathy, congestive heart failure, shortness of breath (dyspnea), emphysema, stroke, sudden death, chronic abdominal pain, chronic constipation, dilated colon, and difficulty swallowing.





# Treatment

- No cure or vaccine.
- Antiparasitic drugs benznidazole (Rochagan, Ragonil) and nifurtimox (Lampit) kill or inhibit *T. cruzi* parasites; drugs are available from the CDC.



# Chagas in Peru

- There is up to a 40% infection rate of chagas in rural Peruvian communities.
- Infected insect rate among some rural villages as high as 85%, with the greatest magnitude around guinea pig enclosures.
- Guinea pig feasts during the rainy season may explain hikes in infection.

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