Dengue Basics
INTRODUCTION
About dengue

- Dengue is caused by one of any of four related viruses: Dengue virus 1, 2, 3, and 4.
  - A person can be infected with a dengue virus as many as four times in his or her lifetime.
  - Not everyone with dengue gets sick.
  - For those who do get sick, illness can be mild or severe.
Where is dengue found?

- **40%** of the world’s population, about **3 billion** people, live in areas with a risk of dengue.

- Each year, up to 400 million people get infected with dengue.
  - Approximately 100 million people get sick from infection, and 22,000 die from severe dengue.
SPREAD AND SYMPTOMS
How is dengue spread?

- Dengue can be spread through
  - Mosquito bites
  - Less commonly:
    - From a pregnant woman to her fetus
    - Infected blood, laboratory, or healthcare setting exposures
How mosquitoes spread dengue

An uninfected mosquito bites the infected person during the period of time when the virus can be found in the person’s blood, typically only through the first week of infection.

The infected mosquito lives long enough for the virus to multiply and for the mosquito to bite another person.

Another mosquito bites the infected person and becomes infected.
Dengue symptoms

• 1 in 4 people infected with dengue will get sick.
• For people who get sick with dengue, symptoms can be mild or severe.
• The most common symptom is fever, with any of the following:
  ➣ Nausea, vomiting
  ➣ Rash
  ➣ Aches and pains (eye pain, typically behind the eyes, muscle, joint, or bone pain)
  ➣ Any warning sign
• Symptoms typically last 2–7 days. Most people will recover after about a week.
Symptoms of severe dengue

Warning signs of severe dengue

• Warning signs generally begin in the 24–48 hours after your fever has gone away.
• If you or a family member develops any of the following symptoms, immediately go to a local clinic or emergency room:
  » Stomach or belly pain, tenderness
  » Vomiting (at least 3 times in 24 hours)
  » Bleeding from the nose or gums
  » Vomiting blood, or blood in the stool
  » Feeling tired, restless, or irritable
TESTING
Testing for dengue

• Anyone who has symptoms of dengue should be tested.
• Dengue is diagnosed through a blood test.
WHAT TO DO IF YOU HAVE DENGUE
There is no specific medication to treat dengue. See a healthcare provider if you develop a fever or have symptoms of dengue. Tell him or her about your travel.

Rest as much as possible.

Take acetaminophen (also known as paracetamol outside of the United States) to control fever and relieve pain. Do not take aspirin or ibuprofen!

Drink plenty of fluids such as water or drinks with added electrolytes to stay hydrated.
PREVENTION
Prevent mosquito bites

Use Insect Repellent

• Use Environmental Protection Agency (EPA) with one of these active ingredients.
  ➢ DEET
  ➢ Picaridin (known as KBR 3023 and icaridin outside the US)
  ➢ IR3535
  ➢ Oil of lemon eucalyptus (OLE)
  ➢ Para-menthane-diol (PMD)
  ➢ 2-undecanone

• Wear long-sleeved shirts and long pants

Tips

• Always follow the product label instructions.
• Reapply insect repellent as directed.
  ✔ Do not spray repellent on the skin under clothing.
  ✔ If you are also using sunscreen, apply sunscreen first and insect repellent second.
Prevent mosquito bites

Tips for babies and children

• Always follow instructions when applying insect repellent to children.
• Do not use insect repellent on babies younger than 2 months old.
  » Instead, dress your child in clothing that covers arms and legs.
  » Cover strollers and baby carriers with mosquito netting.
• Do not use products containing oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD) on children under 3 years old.
• Adults: Spray insect repellent onto your hands and then apply to a child’s face.
  » Do not apply insect repellent to a child’s hands, eyes, mouth, cuts, or irritated skin.
Dengue vaccine in the United States

- In May 2019, Dengvaxia® was approved by the U.S. Food and Drug Administration (FDA) in the United States for use in children 9-16 years old living in an area where dengue is common (the US territories of American Samoa, Puerto Rico and the US Virgin Islands), with laboratory confirmed prior dengue virus infection.

- Information on the vaccine’s availability in the US territories is pending.
**Global dengue vaccine**

- A vaccine to prevent dengue (Dengvaxia®) is licensed and available in some countries for people ages 9-45 years old.

- The World Health Organization (WHO) recommends that the vaccine only be given to persons with confirmed prior dengue virus infection.
MOSQUITO CONTROL
About mosquitoes

- Mosquitoes bite during the day and night.
- Female mosquitoes lay eggs in containers with standing water.
  - Artificial containers: buckets, bowls, animal dishes, flower pots, and vases.
  - Natural containers: plants, trees
- It takes about a week for an egg to become an adult mosquito.
Control mosquitos outside the home

Remove standing water where mosquitos could lay eggs

• Once a week,
  » empty
  » scrub,
  » turn over, cover, or throw out any items that hold water.

• Mosquitoes lay eggs near water. Some items that can hold water are:
  » tires
  » buckets
  » planters
  » toys
  » pools
  » birdbaths
  » flowerpot saucers
  » trash containers

• Tightly cover water storage containers (buckets, cisterns, rain barrels) so that mosquitoes cannot get inside to lay eggs.
Control mosquitos outside the home

• For containers without lids, use wire mesh with holes smaller than an adult mosquito.
• Use larvicides to treat large containers of water that will not be used for drinking and cannot be covered or dumped out.
• If you have a septic tank, repair cracks or gaps. Cover open vent or plumbing pipes. Use wire mesh with holes smaller than an adult mosquito.
Control mosquitoes inside the home

• Use screens on windows and doors.
  ➢ Repair holes in screens to keep mosquitoes outdoors.

• Stop mosquitoes from laying eggs in or near water.
  ➢ Once a week, empty and scrub, turn over, cover, or throw out items that hold water.
  ➢ Kill mosquitoes inside your home using indoor insect fogger or indoor insecticide to kill mosquitoes and treat areas where they rest.
    • These products work immediately and may need to be reapplied.
    • Always follow label directions.
    • Only using insecticide will not keep your home free of mosquitoes.
Wrapping up…

• Dengue is primarily spread through mosquito bites.
• You can protect yourself and your family from mosquito bites by:
  ➢ Using insect repellent
  ➢ Wearing long-sleeved shirts and long pants
• Once a week, empty, scrub, turn over and cover, or throw out any items that hold water to control mosquitoes inside and outside your home.
• If you get sick, see your doctor.
QUESTIONS?