



# Dengue Fever

## Frequently Asked Questions (FAQ)

### For Early Child Care Providers

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#### General Questions about Dengue Fever

1. [What is dengue and how can you keep from getting it?](#)
2. [What can I do to help?](#)
3. [How can you keep yourself or children you care for from getting it?](#)
4. [What are the symptoms of dengue fever?](#)
5. [When do symptoms start?](#)
6. [What is the treatment for dengue fever?](#)
7. [Can children get tested for dengue fever?](#)
8. [Who do I contact with other questions about dengue fever?](#)
9. [Do breastfeeding mothers need to take extra precautions?](#)
10. [Do people who have contracted dengue fever need to be quarantined?](#)

#### MOSQUITOES

1. [How can I protect children from mosquito bites?](#)
2. [What are common mosquito breeding sites to watch for?](#)
3. [What steps should be taken to reduce mosquito nuisance at home?](#)

#### USING REPELLENTS SAFELY

1. [Why should children use insect repellent?](#)
2. [How often should repellent be reapplied?](#)
3. [Which mosquito repellents work best?](#)
4. [What are some general considerations to remember when using insect repellents?](#)
5. [Are there special guidelines for using a repellent on children?](#)
6. [Is it possible to treat clothing with repellent?](#)
7. [Can insect repellents be used by pregnant women or nursing women?](#)
8. [What are some reactions to be aware of when using insect repellents?](#)
9. [Where can I get more information about repellents?](#)

## **General Questions about Dengue Fever**

### **What is dengue fever and how do you get it?**

Dengue fever is a viral illness spread by mosquitoes. There are four closely related dengue viruses (DENV 1, DENV 2, DENV 3, and DENV 4). The dengue virus is spread through the bite of infected *Aedes* mosquitoes. Dengue CANNOT be spread directly from person to person. It is estimated that there are over 100 million cases of dengue worldwide each year.

### **What can I do to help?**

It is important for early child care providers to be able to recognize the symptoms of dengue in themselves and in the children they take care of (see below). It's also important to follow "fight the bite" preventative measures by protecting the children from mosquito bites and regularly surveying their property to eliminate mosquito breeding sites and prevent mosquito nuisance. Remove or empty anything that catches or holds water (e.g., old tires, flower pots, toys, buckets, plastic tarps, air-conditioning drips, hoses, debris, etc.).

Providers traveling to endemic areas (e.g., Puerto Rico, Latin America, Southeast Asia, the South Pacific) should take precautions while abroad, and inform their healthcare provider if they or their children are ill within two weeks of their return.

### **How can you keep yourself or children you care for from getting it?**

- When traveling to areas that have dengue fever, try to avoid exposure to mosquitoes. *Aedes* mosquitoes are usually most active in the early morning hours after daybreak, in the late afternoon before dark, and any time during the day when indoors or in shady areas.
- Use mosquito repellents with 20-30% DEET or another effective ingredient (see below).
- Dress children in appropriate clothing, such as long-sleeved shirts and long pants that reduce exposure to mosquito bites.
- Use mosquito netting over beds, especially if there are mosquitoes indoors.
- Cover cribs, strollers, and baby carriers with mosquito netting.
- Install or repair screens on windows and doorways and make sure they are closed.
- Use air-conditioning if possible.
- Mosquitoes are drawn to dark colors; if possible, wear light-colored clothing when you are likely to be exposed to biting mosquitoes.

### **What are the symptoms of dengue fever?**

For both children and adults, the symptoms of dengue fever include sudden onset of fever; severe headaches; eye, joint, and muscle pain; and rash. The rash typically appears on the hands, arms, legs and feet 3 to 4 days after the fever begins. Minor bleeding problems can also occur. The symptoms usually go away completely within 1 to 2 weeks. Sometimes, people with dengue fever have blood clotting problems. When this happens, the illness is called severe dengue. Severe dengue is a very serious illness with abnormal bleeding and very low blood pressure (shock).

*If you are worried that a child (or adult) might have dengue fever, it is important that they be evaluated by a healthcare provider and avoid further exposure to mosquitoes. Many of the*

initial symptoms of dengue can overlap with other conditions that require specific treatment (like leptospirosis or even the flu); additionally, a small number of individuals with dengue can go on to have severe dengue (see below), and it is important that individuals with dengue be monitored by a healthcare provider to ensure that they are not progressing to severe dengue.

### **When do symptoms start?**

The symptoms usually start 5 to 7 days after being bitten by infected mosquitoes, but the onset can range from 3 to 14 days.

### **What is the treatment for dengue fever?**

There is no specific treatment for dengue fever. Bed rest and acetaminophen (Tylenol) to treat fever and pain are recommended. Aspirin and NSAIDS (ibuprofen, naproxen) are NOT recommended as they can make bleeding problems worse. There is currently no approved vaccine for dengue fever. Individuals with dengue should seek out medical care.

### **Can children get tested for dengue?**

If you are at all concerned that a child might have dengue, you should contact the child's healthcare provider and make sure she/he avoids further exposure to mosquitoes. If the child has symptoms of dengue fever, the healthcare provider will order blood tests that will confirm the diagnosis. These tests are conducted by the State Laboratories on Oahu, which is doing so at no charge for the duration of the outbreak.

### **Who do I contact with other questions about dengue fever?**

*If you have general questions about dengue fever, mosquito avoidance recommendations, or the ongoing Big Island dengue investigation, call Aloha United Way's 2-1-1 hotline.*

### **Do breastfeeding mothers need to take extra precautions?**

The risk of a mother transmitting the virus to her newborn through breastmilk is considered low, and the health benefits of breastfeeding greatly outweigh the likelihood of disease transmission. Ultimately, breastfeeding mothers should consult with their pediatrician about concerns they have regarding breastfeeding and dengue risk.

### **Do children who have contracted dengue fever need to be quarantined?**

Dengue fever cases do NOT require quarantine, because dengue fever is not spread from person to person. Children (and adults) who are infected with the dengue virus should stay home and rest after receiving medical attention. The dengue virus is spread through the bite of an infected mosquito, so the most effective way to prevent future cases is to eliminate mosquitoes that might bite infected persons and then spread the virus to uninfected persons.

## **MOSQUITOES**

### **How can I protect children from mosquito bites?**

Children (and adults) should wear clothing with long pants and long sleeves while outdoors. DEET or other repellents such as permethrin (not registered for use on skin) can also be applied to clothing, as mosquitoes may bite through thin fabric. Mosquito netting can be used over

infant carriers. Also, try to reduce the number of mosquitoes in the area by getting rid of containers or other items with standing water that provide breeding places for mosquitoes.

### **What are common mosquito breeding sites to watch for?**

Heavy mosquito nuisance usually indicates a nearby breeding source. *Aedes* mosquitoes typically lay their eggs on accessible surfaces above the water line/level. Make a systematic and thorough inspection around your facility. Common breeding sites are in water found in old tires, clogged roof gutters, cans, bottles, unused swimming pools, unused fish ponds, pineapple lilies (bromeliads), hollow bamboo stumps, hollow tree stumps, uncapped hollow tile walls, uncapped fence pipes, and overflow trays under house plants.

### **What steps should be taken to reduce mosquito nuisance on our property?**

- Remove or empty anything that catches or holds standing water, such as old tires, flowerpots, toys, buckets, plastic tarps, and debris on your premises.
- For plants that hold water, such as bromeliads, flush with a hose or spray with soapy water once a week.
- Use mosquito-eating fish, such as guppies, in unused swimming pools, constructed fish ponds with no outlet to the environment, or other large containers that cannot be removed or emptied of standing water. *To protect Hawaii's rare native species and aquatic habitats, do not release guppies or other alien species into the natural environment.*
- Install or repair window screens and doors to keep out mosquitoes. Screens are your best protection against mosquito nuisance inside your home.
- Clean your gutters. Remove leaves and debris so water will drain freely.

*Aedes albopictus* adults usually rest out of doors, in places such as in bushes, but they can be found indoors. *Aedes aegypti* are most commonly found indoors, and only occasionally outdoors in garden vegetation. These mosquitoes travel less than 200 yards.

### **USING REPELLENTS SAFELY**

**CAUTION:** *Always read the entire label before you use insect repellent and apply exactly as the label directs. Centers for Disease Control and Prevention (CDC) recommend using products shown to work in scientific trials and containing active ingredients registered with the US Environmental Protection Agency (EPA) for use as insect repellents on skin or clothing. CDC recommends using products containing DEET or picaridin, but products containing oil of lemon eucalyptus may also be effective.*

### **Why should children use insect repellent?**

Insect repellents can help reduce exposure to mosquito bites that may carry viruses, such as dengue fever, Zika, chikungunya, or West Nile virus, that can cause serious illness and even death. Using insect repellent allows children to continue to play outdoors with a reduced risk of mosquito bites.

### **When should children use mosquito repellent?**

Apply repellent when children are going to be outdoors. Even if you don't notice mosquitoes, there is a good chance that they are around.

### **How often should repellent be reapplied?**

In general you should re-apply repellent if children are being bitten by mosquitoes. Always follow the directions on the product you are using. Sweating, swimming, or otherwise getting wet may mean that you need to re-apply repellent more frequently. Repellents containing a higher concentration (higher percentage) of active ingredient typically provide longer-lasting protection.

### **Which mosquito repellents work best?**

CDC recommends using products that have been shown to work in scientific trials and that contain active ingredients which have been registered with the US Environmental Protection Agency (EPA) at <http://www2.epa.gov/insect-repellents/using-insect-repellents-safely-and-effectively> for use as insect repellents on skin or clothing.

Of the active ingredients registered with the EPA, CDC believes that two have demonstrated a higher degree of efficacy in the peer-reviewed, scientific literature. Products containing these active ingredients typically provide longer-lasting protection than others:

- DEET (N,N-diethyl-m-toluamide)
- Picaridin (KBR 3023)

Oil of lemon eucalyptus [active ingredient: p-menthane 3,8-diol (PMD)], a plant-based repellent, is also registered with EPA. In two recent scientific publications, when oil of lemon eucalyptus was tested against mosquitoes found in the U.S., it provided protection similar to repellents with low concentrations of DEET.

### **What are some general considerations to remember when using insect repellents?**

Always follow the recommendations appearing on the product label.

- Use enough repellent to cover exposed skin or clothing. Don't apply repellent to skin that is under clothing. Heavy application is not necessary to achieve protection.
- Do not apply repellent to cuts, wounds, or irritated skin.
- After returning indoors, wash treated skin with soap and water. (This may vary depending on the product. Check the label.)
- Do not spray aerosol or pump products in enclosed areas and do not use it near food.
- Do not spray aerosol or pump products directly to your face. Spray your hands and then rub them carefully over the face, avoiding eyes and mouth.
- Wash hands after application to avoid accidental exposure to eyes or ingestion.

### **Are there special guidelines for using a repellent on children?**

Always follow the recommendations appearing on the product label when using repellent:

- Repellents containing DEET should not be used on infants less than 2 months old, and certain other repellents may not be appropriate for young children (e.g. oil of lemon eucalyptus should not be used with children less than age 3 years).
- When using repellent on a child, apply it to your own hands and then rub them on the child. Avoid children's eyes and mouth and use it sparingly around their ears.
- After returning indoors, wash treated skin with soap and water.

- Have children wash their hands (to remove any repellent they may have touched) before eating.
- Do not apply repellent to children's hands. (Children may tend to put their hands in their mouths.)
- Do not allow young children (especially under age 10) to apply insect repellent on themselves; have an adult do it for them.
- Keep repellents out of reach of children.
- Do not apply repellent under clothing. If repellent is applied to clothing, wash treated clothing before wearing again. (This recommendation may vary by product; check label for specific instructions.)
- Follow product instructions – using more won't give you extra protection but may increase risk.

### **Is it possible to treat clothing with repellent?**

Permethrin is a repellent that can be used on clothing and other items. If treating clothing with permethrin yourself, follow product instructions carefully. Do NOT use permethrin products directly on skin, as they are intended only to treat clothing.

Manufacturer-treated clothing can also be purchased. Such items remain protective after multiple washings, but you should consult the information provided with each product to see how long this protection will last.

### **Can insect repellents be used by pregnant women or nursing women?**

Other than the routine precautions noted earlier, EPA does not recommend any additional precautions for using registered repellents on pregnant or lactating women. Consult your health care provider if you have questions.

### **What are some reactions to be aware of when using insect repellents?**

Use of repellent products may cause skin reactions in rare cases. Most products also note that eye irritation can occur if product gets in the eye. If you suspect a reaction to a product, you should discontinue use, wash the treated skin, and call a poison control center. If product gets in the eyes, flush with water and consult your health care provider or poison control center. If you go to a doctor, take the product with you.

There is a national number to reach a Poison Control Center near you: 1-800-222-1222.

### **Where can I get more information about repellents?**

For information about safely using repellents with children, please consult the information page of the American Academy of Pediatrics at: <https://www.healthychildren.org/English/safety-prevention/at-play/Pages/Insect-Repellents.aspx>. For additional information, please consult the Environmental Protection Agency (EPA) at: <http://www2.epa.gov/insect-repellents/using-insect-repellents-safely-and-effectively> or consult the National Pesticide Information Center (NPIC), which is cooperatively sponsored by Oregon State University and the U.S. EPA. NPIC can be reached at: [npic.orst.edu](http://npic.orst.edu) or 1-800-858-7378.