

Protecting Your Employees From West Nile Virus, Lyme Disease And Dengue Fever



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Dengue Fever Factsheet

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The stylets (needle-like structures) and proboscis (elongated mouth) of an *Aedes aegypti* feeding. Dengue viruses are transmitted during the feeding process.

There are many risks for employees who work outdoors. Farmers, foresters, landscapers, groundskeepers, painters, roofers, pavers, construction workers, and other outdoor workers are exposed to sun, heat, cold, and insects, especially mosquitoes. This exposure means they run the risk of contracting diseases transmitted by mosquitoes like West Nile Virus and Dengue Fever.

Q. What is dengue?

A. Dengue (pronounced den' gee) is a disease caused by any one of four closely related viruses (DEN-1, DEN-2, DEN-3, or DEN-4). The viruses are transmitted to humans by the bite of an infected mosquito. In the Western Hemisphere, the *Aedes aegypti* mosquito is the primary transmitter or vector of dengue viruses. It is estimated that there are over 100 million cases of dengue worldwide each year.

Q. What is dengue hemorrhagic fever (DHF)?

A. DHF is a more severe form of dengue. It can be fatal if unrecognized and not properly treated. DHF is caused by infection with the same viruses that cause dengue. With good medical management, mortality due to DHF can be less than 1 percent.

Q. How are dengue and dengue hemorrhagic fever (DHF) spread?

A. Dengue is transmitted to people by the bite of an *Aedes* mosquito that is infected with a dengue virus. The mosquito becomes infected with dengue virus when it bites a person who has dengue or DHF and after about a week can transmit the virus while biting a healthy person. Dengue cannot be spread directly from person to person.

Q. What are the symptoms of the disease?

A. The principal symptoms of dengue are high fever, severe headache, backache, joint pains, nausea and vomiting, eye pain, and rash. Generally, younger children have a milder illness than older children and adults.

Dengue hemorrhagic fever is characterized by a fever that lasts from 2 to 7 days, with general signs and symptoms that could occur with many other ill-



nesses (e.g., nausea, vomiting, abdominal pain, and headache). This stage is followed by hemorrhagic manifestations, tendency to bruise easily or other types of skin hemorrhages, bleeding nose or gums, and possibly internal bleeding. The smallest blood

vessels (capillaries) become excessively permeable ("leaky"), allowing the fluid component to escape from the blood vessels. This may lead to failure of the circulatory system and shock, followed by death, if circulatory failure is not corrected.

Q. What is the treatment for dengue?

A. There is no specific medication for treatment of a dengue infection. Persons who think they have dengue should consult a physician. They should also rest, drink plenty of fluids, and use pain relievers with acetaminophen and avoid those containing aspirin.

Q. Is there an effective treatment for dengue hemorrhagic fever (DHF)?

A. As with dengue, there is no specific medication for DHF. It can however be effectively treated by fluid replacement therapy if an early clinical diagnosis is made. Hospitalization is frequently required in order to adequately manage DHF.

Q. Where can outbreaks of dengue occur?

A. Outbreaks of dengue occur primarily in areas where *Aedes aegypti* (sometimes also *Aedes albopictus*) mosquitoes live. This includes most tropical urban areas of the world. Dengue viruses may be introduced into areas by travelers who become infected while visiting the tropics where dengue commonly exists.

In the America region, all dengue virus serotypes are now present. DEN-3 was reintroduced into Central America in 1994 and is now found in several countries in the region. Since this serotype has been absent from the Americas for almost 20 years, the population has a low level of immunity and the virus is expected to spread rapidly.

Q. Which working environments may increase exposure to mosquitoes?

A. Mosquitoes may breed in any puddle or water that stands for more than 4 days. Workers at sites near

stagnant pools, ponds, watering troughs, irrigation ditches, rain barrels, manure lagoons, or any stagnant body of water may be at increased risk of mosquito exposure. Equipment such as tarps, buckets, barrels, and wheelbarrows may allow mosquito larvae to develop if water accumulates in them. Even water-filled ruts on the ground attract mosquitoes.

Many mosquitoes bite people most actively at dusk and dawn. When possible, avoid working outdoors when mosquitoes are biting. Some mosquitoes are active during the day—particularly in weedy, bushy, and wooded or shaded areas. When possible, avoid working in these areas.

Q. What can employees who work outdoors do to reduce the risk of acquiring dengue?

A. There is no vaccine for preventing dengue. Outdoor workers can decrease their risk of dengue by reducing their contact with mosquitoes through the use of personal protective measures where mosquitoes may be actively biting.

- *Wear long-sleeved shirts, long pants, and socks when possible.*
- *Spray exposed skin with insect repellents containing DEET at concentrations of 35 percent or less.*
- *Read and follow label directions for repellent use.*
- *Do not apply repellents to cuts, wounds, or irritated skin.*
- *Spray protective clothing with repellents containing DEET.*
- *Do not apply repellents under clothing.*

Q. How can employers protect employees who work outdoors against dengue?

A. Employers can help protect outdoor workers by implementing environmental control measures:

- *When possible, schedule work to avoid having workers outdoors when mosquitoes are most active.*
- *Eliminate as many sources of standing water as possible to eliminate mosquito-breeding areas by:*
 - *preventing stagnant water in animal drinking troughs, ponds, and other standing bodies of water by changing the water every few days or aerating it;*
 - *turning over, covering, or removing equipment such as traps, buckets, barrels, and wheelbarrows that accumulate water;*
 - *discarding tires, buckets, cans, and containers in the work area; place drain holes in containers that cannot be discarded;*
 - *cleaning out rain gutters and ditches to get rid of standing water and fill ruts and other areas that accumulate water.*

Q. How can epidemics of dengue hemorrhagic fever (DHF) be prevented?

A. The emphasis for dengue prevention is on sustainable, community-based, integrated mosquito control, with limited reliance on insecticides (chemical larvicides and adulticides). Preventing epidemic disease requires a coordinated community effort to increase awareness about dengue/DHF, how to recognize it, and how to control the mosquito that transmits it.

Texas Department of Insurance, Division of Workers' Compensation has other publications related to this subject available at www.tdi.state.tx.us/wc/services/employers.html:

- Insect Bites and Stings Fact Sheet
- West Nile Virus Fact Sheet
- West Nile Virus Mosquito Control Fact Sheet

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West Nile Virus

Get the facts

What is West Nile Virus?

West Nile virus is a member of the flavivirus group, which are viruses spread by insects and known to cause disease in animals and humans.

The first step in the transmission cycle occurs when certain breeds of mosquitoes become infected when they feed on an infected bird carrying the virus in its blood. The virus hides out in the mosquito's salivary glands, and after 10 to 14 days, the virus can be passed on to humans or animals when they are bit by the infected mosquito.

Most people infected by the virus only become mildly ill. Experts estimate that less than one percent of those infected with West Nile virus will become severely ill, and only 3 to 15 percent of those severely ill will die as a result.

Who is at Risk?

Although anyone living in an area where the virus has been detected can become infected, people in good health generally do not develop serious symptoms. However, the risk is increased by certain health factors such as:

- People over the age of 50.
- Anyone with an illness that suppresses the immune system, such as HIV.
- Anyone taking medications that suppress the immune system, such as certain drugs for rheumatoid arthritis or organ transplants.
- People going through chemotherapy.

Signs & Symptoms

Most West Nile virus infections cause either no symptoms or symptoms so mild you do not even know you've been infected.

However, if you do develop symptoms they usually appear 3 to 15 days after being bit by an infected mosquito.

Evidence suggests that the majority of people infected with the virus will only develop a mild version of the virus, which includes flu-like symptoms such as:

- Fever
- Headache
- Back pain
- Muscle aches
- Lack of appetite
- Sore throat
- Nausea
- Vomiting
- Abdominal pain
- Diarrhea

Symptoms of the mild version of the virus generally only last a few days. And there are no known long-term effects.

Your chances are even more rare for developing encephalitis, or inflammation of the brain, which is a more severe version of West Nile virus. Encephalitis only affects about one percent of those who contract the virus.

Prevention

The best way to protect yourself and your family is to avoid mosquito bites.

The following is a list of steps you can

take at home to help control mosquitoes and decrease your chances of being bit.

- Eliminate standing water in your yard. Mosquitoes breed and multiply in standing water.
- Unclog roof gutters.
- Empty unused swimming pools.
- Change the water in birdbaths at least weekly.
- Avoid unnecessary outdoor activity when mosquitoes are most prevalent, such as dusk and early evening.
- Wear long-sleeved shirts and pants when going into mosquito infested areas.
- Apply an insect repellent containing 20 to 30 percent DEET. (Do not apply this type of insect repellent to children under three years old.)
- Spray clothing with insect repellent.



Did you know...

Despite the statistics, your chance of actually developing serious or fatal symptoms from West Nile virus is very low. The overwhelming majority of people infected with the virus do not get symptoms or even feel sick.

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Lyme Disease

Are you protected?

Despite all the statistics, your chance of actually catching Lyme disease is relatively low.

What is Lyme Disease?

Lyme disease is a bacterial infection that is only spread by certain kinds of ticks—ones that have been infected while feeding on the blood of an infected animal. The most common tick to carry this disease is the deer tick.

If an infected tick bites you and it stays attached to your skin for 36 – 48 hours, the bacteria can be transferred into your bloodstream causing it to travel to other parts of your body.

Signs & Symptoms

Lyme disease can progress into three stages if it is not properly treated early.

During the first stage, early localized Lyme disease, a rash develops at the site of the bite within one to 31 days. The rash, which usually looks like a bull's-eye, will slowly expand and grow while other flu-like symptoms start to develop.

In the second stage, early disseminated Lyme disease, you may develop skin, joint, early nervous system, and heart problems.

Late persistent Lyme disease is the last, and often the most serious, stage in which you may develop joint, late nervous system, and heart problems.

Prevention

Because the symptoms of Lyme disease are so vague, and therefore often left untreated, it can be difficult to cure. That is why it is important to know some ways to help you reduce your risk of getting it.

The following preventive measures will help reduce your chances of getting a tick bite and possibly developing Lyme disease.

- Wear long sleeved shirts and pants when in wooded and tuck your pant legs into your socks or boots.
- Wear light colored clothing to make identifying ticks easier.
- Spray yourself with insect repellent that contains DEET.
- Walk in the center of trails to avoid overhanging trees or bushes.
- Wash your body and clothing after all outdoor activities.
- Look periodically for ticks if you've been in bushy areas or working in a garden.
- Avoid sitting on the ground.
- Keep long hair tied.
- Stack woodpiles neatly, off the ground, and in a dry location.
- Remove any ticks promptly!

Tick Removal

Remember, in the case of a tick bite, the bacteria will not begin transmitting Lyme disease to your blood stream for 36 – 48 hours after attachment. Your chance of contracting Lyme disease will greatly decrease if you remove the tick within the first 24 hours of the bite.

Removing a tick is an easy process. All you need is a good pair of fine-tip tweezers. The following are instructions for removing ticks.

1. Use a tweezers to firmly grab the tick where it entered the skin. Do NOT squeeze the tick's body as it could cause bacteria to inject into your skin.
2. Slowly and firmly pull the tick directly outward. Do not try to twist it out, that could break the tick in half, leaving half still in your skin.
3. Once the tick is removed, clean the bite with disinfectant.



Did you know...

According to the Centers for Disease Control and Prevention (CDC), there are about 15,000 cases of Lyme disease reported annually. That number is on the rise, and so is the number of geographic areas where the disease can now be found.