

What Every Camp Nurse Needs to Know (and Share with Others) About Mosquito- and Tick-Borne Diseases



Camp nurses have added ticks, mosquitoes and the diseases they can transmit to the long list of concerns to be considered during camp sessions. The information below will help camp nurses define key messages and major teaching points, as well as recommended actions, for parents, campers, counselors and other staffers. It offers recommended actions to help minimize risk of tick bites and gives guidance on what to do if bites DO occur despite everyone's best efforts.

Basic Facts About Repellents

- ▶ There are five active ingredients registered by the Environmental Protection Agency for use in repellent products: DEET, picaridin, oil of lemon eucalyptus, IR 3535, and catnip oil. All of these are effective against mosquitoes at equivalent concentrations.
- ▶ The higher the concentration of active ingredient in a repellent product, the longer the duration of efficacy.
- ▶ The American Academy of Pediatrics issued guidance in 2003 on the use of DEET-based repellents, noting that children as young as two months of age can use repellents with up to a 30% concentration product. This should help to reassure parents that their youngsters can use these products with confidence. The minimum age recommendations are the same for picaridin and IR3535. Children must be at least three years old to use oil of lemon eucalyptus products.
- ▶ Repellents are for use on exposed skin and, sometimes on clothing. Repellents do not kill insects and ticks—they simply repel them. They are not intended for use on screens or other environmental surfaces. They should not be sprayed on the insects or ticks (won't kill them!), and should be reapplied only when the bugs start biting again.
- ▶ There are sweat-resistance aerosol products available, as well as products that go on "dry". There is a sustained-release product that will typically provide protection for up to 12 hours against mosquitoes, even though it has a 34.5% concentration.
- ▶ Applying repellents by spraying the air AROUND your body will not work. Products should be applied directly to the skin, then smoothed on to get even coverage just as you would apply a sunscreen. (A mosquito can find a spot the size of a dime that is not protected and will bite there.) Many people spray repellent on their hands and then smooth it on exposed skin on arms, legs, neck, etc. This is the recommended method for applying to very young children.
- ▶ Children should not apply repellent to themselves or others until they are able to read, understand and follow label directions. Repellent can be reapplied if needed.
- ▶ Clip-on repellent products work ONLY when the air is still and the camper is not moving. The active ingredient is an insecticide. Citronella candles and similar devices, according to the leading experts, do not work.
- ▶ When using repellent at the same time you need to apply a sunscreen, apply the sunscreen first. Allow sunscreen to fully absorb into the skin, then apply repellent. Reapply sunscreen often. Reapply repellent only when bugs start biting again.

- ▶ The most commonly-reported adverse event associated with DEET-based repellents is stinging when the product gets into the eyes. Most formulations contain alcohol and DEET itself can be an eye-irritant. If this happens, rinse eyes with fresh water and the problem is resolved quickly.
- ▶ Repellents are not needed under clothing unless mosquitoes are able to bite through the fabrics. For protection from ticks, spray clothing lightly — shoes, socks, pant legs.

Strategies for Avoiding Tick Bites

Counselors:

- ▶ Campers and staff should dress properly—light colored fabrics, long pants tucked into socks, long sleeves, collared shirt. Ticks are likely to be in brush or wooded areas but may also be in the camp area.
- ▶ Campers and staff should apply repellent according to directions on exposed skin and on clothing. Use a product with at least 20% concentration of DEET, picaridin or IR3535 to provide longer-lasting protection against ticks. Essential oils and “natural” products are not registered by the EPA for tick repellency. They do not work for ticks according to most experts and repellency for mosquitoes lasts about 20 minutes.
- ▶ For proper repellent application, follow label instructions. Watch the Missouri Department of Health and Senior Services video “Keeping the Bite at Bay” <http://www.youtube.com/watch?v=hofkw4FOy9g&>, or visit www.deetonline.org.
- ▶ For tick protection, DEET-based repellents should be sprayed sparingly on shoes, socks and pant legs. More is not better—do not saturate fabric. Do not use on rayon fabrics.
- ▶ Have counselors create a daily routine for campers that includes checking for ticks and showering before going to bed. This should include thorough tick checks. Consider rewards for finding the most ticks. Nymphs are hard to spot, because they are the size of a poppy seed. Adult ticks can also be elusive. Showering is recommended by experts as it helps wash away unattached ticks. Encourage campers to look in body creases, hair, behind ears and in the groin area.

Parents:

- ▶ On pre-departure information that details the gear campers should bring, include information on tick bite prevention and repellents.
- ▶ Reassure parents by citing the American Academy of Pediatrics’ guidance on DEET-based products: Products with concentrations up to 30% can be used on children as young as two months of age. This guidance has been in place since 2003.
- ▶ Parents should review proper repellent product use with children who are old enough to read, understand, and follow label directions. It is important that repellent be sprayed lightly on clothing and on exposed skin then smoothed on (as you would sunscreen) to get thorough coverage for mosquito and tick repellency. Younger children should be instructed to have a counselor or the camp nurse apply repellent on them each morning.
- ▶ Parents should be told if the camp has standard policies that restrict that camper’s activities when the correct repellent is not provided for the camper’s use.
- ▶ Some camps have “stock” supplies and notify parents that a EPA-registered repellent like ones containing DEET will be used. This is usually included in the general permission sections that parents sign. If not, then, depending on camp policy, the nurse may need to seek specific permission from parents via a faxed or emailed permission form which parents sign and return, with the understanding the child would be restricted in activities until the camp has the parent/guardian’s written permission to use the camp-provided repellents.

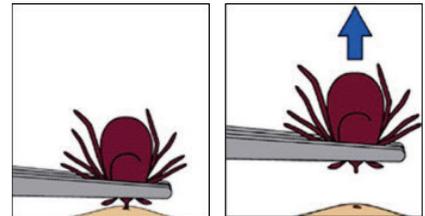
- ▶ Ask parents to consider pre-treating the camper's clothing with permethrin (an insecticide) before the child leaves for camp following label directions. Pre-treatment survives several washings. Permethrin should **never** be applied to exposed skin. Clothing that is pre-treated is also available at many sporting goods stores.

Removing Ticks

- ▶ Experts suggest that some ticks may infect humans in a matter of hours, so finding ticks before they attach and prompt removal of an attached tick are important.
- ▶ Camp staff and campers themselves should seek the nurse's help immediately if one of their campers has an attached tick. Camp staffers should remove attached ticks, if the nurse is unavailable. See instructions below.
- ▶ Never squeeze ticks or use folklore remedies such as heat, "painting" the tick with nail polish, or applying dishwashing liquid, or petroleum jelly to prompt it to detach from the skin. (Hint: based on tick biology, the tick is **UNABLE** to back out even if it wants to do so.)
- ▶ Instruct all camp counselors and older children how to remove ticks properly.

Proper Removal Technique

1. Use fine-tipped tweezers to grasp the tick as close to the skin's surface as possible.
2. Pull upward with steady, even pressure. Don't twist or jerk the tick, which could cause the mouth-parts to break off and remain in the skin. If you are unable to remove the mouth easily with clean tweezers, leave it alone and let the skin heal.
3. After removing the tick, thoroughly clean the bite area and your hands with rubbing alcohol, an iodine scrub, or soap and water. Apply a topical antiseptic used for other superficial wounds.
4. Place the tick in a vial filled with alcohol to kill it. Squeezing or mangling the tick body can release infectious fluids. Never dispose of a live or detached tick outside or down the drain.



Recognizing Symptoms of Tick-borne Diseases is Important

- ▶ Please see the "Tick-Borne Diseases in the U.S." chart (see attached) for those symptoms most likely to be seen in children.
- ▶ Ask symptomatic children (or counselors) if they have been bitten by a tick. Even though they may not be aware of tick bites, don't discount symptoms. Seek immediate medical attention.
- ▶ Medical professionals will prescribe an antibiotic for symptomatic children (typically doxycycline, a member of the tetracycline group) right away based on suspicion of a tickborne disease, rather than waiting for results from traditional diagnostic tests. These tests are often not reliable until several weeks after the onset of symptoms. Counselors and other responsible individuals should be sure that the camper follows instructions for taking this medication as directed.

Dealing with Parents

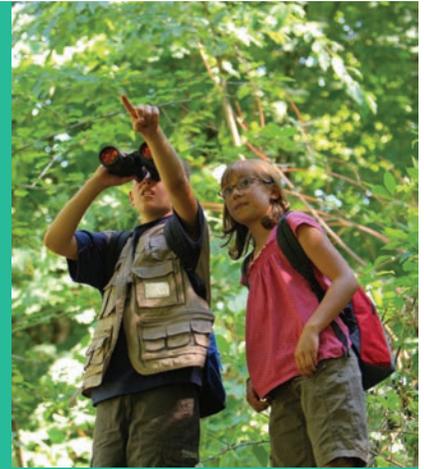
- ▶ Advise parents if their child had an attached tick that was removed while at camp. Parents should monitor for symptoms once the child returns home. Symptoms usually occur within the first two weeks of a tick bite.
- ▶ ***If the child is asymptomatic, medical experts note that there is no need for him or her to take antibiotics.***
- ▶ The child may be unaware of a tick bite but could exhibit symptoms upon returning home and may need medical attention. Urge parents to seek medical attention immediately if the child shows signs and symptoms of illness within two weeks once he or she has returned home. Many tick-borne diseases cause serious illness and even death if not treated quickly.

Strategies for Avoiding Mosquito Bites

Most mosquitoes, except for those that can transmit Zika, are active at dawn and dusk. When possible, try to avoid being outside. If that is not possible, wear long sleeves and long pants at these times. Light colors are recommended. Always use an EPA-registered insect repellent on exposed skin. Apply it according to label directions. DEET-based repellents have the longest track record (they have been available for 60 years) and are considered the “gold standard” against which all other repellents are evaluated.

There are a host of mosquito-borne diseases across the country that affect individuals of all ages. West Nile virus is endemic in every state in the continental U.S.. It creates flu-like symptoms, usually accompanied by a headache. There is no cure, so prevention is essential. West Nile virus creates serious health issues in about 20% of those who contract it and for 1% of individuals, including children, can cause encephalitis that can lead to disabilities and sometimes death.

Other mosquito-borne diseases of concern include La Crosse encephalitis, which is particularly serious for children and kills about 100 youngsters annually. Eastern Equine Encephalitis (EEE) is fatal in a large number of individuals who contract it. It is prevalent in New England, Florida and many locations in between.



Zika is, according to experts, a “game changer.” It is the first mosquito-borne virus known to cause birth defects and is the first sexually-transmitted mosquito-borne virus. To date, *Aedes aegypti* mosquitoes in Texas and Florida have been associated with human illness. (While these *Aedes aegypti* mosquitoes exist elsewhere in the U.S, they have not been found to be carrying the virus.) These mosquitoes are aggressive day-time biters and prefer biting humans to other mammals. The CDC urges caution when traveling to areas where Zika is endemic. www.cdc.gov/zika

MORE INFORMATION

For more information on repellents and the various vector-borne diseases that campers may encounter, call 888-NO-BITES or visit the website for the DEET Education Program, www.deetonline.org. Look here, too, for proper application information.

The Centers for Disease Control and Prevention, www.cdc.gov/ticks, www.cdc.gov/westnile/ or www.cdc.gov/zika has information on ticks and mosquitoes and the diseases they convey to humans. The State of California Department of Health and Human Services has a comprehensive West Nile virus website, www.westnile.ca.gov/wnv_faqs_basics.php.