

Just the Facts...

O'nyong-nyong virus (ONNV) is a mosquito-borne alphavirus belonging to the family *Togaviridae*. It is closely related to Chikungunya (CHIK), Mayaro, and Ross River virus. However, unlike other alphaviruses, it is only vectored by anopheline mosquitoes. The Acholi people of East Africa gave *O'nyong-nyong* virus its name, which translates to "severe joint pain". This virus has caused two large-scale epidemics in Africa since it was first described. The first, from 1959 to 1962, affected over two million people in a large swath of Sub-Saharan Africa, from Uganda south to Mozambique, and westward to Senegal. This outbreak represents the largest recorded mosquito-borne virus outbreak in history. The second outbreak occurred in Uganda in 1996. Sporadic cases of the disease have also been reported in other African countries with the first recorded exported case in Germany in 2013.

How do people become infected with O'nyong-nyong virus?

O'nyong-nyong virus is spread to people by the bite of an infected *Anopheles* mosquito. These are the same mosquitoes that spread malaria. *Anopheles gambiae* and *Anopheles funestus* are the main vectors of O'nyong-nyong virus. These mosquitoes are active at night.

What are the signs and symptoms of an O'nyong-nyong virus infection?

Common symptoms include high fever, crippling joint pain, rash, swollen lymph nodes, eye pain, red eyes with no discharge, chest pain, and general malaise. The symptoms can be misdiagnosed as Chikungunya virus. The infection will usually resolve on its own. Some patients experienced prolonged joint pain during the recovery phase. No fatal cases have been reported.

Is there a diagnostic test available to confirm O'nyong-nyong virus infection in humans?

Yes, your healthcare provider may order blood tests for O'nyong-nyong or other viruses with similar symptoms. See your healthcare provider if you have recently traveled to affected areas and have developed the symptoms described above.

Is there a treatment for O'nyong-nyong virus infection?

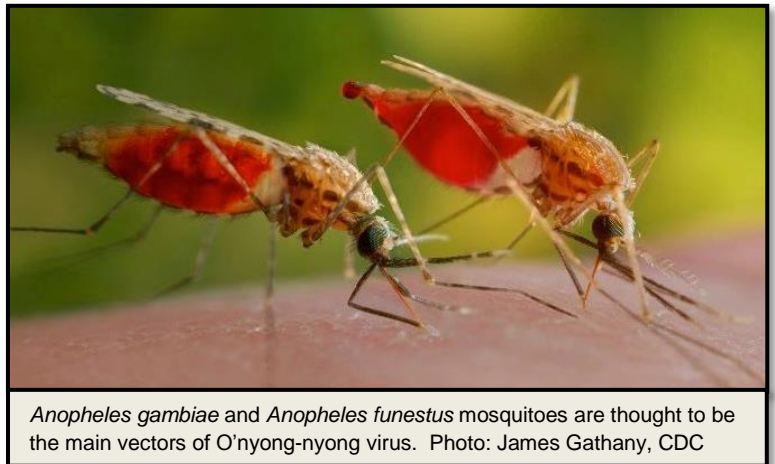
There is no vaccine or cure for O'nyong-nyong virus; however, the disease will eventually resolve on its own without treatment. Supportive care can be provided to alleviate symptoms. Persons experiencing O'nyong-nyong virus symptoms should seek advice and care at a medical treatment facility.

What should I do if I think I am infected with O'nyong-nyong virus?

Seek medical attention if you experience the symptoms described above and have traveled to an area where O'nyong-nyong virus occurs. Be sure to tell your healthcare provider your recent travel history. If you think you have O'nyong-nyong virus, avoid mosquito bites to prevent the virus from spreading to others.

What can I do to reduce my risk of becoming infected with O'nyong-nyong virus?

AVOID MOSQUITO BITES! Using the DoD Insect Repellent System provides the best protection from mosquito bites. It incorporates permethrin repellent on the uniform; DEET, picaridin, or IR3535[®] repellent on exposed skin; a properly worn uniform; and sleeping inside a permethrin-treated bed net. Civilian personnel can also purchase or treat clothing with permethrin.



Anopheles gambiae and *Anopheles funestus* mosquitoes are thought to be the main vectors of O'nyong-nyong virus. Photo: James Gathany, CDC

Stay in air-conditioned areas or make sure door and window screens are in place and do not have holes. If practical, minimize time spent outdoors during nighttime hours. **ELIMINATE MOSQUITO BREEDING SITES!** Search for and remove items that collect water such as plastic containers, flower pots, vases, children's toys, old tires or any other items that can hold water. All standing water is potential mosquito-breeding habitat.

How do I know if my uniform is treated with permethrin?

Army Combat Uniforms factory-treated with permethrin (ACU Permethrin) will have a sewn-in label in the trousers and coat indicating that the uniform has been factory-treated. If not factory-treated, Soldiers can permanently treat with the IDA kit (NSN 6840-01-345-0237), which can last up to 50 washings, or temporarily treat using the 0.5% aerosol spray can (NSN 6840-01-278-1336), which can be reapplied after six weeks and the sixth washing. Never retreat uniforms which have been factory-treated, treated with an IDA kit, or treated using a 2-gallon sprayer. When applying permethrin, always read and follow the label directions. Permanently mark the uniform label with the permethrin treatment date. **NEVER APPLY PERMETHRIN TO THE SKIN!** Civilians can purchase commercially available 0.5% permethrin aerosol products and permethrin factory-treated clothing.

Is it safe for Soldiers who are pregnant, nursing, or trying to get pregnant to wear permethrin-treated ACUs?

The ACU with permethrin is safe to wear; however, if you are pregnant, nursing, or trying to get pregnant, you are authorized to temporarily wear an ACU without permethrin. If your uniform is not treated with permethrin (the maternity uniform or an untreated uniform purchased using a profile) and you and your healthcare provider decide that wearing an ACU with permethrin is the best choice, you can treat your ACU according to the guidance in the question above.

What standard military insect repellent products are available for exposed skin?

Approved military insect repellents for use on exposed skin come in a variety of formulations. Always refer to the label to determine frequency of repellent application based on activity. **Do not apply repellent to eyes, lips, or to sensitive or damaged skin.** Available military repellents are:

- **Ultrathon™** (NSN 6840-01-284-3982) contains 34% controlled-release DEET; one application protects for up to 12 hours.
- **Ultra 30™ Insect Repellent Lotion** (NSN 6840-01-584-8393), contains 30% Lipo DEET; one application protects up to 12 hours.
- **Cutter® pump spray** (NSN 6840-01-584-8598) contains 25% DEET; one application protects for up to 10 hours.
- **Natrapel® pump spray** (NSN 6840-01-619-4795) contains 20% picaridin; provides improved protection against *Anopheles* mosquitoes (carriers of malaria and ONNV) for up to 8 hours.
- **Bullseye™ Bug Repellent pump spray** (NSN 6840-01-656-7707), contains 20% IR3535®; provides protection for up to 8 hours.

What is a “properly worn Army Combat Uniform”?

Worn properly, the ACU is a physical barrier against insects, ticks, and other disease vectors and biting nuisance pests. Wear ACUs with the sleeves rolled down; tuck pants into boots and undershirt into pants as illustrated above in the DoD Insect Repellent System. Wear uniform loosely since mosquitoes can bite through fabric that is pulled tight against the skin. A permethrin-treated uniform does not provide protection to exposed skin; protect exposed skin with an approved insect repellent.

What standard bed nets are available to protect Soldiers from mosquito bites while sleeping?

Treated bed nets provide a barrier between a sleeping Soldier and pests (e.g., mosquitoes, ticks). Use lightweight, self-supporting, pop-up bed nets factory-treated with permethrin (coyote brown (NSN 3740-01-518-7310), green camouflage (NSN 3740-01-516-4415)) or the Egret bed net (NSN 3740-01-644-4953). Untreated mosquito bed nets (NSN 7210-00-266-9736) should be treated with the 0.5% permethrin aerosol spray (NSN 6840-01-278-1336) and assembled properly on a cot. Check for holes in the netting and keep loose edges off the ground by tucking them under the sleeping bag.

Use of trademarked name does not imply endorsement by the U.S. Army but is intended only to assist in identification of a specific product. For more information please consult the APHC website - <http://phc.amedd.army.mil>

