LEISHMANIASIS

FACT SHEET 18-008-1018

Leishmaniasis (leash' ma NIGH' a sis) is an infection of animals and humans caused by protozoa in the genus Leishmania. Leishmania parasites are transmitted by the bites of infected sand flies. At least 23 Leishmania species cause leishmaniasis. There are three forms of the disease: cutaneous (skin), the most common form; mucocutaneous (mucous membranes), a very rare form; and visceral (internal organs). Different species of Leishmania generally cause different forms of the disease. Leishmaniasis is also called kala-azar, oriental sore, Delhi boil, and espundia. Leishmaniasis should not be confused with sand fly fever, which is a viral disease that is also transmitted by sand flies.

Phlebotomine Sand Fly
(Transmits *Leishmania*)

***Culicoides* Sand Fly**
(Does NOT transmit *Leishmania*)

How does a person get leishmaniasis?

Transmission of *Leishmania* occurs through the bite of infected female phlebotomine sand flies (see left hand photo, above) in the genera *Phlebotomus* (Old World, or eastern hemisphere) and *Lutzomyia* (New World, or western hemisphere). These sand flies should not be confused with sand flies in the genus *Culicoides*, which are common in the United States and do **not** transmit *Leishmania* (see right hand photo, above). Generally, sand flies feed at dusk and during the night, although some species are opportunistic and will feed during the day if disturbed. Uninfected sand flies acquire infection by feeding on a reservoir host. Reservoirs for *Leishmania*, which vary depending on location, include domestic dogs, rodents (including rats, hyraxes and gerbils), sloths, marsupials, and humans. It is reported that 90 species of *Lutzomyia* and at least 39 species of *Phlebotomus* feed on humans. However, it is not known how many of these species can actually vector (carry and transmit) the pathogens. Rarely, leishmaniasis is spread by blood transfusion, contaminated needles, and from a pregnant woman to her baby.

PHYSICAL MANIFESTATIONS OF LEISHMANIASIS

Cutaneous leishmaniasis

Where is leishmaniasis found and how common is it?

Leishmaniasis occurs in approximately 90 countries and is found in southern Texas, Central and South America, southern Europe, Asia, the Middle East, and Africa. It is not found in Canada, Australia, Oceania (islands in the Pacific), or Southeast Asia. More than 90% of the world's cases of visceral leishmaniasis occur in India, Bangladesh, Nepal, Sudan, and Brazil. Most leishmaniasis in the Middle East is the cutaneous form. Worldwide, there are approximately 1.5 million new cases of cutaneous leishmaniasis and 500,000 new cases are visceral leishmaniasis each year.

What are the symptoms of leishmaniasis?

Symptoms begin weeks to months following an infectious sand fly bite. Because of this delay in presentation, it is important to tell your health care provider where you have traveled and that you might be at risk for leishmaniasis. Cutaneous leishmaniasis starts at the site of a sand fly bite with a papule that enlarges to become an ulcer. It often develops a raised edge with a central crater that gives it a volcano-like appearance. Sores may be single or multiple, and swollen lymph nodes may be present near the sores (for example, under the arm if the sores are on the arm or hand). Rarely, some species of *Leishmania* found in Central and South America can spread from an initial cutaneous sore on the face to affect the mucous membranes of the nose and mouth. This mucocutaneous form of leishmaniasis can be very disfiguring. Visceral leishmaniasis is typified by chronic fever, enlarged spleen and liver, anemia, weakness, progressive emaciation and weight loss. It is the most severe form of leishmaniasis and is often fatal if left untreated.

Mucocutaneous leishmaniasis

Visceral leishmaniasis

Army Public Health Center, Entomological Sciences Division
8252 Blackhawk Road, APG, MD 21010-5403
COM 410-436-3613 / DSN 312-584-3613 / Website: http://phc.amedd.army.mil

How is leishmaniasis diagnosed?

Diagnosis of leishmaniasis can be difficult. Diagnosis can include presence of skin sores that do not heal, and by microscopic identification or culture of the parasite from samples taken directly from the sores. Blood tests can be useful, particularly for cases of visceral leishmaniasis.

How can leishmaniasis be prevented?

Sand fly bites acquired during the course of a single day in Iraq

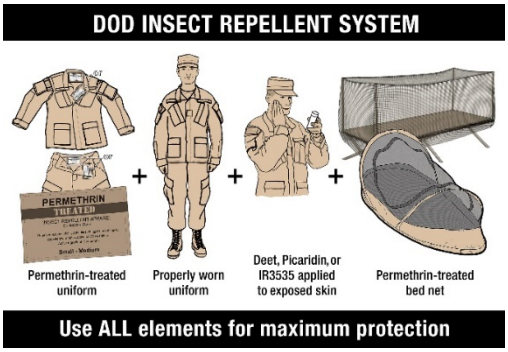
There are no medications or vaccines to protect against leishmaniasis. Sand flies are usually found in small pockets around rodent burrows, and are not spread evenly across sites. They typically bite at night while people are sleeping, and the bites are not found until the following day. Sand fly bites can quickly become numerous, painful, and very distracting (see photo to right). Follow these precautions to help prevent sand fly bites that can lead to leishmaniasis and other diseases such as sand fly fever:

- Limit outdoor activity between dusk and dawn when sand flies are most active. Avoid sleeping in the open. If possible, personnel should sleep in sealed, air-conditioned buildings or tents, or employ window screens or other barriers to help keep sand flies from entering. However, since sand flies are much smaller than mosquitoes (approximately one-third the size), they can oftentimes work their way through standard window screens (16-18 mesh/in^2) and even standard military bed netting (25-27 mesh/in^2).

- Sand flies bite both indoors and outdoors. Although generally nocturnal, they can also feed during the day. Personal protective measures should be used at all times.

- Use the DoD Insect Repellent System for maximum protection from sand fly bites. This system incorporates a properly worn, permethrin-treated uniform; DEET, picaridin, or IR3535 repellent on exposed skin; and sleeping inside a permethrin-treated bed net. To keep sand flies on the outside of your clothing, tuck pant legs inside boots, and fasten your cuffs snuggly at the wrist.

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



Factory-treated permethrin Army Combat Uniforms (ACUs) and Operational Camouflage Pattern (OPC) uniforms are now available to all Soldiers. The ACU/OCP trouser and coat will have a sewn-in label indicating the uniform is factory-treated with permethrin. If not factory-treated, Soldiers can permanently treat their uniforms with the IDA kit (NSN 6840-01-345-0237), which lasts up to 50 washings, or temporarily treat using the 0.5% aerosol spray can (NSN 6840-01-278-1336), which can be reapplied after 6 weeks and the sixth washing. Never retreat uniforms that 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.

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 lotion; 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 for 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; protects for up to 8 hours.
- Bullseye™ Bug Repellant pump spray (NSN 6840-01-656-7707) contains 20% IR3535®; protects for up to 8 hours.

References:

- Armed Forces Pest Management Board (AFPMB), Technical Guide 49, Sand Flies: https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg49.pdf
- Centers for Disease Control and Prevention (CDC), Leishmaniasis: https://www.cdc.gov/parasites/leishmaniasis/index.html