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Insect Bite Avoidance

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Introduction

Many serious tropical diseases are spread by insects. Some examples are malaria, yellow fever, Japanese encephalitis, dengue fever, West Nile virus, and leishmaniasis. For some of the diseases such as dengue fever, avoiding bites is the only way to prevent them.

Mosquitoes are attracted by carbon dioxide, heat, smells and movement. Day-biting mosquitoes can carry yellow fever and dengue fever, night-biting mosquitoes may carry malaria and Japanese encephalitis.

Ticks usually live in long grassy areas and attach themselves to the clothing of a human when they brush past. They crawl up the clothing until they find an area of exposed skin where they can attach.

Sand flies, the carriers of leishmaniasis are most active between dusk and dawn. They will, however, bite during the day if they are disturbed.

Tsetse flies spread sleeping sickness (African trypanosomiasis) and live in the dense vegetation and savannah areas in sub-Saharan Africa. They are attracted to dark, contrasting colours, particularly blue, and bite during the day.

Avoidance of Insect Bites

There are several ways of avoiding insect bites.

Behaviour

Insect bites can be reduced by trying to avoid highly infested areas. Many types of mosquitoes bite between dusk and dawn, so being indoors during these hours can reduce the number of bites. Tsetse flies are less affected by repellents and can bite through tight fitting or loose-knit clothing, so wearing loose-fitting, thick clothing and avoiding infested areas are the best methods of protection.

Insect repellent

There are many types of repellent, but evidence shows that products containing the chemical DEET are the most effective. DEET is available in several strengths suitable for use on skin. Research shows 20% DEET repellents offer protection for up to 3 hours. Higher concentrations give longer-lasting protection, with some 30% DEET repellents providing protection for up to 6 hours. There is no need to use a repellent stronger than 50% DEET. The length of protection is affected by conditions such as heat, humidity and amount of sweating.

DEET-containing preparations should not be used in babies younger than 2 months of age. They may be used in concentrations up to 50% in pregnant or breast-feeding women, and in infants and children older than 2 months. Manufacturers in the UK have applied their own age restrictions on use of DEET, however, there is no evidence to show that the use of DEET in infants and children older than 2 months causes harm and so its use can be recommended. Nevertheless, particular care should be taken with children to ensure they are not able to ingest repellent, and that it does not come into contact with their eyes or mouth.

Repellents need to be reapplied at regular intervals, especially after swimming and in hot, humid countries, when they can be removed by sweating. When both sunscreens and repellents are used, sunscreen should be applied first and then repellent.

There have been concerns about the safety of DEET, but research and extensive clinical experience suggest that it is very safe when used according to the manufacturer's instructions.

1. Don't spray directly onto your face.
2. Use only on exposed skin.
3. Avoid contact with lips and eyes.

4. Wash hands after application.
5. Don't apply to cuts, abrasions, broken or irritated skin.
6. Wash off the repellent with soap and water when it is no longer needed.
7. Sunscreen containing repellent should be avoided as it may encourage excessive use of DEET.

Alternative repellents using synthetic compounds, such as picaridin (Autan®) and natural ingredients such as lemon eucalyptus oil (Mosi-guard®) are available for those who prefer not to use DEET products. The manufacturer's instructions should be followed when applying these products to babies and infants.

Clothing

When travelling in areas with malaria, wear loose-fitting long trousers and long sleeves in the evenings, as the mosquitoes that carry malaria are most active at this time.

When in tick infested areas avoid shorts and tuck your trousers into your socks to prevent ticks from crawling up your legs.

Mosquitoes can bite through tight clothing, so wear loose fitting clothing.

Clothing can be treated with permethrin, a contact insecticide which will kill insects. Permethrin is available in formulations designed to be sprayed on to clothes.

Screening and mosquito nets

Travellers who will be staying in basic accommodation without screening or air conditioning should sleep under a mosquito net to avoid being bitten at night.

Nets should be impregnated with permethrin; most nets are bought already treated prior to purchase.

Generally nets will need to be impregnated with permethrin again after six months of use.

Permethrin is a contact insecticide, which will kill insects landing on the net and therefore increase effectiveness.

Carry a small sewing kit so that repairs can be made if the net develops a hole.

Knock down sprays

These can be used before you go to bed, to rid bedrooms of insects.

Plug-in devices which release an insecticide vapour are also available.

Insecticide coils should only be burnt in well-ventilated areas and can be useful for campers. A small piece of coil lit under the table can be a deterrent when eating at outdoor restaurants in the evenings.

Vitamin B and garlic

There is no scientific evidence that taking vitamin B tablets or eating marmite or garlic makes humans less attractive to mosquitoes.

Buzzers

Devices that emit a sonic tone inaudible to humans are not effective.

Treatment of Insect Bites

Insect bites are usually small, red, raised bumps that are very itchy. Swelling can be reduced by applying a mild steroid cream. Antihistamine tablets can be taken to relieve itching. Both of these are available "over the counter" from chemists in the UK. Keep mosquito bites clean and dry and try not to scratch them, to avoid infection.

Ticks need to be removed from the skin very carefully. This can be done with tweezers or specially designed tick removers. Grasp the tick near to the skin and steadily pull out the tick being careful not to crush the tick's body or squeeze the stomach contents into the site of the bite. Illustrated instructions on this can be found on the Centers for Disease Control and Prevention Division of Vector-Borne Infectious Diseases website at:

http://www.cdc.gov/ncidod/dvbid/Lyme/ld_tickremoval.htm

Availability of Repellents and Nets

Most travel clinics and larger chemists stock a wide range of insect repellents, insecticides and mosquito nets. They can usually also be purchased from specialist camping and outdoor shops.

Reading List

Chiodini P, Hill D, Lalloo D, et al. Guidelines for malaria prevention in travellers from the United Kingdom. 2007, London: Health Protection Agency. Available online at:

<http://www.hpa.org.uk/publications/PublicationDisplay.asp?publicationID=87&Tand>

Curtis, C. Personal protection against pests. In Travellers' Health, ed. Dawood, R. 2002. Oxford University Press. pgs: 207-16.

Health Canada Information: Safety Tips on Using Personal Insect Repellents.

<http://www.pmra-arla.gc.ca/english/consum/insectrepellents-e.html>