FACTSHEET
INSECT AND TICK BITE PROTECTION

Expertenkomitee für Reisemedizin
Comité d'experts pour la médecine des voyages
Comitato di esperti per la medicina di viaggio
Expert committee for travel medicine

Key aspects briefly summarized

- Know the mosquitoes and other arthropods of interest at the destination and when they bite
- Use repellents on exposed skin according to product guidelines
- Reapply as directed to ensure protection
- Wear long clothing, socks and shoes
- Spray or impregnate textiles with insecticides
- Sleep under an impregnated bed net or in air-conditioned rooms
- The following approaches do NOT work: eating garlic, wearing perfume, thiamine (Vitamin B1), ultrasound devices, electronic buzzers (power cuts!), mobile phone apps, alcohol, yeast extract

Protection against arthropod bites

An important part of healthy travel is protection against biting insects and ticks. Mosquitoes, in particular, often transmit diseases such as malaria, dengue, yellow fever and Zika, ticks can transmit borreliosis (Lyme disease), tick-borne encephalitis or tick-bite fevers. Sandflies transmit leishmaniasis and tsetse flies can transmit African sleeping sickness. For some of these diseases, a vaccine or chemoprophylaxis is available but for many diseases, the only protection available is bite avoidance. In many tropical areas, mosquito-borne diseases are often widespread and because different types of mosquitoes are active at different times of the day (*Aedes/Stegomyia*) and/or night (*Anopheles*), travellers are recommended to use 24/7 mosquito bite prevention. The key areas of bite prevention are:

- **Use of repellents**: These are substances that are applied to the skin to keep away or "repel" mosquitoes and other insects. Their purpose is to reduce the attractiveness of the traveller by interfering chemically with skin stimulants that attract insects to human skin. The most widely used repellent, to date, contains DEET (minimal. 20-30%, max 50%) and studies have shown that DEET is well tolerated for all groups including infants> 2months, children and pregnant women when used in accordance with the product instructions. Other recommended repellents include Icaridin, Eucalyptus citriodora oil and IR3535. Repellents vary in their efficacy and duration of protection. Some products contain a combination of repellents.
- **Clothes**: wear long sleeves, shoes and socks.
- **Impregnation of textiles (clothing, bed nets) with insecticides**: Insecticides (such as permethrin) are substances that kill or "knock down" insects.
- Using repellents on the skin and impregnating/spraying textiles is a recommended **combined strategy**
- **Insecticides can also be dispersed** in rooms using sprays or devices that release insecticide. Burning mosquito coils should only be used outdoors.
- **Staying in screened and/or air-conditioned rooms with windows closed**
- **Sleeping or resting under impregnated bed nets.**

The majority of travellers do apply far less than the recommended protective dose of repellent, which will decrease the effectiveness. Repellents need to be applied regularly especially after swimming or in hot, humid conditions conducive to sweating. When using repellents during the day, the sunscreen should be applied 15 minutes prior to the repellent. It is recommended to use 30-50 SPF sun screen to compensate for the reduction in sun protection factor (SPF) caused by DEET.

Repellents (DEET, Icaridin, some essential oil such as citriodora) vary in their effectiveness against different vectors and tend to be slightly less effective against **ticks** where protection can be substantially increased by impregnating clothing and having socks above trousers to prevent ticks from getting access to bare skin.

The value of repellents in protecting from tsetse flies and sandflies is less well documented, but the combination of repellents and insecticide treated clothing is still highly recommended.

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What to do in case of tick bites

After outdoor activities, check your body for ticks. If you find a tick, remove it as quickly as possible. This is best done with fine tweezers by grasping the tick directly over the skin and pulling continuously. The bite site should then be disinfected. If symptoms occur after a tick bite, such as redness or fever, a doctor should be consulted as antibiotic treatment may be indicated. However, preventive antibiotic treatment after a tick bite without symptoms is not recommended.

Vaccination against tick borne encephalitis

Vaccination is indicated for people who live or temporarily stay in areas where transmission of tick-borne encephalitis occurs (Most of Europe, Baltic states, Russia until far-east).

References and further information

1. Hasler T, Fehr J, Held U, Schlagenhauf P. Use of repellents by travellers: a randomized, quantitative analysis of applied dosage and an evaluation of Knowledge Attitudes and Practices. *Travel Med Infect Dis* 2019: 27-33. Free access at https://www.sciencedirect.com/science/article/pii/S1477893918303028?via%3Dihub
2. A-Z of some important arthropod-borne infections for travellers

Infection	Geography	Arthropod	Time/season of activity
African Tick Bite Fever	Southern Africa	Ticks	Always / especially after rainy season
Chikungunya	Widespread	Mosquitoes (*Aedes/Stegomyia*)	Daytime to evening
Dengue	Widespread	Mosquitoes (*Aedes/Stegomyia*)	Daytime to evening
FSME (Tick-borne encephalitis)	Europe, Baltic states, Russia	Ticks	Always / Spring to Autumn
Japanese Encephalitis	Asia, Oceania	Mosquitoes (*Culex*)	Evening/night time
Leishmaniasis	Widespread, also in Mediterranean area	Sandflies (Phlebotomines)	Night time
Lyme Disease	Europe, Asia, N. America	Ticks	Always / Spring to Autumn
Malaria	Africa (south of the Sahara) parts of Asia, Latin America and Pacific	Mosquitoes (*Anopheles*)	Dusk to dawn
Sleeping sickness	African savannah	Tsetse fly (*Glossina*)	Daytime
West-Nile Fever	Parts of Europe, Africa, Israel, USA, Canada	Mosquitoes (*Culex*)	Evening/night time
Yellow Fever	Africa (sub Saharan) Panama and South America	Mosquitoes (*Aedes/Stegomyia*)	Daytime to evening
Zika	South America, parts of Africa, SE Asia and Oceania	Mosquitoes (*Aedes/Stegomyia*)	Daytime to evening

3. Mosquito repellents bearing this mark have been subjected to an extended test at the Swiss Tropical and Public Health Institute (Basel) and have fulfilled specified requirements. In addition, they are re-tested annually. Irrespective of possible additional information in the packaging text, a product with this quality seal has shown a very good protective effect against mosquitoes for at least four hours in the laboratory test. In Switzerland, the following products are available with this guarantee mark:

Anti Brumm Classic (20% Icaridin)
Anti Brumm Forte (28% DEET)
Anit Brumm Kids (20% Icaridin)
Anti Brumm Naturel (31% Citriodiol)
Anti Brumm Night (20% Icaridin)
Nobite Extreme (30% DEET und 20% Icaridin)
KIK Activ (20% DEET)
SENSOLAR ZeroBite (20% Icaridin)

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