

Insect bite avoidance

Liverpool School of Tropical Medicine



When travelling overseas, it's important to avoid getting bitten by mosquitoes and other insects. It's not just the annoyance of being covered in itchy bites; 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 as there is no vaccination or tablets against this disease.

It's not just in the evening or night time that you need to avoid getting bitten. Mosquitoes that carry malaria and Japanese encephalitis tend to bite from dusk till dawn, however, mosquitoes that transmit yellow fever and dengue fever bite during the day.

There are many types of repellent available on the market, but evidence shows that products containing **DEET** (N, N-diethyl-m-toluamide) **are the most effective and therefore this is what is recommended by the Liverpool School of Tropical Medicine.**

Research and extensive clinical experience suggest that DEET is a very safe product when used according to the manufacturer's instructions. DEET has been in use as an insect repellent for more than 50 years and is reportedly used worldwide by approximately 200 million people each year. It is available in a variety of concentrations and in various preparations including spray, roll-on and liquid applications.

How to use DEET:

- Apply mosquito repellent containing **DEET 30-50%** to exposed skin. Apply this over sun cream/screen. Sunscreen SPF 30-50 is recommended as DEET can reduce the effectiveness of the sunscreen.
- DEET containing repellent of no more than 50% can be used on small areas of children's skin but should be avoided in babies under 2 months of age.
- If pregnant, DEET up to 50% strength may be used sparingly. Discuss this with a travel health advisor.

- When both sunscreen and DEET are required, DEET should be applied on top of the sunscreen. It should be noted that DEET can reduce the effectiveness of sun-block.
- DEET applications can damage some plastic watch straps, glasses and plastic jewellery; these items should not be allowed to come into contact with DEET. Repellents should not be ingested or inhaled and should not come into contact with the eyes or mouth. Repellents should be used only on areas of skin not covered with clothing.

Alternatives to DEET:

- Alternative non-DEET containing repellents with active ingredients such as *Picaridin* or *Icaridin* can be used on children and adults if preferred but may provide a shorter period of protection, we would recommend at least a 20% preparation and check the manufacturer's information regarding how frequently to reapply.
- Repellents which contain a derivative of the *lemon eucalyptus* plant can also be used on children and adults if preferred - see the manufacturer's instructions. They give about the same amount of protection as 15% DEET and have to be reapplied extremely frequently (1-2 hourly), which can be impractical with small children.

Clothing:

- Wear loose long-sleeved tops and trousers and socks where possible after sunset. There is no evidence mosquitoes favour any particular colour of clothing.
- For extra protection consider using a clothing treatment which contains an insecticide called permethrin.

Room protection and insecticides:

- Doors, windows and other possible mosquito entry routes to sleeping accommodation should be screened with fine mesh netting which must be close-fitting and free from tears.
- Air conditioning reduces the likelihood of mosquito bite as a result of substantial reduction in night time temperature.
- Permethrin and other synthetic pyrethroids have a rapid knock-down effect on mosquitoes and are used to kill resting mosquitoes in a room.

Leaflet Name: Insect bite avoidance
Leaflet Lead Name: P Tubb
Date Leaflet Developed: 2006

Date Leaflet Approved: 24.04.19
Review Date: April 2021
Version No. V9 (Previous version of this leaflet was titled: Malaria, mosquitoes and other insect bites)

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Products such as mosquito coils that can be burned when sitting outside and plug-in mosquito killers for use indoors contain these types of insecticide.

Nets:

- Mosquito nets are a great way to protect yourself all night long against getting bitten or to cover a child's cot or playpen.
- The type of mosquito net you need depends on what type of travelling you will be doing, the sorts of accommodation you will be staying in and the type of bed you will be sleeping in.
- A mosquito net impregnated with a contact insecticide offers extra protection against biting insects.
- Remember some older mosquito nets need treating with permethrin at least every 6 months depending on the way they are used. The Long Lasting Impregnated (LLI) mosquito nets supplied in the clinic may require retreating with permethrin insecticide after 2-3 years.

A selection of repellents and mosquito nets can be bought in our clinics

The stuff that does not work:

A lot of 'old wives tales' persist about substances that supposedly stop you getting bitten:

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.

Electronic/battery operated buzzers. Devices that emit 'sonic' high frequency sound that are inaudible to humans are **completely ineffective** as mosquito repellents and should **not** be used. Companies selling them have been prosecuted and fined under the UK Trades Descriptions Act and Public Health England's Advisory Committee on Malaria Prevention (ACMP) advise that they should not be used.

Homeopathic remedies. We do **not** recommend relying on any herbal or homeopathic remedies for the prevention of malaria. Herbal remedies have **not** been tested for their ability to prevent or treat malaria and are **not** licensed for these uses. There is no scientific proof that homeopathic remedies are effective in either preventing or treating malaria.

Tea tree oil. There is **no** evidence that tea tree oil is an effective mosquito repellent.

Bath oils. There is **no** evidence that proprietary bath oils provide effective protection against mosquito bites.

Malaria:

In addition to bite avoidance measures, if you are travelling to a high-risk malarial area, anti-malarial tablets will be recommended.

The type of anti-malarial tablet you require depends on the area visited. You must start taking your tablets as instructed before travel, while at risk and for a specified period after you leave the malaria risk area. Speak to your travel health advisor about anti-malarial tablets.

Travellers returning from malarial areas:

Malaria is a very common illness in many parts of the world. The main symptom of malaria is usually a fever. It can be a serious, sometimes fatal illness.

If you have any of the following malaria symptoms seven or more days after arriving in a malaria risk area, or up to a year after your return seek **urgent medical attention the same day** and make sure the doctor is aware that you have visited a risk area for malaria:

- **Fever 38°C or above**
- **Flu-like symptoms: malaise, myalgia**
- **Headache**
- **Diarrhoea**
- **Cough**
- **Sweating and shivers.**