

Malaria Prevention

Malaria is a serious condition that is common in some tropical countries. It is important that you take measures to reduce your risk of infection when you travel to these areas. This leaflet gives general information about malaria and how to avoid it. You should always see a doctor or nurse before travelling to a country with a malaria risk. They are provided with up-to-date information about the best anti-malarial medication for each country.

What is malaria?

Malaria is a serious infection. It is common in tropical countries such as parts of Africa, Asia and South America. Malaria is a disease caused by a parasite (germ) called plasmodium that lives in mosquitoes. The parasite is passed to humans from a mosquito bite.

There are four types of plasmodium that cause malaria. These are called *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium ovale* and *Plasmodium malariae*. Most cases of malaria in the UK are due to *Plasmodium falciparum*. This type of malaria is also the most likely to result in severe illness and/or death.

Most infections occur in travellers returning to the UK (rather than visitors coming to the UK). The risk of getting malaria is greatest if you do not take anti-malarial medication or do not take it properly. People who take last minute holidays and those visiting friends or relatives abroad have been shown to be the least likely to take anti-malarial medication.

Each year around 1,700 people in the UK develop malaria which has been caught whilst abroad. About nine people die from malaria in the UK each year. Malaria can kill people very quickly if it is not diagnosed promptly.

The most common symptom of malaria is a high fever. Malaria can also cause muscle pains, headaches, diarrhoea and a cough.

Note: if you feel unwell and have recently visited an area in which there is malaria, you should seek **prompt** medical advice, even if you have taken your anti-malarial medication correctly.

See separate leaflet called '*Malaria*' for more detail.

Preventing malaria - four steps

There is an "ABCD" of malaria prevention. This is:

- **A**wareness of risk of malaria.
- **B**ite prevention.
- **C**hemoprophylaxis (taking anti-malarial medication exactly as prescribed).
- prompt **D**iagnosis and treatment.

Awareness of the risk of malaria

The risk varies between countries and the type of trip. For example, back-packing or travelling to rural areas is generally more risky than staying in urban hotels. In some countries the risk varies between seasons - malaria is more common in the wet season. The main type of parasite, and the amount of resistance to medication, varies in different countries. Although risk varies, **all** travellers to malaria-risk countries should take precautions to prevent malaria.

The mosquitoes which transmit malaria commonly fly from dusk to dawn and therefore evenings and nights are the most dangerous time for transmission.

Bite prevention

You should use an effective insect repellent to clothing and any exposed skin.

Diethyltoluamide (DEET) is safe and the most effective insect repellent and can be sprayed on to clothes. It lasts up to three hours for 20%, up to six hours for 30% and up to 12 hours for 50% DEET. There is no further increase in duration of protection beyond a concentration of 50%. When both sunscreen and DEET are required, DEET should be applied after the sunscreen has been applied. DEET can be used on babies and children over two months of age. In addition, DEET can be used, in a concentration of up to 50%, if you are pregnant. It is also safe to use if you are breast-feeding.

If you sleep outdoors or in an unscreened room, you should use mosquito nets impregnated with an insecticide (such as pyrethroid). The net should be long enough to fall to the floor all round your bed and be tucked under the mattress. Check the net regularly for holes. Nets need to be re-impregnated with insecticide every six to twelve months (depending on how frequently the net is washed) to remain effective. Long-lasting nets, in which the pyrethroid is incorporated into the material of the net itself are now available and can last up to five years.

If practical, you should try to cover up bare areas with long-sleeved, loose-fitting clothing, long trousers and socks - if you are outside after sunset - to reduce the risk of mosquitoes biting. Clothing may be sprayed or impregnated with permethrin, which reduces the risk of being bitten through your clothes.

Sleeping in an air-conditioned room reduces the likelihood of mosquito bites, due to the room temperature being lowered. Doors, windows and other possible mosquito entry routes to sleeping accommodation should be screened with fine mesh netting. You should spray the room before dusk with an insecticide (usually a pyrethroid) to kill any mosquitoes that may have come into the room during the day. If electricity is available, you should use an electrically heated device to vaporise a tablet containing a synthetic pyrethroid in the room during the night. The burning of a mosquito coil is not as effective.

Herbal remedies have not been tested for their ability to prevent or treat malaria and are therefore not recommended. Likewise, there is no scientific proof that homoeopathic remedies are effective in either preventing or treating malaria, and are also not recommended.

Anti-malarial medication (chemoprophylaxis)

Anti-malarial medication helps to prevent malaria. The best medication to take depends on the country you visit. This is because the type of parasite varies between different parts of the world. Also, in some areas the parasite has become resistant to certain medicines.

There is a possibility of anti-malarials that you may buy in the tropics or over the Internet, being fake. It is therefore recommended that you obtain your anti-malarial treatment from your doctor's surgery, a pharmacist or a travel clinic. Medications to protect against malaria are not funded by the NHS. You will need to buy them, regardless of where you obtain them.

The type of medication advised will depend upon the area you are travelling to. It will also depend on any health problems you have, any medication you are currently taking, the length of your stay, and also any problems you may have had with anti-malarial medication in the past.

You should seek advice for each new trip abroad. Do not assume that the medication that you took for your last trip will be advised for your next trip, even to the same country. There is a changing pattern of resistance to some medicines by the parasites. Doctors, nurses, pharmacists and travel clinics are updated regularly on the best medication to take for each country.

You must take the medication exactly as advised. This usually involves starting the medication up to a week or more before you go on your trip. This allows the level of medicine in your body to become effective. It also gives time to check for any side-effects before travelling. It is also essential that you continue taking the medication for the correct time advised after returning to the UK (often for four weeks). The most common reason for malaria to develop in travellers is because the anti-malarial medication is not taken correctly. For example, some doses may be missed or forgotten, or the tablets may be stopped too soon after returning from the journey.

What are the side-effects with anti-malarial medication?

Anti-malarial medication is usually well tolerated. The most common side-effects are minor and include nausea (feeling sick) or diarrhoea. However, some people develop more severe side-effects. Therefore, always to read the information sheet which comes with a particular medicine for a list of possible side-effects and cautions. Usually, it is best to take the medication after meals to reduce possible side-effects.

If you are taking doxycycline then you need to use a high factor sunscreen. This is because this medication makes the skin more sensitive to the effects of the sun.

Around 1 in 20 people taking mefloquine may develop headaches or have problems with sleep.

Note: medication is only a part of protection against malaria. It is not 100% effective and does not guarantee that you will not get malaria. The advice above on avoiding mosquito bites is just as important, even when you are taking anti-malarial medication.

Symptoms of malaria (to help with prompt diagnosis)

Symptoms are similar to flu. They include fever, shivers, sweating, backache, joint pains, headache, vomiting, diarrhoea and sometimes delirium. These symptoms may take a week or more to develop after you have been bitten by a mosquito. Occasionally, it takes a year for symptoms to develop.

This means that you should suspect malaria in anyone with a feverish illness who has travelled to a malaria area within the past year, especially in the previous three months.

Special situations

- Pregnant women are at particular risk of severe malaria and should, ideally, not go to malaria-risk areas. Full discussion with a doctor is advisable if you are pregnant and intend to travel. Most anti-malarials are thought to be safe to the unborn child. Some, such as mefloquine, should be avoided in the first 12 weeks of pregnancy.
- Non-pregnant women taking mefloquine should avoid becoming pregnant. You should continue with contraception for three months after the last dose.
- If you are given doxycycline and are also taking the combined oral contraception pill (or patch) then you should use alternative contraception for the first three weeks of taking the doxycycline. This is because doxycycline may interfere with the effectiveness of the combined oral contraception pill (or patch). After three weeks you will not need to use any additional contraception.
- If you have epilepsy, kidney failure, some forms of mental illness, and some other uncommon illnesses, you may have a restricted choice of anti-malarial medication. This may be due to your condition, or to possible interactions with other medication

that you may be taking.

- If you do not have a spleen (if you have had it removed) or your spleen does not work well, then you have a particularly high risk of developing severe malaria. Ideally, you should not travel to a malaria-risk country. However, if travel is essential, every effort should be made to avoid infection and you should be very strict about taking your anti-malarial medication.
- Travellers going to remote places far from medical facilities sometimes take emergency medication with them. This can be used to treat suspected malaria until proper medical care is available.

Further Information

Malaria Reference Laboratory (MRL)

London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT

Web: www.malaria-reference.co.uk

The MRL website provides information and advice on malaria and its prevention.

MASTA

Web: www.masta-travel-health.com

MASTA provide travel health advice on anti-malarial treatment.

References

- [Malaria prophylaxis](#), Clinical Knowledge Summaries (2007)
- [Guidelines for malaria prevention in travellers from the United Kingdom](#), Health Protection Agency (January 2007)
- [Chiodini J](#); The standard of malaria prevention advice in UK primary care. *Travel Med Infect Dis.* 2009 May;7(3):165-8. Epub 2009 Mar 21. [abstract]
- [Laloo DG, Hill DR](#); Preventing malaria in travellers. *BMJ.* 2008 Jun 14;336(7657):1362-6.

Comprehensive patient resources are available at www.patient.co.uk

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