TRAVEL DOCTOR

TRAVELLER'S MALARIA POCKET GUIDE

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STANDBY EMERGENCY TREATMENT (SBET)

This may be appropriate for travellers away from reliable medical assistance who have been exposed, are symptomatic and have a positive RAT, to start treatment immediately.

DRUG	DOSAGE	COMMENT
Artemether 20mg/ Lumefantrine 120mg **Coartem®/Riamet®** and other generic Substances	Adults: 4 tablets initially, repeat after 8 hours and then 4 tablets every 12 hours for a total of 24 tablets	Take with fatty food or a little milk
Quinine sulphate 1 tab = 300mg **PLUS** **Doxycycline** 1 tab = 100mg	Adults: 2 tablets, 3 times a day for 7 days Adults: 1 tablet, twice a day for 7 days	Do not use within 12 hours of mefloquine After a meal

Children: Discuss treatment with a doctor.

Travellers in Africa may also encounter:

Artesunate plus Mefloquine (Artequin®), Amodiaquine (Falcimon®), Sulfadoxine-Pyrimethamine (Arinate®) or Dihydroartemisinin (Euraksim®). These are reasonable alternatives if none of the above is available. In accordance with WHO stipulations, Artesunate and its deriva-tives on its own should NOT be used. Any patient with malaria that requires intravenous Quinine or Artesuna-te, should be treated in a well equipped and staffed intensive care unit. If this is not available, medevac to a sophisticated facility is vital.

THE DISEASE

Malaria is the most important tropical parasitic disease causing illness in over 200 000 000 and the death of approximately 750 000 people living and travelling in affected areas around the world.

The epidemiology of the disease is complex, depending on factors such as altitude, climate (temperature and rain fall), mosquito-breeding sites and human behaviour for successful transmission of the disease. Approximately 40% of the world population in around 109 countries, in the tropics and sub-tropics, as well as travellers to these regions, are exposed to malaria. The risk is greatest in sub-Saharan Africa, Papua New Guinea and the Solomon Islands. The Indian sub-continent, Amazon basin and remote rural areas of Southeast Asia also pose a significant risk.

The most important of five *Plasmodium* species causing malaria in humans is *Plasmodium falciparum*, the most prevalent parasite in Africa and responsible for almost all deaths caused by malaria globally.

[*P.falciparum* is the cause of kidney, respiratory and multi-organ failure.] Malaria as a result of any of the other species (non-falciparum malaria) rarely lead to death during acute illness, only doing so in pregnant woman and those with chronic, untreated disease. In order of prevalence they include: *P.vivax, P.malariae, P.ovale and P.knowlesii*. The latter species has only recently been acknowledged as causing malaria in humans. *Plasmodium vivax* and *P.ovale* may lead to repeated illness without re-infection due to the ongoing

presence of parasites in the liver, even following apparently effective treatment of the initial acute illness. These parasites can be eradicated with Primaquine, a drug not used for the treatment of acute malaria. In most parts of the world *P. falciparum* has developed varying degrees of resistance to drugs used for malaria prevention and treatment. There is no vaccine against malaria.

Malaria is transmitted via the bite of parasite infected female Anopheles mosquitoes. (The parasites infect the liver and then the red blood cells). The incubation period - time from being bitten to becoming ill - varies from 7 to 17 days in all malaria species with the exception of *P. malariae* which presents between 18 and 40 days after a bite. The incubation period may be highly variable due to a variety of factors and in exceptional cases the onset of illness may be more than a year after the infected bite.

There are no 'typical' malaria symptoms: All persons experiencing a 'flu-like' illness with symptoms that may include all or any of the following, have MALARIA UNTIL PROVEN OTHERWISE: Fever, cold shivers, headache, muscle and/or joint pain and even diarrhoea.

Suspected malaria represents a MEDICAL EMERGENCY and requires immediate medical consultation. Correct diagnosis and effective treatment depend on a comprehensive, detailed travel and exposure history, thorough clinical examination and reliable laboratory confirmation in order to confirm the clinical diagnosis of malaria or any other life threatening disease that presents with fever.

PREVENTION

THERE ARE THREE GOLDEN RULES FOR PREVENTING ILLNESS AND DEATH FROM MALARIA:

1. **Do not get bitten:** *Anopheles* mosquitoes usually hunt between dusk and dawn. Avoid bites at all times in all malaria risk areas, but especially during or immediately after the rain season. The more mosquito-avoid-ance measures used, the better. Cover up with long sleeves, trousers, socks and shoes. (90% of mosquito bites occur below the knees!) Apply DEET (*diethyltoluamide*) insect repellent to exposed skin every 4 hours. Only sleep in air-conditioned or screened accommodation or carry an insecticide-impregnated bed net - and sleep under it!
2. **Seek early treatment:** Any flu-like illness, (fever, shivers, headache, muscle aches, vomiting, even diarrhoea) commencing 7 days, and for up to 6 months or even longer, after leaving a malaria risk region, should be presumed to be malaria. This is regardless of whether you think you have been bitten and/or malaria-prevention drugs have been taken correctly or not. Seek *expert* medical care immediately and ensure that the clinical diagnosis is confirmed with a reliable laboratory diagnosis to include a malaria blood smear and/or rapid antigen test, preferably with a full blood count.
3. **Take "The Pill":** Malaria chemoprophylaxis kills the malaria parasite before the traveller (who has no natural immunity to malaria and never acquires it in spite of repeated infections) becomes clinically ill. They act mostly on the parasites in the blood phase when the parasites exit the

liver at the end of the 'incubation period'. Malanil® / Malarone® /Mozitec® / Malateq® however, works on the liver stage shortly after being bitten. Chemoprophylaxis must therefore be commenced before entering the malaria area, to ensure that protective drug levels are reached and that the drugs are tolerated. Likewise prophylaxis has to be continued for 4 weeks after leaving the area to ensure eradication of parasites still emerging from the liver. As *Malanil®* also acts on the liver stage of the parasites, it can be stopped seven days after leaving the malaria area.

No drug or bite prevention method is 100% effective, but chosen and applied well, the combination can provide 90% protection against malaria illness and death. It has been shown that even if illness does occur, the likelihood of cerebral malaria is diminished and the chance of death reduced significantly.

No drug is completely without side effects. The decision whether to use preventive drugs or not should be based on consultation with a knowledgeable health care provider regarding the relative malaria risk in the area to be visited, any pre-existing disease or chronic medication the traveller may have or use, the availability of effective malaria prophylaxis, the potential side effects and cost of the available appropriate anti-malaria drugs.

People born in malaria-endemic areas become partially immune because of frequent infection, but the mortality rate amongst babies and toddlers remain extremely high. Travellers never become immune - in spite of frequently being infected - and they are in danger of dying every time they contract malaria.

MANAGEMENT OF SUSPECTED MALARIA

There are no 'typical' malaria symptoms. Any person experiencing a ' u-like' illness with symptoms that may include all or any of the following, has MALARIA, UNTIL PROVEN OTHERWISE: Fever, cold shivers, headache, muscle and / or joint pain and even diarrhoea.

Seek expert medical consultation. State clearly that you suspect malaria and insist on a complete medical examination and laboratory diagnosis.
If there is no medical expertise and provided you have the necessary kit available:

* Ask a trained travel companion to perform a rapid malaria antigen test
* With the results in hand, obtain telephonic support from a Travel Health Consultant * If the test is positive, commence standby emergency treatment (SBET).
* Remember:
  - One negative test does NOT exclude malaria
  - Not all fever is due to malaria - it may be due to another serious disease that requires expert medical care

MAKE YOUR WAY TOWARDS GOOD MEDICAL CARE IMMEDIATELY.

Malaria Rapid Antigen Test Kits (RAT)

The test strip detects the presence of a chemical component of the parasite wall - the antigen. It is used to diagnose new onset malaria, but can NOT be used to monitor treatment ef cacy as it may remain positive for two weeks after effective treatment. There are a number of these kits on the market, but not all are of equal quality.

As the only life-threatening malaria in travellers is caused by *P. falciparum* and the tests detecting multiple species is less sensitive and specific, the single species test is preferable. Anyone planning to use the test in the field MUST be trained in the use of the specific test prior to departure.

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