



Malaria Advisory - Rwanda

- Areas with malaria: All.
- Estimated relative risk of malaria for travelers from non-endemic areas: Moderate.
- Drug resistance: Chloroquine.
- Malaria species: *P. falciparum* 90%, *P. vivax* 5%, *P. ovale* 5%.
- Recommended chemoprophylaxis: Atovaquone-proguanil, doxycycline, or mefloquine

Fact Sheet

1. What is Malaria?

This is a term which describes a disease syndrome caused by certain parasites called plasmodium infecting the human red blood cells. The parasites are introduced when an individual is bitten by a female anopheles mosquito which carries the parasite. The mosquito acquires these parasites after ingesting blood from an individual who happens to have been infected previously and the parasites multiplied becoming numerous in his blood.

It is important to understand that after repeated infections partial immunity develops over the years. This allows the host to tolerate or to have the malaria parasite in their body and not suffer from malaria. This immunity is lost if there is no further infection for a couple of years. This means that people who lived for many years in a malaria endemic area and didn't suffer malaria can be at risk if they leave that area and stay away for many years then later go back to the malaria endemic area. It also explains why visitors to a malaria endemic area are more at risk of becoming ill after mosquito bites which introduce malaria parasites while the usual area residents remain largely disease free.

2. What Is Malaria Prophylaxis

Prophylaxis means prevention. Malaria prophylaxis describes the act of taking the recommended medicines in the recommended doses and period/duration with the aim of preventing malaria infection when and after travelling to malaria-risk area.

Malaria prophylaxis should not replace the other prevention measures such as using mosquito nets and mosquito repellants to prevent mosquito bites. Other measures that are put in place to reduce mosquito access into residential houses and accommodation facilities in malaria – risk areas include fitting the windows with **wire mesh**, spraying the facilities with **insecticides** and providing suitable easy to use **insecticide impregnated mosquito nets** in the hotel rooms. Always be keen to ensure that you choose the accommodation facility with these measures whenever you travel.



It should be noted that no prophylactic regimen is 100% effective and advice on malaria prophylaxis changes frequently.

3. Rationale for Giving Malaria Prophylaxis

The disease is associated with serious illness and high death rates if not well treated. It is currently endemic in over 100 countries visited by 125 million travelers every year. There may be difficulties in accessing reliable medical care for travelers in certain situations such as war torn areas. Unique problems may be faced by travelers who return to a non-endemic country. Doctors in these countries may be unfamiliar with malaria treatment and this may lead to delayed diagnosis. Effective antimalarial medicines may not be registered/ available in countries which have no malaria risks. This implies that travelers who develop malaria after going back to these countries are at risk of not being able to access effective treatment. These limitations may result to severe and complicated malaria and high death rates.

4. Individuals Most At Risk of Getting Infected With Malaria

Certain people are at a higher risk of getting infected compared to the general population. These include visitors from a non-endemic to a malaria endemic area. Children below 5 years even though living in a malaria endemic area are also at risk. Pregnant mothers are at risk as well regardless of the pre pregnancy malaria immunity status. Malaria in pregnancy is a common cause of pregnancy losses and premature deliveries.

5. Recommended Drug Regimens For Malaria Prophylaxis

General principles

Daily regimens should be started a day before arrival in the risk area (earlier if drug tolerance needs to be tested before departure).

Weekly mefloquine should preferably be started 2 to 3 weeks before departure to achieve higher pre travel blood levels and to allow side effects to be detected before travel so that possible alternatives can be considered. All prophylactic drugs should be taken with unfailing regularity for the duration of the stay in the malaria risk area and should be continued for 4 weeks after the last possible exposure.

NB: the entire malaria prophylaxis regimen require a prescription. Do not buy these medicines without a prescription.

Anti-malarial drugs used for prophylaxis in travelers

1. Atovaquone-proguanil (Malarone)
2. Mefloquine



3. Doxycycline

These medications may have various side effects in some people. Inform your doctor if you:

- are extremely sensitive to sunlight
- have tetracycline allergy
- have liver or kidney dysfunction
- are pregnant or breastfeeding

6. Which Are the Symptoms of Malaria

Malaria symptoms vary widely and range from **uncomplicated disease** in which case the symptoms are more obvious to **severe** and then **complicated disease** involving nonspecific clinical conditions which require expert intervention.

UNCOMPLICATED MALARIA

The symptoms include fever, shaking chills, headache, muscle aches and joint aches, body tiredness, a sensation of vomiting or vomiting itself may occur. It is important to note that fevers caused by malaria involve high body temperatures up to 40°C and higher.

COMPLICATED MALARIA

This may present in many different forms such as involvement of the red blood cells causing their massive destruction in a manner that leads to inadequate oxygen transfer to the body's vital organs. This condition is called **anemia**. This is because the red blood cells are targeted and destroyed by the parasite. The temperatures may be high enough to cause **seizures/ convulsions** especially in children. If the parasites clog the blood vessels which supply the brain this constitutes **cerebral malaria** which if not treated urgently will result in death. These are few examples of how severe malaria may present.

The body's vital organs such as the **kidneys, the heart** and **brain** become involved and their functions get compromised. Complicated malaria may present as kidney **failure** in which case the affected person requires short term dialysis to support the **kidney** functions and help them to recover their usual physiological function. Kidney failure is a common cause of death due to malaria parasite infection.

7. How Do You Know When You Have Malaria

If you travel to a place with known risks of getting infected with malaria it is important to understand that for most people symptoms begin **10days to 4weeks** after infection, although one may feel sick as early as **8 days or up to one year later**. Some malaria parasites can rest in the liver up to 4 years after one is bitten by an infected mosquito. When these parasites come out of the liver and begin to invade the red blood cells the person becomes sick with malaria.

Any traveler who becomes ill with a **fever or a flu-like illness** while travelling and up to one year



after returning home should immediately seek professional medical care. When you visit the hospital or a clinic you should remember to tell your doctor that you had **travelled to a malaria-risk area**. This is extremely important because if the symptoms appear after going back to a country with no malaria risk the doctors in that country will not test your blood for malaria unless you tell them about your travel to the malaria – risk country. Failure to do so may delay the diagnosis of malaria and result in disease complication or death.

8. Where Do I Go for a Malaria Test

We advise that medical help be sought at the earliest opportunity upon onset of symptoms. If you are in a major town or in a place with a good medical facility it is prudent to seek prompt attention from a hospital or a health care center where the relevant tests can be done based on how your symptoms are. Information on available facilities can be obtained from local UN focal points

9. Mosquito Nets

Most hotels provide mosquito nets in the rooms. Using these is an essential part of malaria prevention. If not available in the room, you may ask the management to provide one or alternatively use mosquito repellants.

10. Which Mosquito Repellants Should I Use

Those labeled **DEET** are most suitable. Ensure that you apply on the entire exposed skin surface. This is best during the evenings when the mosquitoes are most likely to bite