

## What is Malaria?

Malaria, in the *Italian* language translates into “bad air,” deriving from the people affected by malaria whom lived near the still water where mosquitoes bred. Malaria is caused by a parasite which is transmitted by the bite of an infected female *Anopheles* mosquito to human being, most common in tropical and sub-tropical areas of the world. The malaria parasite causing infection to humans has four types of the species *Plasmodium*; *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium malariae*, and *Plasmodium ovale*. *Plasmodium falciparum* is the most lethal and deadly type of malaria contributing annually to approximately one million deaths of African children under five years of age. Travelers and the local people in malaria endemic regions should be aware of the early symptoms of malaria, how to prevent malaria, and where to go for early diagnosis and proper treatment.

## Symptoms of Malaria

Early symptoms of malaria include headache, nausea, weakness, fever and chills, which typically occur 10-15 days after an individual is bitten by an infected mosquito. Persons living or traveling in malaria endemic regions should seek immediate diagnosis and treatment upon onset of these symptoms. Uncomplicated malaria can quickly lead to severe malaria and death, especially in non-immune travelers, pregnant women, and children under five years of age, if not diagnosed and treated promptly and accurately with antimalarial medications.

## How to prevent Malaria

Non-immune travelers visiting malaria endemic regions should take malaria prophylactic medications as advised by trained medical personnel. Individuals that develop fever despite prophylaxis should still seek immediate medical attention if traveling or recently traveled to malaria endemic regions.

Pregnant women in malaria endemic areas should seek proper prenatal care, education, and prevention measures to reduce malaria transmission to mother, infant, and child as directed by trained medical personnel.

The female mosquito typically bites at night, from sundown to sunrise. Utilizing insecticide-treated bed nets, indoor residual sprays, long-sleeved, lightweight shirts and pants, and malaria prophylactic medications will help prevent the transmission of malaria.

## Malaria diagnosis and proper treatment

Locals and travelers in malaria endemic regions need to be aware of the nearest facility that can diagnose malaria with lab testing and treat with proper antimalarial medication.

Non-immune travelers whom develop fever in malaria endemic regions or after returning home should get tested and treated for malaria as quickly as possible. Those diagnosed with malaria should be treated within 24 hours of onset of fever. Non-immune travelers, pregnant women and children should be closely observed if diagnosed with malaria, especially if diagnosed with *Plasmodium falciparum*. Those at risk for severe malaria need to be monitored in an intensive care unit.

If the individual diagnosed with malaria cannot tolerate oral medication, the medical staff needs to provide alternative routes of administration such as rectal, intramuscular or intravenous routes. If oral medication is the only route available, medical staff may try to administer an anti-emetic or anti-pyretic prior to oral medication ingestion. Non-immune travelers, pregnant women, or children unable to tolerate oral medication need to be treated as a medical emergency and transfer to an appropriate hospital or treatment facility for close monitoring, especially those diagnosed with *Plasmodium falciparum*.

Instructions for regimes of antimalarial medications should be clear and simple. A patient diagnosed with malaria needs to complete the full prescription and should be re-evaluated to assure parasite clearance, as advised by trained medical personnel.

Travelers, locals and healthcare providers need to be educated on current antimalarial medication treatment options. Artemisinin, also known as *artemisia annua*, or sweet wormwood, is presently the most effective drug used in combination therapies to fight malaria, due to the resistance to standard monotherapy treatments such as chloroquine and sulfadoxine-pyrimethamine. Artemisinin alone is not recommended; therefore artemisinin is combined with other antimalarial medications, varying by region, for most effective treatment outcomes. Artemisinin based combination therapies, also known as ACTs, are being used most successfully worldwide to treat uncomplicated *Plasmodium falciparum*. Artemisinins are available in oral, rectal, intramuscular, and intravenous routes.

In April 2009 the United States Federal Drug Administration approved the first artemisinin based combination therapy in oral tablet form; it is a combination of artemether + lumefantrine, with a trade name of Coartem. The U.S. FDA recommends Coartem for the treatment of acute, uncomplicated *Plasmodium falciparum* in adults and children weighing more than five kilograms. Because artemisinin is expensive and difficult to cultivate, locals in rural communities often times cannot afford or produce enough of this medication to treat the increasing number of people with malaria. Researchers in the U.S. are currently trying to produce synthetic artemisinin in order to reduce production cost and increase manufacturing, which will possibly save the lives of millions affected by malaria in the future.