Introduction For years Africa remained non-colonized because of the scourge of malaria. In fact history had it that Africa was referred to as white man's grave for this reason as many of early explorers died from complications of malaria infection. As common as it is, the disease called malaria is one of the leading causes of death in sub Sahara Africa. The disease is caused by a parasite called plasmodium. There are five known species of plasmodium parasites which includes: • Plasmodium falciparum • Plasmodium vivax • Plasmodium malariae • Plasmodium ovale • Plasmodium knowlesi. The commonest among them all is the plasmodium falciparum and its said to be responsible for most cases of malaria infection in Africa. It is the most deadly specie. Equally deadly is the recently discovered plasmodium knowlesi. Plasmodium is a blood parasite that has two stages of developments. The first half of the development takes place inside the salivary gland of the female anopheles mosquito. When the mosquito with malaria parasites bites a human being or other mammals, as the case is with plasmodium knowlesi which is also found in monkeys, the mosquito injects sporozoite form of the parasite into the human blood stream. Sporozoites travel through the bloodstream to the liver, mature, and eventually infect the human red blood cells. While in red blood cells, the parasites again develop until a mosquito takes a blood meal from an infected human and ingests human red blood cells containing the parasites. The malaria parasites continue their development until they reach the mature stage. The period between the mosquito bite and the onset of the malarial illness is usually one to three weeks (seven to 21 days). This initial time period is highly variable as reports suggest that the incubation period may range from four days to one year. The usual incubation period may be increased when a person has taken an inadequate course of malaria prevention medications. Certain types of malaria (P. vivax and P. ovale) parasites can also take much longer, as long as eight to 10 months, to cause symptoms. These parasites remain dormant (inactive or hibernating) in the liver cells during this time. Unfortunately, some of these dormant parasites can remain even after a patient recovers from malaria, so the patient can get sick again. This situation is termed relapsing malaria. Epidemiology Malaria is a disease that kills faster than HIV/AIDS and has more effect on the population than most of the high profile diseases. At one point or the other, we have all been exposed to this disease and more often than not, we have had relatives that suffered from the disease. This disease takes the lives of almost one million people a year, most of them in sub-Saharan Africa which includes our dear country Nigeria. It is the fifth leading cause of death worldwide and almost half the world's population (3.3 billion) is at risk. Children and pregnant women are among the most vulnerable. And when we say Children we mean, mostly under the age of five. Part of the problem of malaria is that it is also a major player in the cause of poverty in our dear continent, Africa. It has been estimated to cost Africa more than US$ 12 billion every year in lost GDP. Malaria traps people in poverty and undermines the development of some of the poorest countries in the world. Though the majority of the cases and deaths (85%) from malaria are found in sub-Saharan Africa, malaria is also endemic in Asia and Latin America. HISTORY Ancient Times: Early man attributed the fevers to evil spirits, angered deities, demons, or the black magic of sorcerers. 800BC: Indian sage Dhanvantari wrote that bites of mosquitoes could cause diseases, fever, shivering etc. 400BC: Hippocrates attributed malaria to ingestion of stagnant water Early Civilizations: Use of mosquito nets recorded; Cleopatra reportedly used them Ancient Romans practiced drainage of swamps to prevent malaria. 11 Century AD: Rice plantation prohibited near human dwellings. Late 1800: Malaria declines in the US and Europe due mainly to draining

swamps and removing mill ponds. 1882 AD: Albert Freeman Africanus King, a US Physician, proposed to encircle the city with a wire screen as a method to eradicate malaria. August 20, 1897: Ronald Ross demonstrates oocysts in mosquito gut, proving the role of mosquito in malaria transmission 1921-22: Larvivorous fish Gambusia affinis or mosquito fish used in the control of mosquitoes in California. 1939: Malaria control drive conducted in Brazil under the leadership of Fred Sopper with great success. 1955: The global Malaria eradication program launched by WHO with emphasis on vector Control with DDT residual spraying 1965: The Global malaria eradication program proved successful in Europe, but cases reemerge in ASIA 1969: The global malaria eradication program abandoned 1998: Roll Back Malaria campaign Launched. • Historical records suggest malaria has infected humans since the beginning of mankind. The name "mal aria" (meaning "bad air" in Italian) was first used in English in 1740 by H. Walpole when describing the disease. The term was shortened to "malaria" in the 20th century. C. Laveran in 1880 was the first to identify the parasites in human blood. In 1889, R. Ross discovered that mosquitoes transmitted malaria. CLINICAL PRESENTATION The most important symptom of malaria infection is fever. The pattern of fever is described as intermittent because it is common in the evenings. Parents often notice that a hitherto sick child the previous night achieves a miraculous healing in the morning without taking any pills to the point that the said child could go to school, only for him to start again in the evening. The cycle can repeat itself for days most especially when dealing with a care free mother. There may be associated chills and rigor, what people call cold, the patient may be shivering with goose pimples all over him. Vomiting is another symptom that people often complains of. The vomiting is usually postprandial (that is, after meal), however that may not necessarily be the case. Patients suffering from malaria often complain of generalized body pains. The pains are usually felt in joints and the muscles. There may also be loss of appetite. Diagnosis The diagnois of malaria is made based on the history volunteered by the patient, the findings on examination of the patient and the results of laboratory investigations carried out. Laboratory investigation. The classic and most used diagnostic test for malaria is the blood smear on a microscope slide that is stained (Giemsa stain) to show the parasites inside red blood cells Although this test is easily done, correct results are dependent on the technical skill of the lab technician who prepares and examines the slides with a microscope. Other tests based on immunologic principles exist; including RDTs (rapid diagnostic tests) approved for use in the U.S. in 2007 and polymerase chain reaction (PCR) tests. These are not yet widely available and are more expensive than the traditional Giemsa blood smear. Some investigators suggest such immunologic based tests be confirmed with a Giemsa blood smear. In addition to this, it is advisable to run other tests like packed cell volume or haemoglobin count to ascertain the level of the red cells in the system. This is important because when malaria parasites invade the red blood cells, they destroy the cell and renders it useless. Red blood cell is the form of blood cells that is responsible for transporting oxygen and glucose to the brain among other relevant functions they perform. The destruction of red blood cells is responsible for the anaemia that we see in severe malaria infection. Treatments Three main factors determine treatments: the infecting species of Plasmodium parasite, the clinical situation of the patient (for example, adult, child, or pregnant female with either mild or severe malaria), and the drug susceptibility of the infecting parasites. Drug susceptibility is determined by the geographic area where the infection was acquired. Different areas of the world have malaria types that are resistant to certain medications.

The correct drugs for each type of malaria must be prescribed by a doctor who is familiar with malaria treatment protocols. Since people infected with P. falciparum malaria can die (often because of delayed treatment), immediate treatment for P. falciparum malaria is necessary. Mild malaria can be treated with oral medication; severe malaria (one or more symptoms of either impaired consciousness/coma, severe anemia, renal failure, pulmonary edema, acute respiratory distress syndrome, shock, disseminated intravascular coagulation, spontaneous bleeding, acidosis, hemoglobinuria [hemoglobin in the urine], jaundice, repeated generalized convulsions, and/or parasitemia [parasites in the blood] of > 5%) requires intravenous (IV) drug treatment and fluids in the hospital. Drug treatment of malaria is not always easy. Chloroquine phosphate (Aralen) is the drug of choice for all malarial parasites except for chloroquine-resistant Plasmodium strains. Although almost all strains of P. malariae are susceptible to chloroquine, P. falciparum, P. vivax, and even some P. ovale strains have been reported as resistant to chloroquine. Unfortunately, resistance is usually noted by drug-treatment failure in the individual patient. There are, however, multiple drug-treatment protocols for treatment of drug-resistant Plasmodium strains (for example, quinine sulfate plus doxycycline [Vibramycin, Oracea, Adoxa, Atridox] or tetracycline [Achromycin], or clindamycin [Cleocin], or atovaquone-proguanil [Malarone]). There are specialized labs that can test the patient's parasites for resistance, but this is not done frequently. Consequently, treatment is usually based on the majority of Plasmodium species diagnosed and its general drug-resistance pattern for the country or world region where the patient became infected. For example, P. falciparum acquired in the Middle East countries is usually susceptible to chloroquine, but if it's acquired in sub-Sahara African countries, it's usually resistant to chloroquine. The WHO's treatment policy, recently established in 2006, is to treat all cases of uncomplicated P. falciparum malaria with artemisinin-derived combination therapy (ACTs). ACTs are drug combinations (for example, artesunate-amodiaquine, artesunatemefloquine, artesunate-pyronaridine, dihydroartemisinin-piperaquine, and chlorproguanildapsoneartesunate) used to treat drug-resistant P. falciparum. Unfortunately, as of 2009, a number of P. falciparum-infected individuals have parasites resistant to ACT drugs. New drug treatments of malaria are currently under study because Plasmodium species continue to produce resistant strains that frequently spread to other areas. One promising drug class under investigation is the spiroindolones, which have been effective in stopping P. falciparum experimental infections. In cases of severe anaemia, the patient is urgently transfused with group and cross matched blood. If the patient is already in heart failure as could be evidenced by difficulty in breathing, painful and enlarged liver, increased heart beat rate and enlarged heart, such patient may require intranasal oxygen with some doses of intravenous Furosemide. It is also important that such patient is laid in cardiac position, that is, the bed adjusted such that the head and the back are at an angle of about 45 to 60 degree. If not malaria, what else can it be. There are several diseases that look almost like malaria. Most of these diseases though caused by other organisms have close symptoms with malaria. Some of these diseases are: Typhoid fever, measles, yellow fever, dengue fever etc. Complications Whenever there is delay in the diagnosis and treatments of malaria, patients often come down with one or more of the complications. The commonest complications include severe malaria with or without heart failure, convulsion, pulmonary oedema, hyperparasitemia, electrolyte imbalance, hematuria, acute kidney failure etc. Prevention Malaria can be mostly prevented by any method that reduces mosquito bite. The use of insecticide treated net

has been found to be one factor that is very useful in the fight against malaria. Regular drainage of gutter and all stagnant water is another important factor. The prevention against mosquito is incomplete with bushes around remaining. Pregnant women should received intermittent preventive therapy twice in pregnancy, between the 16th week and 36th week, and three times in an HIV patient. THE HOPE IN SIGHT The vaccine, known as RTS,S and made by GlaxoSmithKline, is the first ever to be shown effective against a human disease caused by parasites. It was created in 1987 in GlaxoSmithKline Biologicals' laboratory in Belgium. Testing began on healthy adults in Europe and the United States of America in 1992, before the first Africa study started in Gambia in 1998. The vaccine is designed in such a way that when the malaria parasite enters the human bloodstream after a mosquito bite, it stimulates an immune response. This can prevent the parasite from maturing and multiplying in the liver, and from re-entering the bloodstream and infecting red blood cells, at which point the affected person would begin to show symptoms of the disease. Although there are an array of vaccines against viruses and bacteria, there has never been an effective vaccine against a parasite, which is a more complicated organism. And there are five species of malaria parasites. The new vaccine is designed specifically to protect against the deadliest one, which is common in sub-Saharan Africa. Although complete results was expected to be available in 2014, World Health Organisation (WHO) has taken the "unusual step of recommending" the vaccine for use in some African countries by 2015 if the final results turn out to be favorable, as The New England Journal of Medicine noted. A BETTER HOPE British researchers have discovered a biochemical key used by the malaria parasite to invade human blood cells. The discovery could pave the way for an effective malaria vaccine. Plasmodium malaria parasite has a complex life cycle, and that gives scientists different targets for trying to interrupt its development. One critical point in that process is when the parasite enters the victim's red blood cells. It does that by interacting with a chemical receptor on the surface of the cell. Previous research identified several of those receptors, but the problem has been that if one receptor is blocked, the parasite uses a different one. Now, scientists have identified a single blood cell receptor that Plasmodium absolutely needs to enter the blood cell. Basigin receptor The researchers say a vaccine targeting the basigin receptor may be a decade or more away. But they say that unlike vaccines for some other diseases, which are useful only in prevention, a malaria vaccine that targets basigin may also be a useful treatment, blocking the constant reinfection of blood cells that characterizes malaria. Till we meet again next week I will be saying: Live healthy to stay healthy.

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