

Moxie digest

A Community Pharmacy training guide



VOL 8

This Volume contains:

- * General Overview
- * Self Care tips
- * WWHAM Questions
- * When to refer to the Pharmacist
- * Treatment algorithm
- * Test of Knowledge

Topic Of Focus
Malaria

Ideal for training:

Corper Pharmacists | Intern Pharmacists | Pharmacy Technicians | Counter Assistants | Pharmacy Students

HOW TO USE THIS TRAINING MANUAL

This book is broken down into chapters based on different disease conditions. Each chapter is further broken down into different sections to help the reader fully understand the disease condition and empower the reader with the necessary skills and information needed to give the best form of pharmaceutical care to the patient. The sections include

1 Disease overview

This section looks at the general disease condition, symptoms and common medications used in treating the condition. It helps the reader get a deeper understanding of cause of the disease and how the medication works.

2 Self-care tips

This column focuses on additional steps and advice given to the patient to help ensure that recovery is quick. This section usually focuses on non-drug approach to disease management.

3 WWHAM Questions

This section provides a good framework for finding out more about a customer's condition.

Everyone in the pharmacy team should be familiar with the WWHAM questions. Proper use of these questions helps the Pharmacy team to obtain the necessary information so that they can offer the right advice and/or a product recommendation.

The WWHAM questions are intended to form the basis of any conversations with customers, whether you are responding to their health complaints and recommending a product or they have asked for a medicine by name.

The WWHAM Questions are

- W** Who **W: Who is the medicine for?**
It may not be for the customer
- W** What **W: What are the symptoms?**
You may need to ask a few more questions so that you can fully understand the symptoms.
- H** How **H: How long have you had the symptoms?**
Many minor ailments clear up within a few days.
- A** Action **A: What Action has been taken?**
Have they tried any medicine or treatment without success?
- M** Medi-
cation **M: Are you taking any other Medication?**
It is important to ask about prescribed medicines as well as any OTC and herbal remedies as some can interact with each other.

In addition to the WWHAM questions, it is also important to find out whether the patient has any allergies. (it is important to know if the patient reacts to any medicines, foods or other substances).

4 When to refer to the Pharmacist

This section focuses on things the care giver should look out for and then subsequently refer to the Pharmacist in Charge. The section focuses on triggers that point the care giver to the fact that there may be a more serious underlying condition which requires professional management.

5 At a glance

This is a pictorial treatment algorithm for the disease under consideration. It shows a flow chart that the care giver can easily follow in questioning the patient so as to rule out any complications. It also clearly spells out the point at which the case is referred to the Pharmacist in charge.

6 Test of Knowledge Exercise

After each topic, the reader is expected to answer 10 questions drawn from the content studied. The answers to the questions are provided at the back of this manual.

Moxie

Paracetamol

Oral Suspension



Malaria

Malaria is a leading cause of death and illness in Nigeria, affecting mainly young children, infants and young pregnant women, especially in rural areas where access to health services is often limited.

Malaria is a serious and sometimes fatal (deadly) disease caused by a parasite known as Plasmodium that commonly infects a certain type of mosquito which feeds on humans. The bite of a mosquito that has malaria parasites living inside it causes the release of these parasites into the bloodstream which then multiplies within red blood cells and could lead to anaemia (low blood level) if not treated early.

People who get malaria are typically very sick with high fevers, body shaking, headache and flu-like illness. About one out of every ten people who caught malaria died of it, especially if they were children.

Malaria infects about 500 million people each year worldwide leading to about 1-3



million deaths each year, mainly among young children. The disease is widespread in tropical and subtropical regions of the world, including much of Sub-Saharan Africa, Asia, and Latin America. Most deaths occur among children living in Africa where it is said that a child dies every minute from malaria. Nigeria and the Democratic Republic of the Congo (DRC) account for

more than 40% of all malaria deaths worldwide.

Malaria is a common infection in Nigeria, and the population at highest risk includes children, pregnant women, and the non-immune. Malaria is preventable and curable.

What are the different types of malaria?

There are five parasite species that cause malaria in humans:

- **Plasmodium vivax (P. vivax)** – which is found mostly in Asia, Latin America, and in some parts of Africa. It causes a milder form of the disease which is generally not fatal. This parasite has a dormant (inactive) liver stage and can remain in the body for years without causing sickness. If the patient is not treated, the liver stage may re-activate and cause relapses - malaria attacks - after months, or even years without symptoms.
- **Plasmodium malariae (P. malariae)** – which is found worldwide. It also causes a milder form of the disease which is generally not fatal. This type of parasite has been known to stay in the blood of some people for several decades.
- **Plasmodium ovale (P. ovale)** – which is found mostly in Africa (especially West Africa). It also causes a milder form of the disease which is generally not fatal. This parasite also has a dormant liver stage and can remain in the

body for years without causing sickness. Without treatment there is a risk that the liver stage re-activates and cause relapses after very long periods without symptoms.

- **Plasmodium knowlesi (P. knowlesi)** – which is found in certain forested areas of South-East Asia as a species that primarily infects monkeys and may be transmitted to humans. It can rapidly progress from an uncomplicated to a severe infection; fatal cases have been reported.
- **Plasmodium falciparum (P. falciparum)** – which is found worldwide and most common in Africa, especially sub-Saharan Africa (causes over 95% of malaria cases in Nigeria). It is the most deadly form of the disease and it causes severe malaria because it multiplies rapidly in the blood, and can thus cause severe blood loss (anemia). In addition, the infected parasites can block small blood

vessels. When this occurs in the brain, cerebral malaria results; a complication that can be fatal.

How does a human become infected with malaria?

The female Anopheles mosquito transmits the parasite to a human when it takes a blood meal usually at night – it bites the human in order to feed on blood. Only the female Anopheles mosquito can transmit malaria, and it must have been infected through a previous blood meal taken from someone who already has malaria. When the mosquito bites an infected person (a person with malaria), a small amount of blood is taken in which contains microscopic malaria parasites. About one week later, that same infected mosquito takes its next blood meal from another person. The plasmodium parasites mix with the mosquito's saliva and are injected into the person being bitten. After infection, the parasites (called sporozoites) travel

through the bloodstream to the liver, where they mature and release another form, the merozoites. The merozoites enter the bloodstream and infect red blood cells. They multiply inside the red blood cells, which then burst open within 48 to 72 hours, infecting more red blood cells. This usually causes a destruction of red blood cells leading to anaemia and other symptoms of malaria. Because the malaria parasite is found in red blood cells of an infected person, malaria can also be

transmitted through blood transfusion, organ transplant, or the shared use of needles or syringes contaminated with blood (although these are very rare). Malaria may also be transmitted from a mother to her unborn child before or during delivery ("congenital" malaria).

What are the symptoms?

After being bitten by an infected mosquito, a period of time (the "incubation period") goes by before the first symptoms of malaria begin to appear.

The incubation period in most cases varies from 7 to 40 days (9 to 14 days for *P. falciparum*, 12 to 18 days for *P. vivax* and *P. ovale* and 18 to 40 days for *P. malariae*). Infection with malaria parasites may result in a wide variety of symptoms, ranging from absent or very mild symptoms to severe disease and even death. Malaria disease can be categorized as uncomplicated (mild) or complicated (severe) according to the level of symptoms. Simple or uncomplicated malaria occurs when the malaria infection is not life-threatening and is easily treatable. It usually manifests at the early stage of infection.

The symptoms include:

- ▲ Body shivering (chills)
- ▲ A high temperature (fever)
- ▲ Sweating
- ▲ Headache
- ▲ Muscle and joint pain (body aches)
- ▲ Yellow or dark-coloured urine (haemoglobinuria)
- ▲ Loss of appetite.



Diarhea, nausea and vomiting and symptoms of Malaria

- ▲ Bitter mouth/tongue
- ▲ Gastrointestinal upset (stomach pain & indigestion).
- ▲ Diarrhoea.
- ▲ Tiredness (fatigue)
- ▲ Nausea (feeling sick)
- ▲ Vomiting
- ▲ Cold sores

If not promptly treated, the infection can become severe and may cause kidney failure, seizures, mental confusion, coma, and death. These are the signs of complicated (severe) malaria.

What are the treatment options?

With early treatment, malaria can usually be cured in about 1-2 weeks. However, because malaria is very common due to constant mosquito bites, many people get infected again and again and never really recover between episodes of illness. Without treatment, it can be fatal, especially in children who are poorly nourished. Drugs used to treat malaria are called

anti-malarial drugs or antimalarials.

They are given with the aim of totally eradicating the Plasmodium parasite. However, other drugs are also used together with them. For example, analgesics can be given to control fever, headache and body aches. B-complex vitamins also help during the sickness to speed up the body's recovery and stimulate appetite. Antiemetics (e.g. Avomine) should be used to if the patient keeps vomiting to stop it.

Antimalarials can be generally divided into two: those used to prevent malaria from occurring (prophylaxis) and those used to treat an already existing malaria infection (curative). They include:

- **Proguanil**

Proguanil is an effective prophylactic medication for preventing the onset of malaria. They prevent the development of the parasite from the sporozoite form into merozoite form (which attacks red blood cells)

in the liver thus preventing malaria. They can be used by people who don't have malaria but are travelling to areas where malaria is common such as foreigners travelling into or leaving Nigeria. The tablets usually come in 100mg strength and is suitable for both adult and children. The tablets are usually taken daily at the same time each day. Treatment begins at least 24 hours before entry into the malaria region and used continually throughout the period of stay and up to four weeks after leaving the region.

Examples: Paludrine, Reludrine.

- **Pyrimethamine**

Pyrimethamine usually called 'Sunday-Sunday medicine' is used alone or in combination with drugs such as sulfadoxine and sulfamethoxypyrazine to prevent malaria. Thus, it can be used by people who are travelling to malaria regions in order to prevent malaria disease. It is more active than proguanil

against malaria parasites and comes in 25mg strength tablets to be used once in a week. When combined, the tablets comprise 500mg sulfadoxine + 25mg pyrimethamine or 500mg sulfamethoxyypyrazine + 25mg pyrimethamine. Sulfadoxine-pyrimethamine combinations also occur in liquid suspension for children.

They are also to be used once a week.

Examples: Metaprim, Metakelfin, Antimal, Amalar, Maldox, Fansidar.

• Chloroquine

Chloroquine was, until recently, the first choice drug for treating malaria until malaria parasites developed resistance to it. Now, it is used majorly for prophylactic reasons and not to cure malaria. It comes in tablets, capsules and liquid syrups for adults and children.

Chloroquine is known to cause itching all over the body and this could be very uncomfortable for the

patient.

Antihistamines (e.g. Piriton) could be given 30 minutes before chloroquine is given to reduce itching. The tablets are used once a week to prevent malaria.

Examples: 2-2-1 Forte Capsules/ Suspension, Capquin Capsules, Maxiquine Syrup, Vinaquine Syrup.

• Artemisinin-based Combination Therapies (ACTs)

These are combinations in which one of the components is artemisinin and its derivatives (artesunate, artemether, dihydroartemisinin). The artemisinins rapidly kill the plasmodium parasites in the blood which leads to quick relief of symptoms, hence curative.

The ACT options in alphabetical order are:

• Artemether plus lumefantrine

This is currently available in a fixed-dose solid formulation (tablets) containing 20 mg of artemether

and 120 mg of lumefantrine per tablet.

It comes in standard tablets, flavoured dispersible tablets and liquid suspension for children and babies.

It is usually given twice a day for three days. **Examples: Coartem, Lonart, Amatem, Artelum, Combisunate, Artemef.**

• Artesunate plus amodiaquine

This is currently available as a fixed-dose formulation with tablets containing 25+67.5 mg, 50+135 mg or 100+270 mg of artesunate and amodiaquine. Separate tablets containing 50 mg of artesunate and 153 mg base of amodiaquine, respectively, are also available.

It comes in tablets and powders especially for children and babies.

It is usually given once a day for three days.

Examples: Camosunate, Coarsucam, Gsunate Kit, Larimal, Malmed Jr.

Self-care tips

The best way to prevent malaria is by keeping mosquito away from humans. Controlling mosquito populations can reduce malaria considerably. This can be achieved by:

- ▲ Maintaining proper sanitation – ensure that you keep the surroundings of your home tidy. Do not allow stagnant pools of water to collect around the home and ensure you drain the gutters properly
- ▲ Spraying your home – treating your home's walls with insecticide can help kill adult mosquitoes that come inside. **Examples: Raid, Baygon, Mortein, Mobil**
- ▲ Installing window and door net screens – fixing nets to your windows and doors will help to prevent mosquitoes from entering the rooms when you open them
- ▲ Sleeping under a net – bed nets, particularly those treated with insecticide, are especially recommended for pregnant women and young children
- ▲ Covering your skin – during active mosquito times, usually from sunset to early morning, wear trousers and long-sleeved shirts
- ▲ Using mosquito repellent ointments and coils – mosquito repellent coils and ointments can be used to chase mosquitoes away. Ointments (e.g. Odomos cream) can be used on the skin

• **Artesunate plus mefloquine**

This is currently available as separate tablets containing 200 mg of artesunate and 250 mg base of mefloquine, respectively. It comes in tablets for adults and children to be used once a day for three days.

Examples: Artequin, Artequin Paediatric, Arfloquin, Meflonate, Thydop.

• **Artesunate plus sulfadoxine-pyrimethamine**

This is currently available as separate tablets containing 50 mg of artesunate and

tablets containing 500 mg of sulfadoxine and 25 mg of

pyrimethamine. It comes in tablets for adults and children.

The artesunate tablets are given once daily for three days while the sulfadoxine-pyrimethamine tablets are given on day 1 of treatment only.

Examples: Amalar Plus, Farenax, Malosunate.

• **Dihydroartemisinin plus piperazine**

This is currently available as a fixed-dose combination with tablets containing 40 mg of dihydroartemisinin

and 320 mg of piperazine. It comes in tablets for adults and children to be used once a day for three days.

Examples: Artecxin, Axcin, P-alaxin, Solartep.

Caution

Fever is an important feature of malaria, and is associated with other symptoms such as weakness, headache, loss of appetite and often nausea. In young children, high fevers are associated with vomiting (they could vomit their medication) and seizures.



Chills are a major symptom of Malaria

Treatment is with antipyretics (e.g. paracetamol) and, if necessary, fanning and tepid sponging. Malaria should be treated as quickly as possible to prevent it from becoming severe which may lead to the damage of some vital body organs.

WWHAM questions

Ask these questions in order to find out more about the patient's condition so as to give accurate advice and correct medication for their problems.

W – Who is it for?
It may not be the customer who needs the treatment.

W – What are the symptoms?
Ask the customer to describe all the symptoms so that you can establish whether it is malaria. However, many other disease conditions manifest with symptoms similar to malaria (such as typhoid). Remember to refer to the pharmacist if you are not sure or if symptoms are severe.

H – How long have the symptoms been present?
You need to find out how long the customer has had the symptoms so that you can know the type of malaria present.

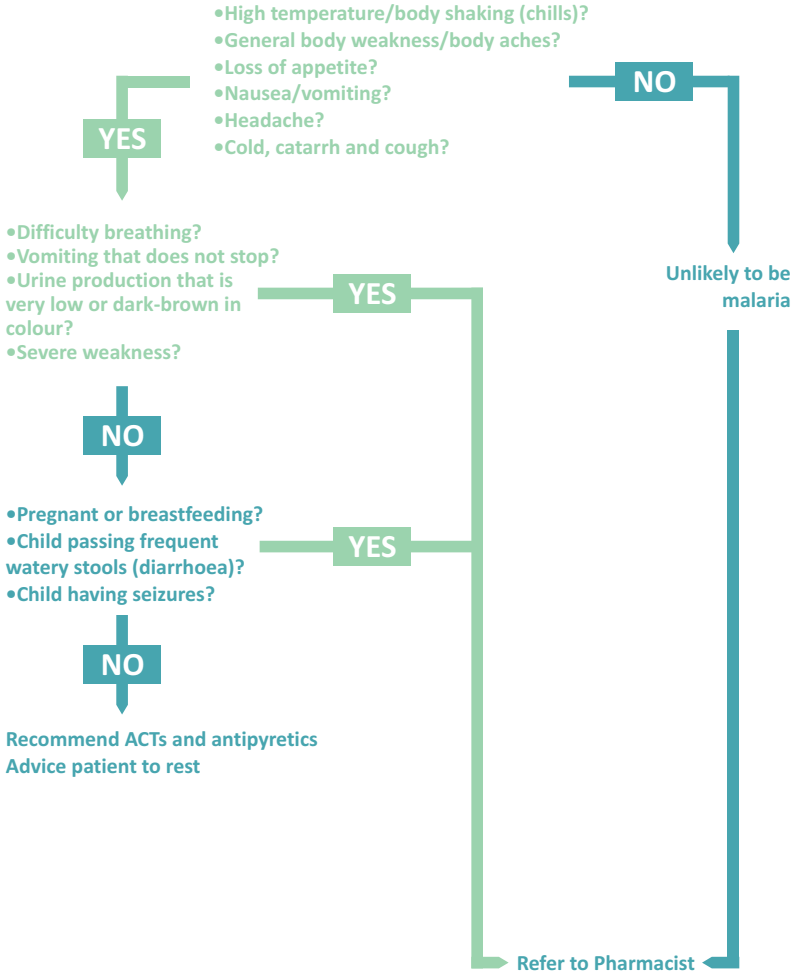
A – Action already taken?
This will help establish if the customer has used a product that wasn't appropriate or hasn't helped for their symptoms.

M – Medications?
It is important to find out if the customer is taking an herbal preparation, prescribed or OTC medicines and refer them when appropriate to the pharmacist.

When to refer to the Pharmacist

- ⋆ Pregnant or breast feeding women
- ⋆ Babies and children suffering from diarrhoea as they can dehydrate
- ⋆ Any child having convulsion
- ⋆ When urine production is abnormally low or dark brown in colour ('coke' colour)
- ⋆ If the customer is very weak
- ⋆ If the customer keeps vomiting the drugs given
- ⋆ If the customer has difficulty breathing
- ⋆ If the symptoms don't improve or get worse after treatment
- ⋆ Any of the symptoms of severe (complicated) malaria

At a glance



Test of Knowledge Exercises

- 1. Which of the following is NOT true of Malaria?**
 - a. Malaria is a serious and sometimes deadly disease
 - b. It is caused by a parasite known as plasmodium
 - c. People who get malaria usually have high fevers, body shaking and headache
 - d. About two out of every ten people who caught malaria died of it, especially children

- 2. The population at highest risk of malaria includes the following EXCEPT**
 - a. Children
 - b. Non-immune
 - c. Adults
 - d. Pregnant women

- 3. The following are parasite species that cause malaria in humans**
 - a. Plasmodium malaria
 - b. Plasmodium malariae
 - c. Plasmodium malariae
 - d. Plasmodium malareia

- 4. Plasmodium falciparum**
 - a. Causes the least deadly form of the disease
 - b. Multiplies slowly in the blood
 - c. Cannot lead to cerebral malaria
 - d. Causes 95% of malaria cases in Nigeria

- 5. Malaria can be transmitted to humans by the following ways EXCEPT**
 - a. Mother to her unborn child before or during delivery
 - b. Blood transfusion
 - c. Shared use of needles or syringes contaminated with infected blood
 - d. Kissing and hugging

- 6. Symptoms of malaria includes the following EXCEPT**
 - a. Hunger
 - b. Headache
 - c. Yellow or dark-coloured urine (haemoglobinuria)
 - d. Body shivering (chills)

- 7. The following drugs are used for curative treatment of malaria.**
 - a. Proguanil
 - b. Artesunate + lumefantrine
 - c. Sulfadoxine + pyrimethamine
 - d. Chloroquine

- 8. Artemisinin-based Combination Therapies (ACTs) have the component artemisinin and its derivatives which includes all the following EXCEPT**
 - a. Artemether
 - b. Artesunate
 - c. Arteglunate
 - d. Dihydroartemisinin

- 9. One important feature to monitor especially in children to prevent seizure is**
 - a. Vomiting
 - b. Fever
 - c. Gastrointestinal upset
 - d. Loss of appetite

- 10. All of these are important reasons to refer to the pharmacist EXCEPT**
 - a. Any child having convulsion
 - b. When urine production is abnormally low or dark brown in colour ('coke' colour)
 - c. If the customer takes the drugs given without vomiting
 - d. If the symptoms don't improve or get worse after treatment

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Paracetamol

Oral Suspension

