

**For a
malaria-free
Nigeria,
play your part**

**Federal Ministry of Health
National Malaria Elimination Programme, Abuja, Nigeria**

Module 2:

CASE MANAGEMENT OF MALARIA AT THE PRIMARY HEALTH CARE CENTRE

TRAINEE CONTENT



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1.0 Background

This module is designed for the training of health care providers at the health centre level including Nurses, Senior Community Health Extension Workers, Junior Community Health Extension Workers and other staff at PHC who have already received some medical training.

1.1 Overview of PHC services

What is the importance and role of PHC services within the health system?

This is the first tier of health service in Nigeria. It provides an essential health care package. It is a level of health care that has full community participation and constitutes the first element of a continuing health care process.

What are the links between PHC services and secondary level health care?

All cases seen at the PHC that are beyond the scope of the health worker are referred to the secondary level. The secondary level is expected to give a feed back to the PHC on cases referred to it.

What are the links between PHC services and community caregivers?

PHC system is organised from the grassroots and woven into the fabric of the community through the process of community participation. Thus, Community Care givers have access at all times to the PHCs and are expected to refer i) All cases of illnesses that do not respond to home management and ii) All cases that present with danger signs or other referral signs.

What are the links between PHC services and private health care providers?

Private health care providers can be found at all three tiers of the health care system. The rule in Nigeria is that the PHC worker is expected to refer cases only to government hospitals. However, if a patient insists on going to a private hospital, the health worker can only direct him/her to a facility but cannot give a referral letter to the private hospital.

1.2 Why it is necessary for you to receive training on malaria case management

There has been a global and national shift from the use of monotherapies to using Artemisinin-based Combination Therapy (ACT) as the main treatment for uncomplicated malaria while treatment of severe malaria now includes artemisinin derivatives. Another recent change is that parasitological diagnosis is now recommended to confirm all suspected cases of malaria. As a health worker actively involved in caring for patients with malaria, you need to fully understand the new developments and have the skills to implement the changes in your health facilities. In this way this training will directly benefit you and indirectly benefit your community and the nation as a whole.

1.3 Case Management

Case management is made up of the tasks and activities that a health worker engages in once presented with a patient. These tasks and activities include:

- Diagnosis
- Treatment or referral
- Counselling
 - Building rapport to promote a good health worker/patient relationship
 - Health promotion especially early treatment seeking and preventive behaviours
 - Adherence to test results and treatment advice
- General care of the patient
 - Attending to other aspects of the patient's health e.g. nutrition, immunization, etc.
- Follow up of the patient where required
- Provision of a clean patient-friendly and well-managed facility
- Pharmacovigilance to ensure safety of treatment regimes

1.4 Key Messages from this module

- 1) Parasitological diagnosis should be carried out on all patients with suspected malaria
- 2) Chloroquine has been banned by the government of Nigeria for the treatment of uncomplicated malaria. Also Sulphadoxine Pyrimethamine (SP) and oral monotherapies are no longer recommended for treatment of uncomplicated malaria. ACTs have been found to be more effective and should be used for treatment of malaria.
- 3) Prompt and good referral can save lives

1.5 Learning objectives for this module

By the end of this module you should know:

1. The importance of parasitological diagnosis in malaria case management
2. How to treat uncomplicated malaria with ACT
3. How to identify and handle treatment failures
4. The good practices on referring a severely sick patient, including pre-referral treatment
5. How to improve health workers' adherence to test results
6. How to improve patient adherence to treatment
7. How to improve health worker/patient relationships
8. How to triage severely ill patients
9. How to manage a health facility effectively to ensure optimal patient care including the importance of case reporting
10. The advice to give patients on prevention of malaria and general care
11. How to report adverse drug reactions (ADRs) of medications
12. How to improve management and storage of medicines in the facility

NOTE – this is your personal training manual. You will be taking it away with you after the training is over so that you can refer to it at the workplace. Make sure to fill in the reflection boxes as you go along; these will help you think about how you can use your new knowledge when you return to your workplace at the end of the training.

2.0 Overview of Malaria

2.1 General facts about malaria

Malaria is one of the most commonly encountered diseases in Nigerian medical practice.

- Malaria is a disease caused by a parasite called *Plasmodium* which infects human blood cells
(A parasite is an organism that can only exist in the body of another organism for all or part of their life)

- There are 5 main kinds of *Plasmodium* parasites that cause malaria in humans. These are:

- o *Plasmodium falciparum* (Pf)

- o *Plasmodium vivax* (Pv)

- o *Plasmodium malariae* (Pm)

- o *Plasmodium ovale* (Po)

- o *Plasmodium knowlesi*(Pk)

- In Nigeria, 98% of malaria infections are due to Pf. This parasite causes the most deadly form of malaria, known as severe malaria. Other forms of malaria present in Nigeria include *P. ovale* and *P. malariae* which play a minor role with the latter being quite common as a double infection in children.

- Malaria is transmitted by the bite of an infected female *Anopheles* mosquito, of which there are at least 400 different species. The common species are *Anopheles gambiae*, *A. funestus*, *A. arabiensis* and *A. melas*

- Within the *Anopheles gambiae* complex, *A. gambiae* s.s. is the dominant specie with *A. arabiensis* found more often in the Northern part of the country and *A. melas* found only in the mangrove coastal zone.



Picture 1: *Anopheles gambiae*

- **Why is it different from other mosquitoes?**

Answer: It is a large mosquito and when standing it is tilted with head downwards and tail upwards in the air.

- **Why does only the female transmit disease?**

Answer: The female mosquito needs a blood meal for the nutrients to develop her eggs.

2.2 Life cycle of the malaria parasite and the malaria transmission cycle

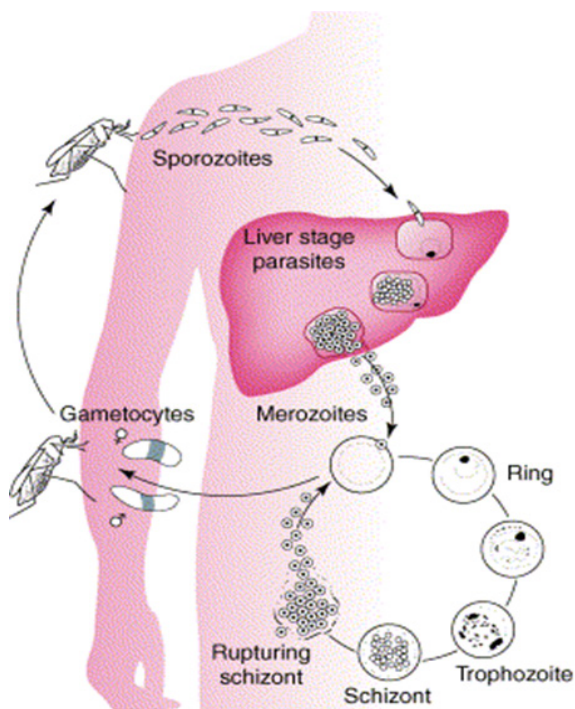


Figure 1: Life cycle of *Plasmodium* parasites illustrating the parts of the cycle that take place in the human body.

The life cycle of the malaria parasite:

- While taking a blood meal the female mosquito injects saliva into the person's blood vessels to stop the blood from clotting to make it easier to suck in. If she is infected with malaria parasites, she injects sporozoites into the person's blood.
- On the other hand, if the person is infected, when the mosquito draws up the blood it will also take up malaria parasites as gametocytes, the sexual forms of the malaria parasite. The malaria parasites which have been sucked up from the blood as gametocytes develop inside the mosquito to become sporozoites in the salivary glands. At this stage the female Anopheles mosquito becomes infective to the next person it feeds on.
- Once the sporozoites get into a person, they undergo various stages of development to cause disease. Specifically, the sporozoites travel rapidly to the liver where they enter the liver cells and divide rapidly forming merozoites.
- When a liver cell is full of merozoites it bursts and discharges the merozoites into the blood where they rapidly enter the red blood cells. In the red blood cell the merozoites grow and rapidly divide again until the red blood cell bursts to release them into the blood stream to attack other red blood cells. This causes the person to experience symptoms such as fever, sweating and shivering.
- Some merozoites however change into the male and female forms of the parasite called gametocytes which are taken in by the mosquito when she sucks the blood. The gametocytes enter the mosquito's stomach and mate to form eggs which then in turn become sporozoites and move to the mosquitoes salivary glands where they are ready to be injected into another person. The transmission cycle is illustrated in Figure 2.

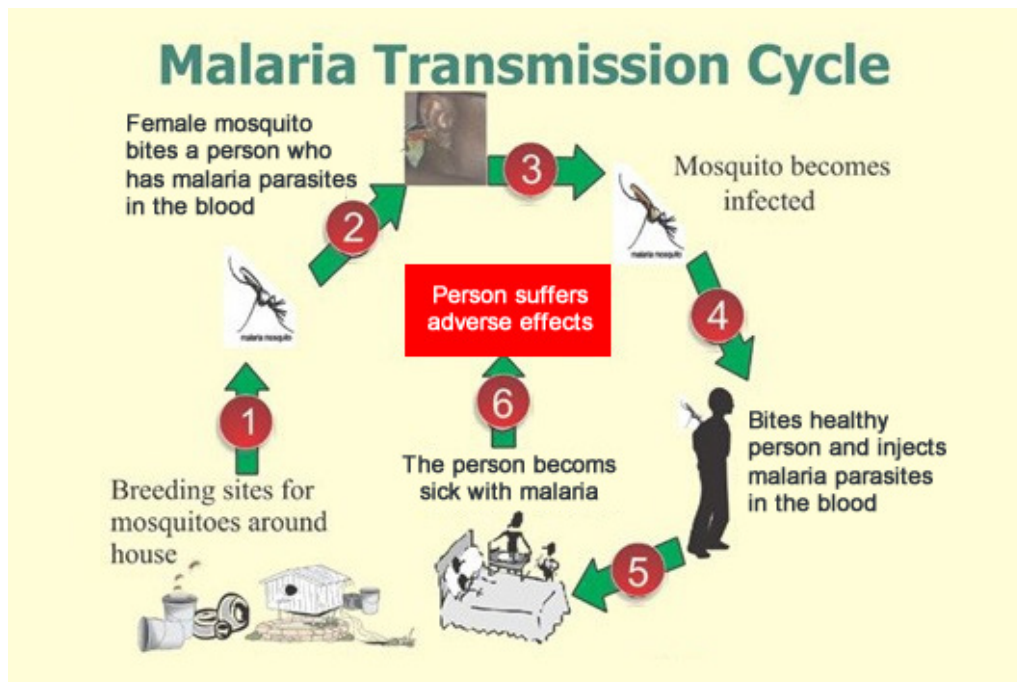


Figure 2: Malaria transmission cycle showing how malaria parasites are carried by a female *Anopheles* mosquito from an infected person to a healthy one, causing malaria

Immunity - people who live in areas with high prevalence of malaria develop immunity as they grow up. That helps to stop them from getting many episodes of malaria. It also reduces the chances of developing the severe form of the disease. This is because each time your body is exposed to attacks of malaria and you survive, the body gets stronger and ready to fight the next attack.

This is one reason why adults who live in an area where malaria is common are able to fight off a malaria attack more effectively than children. Children below the age of five years have low immunity to fight off malaria parasites. Pregnant women, especially during the first pregnancy lose most of their capacity to fight off malaria. This can put a pregnant woman and her unborn child at risk of serious illness.

2.3 Definition malaria

Malaria is a life threatening disease caused by parasites that are transmitted to people through the bites of infected female *Anopheles* mosquitoes. It is preventable and curable.

Eliminating malaria is a long term national goal. In the short to medium term, effective and sustained malaria control is the priority. We should take responsibility for this vision.

We need to be sure when we discuss issues relating to malaria that the terms we use are consistent and accurate. Some terms we shall use include:

Suspected malaria: A patient with a fever or history of fever in the last 24 hours who lives in, or has come from anywhere in Nigeria or any other endemic country. Previously all patients with this definition of malaria were given treatment with an anti-malarial medicine. Now, , the standard practice is to test all patients with suspected malaria with a confirmatory test before giving treatment.

Confirmed malaria: A patient with suspected malaria who has been diagnosed to have malaria parasites - by using a parasitological test such as microscopy (using a blood smear) or rapid diagnostic test (RDT).

REFLECTION:

Think about the topics you have just been discussing. How will you use the new knowledge you have gained when you go back to your workplace? Use the questions in the boxes to help you reflect on this. When you are ready, record your thoughts in the boxes below.

What have I learned about malaria today that I did not know before I came to this training?	How will this new information be useful when I go back to work?
What other questions do I now need to ask and get answers for?	What questions do I have about how I will use this information when I go back to my workplace?

Malaria manifests in two forms namely uncomplicated malaria and severe malaria.

Uncomplicated malaria: a patient with a fever or history of fever in the last 48 hours who has a positive RDT or blood smear test and no symptoms of severe illness.

Severe malaria: a patient with parasitologically confirmed malaria who is very ill and has one or more of the clinical manifestations below:

- Severe anaemia
- Unarousable coma
- Multiple/repeated generalised convulsions
- Hypoglycaemia
- Respiratory distress with metabolic acidosis
- Circulatory collapse
- Renal failure
- Abnormal bleeding
- Pulmonary oedema
- Hemoglobinuria

Some supporting features that should give you a high index of suspicion of a diagnosis of severe malaria include:

- Impaired level of consciousness
- Prostration
- Jaundice
- Hyperparasitaemia
- Hyperpyrexia

These features will be explained further in the section on severe malaria.

2.4 The burden of malaria

World situation

Approximately 37% of the world's population is at risk of malaria although about 80% of malaria cases and malaria deaths occur in Sub-Saharan Africa. In the 2017 World Malaria report, WHO estimated that in 2016 there were 216 million cases of malaria in 91 countries and 445,000 deaths worldwide. Twenty seven percent of the global cases of malaria occur in Nigeria.

Malaria in Nigeria

EXPLAIN: Malaria is endemic in all parts of Nigeria although some parts have higher transmission than others. This means that all of the population are at risk of getting malaria. Half of the adult population has at least one attack of malaria per year whereas, children under five have between 2 and 4 attacks per year.

Why is malaria a problem in Nigeria?

Malaria is a major cause of:

- Ill health (morbidity)
- Death (mortality)
- Impaired child development
- Absenteeism in schoolchildren
- Lost opportunities for economic development, e.g. tourism and foreign investments

2.5 Endemicity of Malaria in Nigeria

Malaria is endemic in most parts of Nigeria. The only exception is the areas with some mountain peaks reaching 1600 meters.

What is the endemicity in your area? (there is a map on the next page for reference). What implications does the endemicity in your area have on malaria case management?

REFLECTION:

Think about the topics you have just been discussing. How will you use the new knowledge you have gained when you go back to your workplace? Use the questions in the boxes to help you reflect on this. When you are ready, record your thoughts in the boxes below.

Endemicity and transmissibility vary by geographic area – what are the implications on case management for the area where I work? Does this have a direct impact on how I do my job?	What are the implications for my area?
	What do I need to do?
	How do these things impact on my workplace and my work?

Nigeria: Duration of the Malaria Transmission Season

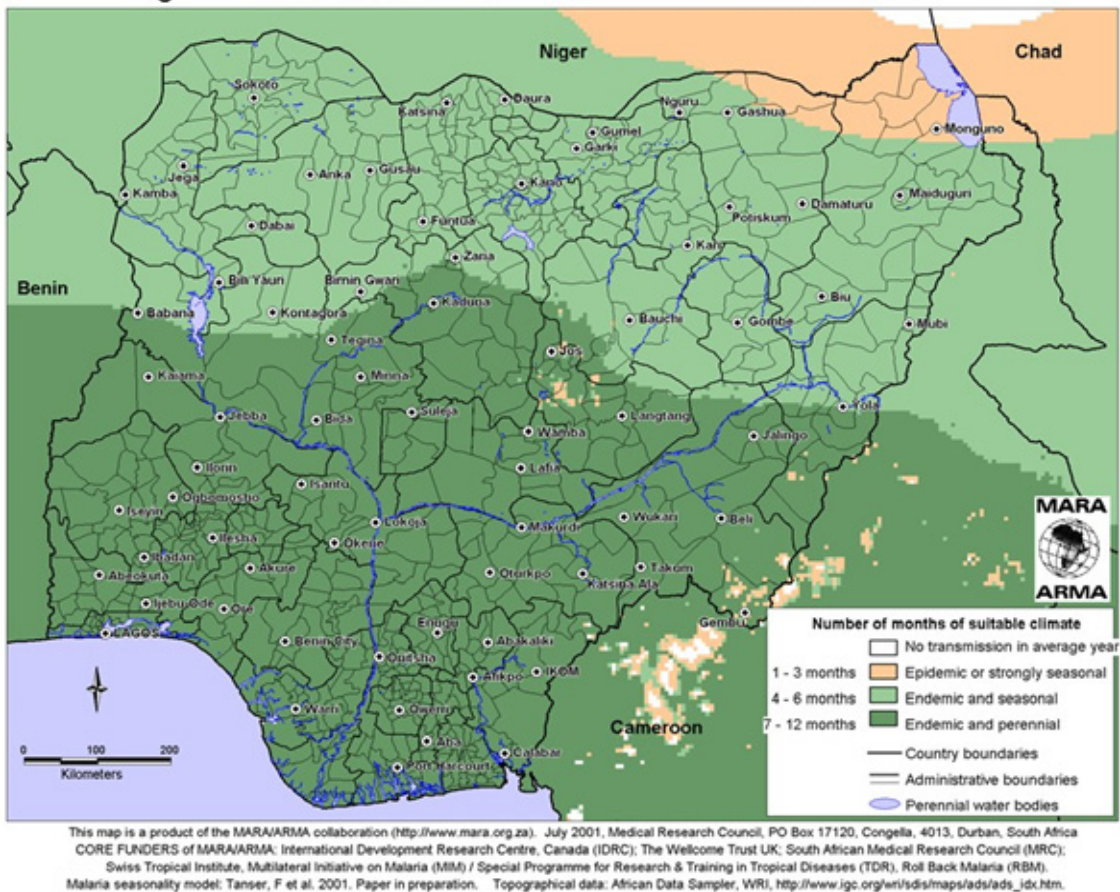


Figure 3: Distribution of the duration (months) of suitable climatic conditions for malaria transmission in Nigeria

Source: Mapping Malaria Risk in Africa (MARA/ARMA)

3.0 National Strategy to combat malaria in Nigeria

3.1 The National Malaria Strategic Plan 2014-2020

The general objective of the current National Strategic Plan: to test all care seeking persons with suspected malaria using Rapid Diagnostic Tests (RDTs) or microscopy and to treat all individuals with confirmed malaria seen in private and public facilities with effective antimalarial drug by year 2020

Key interventions:

- Scaling up of universal access to parasitological confirmation of malaria using microscopy or (RDTs)
- Providing prompt and effective antimalarial medicine within 24 hours of fever onset through all health care providers (public and private)
- Early recognition and improved management of severe malaria cases
- Expansion of access to free ACTs at community level

REFLECTION:

Think about the topics you have just been discussing. How will you use the new knowledge you have gained when you go back to your workplace? Use the questions in the boxes to help you reflect on this. When you are ready, record your thoughts in the boxes below.

What experience do I have using the national strategic plan?

What use could I make of them in the workplace?

What am I going to do to ensure that the National Strategic Plan is implemented in my workplace?

3.2 The National Guidelines for diagnosis and treatment of Malaria

The National Guidelines for diagnosis and treatment of malaria contains information on nationally recommended treatment that should be given for malaria. The current guidelines recommends Artemisinin-based Combination Therapy (ACT) as the treatment for uncomplicated malaria.

NOTE: this is a very important table in the trainee manual - you should mark this page so that you can easily refer back to it in the future!

Uncomplicated malaria

Treatment of choice

Artemether+ Lumefantrine as a fixed dose combination (FDC), given twice a day for three consecutive days with the second dose being given 8 hours after the first.

Alternate Medicine

Artesunate-Amodiaquine: Given once daily for three (3) consecutive days

Pre-referral treatment: In order of preference

Artesunate Injection: IM artesunate 3.0 mg/kg for children less than 20kg or 2.4 mg/kg for persons above 20kg as a single dose

Alternatively:

Rectal artesunate: 10 mg/kg minimum dose repeated after 8 hours if transfer is delayed

or

IM artemether 3.2 mg/kg single dose

or

IM quinine: 10 mg/kg,

Treatment of severe malaria

All cases of severe malaria must be referred to the Secondary Level Health Care facility immediately after giving Pre-referral Treatment. A referral letter describing the symptoms, signs and treatment should be given to accompany the patient to the referral hospital.

3.3 Why the government changed malaria treatment to ACTs

REFLECTION:

Think about the topics you have just been discussing. How will you use the new knowledge you have gained when you go back to your workplace? Use the questions in the boxes to help you reflect on this. When you are ready, record your thoughts in the boxes below.

<p>Does my facility have the National Guidelines? Where? Is it visible and accessible to all those who need to use it?</p>	<p>Why do we need to use it in my facility?</p>
<p>How can I make sure everyone who needs it to have access to it?</p>	<p>What three things am I going to do when I get backing order to get others in the facility to use it?</p> <p>1</p> <p>2</p> <p>3</p>

Why use ACTs?

Artemisinin derivatives are the most effective medicines against malaria in the world at the moment and if misused, the parasites can potentially develop resistance to them.

A technique to prevent development of resistance to artemisinin derivatives is to combine them with other antimalarials so that as a combination, there is less possibility of the parasites developing mechanisms to avoid both medicines.

It is for this reason that artemisinin derivatives such as artemether, or artesunate are combined with one other anti-malarial medicine to form various types of ACTs.

IMPORTANT NOTE: the correct use of ACTs is essential for the longer term success of treating malaria in Nigeria and elsewhere.

4.0 Handling a patient with fever

- 1) Greet the patient or caregiver
- 2) Does the patient look severely ill?
 - If yes, check for danger signs or features of severe malaria (Please refer to section 5 pages 23-27 for danger signs in this document)
 - If any danger signs are present, give pre-referral treatment and refer to the nearest higher level of care
 - If the patient does not look severely ill nor has any danger sign, then move to the next step
- 3) Does the patient have any other indications for referral?
 - If yes, refer to the nearest higher level of care
 - If no, then move to the next step
- 4) Take a good history to determine the possible cause of the fever
- 5) Examine the patient to find out the cause of the fever
- 6) Carry out a confirmatory test for malaria, if this is available
- 7) Give appropriate treatment
- 8) Provide counselling
- 9) Record the patient's information
- 10) Arrange for the patient to come for follow up visit

5.0 Assessing the patient for severity of illness

5.1 Danger signs and features of severe illness

Key point: Patients who have danger signs need urgent treatment at a hospital with the medicines and equipment to handle the child's condition.

The signs and features of severe illness are:

A) Signs of Severe malaria

1. Convulsions or fits within the last two days or at present
2. Inability to drink or breastfeed
3. Vomiting everything or severe vomiting
4. Prostration indicated by extreme weakness, inability to sit or stand
5. Altered mental state such as lethargy, drowsiness, confusion or unconsciousness

B) Signs of severe malaria related to the most common childhood illnesses

1. Severe dehydration shown by sunken eyes or skin pinch which goes back slowly
2. Chest in-drawing or difficulty in breathing
3. Severe anaemia or "lack of blood" shown by pale lips or palms
4. Stiff neck
5. Clouding of the cornea
6. Deep or extensive mouth ulcers
7. Tender swelling behind the ear (mastoiditis)
8. Visible severe wasting or oedema of both feet

5.2 More information about the danger signs of severe malaria

Convulsions

During a convulsion, a child suffers from a sudden, violent, irregular movement of the body, caused by uncontrollable contraction of muscles. The child's arms and legs may stiffen. Sometimes the child stops breathing. The child may lose consciousness and for a short time cannot be woken up. Use local words to ask about convulsions. (Refer to picture 6).

Inability to drink or breastfeed

One of the first things that shows a child is very sick is that he/she cannot suck, drink or swallow. This is the case if the child has stopped drinking completely, rather than just reduced amount that he/she drinks. Dehydration is a risk. Also, if the child is not able to drink or breastfeed, then the child will not be able to swallow medicines (Refer to picture 3).

Vomiting everything

If the child is vomiting, it is important to find out whether he/she is vomiting everything. A child who is not able to hold anything down at all has the sign "vomits everything" (Refer to picture 5).

Prostration (indicated by extreme weakness, inability to sit or stand)

A child that is very weak may not be able to sit or stand. If the child cannot do any of these actions as a result of an illness, then the child is said to have prostration.

Altered mental state (such as lethargy, drowsiness, unconsciousness or confusion) Altered mental state means the child is drowsy or very sleepy most of the time when he/she should be awake and alert. The child continues to sleep even when the attendant talks to him/her or claps his/her hands. It is also possible that the child stares blankly and appears not to see what is going on around him/her. An unconscious child cannot be awakened by touch or pain. [See picture 4]

Severe dehydration (shown by sunken eyes, skin pinch which goes back very slowly combined with inability to drink or drinking poorly)

A child who has been vomiting, failed to take enough fluid or has many loose or watery stools is likely to develop this sign. It means that the child does not have enough fluid in the body and is gradually drying up. The mother may mention that the child is not able to drink and has been refusing fluids or feeds. The way to identify this sign is to look at the child carefully after exposing the face completely. A child with severe dehydration will have eyes that look as if they are sinking backwards into the head. These are called "sunken eyes". If you are able to pinch the skin with your thumb and first finger, the skin will return back to position very slowly taking more than 2 seconds. The severe dehydration is present if at least two of the following signs are present: sunken eyes, skin pinch goes back very slowly, lethargy or unconsciousness and inability to drink or drinking poorly. **A child with severe dehydration needs to be treated at a hospital or health centre with the medicines and equipment to handle the child's condition and find a way to give the child fluids.**

Chest in-drawing and difficulty in breathing

Some children will have difficulty in breathing which shows as very fast breathing or struggling to take in air and breathe it out. Chest in-drawing is a sign of severe pneumonia. This is the case if the lower chest wall goes in when the child breathes in.

When children have severe chest infection, they require greater effort to breathe and the chest wall moves in when the child breathes in. If one listens to the child as he/she breathes, one can sometimes hear a grunting noise or stridor when the child breathes in indicating that there is difficulty in breathing. **This child will need oxygen and appropriate medicine for severe pneumonia and urgent attention from a trained health worker at the nearest hospital or health centre with the medicines and equipment to handle the child's condition (Refer to picture 7).**

Severe anaemia or "lack of blood" (shown by pale lips or palms)

This sign occurs when a child does not have sufficient capacity in the blood to carry enough oxygen for his/her use. The child with severe anaemia looks pale/whitish especially the lips and palms. The eyes look very white and if you examine the eyelids, you will find that they are white instead of pink. **A child with this sign should be quickly taken to a hospital or health centre with the medicines and equipment to handle the child's condition because he/she may need a blood transfusion (Refer to picture 1 & 2).**

Stiff neck (a sign of meningitis)

During history taking, the movements of the child should be observed e.g. see if the child moves and bends his/her neck easily as he/she looks around. If the child is moving and bending his/her neck, he/she does not have a stiff neck. If no movement is seen, or if one is not sure, one should draw the child's attention to his/her umbilicus or toes. For example, by tickling his/her toes so as to encourage the child to look down. Observe to see if the child can bend his/her neck. If this still does not cause the child to bend his/her neck, the child needs to be examined for this sign.

The mother should help to lay the child on his back. Lean over the child, gently support his/her back and shoulders with one hand. With the other hand, hold his/her head. Then carefully bend the head forward toward his/her chest. If the neck bends easily, the child does not have stiff neck. If the neck feels stiff and there is resistance to bending, the child has a stiff neck. Often a child with a stiff neck will cry when one tries to bend the neck. **This sign signifies that the child may have meningitis, which is a bacterial infection that needs treatment with powerful antibiotics at a hospital or health centre with the medicines and equipment to handle the child's condition.**

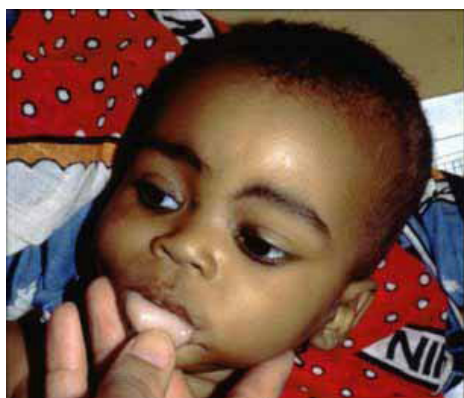
Action to take with a child who has danger signs:

To save this patient you need to refer him/her immediately to the nearest hospital with the medicines and equipment to handle the child's condition.

Activity - Picture gallery



Picture 1
Pale eyelids



Picture 2
Pale lips



Picture 3
Not Breastfeeding



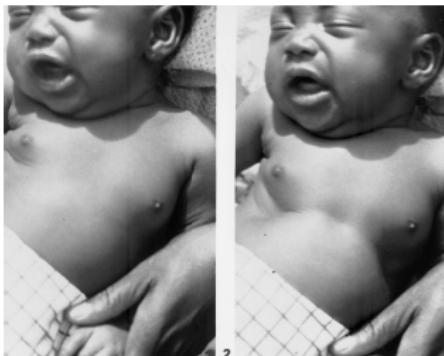
Picture 4
Abnormally Sleeping



Picture 5
Vomiting everything



Picture 6
Convulsion



Picture 7
Chest in-drawing

Summary:

A very ill patient will have one or more features of severe illness. This may be due to malaria or other illnesses.

During your assessment of a sick patient, you should always start by looking for features of severe illness before you take a history and examination for the specific cause of the patient's illness. If there are no features of severe illness you need to check for the other indications for referral that will be explained in the next section.

6.0 Indications for referral, pre-referral treatment and making a referral

6.1 Indications for referral

There are conditions that require a patient to be referred from a PHC to a higher level facility for treatment. These conditions are referred to in this module as indications for referral:

The indications for referral from PHC to hospital are:

- When one or more feature(s) of severe illness are present
- When the patient has features of severe malaria
- When the patient has taken recommended malaria treatment, but there is no improvement after 48 hours
- When patient is not complying with treatment, because they are vomiting or otherwise unable to take drugs by mouth
- When the patient has adverse drug reactions to the ACT medicine that prevents him/her from taking/completing treatment
- When you are unsure of the patient's illness or condition
- If the patient had fever every day for seven or more days
- If a child is a new born or less than two months, he/she should be referred to a hospital
- If the child has yellowness of eyes or sole of foot refer to a hospital

Those patients who are not severely ill but have one or more indications for referral should be referred with a referral form/letter. Patients who are severely ill as shown by the presence of danger signs or features of severe malaria should be given pre-referral treatment and referred with a form/letter.

6.2 Pre-referral treatment of malaria

If the patient is very ill (i.e. has any feature of severe malaria) there is need for referral to a higher facility with the ability to give 24 hour in-patient care. You need to make a referral that is appropriate and effective. Time is important at this point and **every hour of delay reduces the patient's chance of survival**. Pre-referral treatment is used to increase the chance of the patient surviving long enough to get to the health facility for further treatment.

It makes an assumption that the patient is likely to have severe malaria or any other severe disease. Pre-referral treatment is not a replacement treatment for severe malaria.

The procedure before referral should include the following:

- a) Make sure that the patient's respiratory tract is clear to ensure that breathing is not obstructed.
- b) Treat convulsions lasting longer than five minutes with rectal diazepam (dose 0.5 mg/kg).
- c) Give pre-referral treatment of malaria. The options for pre-referral treatment that you will have available at a PHC are the following:
 - i) IM artesunate
 - ii) Rectal artesunate
 - iii) IM artemether or
 - iv) IM quinine

Option i) Artesunate IM: 3.0mg/kg for children <20kg and 2.4 mg/kg for adult and children >20kg- respectively

A solution for parenteral use should be prepared for IM (20mg/ml) use, following manufacturer's instructions, using the sodium bicarbonate and saline solution supplied to dilute the concentrated artesunate.

Table 1: Dosage (ml) for weight using 20mg/ml Artesunate injection

Weight (kg)	5	10	15	20	25	30	40	50	60
Dosage (ml)	0.6	1.2	1.8	2.4	3.0	3.6	4.8	6.0	7.2

Option ii) Rectal Artesunate

Ten (10) mg per kg body weight is the recommended dose. Give a single dose as pre-referral treatment.



Picture 8 Artesunate suppository

The dose of rectal Artesunate for pre-referral treatment is indicated in the table below:

Table 2: Dosage of rectal artesunate for pre-referral treatment

Weight (kilogrammes)	Age	Artesunate single dose	Number of suppositories
5 – <10	4 – <12 months	50 mg	One 50 mg suppository
10 – 19	1 – <6 years	100 mg	One 100 mg suppository
20 – 29	6 – <10 years	200 mg	Two 100 mg suppositories
30 – 39	10 – 13 years	300 mg	Three 100 mg suppositories
>40	> 13 years	400 mg	Four 100 mg suppositories

Instructions on how to insert a rectal suppository

- Explain to the patient or caregiver what you are going to do and that the suppository will melt in the rectum and may leak and stain clothing
- The person who will insert the suppositories should wash his/her hands and put on disposable gloves.
- Have the patient lie on his/her side with the lower leg straight and the upper leg bent towards the chest e.g. if lying on the left side, the left leg should be straight and the right leg bent towards the chest.
- Remove suppository from package. Lubricate the suppository with water
- Bend the other leg towards the stomach and part buttocks to expose the rectal area.
- Gently but firmly insert the lubricated suppository into the rectal opening and using one finger push it inside the rectum to a distance of about ½ to 1 inch in children and just over 1 inch in adults.
- Hold the buttocks together for about one minute and allow the patient to lie down for about 15 minutes to avoid the suppository coming out.
- Get rid of used materials safely and wash hands

If transfer is delayed for more than 12 hours a second dose of rectal artesunate can be given. If you are able to give intramuscular injections, an alternative to rectal artesunate, artemether, or quinine should be given.

Option iii) Artemether IM: 3.2 mg/kg stat

Table 3: Dosage (ml) for weight using 20mg/ml Artemether injection

Weight (kg)	5	10	15	20	25	30	40	50	60
Dosage (ml)	0.8	1.6	2.4	3.2	4.0	5.2	6.4	8.0	9.2

Table 4: Dosage (ml) for weight using 80mg/ml Artemether injection

Weight (kg)	5	10	15	20	25	30	40	50	60
Dosage (ml)	0.2	0.4	0.6	0.8	1.0	1.2	1.6	2.0	2.4

Note: Artemether should be administered in the antero-lateral part of the thigh. The 20 mg/ml presentation and a 1ml syringe may facilitate dosing in small children. Artemether is not well absorbed in shock.

Option iv) Quinine I.M:

Give 10mg/kg body weight of Quinine as an intra-muscular (IM) injection in the antero- lateral aspect of the thigh.

Quinine should not be given as 8 hourly IM injections to treat uncomplicated malaria.

Dilution of Quinine for IM injection as pre-referral treatment

A 2ml ampoule of Quinine contains 600mg of Quinine (300mg/ml).

100 mg/ml dilution: Add twice the volume of water for injection (4ml) to get 600mg of Quinine in 6ml of solution. Each ml of the solution will contain 100mg of Quinine OR

60 mg/ml dilution: Add 8 ml of fluid to 2ml of 600mg of Quinine salt to obtain 10 ml solution containing 60mg/ml of Quinine salt

Calculate the volume (ml) of the diluted Quinine needed (you require 0.1 ml/kg body weight up to a maximum dose of 600mg). The dose of the diluted Quinine required = 0.1ml x Body Weight in kg. If the total solution to be injected is more than 3 ml, split the volume in two and inject one half in each thigh.

Do not inject into the buttock. When Quinine is injected in the buttock, there is a risk of causing damage to the sciatic nerve which will result in foot drop. This damage is not reversible. Once you have given the right dose in the right place, write a referral note and send the patient to a higher level facility for treatment.

Repeat the quinine injection 8 hours later if the referral is delayed. This practice though is not advisable.

6.3 Making an effective referral

How do you make a referral from your facility?

- How do patients in your area access a hospital?
- What means of transport are available?
- How much do they cost?
- What would be the time delay?
- Is an ambulance service available?
- If you tell a patient to go to the hospital do you think it is your responsibility to ensure they are able to get there?

REFLECTION:

Think about the topics you have just been discussing. How will you use the new knowledge you have gained when you go back to your workplace? Use the questions in the boxes to help you reflect on this. When you are ready, record your thoughts in the boxes below.

<p>Think about how referrals are done in your facility. How would you improve the system? E.g. what information assistance could you offer to patients?</p>	<p>What action will I have to take to ensure that all those patients who need referrals are successfully transferred?</p>
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How do you encourage patients and their caregivers to accept a referral?

In the event that the patient's relatives or caregivers who are responsible for taking the patient to the hospital, they may decide not to do so, instead decides to take the patient home or to the traditional healer or PMV. How can you try to convince them to go to the hospital?

Think about, and then discuss, why patients (and their caregivers) might be reluctant about a referral. Has this happened to participants in their practice? How did they deal with the situation and what was the outcome? What advice can they give to help colleagues deal with reluctance from patients and caregivers?

REFLECTION:

Think about the topics you have just been discussing. How will you use the new knowledge you have gained when you go back to your workplace? Use the questions in the boxes to help you reflect on this. When you are ready, record your thoughts in the boxes below.

Reasons why patients might not want to be referred to hospital	How I am going to encourage patients to accept referrals when I get back to the facility
--	--

6.4 The referral letter

The referral letter should include all the details the hospital will need to treat the patient. Your facility may have a pro-forma. The details should include those shown in the box below:

Example

Date, name of patient, age, sex and address of patient Also, summary of observations to date: e.g.

The patient is a 2 years old boy who weighs 13 kilogrammes with a history of fever, headache and loss of appetite; all of 1 day duration. His mother said he has had two convulsions before coming to the clinic. On examination in the clinic his axillary temperature was 38.5 degrees Celsius, his pulse was 110 beats per minute, respiration 40 breaths per minute, with no signs of respiratory distress. He was drowsy but responded to painful stimuli. The RDT was positive for Pf. malaria. He has had 1 x 100mg suppository of rectal artesunate at 11 o'clock this morning.

Ideally any form or letter should include a tear off slip so that the hospital can report back on patient outcomes for monitoring purposes. Ideally the referral form should also have an eye catching colour to attract attention when it is shown at the hospital.

6.5 Referral outcomes

It is important that the health care worker fills the referral form produced in quadruplets and keeps a copy and give the rest of the copies to the patients for submission to the health care worker at the referred health facility. The health care worker at the health facility will record the type of services delivered and return two copies to the patient who then returns the completed referral form to the PHC to establish complete referral. The PHC should try to keep a record of the outcome of referrals and investigate the reason for non-attendance of the referred patient at the hospital. Liaising with the community to get their participation may help to improve adherence to referral if many patients are not going on to the referral facility.

6.6 Case study - revision

You are working in a rural clinic in a hyper-endemic *P. falciparum* area. Various anti-malarial medicine are available, but intravenous infusions cannot be given. A child aged 20 months became feverish two days ago and has vomited several times today. One hour ago the child had a convulsion, described by the mother as a repetitive twitching of limbs and mouth, followed by un-responsiveness for a few minutes. The child is now febrile (39°C in axilla) and conscious. An RDT is positive. The child repeatedly vomits any anti-malarial treatment given by mouth.

Questions:

1. Is this patient severely ill? Why?
2. At what level of the health system do you feel this patient will get the most appropriate and life saving treatment?
3. How would you go about to handle this patient?
4. Describe the referral process

7.0 Taking a good history

The main purpose of taking a good history is:

- a) To ask for symptoms that are suggestive of malaria
- b) To ask for symptoms associated with other causes of the illness
- c) To determine if the patient has taken medicines that could interfere with your treatment

Symptoms of malaria:

- Fever (this the most common one)
- Shivering or feeling of coldness
- Headache
- Weakness
- Body pains especially in the joints or back,
- Stomach pains
- Mild cough
- Vomiting and diarrhea
- General body weakness or tiredness

REMEMBER that the symptoms of malaria are not specific for malaria alone

Key point:

Fever is the most common symptom of malaria. Its presence alone should alert you of the possibility of malaria. Whereas malaria often presents with fever, there are other diseases that can cause fever also. The most common ones are pneumonia and diarrhoea. The next section highlights the causes of fever which you will encounter during your work.

7.1 Common causes of fever

All diseases which present as fever should be considered when assessing a client who comes to the health worker with complaints of fever or with a high body temperature. ASK trainees to look at the following list of the diseases that the health worker is likely to encounter. The list has been divided into those found in children aged under five years and those found in older children and adults.

Table 5: Common causes of fever in community members in Nigeria

Under five years	Five years and above
Respiratory tract infection including ear infection	Respiratory tract infections
Diarrhoeal diseases	Gastrointestinal tract infections
Malaria	Urinary tract infections
Measles	Malaria
Sepsis	Skin infections
Meningitis	Measles
Skin infections	Meningitis
Malnutrition	Lassa fever
HIV/AIDs	Typhoid fever
	HIV/ AIDS

Other information that you should ask for includes the following:

- Any medications that the patient has been given/has taken, especially anti-malarial
- Any medications that the patient is allergic to, for example SP, penicillin, etc,

8.0 Carrying out a good physical examination of the patient

REMEMBER that this trainee guide is intended to have notes added throughout the training so as to make it a useful reference guide when you return home.

8.1 Examining the patient for features of malaria and other diseases that can cause fever

What should you look for when doing an examination of a patient suspected of having malaria? The main purpose of examining the patient is to identify physical problems in the patient that give you an idea of the likely cause of the illness. The table below can help. You could also use the RMNCH chart (discussed later).

Table 7: Features to look for during a systematic assessment of a patient and indicating the common conditions that the health worker should consider. The RMNCH chart can be used in place of this table

System	Features to examine for	Common conditions to consider if feature is present
General	How sick does the child look?	
	Check level of awareness	If not fully conscious consider severe malaria, meningitis, shock etc
	Measure body temperature with a thermometer and record the level of fever	If temperature measured in the axilla is 37.5°C or greater there is a fever. Consider diseases that can cause fever Remember that patients with malaria do not always have a fever at the time of examination.
	Measure the mid upper arm circumference	If the Mid Upper Arm Circumference (MUAC) strap shows red, it means malnutrition and when yellow, it is a sign of impending malnutrition
Skin	Check for body rash, wound or abscess	If rash is present consider skin infection, measles
Eyes	Examine the conjunctiva for paleness and yellowing	If pale consider anaemia due to malaria, hookworm infestation or nutritional causes. If there is a slight yellowing of the conjunctiva this could be due to haemolysis from malaria infection. If there is deep yellowing consider hepatitis
Mouth	Examine the tongue for paleness	If pale consider anaemia due to malaria, hookworm infestation or nutritional causes
	Check for Koplik's spots(describe the spot)	If present consider measles

	Check for inflamed throat or swollen tonsils	If present consider upper respiratory tract infection
Nose	Check for watery discharge	If running nose consider upper respiratory tract infection
	Check for flaring of the nostrils	If present consider breathing difficulty due to pneumonia
Ears	Check for swelling	If present consider an abscess
	Check for pus discharge	If present consider ear infection
Chest	Examine for chest in-drawing	If present consider breathing difficulty due to pneumonia
	Count the number of breaths per minute	If fast breathing is detected consider high fever or pneumonia
	Examine with a stethoscope for abnormal sounds	If abnormal sounds are present consider pneumonia
Abdomen	Do a skin pinch	If skin takes long to return to normal position, consider dehydration due to severe vomiting or diarrhoeal disease
	Check for swellings or enlargement of liver or spleen	If liver is enlarged consider liver infection such as hepatitis. If spleen is enlarged consider malaria
Weight	Weigh the patient	If below weight for age consider under nutrition
Extremities	Check the warmth of the hands and feet	If cold consider circulatory failure due to shock
	Check for swelling on both feet	If dent remains after pressing on both feet, it indicates severe malnutrition.
	Check for pulse rate	If the pulse is very fast consider high fever or shock
	Check nail bed for capillary refill	If capillary refill is more than 2 seconds after pressing the finger, consider dehydration

Important note:**Respiratory rate**

- The respiratory rate may be more rapid with fever but it can also be faster as a result of pneumonia.
- Fast breathing depends on the child's age. A child will have fast breathing as follows:
 - A newborn less than 2 months with 60 breaths or more per minute (refer such a case immediately)
 - A child 2 months up to 12 months with 50 breaths or more per minute
 - A child 12 months up to 5 years of age with 40 breaths per minute

Pulse rate

- Less than 1 year: 100 to 160 beats per min
- 1 year to 2 years: 90 to 140 beats per min
- 3 years to 5 years: 80 to 110 beats per min
- 6 years to 12 years: 75 to 105 beats per min
- 13 years to 18 years: 60 to 100 beats per minute

8.2 Using RMNCH chart to diagnose malaria and other causes of fever

The RMNCH strategy has been used to manage malaria and other common causes of fever in children aged under five years. An RMNCH diagnostic chart that helps guide the user on how to manage a child with fever does exist and can be used in conjunction with this training module.

History taking and physical examination lead to a clinical diagnosis. Clinical diagnosis can help to determine whether the patient is severely ill, whether the patient is likely to have malaria or whether the patient is likely to have other causes of febrile illness. Unfortunately, clinical diagnosis does not lead to a confirmed diagnosis of malaria because the clinical features of malaria can also occur in other illnesses. To confirm whether the patient has malaria one needs to carry out a parasitological test that can detect the parasites in the patient's blood.

9.0 Confirming a malaria diagnosis

9.1 Importance of confirmed diagnosis

Until recently and especially in areas of high malaria transmission, malaria treatment has been based mainly on clinical diagnosis because malaria is the commonest cause of fever in these areas.

Confirmatory malaria diagnosis is not a common practice because microscopy is difficult to organize in peripheral health facilities but with the advent of reliable and easy-to-use RDTs the situation has changed.

Now with a few days training, any health worker including community caregivers can safely use RDT to confirm diagnosis of malaria.

This makes it feasible to now test all suspected cases of malaria with a confirmatory parasitological test i.e. microscopy or RDTs. RDTs do not however replace microscopy where it is available but instead provide an additional tool that can be used where microscopy is lacking.

In areas of moderate or low malaria transmission intensity, malaria is not the most common cause of fever except during a malaria upsurge or epidemic (in hypoendemic areas). This means that it is not a good practice to treat all fever cases with anti-malaria medicines. Confirmatory diagnosis is very important to target malaria treatment.

As Nigeria scales up preventive interventions and effective treatment, the epidemiology of the disease is expected to change over time. As coverage with these interventions reaches high levels, the number of malaria cases will reduce. In this context, confirmed diagnosis becomes an essential component of malaria case management by providing for targeted treatment, an accurate estimation of true malaria cases, and measurement of impact of malaria control interventions.

Confirmed diagnosis is an important aspect of good clinical practice and it will improve the quality of care of patients. It encourages the consultant to confirm the cause of the febrile illness so that other non-malarial cause of fever can be identified and managed.

Key messages:

- All suspected cases of malaria should have a confirmatory test.
- Confirmed malaria diagnosis is an important aspect of good clinical practice and will improve the quality of care of patients.

9.2 Methods of confirmatory diagnosis of malaria

There are two ways to confirm a clinical diagnosis of malaria: microscopy and RDTs.

Microscopy

Conventional light microscopy is considered the 'gold standard' for malaria parasitological diagnosis. Microscopy done on a blood smear can be used to identify the presence of malaria parasites, the type of plasmodium species and the number of parasites present. To ensure that the results of routine microscopy are reliable it is good practice to have a quality control system in place.

9.2.1 Rapid Diagnostic Test (RDTs)

Definition of malaria rapid diagnostic tests

Malaria RDTs are single use tests, normally in a cassette format, that provide a simple and reliable method to test for the presence of malaria parasites in a blood sample.

Some RDTs can detect only one species (*Plasmodium falciparum*), some also detect other parasite species (*P. vivax*, *P. malariae* and *P. ovale*).

How do malaria RDTs work?

Malaria Rapid Diagnostic Tests (RDTs) detect specific substances that are produced by the parasite, called antigens. If malaria antigens are present, the person will test positive. If malaria antigens are not present, the person will test negative. Different types of RDTs detect different antigens. Some antigens are produced by a single species of malaria parasite (e.g. *Plasmodium falciparum*), some are produced by all malaria species (including *P. falciparum*, *P. vivax*, *P. malariae*, *P. ovale* and *P. knowlesi*).

If present, the antigens cause microscopic particles to stick to a band on the RDT, eventually forming a visible, coloured line in the 'test' area. There is a second line, called the control line which becomes visible to show that the RDT test is working properly. For an RDT test to be positive, these two coloured lines must be visible.

Limitations to RDTs

- Unlike microscopy they cannot inform you on the number of parasites that are present in the blood. The result is given as the presence or absence of the parasites.
- Some RDTs detect parasite antigens that can remain in circulation in the blood for up to two weeks or more after a patient has received treatment (e.g., Histidine-rich protein 2, or 'HRP2' produced by *P. falciparum*). These types of RDTs, therefore cannot be used for follow up testing after the patient has received treatment, even if the treatment has been successful. Other RDTs detect antigens that disappear from the blood rapidly and so will usually be negative a few days after effective treatment. These include RDTs that detect plasmodium lactate dehydrogenase (pLDH) and aldolase.
- RDTs can be damaged by heat and humidity. It is therefore important to store them correctly and remove the RDT from its sealed packet only when you are ready to use it. If a package has been damaged and the seal broken or it has been open for some time, the RDT may be impaired by heat or humidity and may give an invalid (false) result. You should discard this package and use another, unopened, package.
- To work properly, RDTs need blood and a chemical solution called 'buffer'. Adding too much or too little blood or buffer can cause the test to give an invalid result or be difficult to read. Adding blood and buffer in the wrong place can also cause an invalid result.

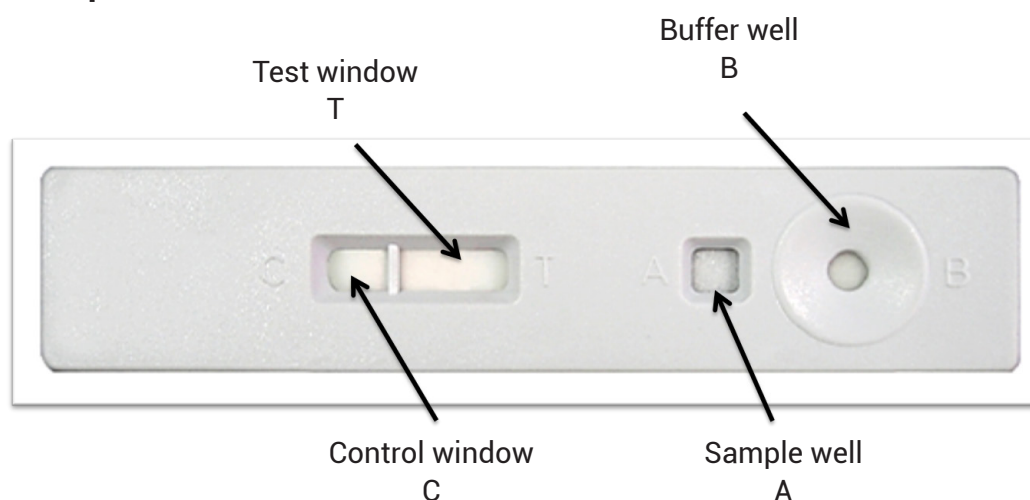
Procedures for Conducting Rapid Diagnostic Tests

The recommended RDTs in Nigeria are the HRP2 based. The brand to be adopted must satisfy the Selection Criteria stipulated in the Parasite based Implementation Guide.

RDT Selection Criteria

1. The malaria RDT must have been evaluated by the WHO/FIND Product Testing (http://www.finddiagnostics.org/programs/malaria-afs/malaria/rdt_quality_control/product_testing/).
2. The Histidine Rich Protein 2 (HRP2) are recommended.
3. The HRP2 shall possess a minimum Panel Detection Score (PDS) of 80% at 200 parasites/ μL of blood for *P. falciparum*, less than 10% False Positive Rate and less than 5% Invalid Rate.
4. The RDT shall preferably be in cassette format (and placed in a protective enclosure from temperature and humidity i.e. moisture-proof envelopes).
5. For ease of use, the RDT shall be a One-Step device format (one-time blood transfer into cassette with one well).
6. The RDT blood transfer device(s) shall be preferably, inverted cup.
7. The RDT shall have a shelf life of a minimum of 18 months as at the time of supply.
8. The RDT shall be heat stable at 40°C and above for period of its shelf-life, in all regions of the country, especially the North where temperature could be high. (Look out for documentation of stability testing and recommended storage conditions provided by RDT Suppliers).
9. In-country Lot Testing shall be performed on every batch of RDT procured before and after deployment.

A Sample Test Kit



Definitions:

A: Sample well - the square hole is where you put the blood

B: Buffer well - the round well is where you put the buffer

T: Test window - this window has two sections – 'T' is where you read the result. If a red line appears here, then the test is positive.

C is for control.

If this line does not appear, then the test is invalid and you must do a new one.

Specific steps in Conducting RDT**1) Assemble all the supplies you will need, including:**

- A new, unopened test packet (RDT cassette is the recommended)
- A new, unopened alcohol swab
- A new, unopened sterile lancet
- A new unused pair of disposable examination gloves
- Buffer
- A watch or clock to use as a timer (personal wrist-watch, phone etc..can be used)

2) Check the expiry date.**3) Put on the pair of examination gloves.**

(The gloves are to protect the user from possible infection with blood-borne diseases, including HIV-AIDS).

4) Open the test packet and remove the contents.

The blood collection device (loop, capillary tube, pipette, inverted cup or any other) is used to collect blood and transfer it to the test cassette.

The desiccant sachet protects the test from humidity before the packet is opened. The color of the desiccant should be confirmed from the manufacturer's instruction. Any color change indicates that the cassette has been exposed to humidity and should be replaced. Once the packet is opened, the desiccant sachet serves no purpose and should be discarded. It may be harmful if swallowed, so it should be kept away from children.

5) Write the patient's name on the cassette.

This helps to remove the risk of mixing up one person's results with others especially when testing several people.

6) Open the alcohol swab.**7) Clean the patient's 4th finger.**

Use the left hand for the right handed patient and vice versa. In a small child, the heel can be pricked and should be cleaned.

8) Put the swab back on top of its packet.**9) Allow cleaned finger to dry.**

Do not dry with cotton wool or a tissue or blow on the finger as this may introduce infection. Allow the finger to dry for a few seconds. It is important for the cleaned area to be dry completely as left-over alcohol will cause the blood to spread on the area thus making it difficult to collect.

10) Finger pricking

- Make sure the lancet does not touch any surface but the patient's cleaned finger to avoid contamination.
- Grip the hand firmly, and with the lancet point, prick the patient's cleaned finger on the side, since a prick on the ball of the finger may be more painful.
- When a drop of blood appears, discard of the lancet in the sharps box.
- Discard the lancet in an appropriate sharps/safety box immediately after using it.
- Never set the lancet down before discarding it.
- Never discard the lancet in a non-sharps container.
- Never use a lancet on more than one person.

11) Collect the droplet of blood.

- Collect the droplet of blood using the blood collection device included with the RDT.
- When using straw or pipette, NEVER suck blood into the blood collection device.

12) Use the device to add the drop of blood to the sample well (hole).

The blood needs to reach and be absorbed by the pad at the base of the hole. Push the blood collection device vertically into the hole until its tip touches the pad at the base and remain there until all blood has been emptied.

13) Discard the blood collection device after use.

You must discard the blood collection device in the sharps/ safety box immediately after transferring the blood to the test cassette.

14) Add buffer to the cassette

Add exactly the correct number of drops of buffer as instructed by the manufacturer. Numbers of drops differ from product to product. Hold the bottle vertically to ensure the correct drop size.



15) Look at the clock and write the time on the cassette

Add buffer and write down the time on a note pad or piece of scrap paper. Waiting time should be as specified by the product manufacturer. Wait for the correct time (e.g., 15 or 20 minutes) after adding buffer before reading the test results.

16) Remove and discard your gloves.

- Used gloves should be discarded in the non-sharps container before the health worker does anything else.
- To begin a new RDT to diagnose another patient while waiting for the first patient's results, he or she must put on a new pair of gloves.

17) Reading the test result

(for HRP-2 based test results only)

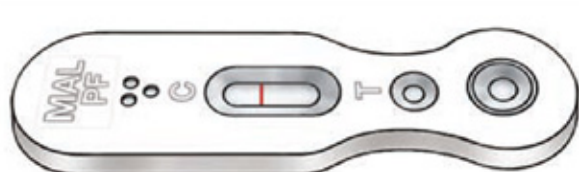
a) Red line in the result window and red line in the control window = Positive
(result window: if test line is red, control line is red, the test is positive)



(Note: test is positive even if the red line in the test (T) section window is very faint.)



b) No line in the test area and red line in control area = Negative



c) Red line in the test area and no line in control area = Invalid



d) No line in the test area and no line in control area = Invalid



Invalid result

Invalid result means the RDT is damaged and the result obtained is incorrect. When this occurs, discard the cassette, record as invalid and repeat.

Reading test results

Positive result shows that the patient has malaria. The test may also be positive when the patient is being treated for malaria or has completed antimalarial treatment.

If result is negative the patient is unlikely to have malaria; do not treat for malaria but look for other causes of fever. Refer for further investigations.

Client A: A mother with an infant aged 6 months who presents with fever of three days and cough of two days duration. The child has lost appetite but does not have diarrhoea. The child has had four convulsions in the past 12 hours.

Client B: A boy of 14 years complains of a fever for one day. He has not vomited and has no diarrhea. He has headache and has lost appetite. He has not been treated for malaria in the past two months. He says he does not sleep inside a mosquito net.

10.0 Appropriate treatment for uncomplicated malaria

10.1 Why we treat malaria with ACTs

The objectives of prompt and effective malaria treatment are to:

- Cure the disease and eliminate the parasites from the body
- Prevent progression to severe disease or death
- Prevent transmission to others
- Prevent the parasites developing resistance to the malaria treatment
- Minimize adverse drug reactions

Many things are necessary in order to achieve these objectives? They can roughly be grouped into these categories

- Host factors (good health seeking behaviour among community members, treatment adherence, competent immune system),
- Parasite factors (sensitive malaria parasites),
- Health worker factors (use of good malaria diagnosis including confirmatory tests, good interpersonal skills) and
- Characteristics of the ACT (quality-assured ACTs).

10.2 Treatment of Uncomplicated Malaria

The tables below show the treatment regimen for malaria as recommended by the Government of Nigeria.

Artemether+Lumefantrine

Artemether+Lumefantrine is available in fixed dose combinations as co-formulated tablets and dispersible tablets for children.

Tablet strengths (artemether+lumefantrine) available are 20mg/120mg; 40mg/240mg; and 80mg/480mg. These new higher strengths provide for less pill load per dose.

Weight	No. of tablets/dose (20/120)mg tab	No. of tablets/dose (40/240)mg tab	No. of tablets/dose (80/480)mg tab
5-<15kg	1 tab twice daily x 3days	NA	NA
15-<25kg	2 tabs twice daily x 3days	1 tab twice daily x 3days	NA
25-<35kg	3 tabs twice daily x 3days	NA	NA
>35kg	4 tabs twice daily x 3days	2 tabs twice day x 3 days	1 tab twice/day x 3 days

Artesunate-Amodiaquine

Artesunate-Amodiaquine is abbreviated as AA. Fixed dose combination pre-packaged and a colour-coded formulation exist.

Weight	Tablet strength	Dosage regimen
4.5kg-<9kg 2months-11 months	25mg/67.5mg	1 tablet once daily for three days
>9kg-<18kg >1 year-5 years	50mg/135mg	1 tablet once daily for three days
>18kg-<36kg >6 years-13 years	100mg/270mg	1 tablet once daily for three days
36kg and above 14 years and above	100mg/270mg	2 tablets once daily for three days

Side effects of ACT - Artemisinin are generally well tolerated at the doses used to treat malaria. The side effects from the artemisinin class of medicines are similar to the symptoms of malaria: nausea, vomiting, anorexia, and dizziness.

10.3 Good dispensing practices

It is good practice to encourage the client to take a full course of treatment and complete the dose. This means that you, as the health provider, need to counsel the client by providing health information and advice.

Clients need to know about:

- The type of treatment they are receiving
- How to take/give the medicine
- The dosage required
- Importance of completing treatment
- Details of how to watch out for adverse drug reactions.

Dosing advice for patients

a) Remember to do the following with your patient:

- Always dispense the full 3 day course of medicines
- If possible, have the patient take the first dose in front of you, so you can supervise as needed.
- Refer the patient to the health facility if they have any of the indications for referral

b) Explain to the patient the following:

- They should always take the medicine with or right after meals with a full glass of water
- When using co-packaged product (two different medicine together), both medicines must be taken together in correct doses.
- To completely cure the illness, the full course of treatment (the correct number of tablets taken the correct number of times each day and the correct number of days) must be taken.
- Symptoms may not disappear immediately after taking the first dose. Improvement may take up to two days.
- If the patient vomits within half an hour, then the dose should be repeated.
- The patient should take plenty of fluids to avoid dehydration and food to maintain strength. Fluids that contain sugar or glucose are an advantage.
- If the patient cannot tolerate the medicine (continues to vomit or has reaction), they should go to the secondary health facility immediately.
- Patient should be referred to the secondary health facility if there is no improvement within two days or if the condition worsens.

- For small children, it helps to crush the tablets and mix it with sugar and clean water to make a solution that is easier to swallow.¹

¹*Adapted from Mobilize Against Malaria Pfizer Investments in Health Licensed Chemical Sellers Training Manual for Managing Malaria in the Community, FHI International and GSMF International in collaboration with Pfizer Inc, May 2008*

Giving tablets to a child with malaria

Steps:

- **Crush the tablet** between two spoons making sure all the powder is collected in one spoon. (if the dispersible tablets are used this step can be omitted).
- **Dissolve the powder** with some liquid that is fatty or sweet, such as breast milk, or sugar water. (if the dispersible tablets are used, place the tablets into the liquid and mix until the solution is uniform).
- **Sit the child on your lap** and make sure they are calm, **place the liquid in the mouth bit by bit** making sure the child has swallowed the portion you have given. If necessary give a drink of water to aid swallowing of the medicine.
- **Do not try to give the medicine all at once.** Sometimes a small 2 ml syringe can be useful to gently squirt the medicine into the child's mouth in small portions.
- **Ensure child finishes entire dose.** It is very important that all the medicine goes in and that the child does not vomit it.
- **Ensure the child eats something.** Children who are sick often refuse to eat. It is important with ACTs that the child eats something so the medicine goes into the blood better. Encourage the child to drink some milk or a small portion of pap just before or after giving the medicine.

Important note:

Artemisinin monotherapies are not recommended as treatment for uncomplicated malaria.

10.4 More advice for patient

Post illness care

You should give advice to the patient/caregiver. In particular:

Extra fluid and food should be given to the patient starting at the onset of illness, but if this is not possible due to the condition of the patient:

- Ensure that extra food is given to encourage weight gain
- Iron/folic acid should be given after completion of the full course of ACT if the patient is anaemic

To prevent new attacks community members should sleep inside LLIN every night

10.5 Follow up of patients

Normally patients should recover quickly but Patients should also be advised, to return to the PHC

- If there is no improvement
- Immediately if the condition worsens
- If any adverse drug reaction is noticed

10.6 Case management of uncomplicated malaria in special groups

REMEMBER that this trainee manual is intended to have notes added throughout the training so as to make it a useful reference guide when you return to your workplace.

Pregnant women

Facts:

Malaria in pregnant women even with no severe symptoms can be very dangerous.

The parasites continue to destroy red blood cells leading to severe anaemia which is a risk to mother and baby. The parasites also become sequestered in the placenta resulting in poor growth of the baby, miscarriage, still birth or low birth weight babies (low birth weight is a significant factor in infant mortality)

Treatment of malaria in pregnancy:

- Quinine is recommended for use during the first, trimester of pregnancy. It can also be used in the second and third trimesters where ACTs are not available.
- Quinine is administered orally as 10mg/ kg body weight to a maximum dose of 60kg body weight, every 8 hours for seven days.
- At present it is not recommended to take ACTs for treatment of malaria in the first trimester of pregnancy. An ACT can be given if this is the only treatment immediately available.
- ACTs are safe and recommended, in the second and third trimester. Oral Quinine can be given if ACT is unavailable.
- All pregnant women should be given SP for IPTp as follows
 - The 1st dose should be given as early as possible in the 2nd trimester or after quickening (when movements of the child can be felt) if the gestational age is unknown unless the patient is:
 - Allergic to sulfa-containing medicine
 - HIV positive and on daily Co-trimoxazole chemoprophylaxis
 - Subsequent doses should be separated by at least 4 weeks
 - Doses of SP given should be recorded on the patients ANC cards and on the health centre record

Roles of health workers in handling pregnant women

- Ensure all suspected cases of malaria are confirmed using either microscopy or RDTs before commencing treatment
- Health facilities that do not have laboratory facilities for confirmation of malaria should refer all cases of febrile illness in pregnant women
- Encourage all pregnant women to attend antenatal care (ANC) early and regularly
- Counsel all pregnant women on the importance of balanced diet and the use of medicine prescribed during ANC visits
- Encourage all pregnant women who are neither allergic to sulfa- containing medicine nor on routine Co-trimoxazole to take and complete SP doses for IPTp
- Encourage all pregnant women to sleep inside LLINs every night

Key message: Take every opportunity of contacts with pregnant women to advise about sleeping inside LLINs and taking SP for IPTp. Pregnant women can receive SP for IPTp at 4-weeks intervals (starting from 2nd trimester) until the time of delivery.

b) Children weighing less than 5 kilogrammes

“Malaria in children less than 5kg can be serious and may progress to severe disease with increased risk of dying if not treated promptly. Artemisinin-based combination treatments are safe and well tolerated by young children. ACTs can be used in uncomplicated malaria in infants and young children but attention must be given to accurate dosing and should be given under the supervision of health care provider.

Treat infants weighing < 5 kg with uncomplicated *P. falciparum* malaria with an ACT at the same mg/kg body weight target dose as for children weighing 5 kg”

c) Severely malnourished children

The immune system in severely malnourished children is compromised and they may show none of the symptoms of malaria including fever. Refer all patients with features of severe malnutrition to the nearest hospital for treatment unless there is an outpatient treatment programme at the PHC.

d) Non *Plasmodium falciparum* malaria.

Malaria due to the other *Plasmodium* species is not common in Nigeria. These other species can occasionally occur as a mixed infection with *P. falciparum*. It is a difficult and bad practice to make a diagnosis of non-falciparum malaria without other types of parasitological diagnosis, such as microscopy and PAN RDTs. All species respond to treatment with ACT and this is the preferred treatment choice.

e) Sickle cell disease

- Malaria is the most common precipitating cause of crises in sickle cell disease in malaria-endemic countries.

- Ensure all suspected cases of malaria are confirmed using either microscopy or RDTs and treated promptly.
- All children with sickle cell disease should sleep inside LLINs every night to prevent malaria.

f) HIV infection and malaria

- HIV infection is associated with more severe disease and risk of death
- Malaria needs to be prevented rigorously in HIV infected persons. All HIV positive people should be instructed to sleep inside LLINs every night.
- Treatment with ACTs should be supported with parasitological diagnosis
- Close follow up in HIV infected individuals is important, as re-infection within 4 weeks is common. More frequent malaria attacks can precipitate the onset of AIDS.
- HIV infected patients on ART need to be closely monitored when on malaria treatment. Pharmacovigilance is essential for all patients treated with both ARTs and anti-malaria medicine.
- Prophylaxis with Cotrimoxazole (960mg per day/adult) has a protective effect on malaria in HIV infected persons.

REVISION - Case histories:

Patient 1

A child is brought to you. He is 7 months old. He has had a fever for 24 hours, which comes and goes. He was given paracetamol from a neighbour plus one dose of chloroquine which he vomited.

- What additional information would you ask for?
- How would you manage this patient

Patient 2

A woman comes to see you. She is 24 years old. She has had many previous attacks of malaria. She tells you she has had a fever for 12 hours with sweating and shivering and headache.

- What questions would you ask her?
- How would you treat this case?
- What extra advice would you give?

11.0 Management of common conditions associated with severe malaria

A patient with severe malaria needs to be admitted and cared for in a hospital. At PHC level, admission facilities do not usually exist therefore care of a child with severe malaria is limited to: a) first aid, b) pre-referral treatment, c) referral, and follow up. These are explained in more detail in the following sections.

In the first instance, it is important to determine if the patient is severely ill or not, irrespective of the underlying cause of the illness. Assess the patient for danger signs. If one or more danger signs are present, consider what first aid to give, give pre-referral treatment and refer to the nearest hospital. If no danger signs are present, take a history and examine for features of severe malaria. One or more features of severe malaria should be present before you diagnose severe malaria. Give first aid, give pre-referral treatment and refer to the nearest higher level of care. If no features of severe malaria are present then look for other causes of the illness, give first aid if needed, and refer to the nearest higher level of care.

11.1 First aid for common conditions you will encounter in a severely ill child

a) Dealing with convulsions

Steps for dealing with a child having a convulsion:

- Turn the child on his/her side to prevent aspiration
- Ensure that there is nothing obstructing the airway and that the child is breathing
- Loosen all tight clothing
- Disperse the crowd, if any
- Remove dangerous objects around
- Give anticonvulsant treatment as follows:

Children: Give rectal Diazepam 0.5 mg/kg or intramuscular Paraldehyde 0.1 ml/kg (or 1ml/age in years up to a maximum of 5 ml). If convulsions continue, give intramuscular Phenobarbitone 10 – 15 mg/kg.

Adults: Give 10 mg Diazepam intravenously. However, this may not be possible at the PHC centres.

Preventing convulsion:

- Recognize the fever early
- Seek medical attention early
- Tepid sponge when temperature is high. The temperature of the water should be similar to water that has been warmed by sunlight.
- Administer antipyretics like paracetamol to reduce temperature

During convulsion do not:

- o Cut the child with sharp objects
- o Give concoction such as cow urine or herbs
- o Burn the child with fire
- o Break child's teeth while forcing objects into the mouth
- o Sponge the child with cold water
- o Fan the child

Discourage these actions as they will cause additional problems

b) Severe dehydration

A severely ill child should be managed at a health facility where rehydration can be provided either through a tube in the nose or an intravenous line.

Before referring the child one can:

- Prepare a solution of Oral Rehydration Salts (ORS) (the low osmolarity type is recommended) according to the package instructions using clean drinking water
- Place the child in a sitting position
- Use a spoon or syringe to give small quantities of ORS solution
- Give sips of the ORS solution, if the child is able to drink or swallow. Give as many sips as the child can take.
- Refer to the nearest secondary/tertiary health facility

c) High body temperature / fever

- The normal body temperature range in children is 36.5 – 37.2°C using the axilla to take the measurement.
- A child's temperature is high and requires tepid sponging to avoid convulsions once it gets to 37.5°C.
- A child with a very high temperature (if temperature in the axilla is 38.5°C and above) stands the risk of getting convulsions.
- If the child feels very hot when you touch him/her, one should arrange for tepid sponging to bring the temperature down

d) Unconsciousness

A child who is unconscious needs to be handled carefully. You should:

- Check the airway to ensure that it is not obstructed
- Ensure that the child is breathing
- Check that there is no tight clothing on the child
- Refer to the nearest secondary/tertiary health facility

e) Administer the recommended pre-referral treatment for severe malaria (Refer to the pre-referral section for the recommended medications and doses)

12.0 Prevention of malaria

12.1 How malaria affects our communities:

- Who is affected by malaria?
- Why is malaria so serious?
- What are the effects for the community?

1. Malaria is one of the most serious diseases that affect people in our communities.

2. It is particularly dangerous for young children, for pregnant women and their unborn children, although others may be seriously affected in some circumstances too.

3. Malaria is a curable and preventable disease, but it still kills many people.

The main reasons people in Nigeria die from malaria are:

- As a result of wrong treatment
- Some people do not come for treatment until they are very ill
- Some do not realize that malaria is very dangerous
- Many people live far away from health care facilities
- Many do not know what causes malaria or how it is spread, so they are not able to protect themselves from the disease

12.2 How to prevent malaria

- Provide health education to your community. As a health care worker you can provide community members with information on prevention methods that are available so that they can take steps to prevent malaria.
- Be a good example to the community by using the preventive methods you tell them about, especially sleeping inside LLINs every night.

The most common methods used to prevent malaria are explained below. This information will be useful when you talk to patients or other community members.

12.3 How to stop parasites getting into the blood

The mosquitoes that spread malaria tend to bite more at night between the hours of 10 p.m. and 4 a.m. They prefer to feed on human blood. After feeding, the mosquitoes rest inside the house, usually on the walls. The common ways of preventing malaria take advantage of these characteristics of mosquitoes:

There are two main ways of preventing malaria:

1. Methods that stop the mosquitoes from biting a person

These involve using bed nets (LLINs) to prevent the mosquitoes from actually getting close enough to bite while a person is sleeping; or wearing protective clothings - again to prevent the mosquitoes from being able to bite the person.

2. Methods that kill the mosquitoes while they rest

Indoor residual spraying (IRS) with an insecticide is a way of doing this. A residual insecticide is sprayed on the wall every four or six months. After feeding on the person, the mosquito rests on the wall where it picks up some of the insecticide which eventually kills it. In this way any mosquito that has to rest on the wall will die. IRS is a very effective way of preventing malaria.

An effective method of preventing malaria is by regular (every night) and proper use of LLINs

The Nigerian Government wants everybody to sleep inside LLINs every night so they are periodically distribute free nets to all households on the basis of one net for two people. The nets are usually the large family size and can be conical or square. LLINs can also be obtained from:

- ANC facilities
- General merchandise shops
- Markets
- Public and private health facilities
- Community health workers
- NGOs, community-based organizations
- Pharmacies/Drug stores
- Supermarkets

12.4 Why LLINs are so effective:

While you are sleeping inside the LLIN, the mosquito is attracted to feed on your blood but because of the barrier (the LLIN) the mosquito cannot reach you. While it tries to get to bite you the mosquito is in contact with the LLIN, and the insecticide on the LLIN gets on to the mosquito and gradually kills it. This means that the mosquito cannot bite other people in the house or in the community.

As more people use LLINs the benefit to the community is greater because more female mosquitoes are dying and so are not producing younger mosquitoes. This is why the Ministry of Health is trying to increase the number of people that use LLINs in Nigeria. Sleeping inside LLINs every night is very important for preventing malaria. Everyone in the house should sleep inside LLINs every night, especially children and pregnant women. LLINs should be provided to pregnant women as early in pregnancy as possible, and they should be encouraged to use them all through pregnancy and during the postpartum period. LLINs are available either through the antenatal clinics or through other places like pharmacies, supermarkets etc.

REMEMBER: The infant who sleeps inside the LLIN with the mother will be less likely to get malaria, less likely to get anaemia and less likely to die from sickness. This means they will be healthier, develop stronger and be more resistant to other illnesses. Evidence shows that sleeping inside LLINs reduces the number of children dying

REFLECTION:

Think about the topics you have just been discussing. How will you use the new knowledge you have gained when you go back to your workplace? Use the questions in the boxes to help you reflect on this. When you are ready, record your thoughts in the boxes below.

<p>What does the facility I work in do to prevent malaria?</p>	<p>Action points for improving prevention activities:</p> <p>1.</p>
<p>What else needs to be done by my facility?</p>	<p>2.</p> <p>3.</p>

13.0 Malaria in pregnancy

ASK trainees why malaria is such a major problem during pregnancy? REMIND them that malaria is a major problem during pregnancy because pregnant women, lose most of their capacity to fight off malaria. This can put a pregnant woman and her unborn child at risk of serious illness.

13.1 How to prevent malaria in pregnant women

A method called Intermittent Preventive Treatment in pregnancy (IPTp) is used to prevent pregnant women from suffering from malaria. TALK them through the material below and REMIND them they can use the material in future when they talk to community members or take part in health education activities.

How does IPTp work?

(IPTp) is based on the assumption that pregnant women living in areas of high malaria transmission have malaria parasites in their blood or placenta, whether or not they have symptoms of malaria. Giving pregnant women IPTp reduces the chances that their baby will suffer the effects of malaria. It also reduces the chances that they will end up with maternal anaemia or malaria.

IPTp with Sulphadoxine/Pyrimethamine (medicines in the form of tablets) is given at antenatal care (ANC) facilities or, sometimes, by a trained Community Caregiver. When a pregnant woman takes IPTp she reduces her chances of giving birth to a small baby (Low Birth Weight), having low blood (anaemia), miscarriage and increases her chances of having a normal healthy delivery.

Who should use IPTp? All pregnant women should have 8 contacts with the ANC clinics. During these contacts, they should receive IPTp using Sulphadoxine-Pyrimethamine (SP) (1st dose) as soon as possible in the second trimester and subsequent doses at 4weeks interval until delivery. In addition, HIV positive women who are receiving daily Cotrimoxazole should not be given SP. IPTp should be used in every pregnancy as recommended.

What are the benefits of IPTp?

- Reduced number of malaria attacks in pregnancy
- Reduced malaria-related mortality in pregnancy
- Reduced rate of low birth weight

Key point: You should encourage pregnant women to go for ANC so they can get IPTp. Women who are pregnant should sleep inside LLINs every night. At ANC clinic the pregnant women will also get other care for her pregnancy.

14.0 Handling ACTs and other medicines

14.1 Quality of medicines

It is essential that they give their clients medicines that are of good quality as substandard medicines are dangerous to human health.

- Avoid sub-standard medicines by buying medicines from suppliers that are recognized.
- Buy only brands of medicines that have been registered by NAFDAC.
- Be especially watchful for counterfeit brands of medicines.
- Pay attention to the packaging and blisters of the medicines by making sure that they have not been tampered with.
- Check that the colour of the tablets is consistent and have no spots of discolourations.

Other indicators of poor quality medicine include:

For tablets

- Chipped/cracked/crumbled tablets
- Stickiness
- Abnormal hardness
- Missing tablets from the blister pack
- Unusual smell or taste
- Perforations on the blister or other packaging

For suspensions or powders:

- Discolouration
- Cloudiness
- Caking (liquid does not return to suspension after shaking)
- Cracks in the container
- Moisture in packaging

Never use such medicines regardless of the expiry date

If you suspect that you have been supplied sub-standard or counterfeit medicines, report to the police or your health authorities. Pay attention to expiry dates and avoid stocking medicines that are about to expire, for example; medicines with a shelf life of only six months left.

14.2 Handling and storage

- All medicines should be stored according to the manufacturer's instructions
- Medicines should be stored on shelves raised above the floor
- Protect medicines from heat, sunlight, moisture, pests, fire and physical damage.

Exposure to these conditions will result in deterioration of the medicine causing them to become ineffective and sometimes poisonous.

It is necessary to protect medicine and supplies from excessive heat, light,

humidity, rats, and insects, and also against theft, expiration, damage, and fire. Here are some things to consider in order to adequately store your medicine and supplies:

The Risks involve:

Heat - accelerates the deterioration of medicines. Use air conditioners if possible. If not, use window fans, exhaust fans, and high ceilings to reduce temperature. Temperature should always be below 30°C.

Light – Some items .e.g. Paraldehyde, deteriorate when exposed to light. Protect medicines from sunlight. Use curtains on windows.

Humidity – Mildew is caused by humidity and is difficult to combat. To reduce the effects of humidity:

- Promote circulation of air
- Use containers and tins with covers
- Separate storage pallets
- Don't remove from sachet except during administration

Pests such as Rats and Insects

- Prohibit eating in the store.
- Clean storeroom regularly.
- Set traps. Avoid use of poisons to kill pests because they can contaminate the medicines.

Theft – Minimize thefts by putting good locks and security bars, maintain proper stock cards and registers. Restrict access to storage areas. Carry out regular stock counts.

Expiry – Check expiry dates often. Expired medicines should not be dispensed to clients. Minimize losses due to expired medicine and supplies by using the following methods:

- Calculate stock requirements correctly.
- Note expiry dates on stock cards.
- Distribute medicines and supplies using the FEFO method (first expired, first out).
- Give excessive stock items to colleagues with faster turnover.

14.3 Stores management

The essential requirements for a storage environment for anti-malaria commodities:

1. There should be a storage area either a dedicated room or a part of your premises.
2. The store should be furnished with shelves, lockable areas and/or cupboards as the situation may require.
3. The store should be kept dry, clean and well ventilated in order to maintain

effectiveness of medicine and prevent contamination.

4. The windows in the store, if any, should be fitted with curtains to prevent excessive sunlight.
5. Different types of medicines should be stored and arranged in clearly identifiable sections.
6. Stocks should have bin cards accompanying the items on the shelf.
7. Expired and otherwise unusable stock should be separated and kept under special custody until written authorization for destruction has been obtained from the National Agency for Food and Drug Administration and Control (NAFDAC) or appropriate authority.
8. Note that special storage like refrigeration may be required for some anti-malaria medicines such as suppositories.

The proper procedures for receiving of anti-malarial medicines medicine into store and documentation of receipt:

1. The health worker should cross check items received against the invoices to ensure quantity, physical quality, expiry and check for any damages.
2. The health worker should reject all items that fail physical quality control test irrespective of source.
3. Every item supplied must carry expiry date, or else be returned.
4. Record all receipts whenever such transactions take place.

The proper procedures for management of stock level and stock movement of anti-malaria medicine:

The health worker should:

1. Carry out a daily check for availability and physical condition of anti-malaria commodities.
2. Compare the physical stock with the records.
3. Consider date of expiry (FEFO) in shelving.
4. Monitor/note slow moving items, expiry date, and shelf life and take actions 6 months before expiry. Actions can include returning to the supplier or to the local health authorities.
5. Carry out stock count monthly on the last day of the month.
6. Record all books relating to stock management and movements whenever such transactions take place.

Drugs should be issued in date order - use FEFO to issue medicines from the store: **FEFO means FIRST EXPIRED, FIRST OUT.**

Always use this to make sure you issue commodities that will expire first.

1. Arrange medicine stocks in such a way that stocks to expire are stacked in front or on top of stocks that will expire later
2. Issue stocks from front to back or top to bottom so stocks with short or near expiry dates are issued first

3. Mark stock records of medicines that are nearing expiry. Make sure that this information is communicated to the supplier of your anti-malaria medicine once you know the stock cannot be used by the patients before it expires.

14.4 Record keeping

Keeping records of the clients that you see and the movement of medicines in your store is necessary for the following reasons:

- To keep track of the patient load
- To appreciate the quantities of medicines that are consumed by your clients, for example per month, to allow you to make accurate orders and avoid stocking excessive or too little quantities.
- To know how your stock is moving

Bin card

Used to record quantities of medicines during receipts or issues and stating the balance figure in each case.

Store ledger

This is used to record both quantities of anti-malarial medicine and the nominal amount/cost during receipt or issues.

14.5 Pharmacovigilance

Definition of pharmacovigilance?

Pharmacovigilance is the science and activities relating to the detection, assessment, understanding and prevention of adverse reactions to medicines or any other possible drug related problems.

Why health workers should carry out pharmacovigilance

Health workers use many medicines under various brand names and manufacturers. Monitoring of all medicines is therefore of tremendous value as a tool for detecting adverse reactions to medicines and specifically in relation to counterfeit and sub-standard products. Other reasons for monitoring all medicines include:

- i. It helps to ensure that patients obtain safe and efficacious products
- ii. It can be useful in detecting counterfeits and sub-standard products
- iii. It enables regulatory authorities to detect less common but sometimes very serious adverse drug reactions.

What to report

- i. Suspected reactions to medicines
- ii. Suspected adverse reactions associated with interactions between one medicine and another, medicine and herbal treatment, and medicine and food supplements

- iii. Reporting adverse medicine reactions in special cases e.g. medicine abuse and use in pregnancy and during lactation
- iv. Adverse reactions associated with medicine withdrawals
- v. Adverse medicine reactions occurring from overdose or medication error

How to report

- a. Recognize an adverse medicine/drug reaction (ADR)
- b. Document patient history of medicines taken, symptoms and signs
- c. Determine onset of the suspected adverse drug reaction (ADR)
- d. Determine the time interval between the start of the drug treatment and the onset of the suspected adverse reaction.
- e. Discontinue the medicine and change to an alternative one
- f. Look for alternative possible causes of the reaction
- g. Complete the adverse reaction report / Pharmacovigilance form; see annex
- h. Send the form to the National Pharmacovigilance Centre (NPC) at NAFDAC

How to get or send forms

Adverse reaction report forms can be obtained from NAFDAC field offices and public health units of local and State Ministry of Health. Completed forms should be posted through any post office where they are delivered at no cost to the sender:

15.0 Good health facility record keeping

Registration and patient records

The standard Nigeria format of registers should always be used. Exercise books and self-ruled registers are not satisfactory, if registers are full these can be used as a temporary measure and the proper register completed when available.

Before consultation, a patient card should be filled with the name, age, address, sex, mother's name and patient number. If the patient has been seen at the clinic before then the old record should be found. In clinics, the patient is weighed and temperature, pulse and BP taken before the consultation. If this is the case, this should be written on the patient's record.

It is good practice to ensure that data from community caregivers within the PHC catchment area are captured in your records and sent to the MoH.

Periodic re-training on these techniques will keep skills up to date and ensure accurate records can be kept.

16.0 Organising the health facility to ensure good patient care

There are many things to think about in relation to the resources needed in a health facility e.g. What are the requirements in terms of physical and human resources? What supplies are required to guarantee a quality service to those with malaria? How are medicines to be procured? How are user fees to be collected? What system does the person in charge need to support quality service delivery?

16.1 The triaging process

Triage is the process of rapidly examining all sick children when they first arrive in a health facility to sort out critically ill children who need emergency care. In this way there is a greater chance of saving their lives. All children should be checked on their arrival in a health facility by a person who is trained to assess how ill they are. This person decides whether the patient will be seen immediately and will receive life-saving treatment, or can safely wait his/her turn to be examined. Triage should not take much time. The health worker should assess for the danger signs that have been explained in this module. A child with one or more danger signs should be handled either by giving first aid or by referring the patient to the nearest higher level of care

When should triaging begin?

Triage should be carried out as soon as a sick child arrives in the hospital before registration takes place. The flow of patients in your facility should take this into account. If a child with emergency signs is identified in the queue, he/she must be quickly taken to a place where first aid can be provided immediately, e.g. an emergency room or treatment area.

Who should triage?

All health workers at the PHC should be prepared to carry out rapid assessment in order to identify the few who are severely ill and require first aid. In addition, people such as gatemen, record clerks, cleaners who have early patient contact should be trained in triage for danger signs and should know where to send people for immediate management.

16.2 Overall Organisation of the PHC

One person should be **in charge** of a health facility. He /She should appoint a person to take over when he/she is absent

The person in charge must make sure that:

- The health centre is clean and well organised
- Medicine are available and properly stored
- Diagnostic supplies (e.g. RDTs) are available and properly stored
- RDTs are properly conducted
- If microscopy is available, ensure that the microscope has a light source that reagents are available and properly used that there is a well lit room available for the microscopist to use
- Equipment is working and requisition for replacements are made when necessary (e.g. weighing scales, measuring equipment, registers, cupboard for storage, etc)
- There is a clean water supply for drinking in the health facility
- There are facilities for hand washing
- Adequate facilities are available to sterilise instruments
- Gloves are available for use in diagnostic procedures
- Confidential spaces are available for consulting
- Registers are properly filled in for all patients

- Waiting areas are sheltered from the weather
- Someone is trained and available to conduct triage when there are many patients waiting to ensure that seriously ill patients are given priority
- Patient records and registers are kept confidential
- Statistics are compiled at regular intervals and sent to the LGA
- Feedback from the LGA is followed up on
- Proper waste disposal facilities exist, bearing in mind infection control procedures especially where blood products or sharps are concerned

This person is responsible for the welfare of the other staff and patients and should give supportive supervision and mentoring to all other employees.

16.3 Roles and responsibilities of PHC staff

It is important that all staff at the PHC are clear about their roles and responsibilities. The person in-charge should make sure each member of the team has a job description that is relevant to the work the person does routinely. It is also important that the person in-charge is able to make staff appreciate how important they are to one another and by working together, will be able to provide better services at the PHC. Regular staff meetings should take place. These meetings should be used to promote team work, review how the PHC is doing and plan ahead.

17.0 Supervision and links with the community health care system

17.1 The role and importance of supervision

Supervision is to ensure what needs to be done is properly done. It is used to support the translation of knowledge into practice. It is also used to see that good practices are maintained and poor practices minimized. You should consider this as a form of on-the-job training and not one that is intended to find faults and penalize you.

17.2 The benefits of supervision

When carried out regularly and with the right techniques, it is an effective way of supporting the health worker to be confident in dispensing ACTs and handling clients. Other benefits are: it helps to link the health worker with the rest of the health system (primary, secondary and tertiary); it allows the health worker to communicate with their peers or supervisors; it allows the health worker to pass on data from their records; and it gives the community more confidence in the quality of services provided by the health workers.

Issues to think about:

- What arrangements do you have for regular supervision?
- Who do you report to?
- Who supervises or oversees your efforts?
- What continuing training do you need?
- How can the PHC be part of a supervision process?

17.3 Other important issues:

How should health workers support community caregivers?

Support the community care givers in your catchment area to collect their treatment kits. Treat them with respect when they come to collect their kits or when they are being supervised.

What linkages do PHCs have with the national health system?

PHCs play a critical role in the delivery of treatment for uncomplicated malaria. It is therefore important that their efforts are linked to the national health system. This can be done in the following ways:

- a) Participating in the National Health Management Information System (NHMIS) which collects malaria-related data in the country. You should, on a monthly basis, submit data to this system through your nearest health facility.
- b) Participating in regular supervision
- c) Submitting information on adverse drug reactions

18.0 Communication¹

18. 1 Why communication is important

Key Point: Malaria is an issue that affects the whole community. It requires good communication between health workers and all stakeholders in order to improve health and wellbeing for everyone.

Being a health worker means:

- You are a trusted member of the community
- People in the community know they can come to you for help and guidance because you are a role model and authority on health issues
- You are up to date on information that is important for the community's health and wellbeing
- You can assist people to make informed decisions about their health, and act as an advocate for them when necessary

To be an effective health worker, you need to be able to talk to other community members about many things and convince them that you know what needs to be done.

In particular, you need to:

- Respect others no matter their social status. Respect towards people often earns respect in return.
- Listen to others without judging or criticizing.
- Have good habits that can inspire others to change and improve their lives. For example, if you sleep inside an LLIN every night to prevent malaria, you can say from experience and with authority that the nets are effective in preventing malaria. If you use only ACTs to treat malaria, you can speak from experience and with authority when you tell community members to use only ACTs and not other less effective medicine.

¹ This section on communication is modified from the stand alone Communication module.

Remember. Encouraging positive attitudes about malaria prevention and treatment will improve the lives of community members by helping them stay healthy.

18.2 Understanding and taking notice of community culture and traditions

It is important to understand the culture and traditions of the community. These are the basis of community members' values, which shape their attitudes on topics like malaria control. Often, these local beliefs influence their actions (or non-actions) more than any other source of information. Community members are likely to trust what they hear from family, friends and community leaders. Often they hear a mix of information, including local beliefs and messages that are passed down from health clinics. This mix of messages can be very confusing.

It is therefore important that you, as the health worker, be seen as a role model, someone who can be trusted to provide the correct information. Someone who is trusted, respected and seen as a role model will be more likely to dispel rumours and myths, and more likely to inspire confidence and successfully promote use/adoption of healthy behaviours.

18.3 Barriers to communication

There are three main kinds of barriers you may encounter in your work:

- **Physical barriers:** includes physical distance, being distracted, and physical disability (e.g. being visually or hearing impaired, etc.), feeling incessantly sleepy, tired, stammering or ill.
- **Personal barriers:** include social and psychological factors, which involve judgments, emotions, and values held by both sender and receiver. Also, suspicion, rumours, customs and taboos.
- **Language barriers:** can come from different meanings and uses of words, symbols, images, and gestures, also from the kinds of words used. Try to avoid medical language.

The barriers are significant because:

Barriers may lead to:

- Poor and wrong feedback
- Conflicts or misunderstanding
- Misinformation, misinterpretation and misconception

But these can be overcome by:

- Using simple language
- Knowing your audience
- Using appropriate messages
- Giving the audience your full attention
- Using an appropriate channel / medium for your messages

Good communication skills can encourage the person(s) you are talking with to think about their health behaviours, and how they might change them. Good communication also encourages the person(s) you are speaking with to open up to you and share their personal thoughts and feelings ².

A good communicator is someone who:

- is kind, understanding and supportive
- is a good listener
- is responsible
- is easy to talk to
- is open and non-judgmental
- is always available
- is trustworthy
- understands a community member's concerns and needs
- is helpful and caring
- is respectful of other people
- is able to exercise confidentiality
- knows when to speak and when to listen
- has a broad understanding of the topics being discussed

18.4 Active listening

Communication is a two-way process. You need to be able to present information to the community and receive a response. There are different ways of showing your listeners that you are actively listening to them and hearing their point of view; these include not just the words you use but also the gestures you make.

Non Verbal (the gestures that you use):

- Be attentive
- Concentrate on the community member, look at him/her
- Don't interrupt when he/she speaks
- Nod, smile, lean forward

Verbal (the words that you say)

- Make some sounds (prompts):mm hmm..... to indicate you are listening and following along.
- Ask questions for clarification if there's something you don't understand.
- Summarize to ensure the community members understand the information you are providing.

What makes for good listening?

Listening is a skill that requires constant practice. Paraphrasing, repeating back to the community member what you heard him/her say in a short form, is important for making sure you understood him/ her, to show him/her you are listening and to help him/her clarify their feelings.

² *The discussion on good communication and interpersonal communication is adapted from the IFRC manual, Towards a Malaria Free Community: IFRC Keep Up Program Trainer's Guide, 2008.*

This is most needed when trying to get information from the community member e.g. during history taking or when a community member seems concerned about an issue.

Misunderstanding can happen very easily when two people discuss something. A community member may tell you something that you understand in quite a different way from the way he/she meant it. To prevent misunderstanding when listening to a community member's problem or when sharing information with a community member, it is useful to summarize or paraphrase what has been said.

Getting communications right involves a number of skills and an awareness and understanding of how to communicate messages so that the listeners will hear them and understand them. There are tools available to help you. These include IEC materials such as table top flip charts, leaflets, etc..

18. 5 More about learning new things

Understanding how people learn new things also helps to get communication right and messages delivered. Empowering community members to change their behaviour and/or adopt healthier behaviours is not always easy and it is helpful to remember that adults learn in a different way from the way school children learn. Helping adults learn new behaviours involves also acknowledging and appreciating their previous experience. Thinking about the ways we like to learn new things may help us to guide others to learn new health behaviours and practices.

Generally adults learn best when the learning:

- **Shows respect for the person.** Mutual respect and trust between you and your community members will help the learning process. It is important to show appreciation of each other's feelings and thoughts without making a judgment or showing any bias.
- **Is relevant to them.** An adult learns best by building on what he or she already knows. Learning must meet their real-life needs.
- **Fills an immediate need.** People are most motivated to learn when they can make use of new information right away.
- **Involves two-way communication.** Learning activities must allow the learners to enter into a conversation with the teacher and with other people.
- **Engages them** - adult learners need to be encouraged to take an active part in their own learning. Get them involved through discussion, small groups, and learning from other adults.
- **Provides feedback and praise.** Give praise to learners even for small attempts. You need to correct ideas and behaviors that are not right but you also need to be supportive and encourage your learners as they get used to new ideas.

- **Uses visual materials and offer the chance to put into practice new skills.**

Generally, people remember more when visuals are used to support what is being said and they remember new skills best when they have the chance to practice them.

- **Is introduced in a safe atmosphere.** A cheerful, relaxed person learns more easily than one who is afraid, embarrassed or angry. Your learners need to feel that their ideas and contributions are valued—that they will not be made fun of or made to feel stupid.
- **Occurs in a comfortable environment.** Learners will learn best when they are physically comfortable and at ease.

18.7 Ways of reaching different audiences

You need to get the group to think about providing/creating the right environment for their clients. Suggest to them that they need to consider where would be the most appropriate place to talk to them - in a private office, perhaps? - a private room in the home? Should it be a one-on-one discussion or is a group setting better? Remind them that choosing the right environment will help them ensure that their client is most comfortable and able to learn.

Some final guidance:

In order to ensure that community members understand the information they are receiving, it is important to use the simplest language possible by:

- Avoiding medical terms where possible
- Using the local language, or the language the community member is using
- Stressing key messages to summarize the discussion (e.g. you can protect yourself, sleep inside LLINs every night etc.)
- Using visual aids to emphasize the message
- Using an interpreter if necessary.

NATIONAL PHARMACOVIGILANCE CENTRE (NPC) NIGERIA

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**FORM FOR REPORTING OF
SUSPECTED ADVERSE DRUG
REACTIONS**

IN STRICT CONFIDENCE

Tel: 08086899571 or Fax: 09-5241108

1. * PATIENT'S DETAILS

Full Name or Initials: _____ Patient Record No: _____
 AGE/DATE OF BIRTH: _____ SEX: M F WEIGHT (kg): _____
 HOSPITAL/Treatment Centre: _____

2. * ADVERSE DRUG REACTION (ADR)

<p>A. DESCRIPTION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">DATE Reaction Started</td> <td style="width: 50%;">DATE Reaction Stopped</td> </tr> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table>	DATE Reaction Started	DATE Reaction Stopped			<p>C. OUTCOME OF REACTION TICK AS APPROPRIATE</p> <p><input type="checkbox"/> Recovered fully <input type="checkbox"/> Recovered with disability (Specify) _____</p> <p><input type="checkbox"/> Congenital Abnormality (Specify) _____ <input type="checkbox"/> Life Threatening (Specify) _____</p> <p><input type="checkbox"/> Death <input type="checkbox"/> Others (specify) _____</p>
DATE Reaction Started	DATE Reaction Stopped				

B. Was Patient Admitted Due to ADR Yes No

If Already Hospitalized, Was it Prolonged Due to ADR Yes No

Duration of Admission (days) _____

Treatment of Reaction: _____

3. * SUSPECTED DRUG (Including Biologicals Traditional/Herbal Medicines & Cosmetics)

A. DRUG DETAILS (State name and other details if available / Attach product label / Sample (if available))

Brand Name: _____ Generic Name: _____ Batch No: _____

NAFDAC No: _____ Expiry Date: _____

Name & Address of Manufacturer: _____

B. Indications for Use	Dosage	Route of Administration	Date Started	Date Stopped

4. * CONCOMITANT MEDICINES (All medicines taken within the last 3months including herbal and self medication)

Brand or Generic Name	Dosage	Route	Date Started	Date Stopped	Reason for Use

5. * SOURCE OF REPORT:

Name of Reporter: _____
 Address: _____
 Profession: _____
 Signature: _____ Tel No/E-mail: _____

***: MANDATORY FIELDS**



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