ASSESSMENT AND COMMUNITY MANAGEMENT OF MALARIA

Trainer guide:

1. Sentences in *italics* are instructions for the trainer. Sentences in *italics* and quotation marks can be read verbatim by the trainer.

2. Before the training, words in brackets [ ] should be replaced by words that match the context; for example, replace [*COUNTRY*] with "Mali" if the training is to be implemented in Mali.

3. The training is organized around different types of activities: brainstorming, simulation/role-plays, practice exercises (individual or group), and case studies.

4. **General training tips:**
   - Encourage the participation of all participants, at all times, and encourage them to comment on different topics.
   - Listen to all answers without judgment and make sure all participants have the opportunity to speak.
   - Encourage participants to share their experiences as a parent or caregiver when applicable.
   - Share a summary statement at the end of an activity to review the important points or the main idea that the activity was intended to highlight.
   - Ask participants regularly if they have any questions or would like a concept to be clarified.
   - For group work:
     - Form groups based on the total number of participants, small enough to encourage participation, but large enough to meet the requirements of the activity.
     - Ask each group to present their work to the other groups.
     - Ask participants to share their reflections about the other groups' work.
     - Point out the strengths and areas for improvement of each group's work.
     - Wrap up the group work by summarizing the key takeaways.

5. **Tips for brainstorming**: Brainstorming is a technique that involves asking questions before presenting concepts to initiate reflection and discussion on the training topic. It allows you to take stock of participants' proficiency in a topic as well as their knowledge gaps in advance in order to frame the training and target certain concepts.
   - Emphasize that the purpose of a brainstorming discussion is to help encourage reflection among participants rather than to identify the best answers.
   - If possible, write participants' answers on a large sheet of paper to encourage discussion and give value to everyone's comments.
   - Ask the questions one at a time, and pause after each question to encourage participation.
   - Make sure that the correct answers are clearly identified after each discussion.

6. **Tips for simulation/role-plays**: Simulation and role-plays put participants in real-life situations to practice a procedure, method, or communication technique. They help create a realistic environment for anticipating and preventing possible errors in a setting with no harmful consequences for the patient.
   - Clearly describe the simulated situation or role-play.
   - Provide time for participants to immerse themselves in the situation/their role.
   - Encourage everyone to participate as realistically possible.
   - Do not intervene until the simulation or role-play is complete.
   - At the end of each role-play, congratulate the actors.

- Have other actors repeat the role-play again as many times as necessary.

7. **Tips for practice exercises**: practice exercises require participants to apply theoretical concepts to practical situations. They help check participants' level of understanding of an abstract concept in the way that will be expected in the field.
   - Prepare the materials and tools needed for the exercise in advance.
   - Clearly define the instructions for the exercise.
   - Make sure the correct answer is clearly identified at the end of the exercise.

8. **Tips for case studies**: Case studies describe a story/situation to introduce or dig deeper into a theoretical concept. They help illustrate abstract concepts through familiar situations to make them more understandable and easier to remember.
   - Share the case study clearly.
   - Ask the questions one at a time, pausing after each question to encourage participation.
   - Make sure the correct answers are clearly identified after each discussion.
   - Summarize the concept illustrated by the case study.

9. Review the tips for each activity type above before starting an activity of that type.

Abbreviations and acronyms:

ACT	Artemisinin-based combination therapy
AIDS	Acquired immune deficiency syndrome
ALU	Artemether + Lumefantrine
ANC	Antenatal consultation
CHW	Community Health Worker
FP	Family planning
HCG	Human chorionic gonadotropin
HIV	Human immunodeficiency virus
HV	Home visit
iCCM	Integrated community case management
IPT	Intermittent preventive treatment
LLIN	Long-lasting insecticide-treated net
NGO	Non-governmental organization
NMCP	National Malaria Control Program

PMTCT	Prevention of mother-to-child transmission
PNC	Postnatal consultation
PSP	Policies, Standards, and Procedures
RASS	Annual report on the health situation
RDT	Rapid diagnostic test
SP	Sulfadoxine/pyrimethamine
T°	Temperature
TD	Thick drop
TS	Thin smear
VTP	Voluntary termination of pregnancy
WHO	World Health Organization

Course Introduction:

- *This training module covers malaria in children and adults.*
- *The assessment and management of uncomplicated malaria at home is an aspect of the iCCM package.*
- *By conducting these activities, you will help significantly reduce the mortality and morbidity rates of children under five years of age.*
- ***Inform participants:***
  - *In this module, some words, situations, pictures, and/or videos may make participants uncomfortable, be troubling, or cause emotions such as sadness. All these emotions are normal and welcome in the room.*
  - *If a participant feels uncomfortable and wishes to take a break, they should feel free to do so.*
- ***Encourage participants to:***
  - *Commit to ensuring confidentiality, as some could share sensitive or personal information with the group, and we want to create a space where all participants will feel safe and comfortable. Any personal information shared during this training should not be shared with anyone outside of this training.*
  - *Share their thoughts on this issue of confidentiality.*

Present the training objectives, plan, and activities. Make sure all the necessary materials are present.

Objectives:

At the end of this session, participants should be able to:

- Define malaria and its classification
- Know the epidemiology of malaria
- Describe the transmission of malaria
- Know malaria prevention methods
- Know the malaria-related signs to look for when assessing a patient for malaria
- Know what to do (so as to) to manage cases of uncomplicated malaria at home in children and adults
- Interpret the results of a malaria RDT
- Correctly administer ALU and paracetamol
- Know the patient follow-up procedure after home management

Plan:

1. Definition of malaria, epidemiology, and classification
2. Malaria transmission and consequences
3. Malaria prevention
4. Patient assessment for malaria
5. Managing uncomplicated malaria at home in children under five years of age
6. Managing uncomplicated malaria at home in children from five years of age and adults
7. Follow-up and referral after home malaria management

Activities: brainstorming; practice exercises; simulation or role-plays; case studies

Materials:

- Common to all activities: video projector; laptop; large sheet of paper; multicolored markers; multimedia tools (images, forms, videos, etc.), suggestion box.
- Additional: thermometer/ThermoFlash, RDT box, medications (ACT, artesunate suppository, and paracetamol), sharps container.

Pre-test:

"We will proceed with the pretest before diving into the subject in order to assess participants' level of understanding before and after the session is completed."

Provide a copy of the pretest to all participants. Remind them that the pretest is not a judgment and that it is a private exercise that helps us have a better idea of their basic level of understanding of the topic that will be discussed. Read and explain the questions one at a time pausing (30 seconds/question) to encourage participation. At the end of the pretest, thank the participants, collect the forms, and move forward with the training.

First and Last Name: _____

Some of the following statements are false and some are true. In the first column, circle (T) for those that are **"true"** and (F) for those that are **"false."** The correct answer is listed in the second column.

1	Malaria is a dangerous disease.	T F	T
2	Malaria is caused by very oily foods.	T F	F
3	To prevent malaria, everyone should sleep under an insecticide-treated net.	T F	T
4	A child with diarrhea cannot have malaria.	T F	F
5	CHWs cannot give medications to treat malaria.	T F	F
6	All cases of malaria in children can be treated by the CHW at home.	T F	F
7	There is no follow-up for a child with malaria.	T F	F
8	The malaria RDT does not confirm malaria in an individual.	T F	F
9	Malaria is a disease that affects only children.	T F	F
10	The most vulnerable people to malaria are children, the elderly, and pregnant women.	T F	T
11	Malaria occurs only during the rainy season.	T F	F
12	SP prevents and treats malaria in pregnant women.	T F	F
13	Malaria is a disease caused by a parasite.	T F	T

The form above contains the answers. Before printing the forms for participants, make sure to remove the last column which contains the answers.

Section 1: Definitions, Epidemiology, and Classification of Malaria.

"We will discuss the definition, epidemiology and classification of malaria."

BRAINSTORMING – Ask each question to participants. Write their answers on a large sheet of paper. Then present the corresponding answer.

Questions:

1. Define malaria. What is its causal agent and what is its vector?
2. Is malaria an important disease in [*YOUR COUNTRY]*?
3. What are the symptoms of malaria?
4. What symptoms indicate uncomplicated malaria and severe malaria?

Answers:

1. Malaria is an infectious and potentially fatal disease caused by *Plasmodium* parasites. It is transmitted to humans by bites of infected female mosquitoes of the Anopheles species called "malaria vectors." Malaria is still a worldwide public health problem today **[1]**.

   The causative agent is the *Plasmodium* parasite and there are more than 100 species of *Plasmodium*, six (6) of which are pathogens in humans **[1]**: *Plasmodium falciparum* (responsible for the severe and complicated form of malaria), *Plasmodium malaria*, *Plasmodium ovale*, *Plasmodium vivax*, *Plasmodium knowlesi*, *Plasmodium cynomolgi*.

   A parasite is so small that a microscope is needed to look at it.

2. Extent of malaria worldwide and in your country:
   - In 2020, according to the World Health Organization (WHO), Sub-Saharan Africa had the highest burden of morbidity and mortality associated with malaria **[1]**. The entire region recorded:
     - 95% of all malaria cases (228 million cases);
     - 96% of all malaria deaths (602,000 deaths);
     - 80% of all deaths due to malaria in the region occur in children under five years of age.
   - **For example, in Mali,** malaria represents the main reason for consultation in health facilities (36%) [and], according to the local health information system, health facilities recorded 2,884,837 confirmed cases of malaria in 2019 **[8].**
   - **For example, in Côte d'Ivoire,** malaria kills four people every day, including three children under five years of age for a total of 1,316 deaths in 2020 and remains the leading cause for health consultations **[9]**.
3. Symptoms of malaria include fever or chills that can sometimes be cyclic, sweating, headache, body aches, including joint pain, nausea/vomiting, decreased appetite, taste alteration, diarrhea, fatigue, and general malaise.
4. **Uncomplicated malaria** is characterized by fever (axillary T° ≥ 37.5°C) or a history of fever with headache, muscle pain (soreness) or joint pain, gastrointestinal problems, confirmed by laboratory testing.

   Severe malaria is characterized by one or more of the following symptoms: altered mental status, inability to walk or sit, difficulty breathing, seizures, jaundice, "Coca Cola" or dark-colored urine, abnormal bleeding, confirmed by laboratory testing.

Section 2: Malaria Transmission and Consequences

"We will discuss the consequences of malaria."

BRAINSTORMING – Ask each question to participants. Write their answers on a large sheet of paper. Then present the corresponding answer.

Questions:

1. How is malaria transmitted?
2. What are the consequences of malaria?

Answers:

1. Malaria is transmitted by a mosquito bite: during a blood meal, the female Anopheles mosquito (vector) can ingest the *Plasmodium* parasite by biting a person who already has malaria. While taking another blood meal, the infected mosquito transmits the *Plasmodium* to another person. The parasite hides in the liver and then passes through the blood of the newly infected person and can thus continue to be transmitted. The parasite replicates and destroys red blood cells, causing symptoms.

   Malaria can also be transmitted from mother to fetus.

Figure 1: The malaria cycle **[1]**

2. The consequences of malaria are observed at several levels:
   - The consequences for children:
     - Delayed psychomotor development
     - Low birth weight
     - Anemia
     - Mortality
   - Consequences for pregnant women:
     - Abortions
     - Preterm delivery
     - Stillbirths
     - Fetal distress
     - Anemia in pregnancy
   - Consequences at the family level:
     - Reduced savings
     - Healthcare costs
     - School and workplace absenteeism
     - Decreased productivity

Section 3: Malaria Prevention

"We will now address malaria prevention, in other words how to protect against malaria."

BRAINSTORMING – Ask each question to participants. Write their answers on a large sheet of paper. Then present the corresponding answer.

Questions:

1. What are the different ways to prevent malaria?

Answers:

1. There are two major methods of malaria prevention to break the transmission cycle:

- Vector control
- Malaria chemoprevention

1. Vector control

a) **Larval Control: Preventing or Limiting Mosquito Reproduction.**

It involves:

- Removing areas where mosquitoes may spawn: depressions in the ground, old containers, old cart tires, any area where water can stagnate for several days;
- Introducing fish species that feed on mosquito larvae into ponds where mosquitoes spawn;
- Spreading insecticides that kill larvae in water.

b) **Reduce Human-to-Vector Contact.**

It involves:

- Treating curtains and mosquito nets with insecticide;
- Sleeping under an insecticide-treated net;
- Spraying insecticide in rooms where people sleep;
- Performing activities that contribute to reinforcing hygiene and sanitation in everyday life;
- Placing a screen or treated curtain in the openings of the entire house or, failing this, at least in the rooms where people sleeping;
- Spraying a repellent that keeps mosquitoes away on one's body. **[10]**

c) **Hygiene and Sanitation.**

The following physical control methods help limit the areas where mosquitoes reproduce:

- Eliminating areas where mosquitoes can spawn (detailed above);
- Draining ponds;
- Weeding land and surrounding plants;
- Properly disposing liquid and solid waste;
- Avoiding growing crops around plants.

2. Malaria Chemoprevention.

Malaria chemoprevention involves taking drugs periodically to stop *Plasmodium* from growing and replicating immediately after it enters the bloodstream, before it causes the disease.

The target populations for this chemoprevention are pregnant women and children from three months to 59 months of age (five years).

For pregnant women, chemoprevention is done by taking SP. IPT of malaria during pregnancy (IPTp) will be addressed in a separate training module.

For children three months to five years of age, chemoprevention is done by taking SP combined with Amodiaquine. This chemoprevention is seasonal; in other words, it is done during the period of highest malaria transmission risk, usually the rainy season.

SIMULATION/ROLE-PLAY - Review what the participants should simulate or the role(s) they should play. Provide a timeframe for when participants should share their simulation or act out the situation.
Roles:

1. **The KEITA family (wife and husband):** you live in an unfinished house, the courtyard is half closed. Children spend the early hours of night on the patio. In the courtyard, you are growing peanuts, corn, and vegetables. An area of stagnant water is located in the middle of the courtyard. When the Keita family's children get sick, their father sells some grains to treat them. The father wonders why his children frequently get sick.
2. **Alice TOURÉ:** you are the CHW. During your HV, you meet the Keita family.

- Explain the malaria vector prevention methods by taking into account the specific situation of this household.
- Answer the father's question.

Section 4: Patient Assessment for Malaria.

"We will discuss the assessment of a patient for malaria."

BRAINSTORMING – Ask each question to participants. Write their answers on a large sheet of paper. Then present the corresponding answer.

Questions:

1. How is a patient assessed for malaria?
2. What are the signs of malaria?

Answers:

1. The start of any assessment begins with checking for warning signs **[3]**. When there is no warning sign, the CHW should look for malaria-related signs through an interview to check for useful information and a thorough physical examination, including observation of the patient and checking for signs and symptoms.

   The interview helps:

   1) find out whether it is malaria or not;
   2) characterize the type of malaria (uncomplicated or severe).

2. In the absence of general warning signs, the CHW should look for signs of malaria. These signs are similar to the warning signs, but are usually less advanced. There are five:
   - Current fever or episode of fever within the last 24 hours or 48 hours;
   - Vomiting: this corresponds to vomiting after eating certain foods, but not vomiting of everything that is eaten;
   - Lack of appetite: this corresponds to a decrease in appetite without a complete inability to nurse or drink/eat;
   - Sluggishness or lack of energy: this corresponds to a decrease in activity, without reaching the level of lethargy;
   - Chills.

"We will now discuss the steps and what to do to assess whether a child is presenting signs of malaria."

1. Interview: questions to assess a child under five years of age for malaria:

The CHW should begin the assessment by looking for general warning signs through an interview and physical examination. In their absence, the CHW should ask questions to look for signs of malaria.

The different questions that a CHW may ask the mother or caregiver of the child during the interview for assessment of malaria in children under five years of age are as follows:

- Has the child had a fever or chills in the past 48 hours?
- Does the child have a reduced appetite?
- Is the child able to nurse, drink, or eat?
- Does the child vomit everything he/she drinks or eats?
- Is the child able to move and play normally?
- Is the child's urine dark (Coca Cola color)?

2. Physical Examination and Additional Examination.

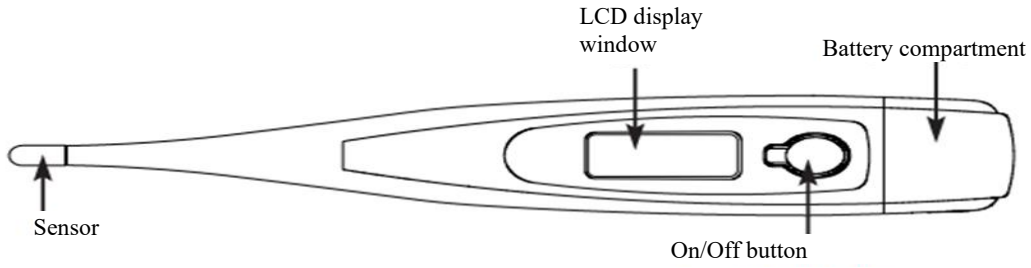
The physical examination is also used to assess whether one or more of the five malaria symptoms are present after the interview.

2.1 T° measurement with a thermometer.

In all cases where the parent reports one or more of the five malaria symptoms, including but not limited to fever or episode of fever in the last 24 to 48 hours during the interview, the CHW should measure his/her T° with a thermometer. This step is vital in determining the best course of action.

A digital thermometer has four distinct parts:

- The sensor: the tip of the thermometer that should be placed under the armpit;
- LCD display window: used to read the T°;
- On/Off button: turns the device on and off;
- The battery compartment.



Underarm T° is taken using a digital thermometer in several steps, including **[3]**:

- Before using it, disinfect the sensor with an alcohol swab.
- Press the on/off button. A beep will sound and the display will read 188.8°E for approximately two seconds. The thermometer will display the last T° stored in the memory for two seconds, followed by a self-test T° of 37°C.
- When the display reads “Lo°C” and the “°C” sign flashes, the thermometer can be used.
- Place the tip of the thermometer in the center of the armpit. Lower the arm against the torso to cover the instrument.
- After the measurement, “C°” will stop flashing and the end of measurement beep will sound for approximately 10 seconds. The thermometer displays the body T°.
- Remove it and read the T°.
- The thermometer automatically turns off after 10 minutes, but to save the battery, it can be turned off manually by pressing the on/off button.

2.2 Performing a malaria RDT

If the measured T° corresponds to a fever (above 37.5°C) or if the parent reports that one or more of the five malaria symptoms are present, the CHW should perform a malaria RDT. This step is also vital in determining the best course of action.

- Prior to initiating an RDT, gather all the necessary supplies:
  - One new unopened cassette;
  - One new alcohol swab;
  - One new unopened sterile lancet;
  - The bottle of buffer;
  - One new pair of single-use examination gloves;
  - One sharps container.

- Check the expiration date on the back of the packaging of the new malaria RDT cassette.

- Wash hands with soap and water or hand sanitizer.

- Put on the new pair of single-use gloves.

- Open the packaging of the RDT cassette and check the contents. The packaging of the RDT cassette usually includes:
  - A single-use blood collection instrument.
  - The desiccant that protects the test from moisture before the packaging is opened. The CHW should check the color of the desiccant. The color of the desiccant should be **BLUE**. If it is **PINK**, the RDT cassette should be discarded and a new package should be used.
  - The malaria RDT cassette is divided into three parts **[4]**:
    1. **The round hole marked B:** into which the buffer solution is added;
    2. **The square hole marked A:** into which the blood is added;
    3. **The rectangular hole separated into two parts marked with the letters T and C**: window for reading test results.
       - The part with the letter **"T"** is where the diagnosis will be determined. If a red line appears in this window, the patient does indeed have malaria. If no line appears in this window, malaria has not been detected in the patient.
       - The part with the letter **"C"** verifies that the test is working properly. A red line must appear in this hole for the test to be valid. If no line appears in this hole, this means that the test is not working properly or that the completion procedure has not been followed and the results are therefore invalid.
       - If no line appears in this hole, the cassette must be discarded and the patient retested using a new test package that has not yet been used.

- Write the patient's name, and the date and time the RDT was performed on the cassette. For example, write the first and last name on the back of the cassette and the date and time on the front.
  Note: it is important to note this information when testing many patients at the same time, so as not to mix up the results.

- Open the alcohol swab and wipe clean the patient's 3rd or 4th finger (as these are the least used fingers for most patients), then allow to dry.
  Note: do not blow on the finger or dry it with a piece of tissue or paper as it would no longer be disinfected.
  Note: after using the alcohol swab, place it on its packaging and set it aside on the table. It will be used again to stop the bleeding once the blood sample has been taken.

- Remove the lancet from its pouch and prick the patient's finger, preferably to the side of the finger pulp, to obtain a drop of blood.
  Note: pricking the underside or fingertip is more painful.
- Make sure the finger prick gives enough blood, then throw the lancet in the sharps container.

Each time they use a lancet, CHWs must follow all the steps below to ensure blood safety **[4]**:

- Discard the lancet in the sharps container immediately after use.
- **Never** lay the lancet down before discarding it.
- **Never** throw the lancet in a container other than the sharps container.

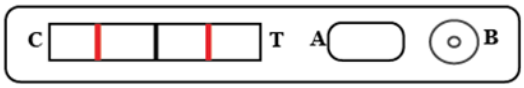
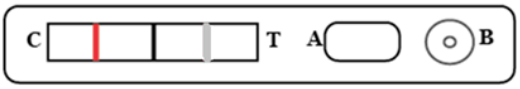
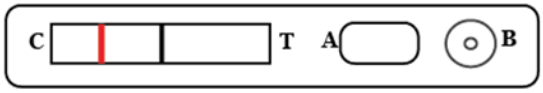
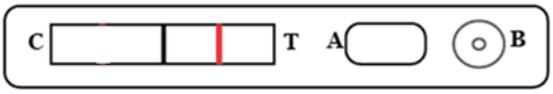
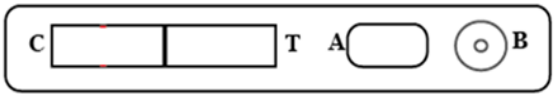
- **Never** use a lancet on more than one person.
- Use the available blood collection tool to collect the drop of blood needed for the RDT.

- Use the collection instrument to place the drop of blood in the hole intended to receive the drop of blood (square hole marked with the letter A).
  Note: the blood should be in contact with the buffer solution at the bottom of the hole and should be absorbed by this buffer solution. If the blood is simply deposited on the plastic edges of the hole, without being in contact with the buffer solution, the test will not work properly.
  Note: The collection instrument should be discarded in the sharps container after placing the blood in the test cassette. It should not be placed on the table or elsewhere before disposal.
- Add the buffer solution to the round hole marked "B." Add the exact number of drops (four drops) for the RDT performed. Hold the bottle vertically to get the right drop size. Place the bottle at least 2 cm above the well to allow the drops to fall freely.
- Allow the blood to migrate and wait 15 minutes after adding the buffer solution.

After an RDT is performed, three results are possible:

- Positive result
- Negative result
- Invalid result (test is not good or completion procedure was not followed correctly)

The table below summarizes the possible results of the malaria RDT **[3]**:

Images	(5) Presentations	(3) Results
	A dark line in the control window and a dark line in the test window.	**Positive**
	A dark line in the control window and a thin line in the test window.	
	A dark line in the control window and no line in the test window.	**Negative**
	No line in the control window but one line in the test window.	**Invalid**
	No line in the control window and no line in the test window.	

PRACTICE EXERCISE - Go over the exercise instructions. Specify whether the exercise should be done individually or in teams. Advise participants as to whether they should share their answers. Provide the answer during or at the end of the exercise.

Preparation: separate participants into pairs and give each pair an already completed malaria RDT with a visible result or a kit to perform the malaria RDT on one of the members of the pair.

Instructions:

- Ask each pair to have one of the members of the pair explain the different steps to perform the malaria RDT to the other member.
- Ask each pair to identify the result of their RDT.

PRACTICE EXERCISE - Go over the exercise instructions. Specify whether the exercise should be done individually or in teams. Advise participants as to whether they should share their answers. Provide the answer during or at the end of the exercise.

Preparation:

1. Provide a copy of the document with images of the malaria RDT results.
2. Project onto the screen the 10 images of the malaria RDT results numbered from 0 to 10 and display the images one at a time for approximately one minute.

Instructions:

1. Ask participants to individually interpret each projected image by writing down the image number followed by (+) for a positive test, (-) for a negative test, or (0) for an invalid test.
2. Ask three participants to share their results with the other participants.

3. Course of Action in the Presence of one or More Signs of Malaria:

The course of action that the CHW should take depends on the interview, physical examination, and additional examination, including T° measurement and malaria RDT.

3.1 Paracetamol and wrapping in a damp cloth.

- In case a fever is measured when the CHW takes the child's T° (T° greater than or equal to 37.5°C), the CHW should administer a dose of Paracetamol if possible, and recommend wrapping him/her in a wet cloth or cold bath to lower the T°.

  Note: for a child from zero to two months of age with fever, the CHW should apply the wet wrap, but should NOT administer Paracetamol.

  Note: Paracetamol should not be given to an unconscious child, even in case of fever, because the product may go into the lungs instead of the stomach and cause another serious problem. In this case, a wet wrap can be done.
- If a fever is not measured when the CHW takes the child's T° (T° below 37.5°C), the CHW should not give Paracetamol or apply a wet wrap.

The dosage of Paracetamol is explained in Section 5.

3.2 ACT

- In case of a positive malaria RDT result, the CHW can treat cases of uncomplicated malaria at home with ACT.
- In case of a negative malaria RDT result, the CHW should not administer ACT.

The dosage of ACT is explained in Section 5.

Section 5: Management of cases of uncomplicated malaria at home in children under five (5) years of age.

"In this section, we will address the management of cases of uncomplicated malaria at home in children under five years of age."

Management of cases of uncomplicated malaria at home in children under five years of age includes several steps as follows:

- Look for the five malaria-related symptoms
- T° measurement, if the parent reports one or more of the five symptoms
- Decrease his/her T° and administer Paracetamol if possible, in case of a high T°
- Perform the malaria RDT, if the parent reports a fever or an episode of fever or if the child's T° is elevated during the T° measurement
- Administration of ACT to the child in case of a positive malaria RDT
- Train the mother or caregiver on warning signs and treatment follow-up

1. Identification of a Case of Uncomplicated Malaria

Only cases of uncomplicated malaria are managed at home by the CHW. Therefore, it is important to differentiate between the uncomplicated and severe cases.

As a reminder, **uncomplicated malaria** is characterized by fever (axillary T° ≥37.5°C) or a history of fever with headache, muscle pain (soreness), joint weakness, gastrointestinal problems, and/or chills.

The absence of **severe malaria** symptoms should be noted, which include impaired consciousness, inability to walk or sit, respiratory distress, seizures, jaundice, "Coca Cola" or dark-colored urine, and abnormal bleeding.

Practically, uncomplicated malaria is confirmed by the presence of one of five malaria symptoms (fever or episode of fever in the last 24 to 48 hours, vomiting, lack of appetite, sluggishness or lack of energy, chills) and a positive malaria RDT.

2. Techniques for Lowering T°.

BRAINSTORMING – Ask each question to participants. Write their answers on a large sheet of paper. Then present the corresponding answer.

Questions:

1. Are you familiar with techniques for lowering T°?

Answers:

1. To lower body T° in a child. it is important to:

- Undress the child and place him/her in an area with as much cool air as possible and in the shade
- Ventilate or aerate the child
- Soak a piece of tissue in cool (but not cold) water and place the wet tissue on the child's body, especially on the chest and forehead, and continue to do so until the child's T° lowers
- Give the child plenty of fresh water to drink
- Administer Paracetamol

Paracetamol, or Acetaminophen, is a medication with analgesic (pain reliever) and antipyretic (anti-fever) properties. It helps relieve many pains (headache, tooth or joint pain, flu-like conditions, painful menstrual period, etc.). It is also effective against fever. Its action mechanism is still poorly understood.

The dosage of Paracetamol differs depending on the child's age. The number of tablets should be adjusted according to the available doses. The table below summarizes the dosage for 500 mg tablets.

Age ranges	**Dosage**
From 2 months to 11 months	1/4 tablet in the morning 1/4 tablet at noon 1/4 tablet in the evening
From 1 year (12 months) to 5 years (59 months)	1/2 tablet in the morning 1/2 tablet at noon 1/2 tablet in the evening

Note: in case of fever, the CHW should apply a wet wrap and administer Paracetamol as a single 1/4 or 1/2 tablet dose depending on the child's age.

3. Administration of ACT to the child if the malaria RDT is positive:

BRAINSTORMING – Ask each question to participants. Write their answers on a large sheet of paper. Then present the corresponding answer.

Questions:

1. What is ACT?
2. When should the CHW administer ACT?

Answers:

1. ACT is a pale yellow, round tablet with "NC" etched on one side and "CG" on the other. The tablet contains two medications: Artemether 20 mg + Lumefantrine 120 mg (ALU).
   ACT produces a high cure rate by removing the parasite.
2. The CHW should administer ACT for the home management of cases of uncomplicated malaria in children under five years of age which are confirmed by a positive malaria RDT result. It is a medication that is taken twice a day for three days.

The dosage of ACT differs depending on the child's age. The number of tablets should be adjusted according to the available doses. The table below summarizes the dosage for 20 mg tablets of Artemether and 120 mg tablets of Lumefantrine.

1. ACT dosage in Mali (children under five years of age)

Age ranges	**Dosage**		
	Day 1	**Day 2**	**Day 3**
< 4 years	1 tablet in the morning 1 tablet in the evening	1 tablet in the morning 1 tablet in the evening	1 tablet in the morning 1 tablet in the evening
From 4 years to 5 years	2 tablets in the morning 2 tablets in the evening	2 tablets in the morning 2 tablets in the evening	2 tablets in the morning 2 tablets in the evening

2. ACT dosing for Côte d'Ivoire (children under five years of age)

Age ranges	Dosage		
	Day 1	**Day 2**	**Day 3**
< 3 years	1 tablet in the morning 1 tablet in the evening	1 tablet in the morning 1 tablet in the evening	1 tablet in the morning 1 tablet in the evening
From 3 years to 5 years	2 tablets in the morning 2 tablets in the evening	2 tablets in the morning 2 tablets in the evening	2 tablets in the morning 2 tablets in the evening

Note: the preparation and administration of the first dose should be supervised by the CHW.
Note: if the child vomits within 30 minutes of administration, the dose should be taken again, and the treatment should be completed by providing the mother or child with enough medication for the full three-day treatment course.

PRACTICE EXERCISE - Go over the exercise instructions. Specify whether the exercise should be done individually or in teams. Advise participants as to whether they should share their answers. Provide the answer during or at the end of the exercise.
Preparation: separate participants into pairs. Hand out ACT to each pair.
Instructions:

1) Ask each pair to identify the dosage and expiration date of their ACT blister.
2) Ask each pair to choose the ACT dosage for a child aged (a) 39 months, (b) two years, (c) four years, (d) 28 months, and (e) five years.
3) Ask a representative from each pair to share their results with the rest of the participants.

Section 6: Management of cases of Uncomplicated Malaria in Children from Five Years of Age and Adults.

"We will address the management of cases of uncomplicated malaria at home in children from five years of age and in adults."

The steps for management of uncomplicated malaria at home by CHWs for children from five years of age and adults are the same as for children under five years of age. As a reminder, these steps are:

1. Look for the five malaria-related symptoms
2. T° measurement, if one or more of the five symptoms is present
3. Decrease his/her T° and administer Paracetamol if possible, in case of a high T°
4. Perform the malaria RDT, in case of fever or an episode of fever or if the child's T° is elevated during the T° measurement
5. Administration of ACT in case of a positive malaria RDT
6. Train the patient or caregiver about warning signs and treatment follow-up

As a reminder, the five malaria-related symptoms are the following:

1. Current fever or episode of fever within the last 24 hours or 48 hours
2. Vomiting
3. Lack of appetite
4. Sluggishness or lack of energy
5. Chills

In case of fever or episode of fever within 24 to 48 hours in children from five years of age and in adults, the CHW should measure the T° and perform the malaria RDT. The results determine the course of action for treatment.

BRAINSTORMING – Ask each question to participants. Write their answers on a large sheet of paper. Then present the corresponding answer.

Questions:

1. What do you know about the treatment of malaria in children from five years of age and adults?

Answers:

1. Treatment of children from five years of age and adults includes measures to lower the T° in case of fever, administration of Paracetamol and a cold bath or wet wrap, as well as ACT in case of a positive malaria RDT result.

The dosage of ACT differs depending on age. The number of tablets should be adjusted according to the available doses. The table below summarizes the dosage for 20 mg tablets of Artemether and 120 mg tablets of Lumefantrine (ALU) taken twice a day for three days **[7]**.

1. ACT dosage in Mali (children from five years of age and adults)

Age ranges	Dosages		
	Day 1	Day 2	Day 3
From 5 to 6 years	2 tablets in the morning 2 tablets in the evening	2 tablets in the morning 2 tablets in the evening	2 tablets in the morning 2 tablets in the evening
From 7 to 10 years	3 tablets in the morning 3 tablets in the evening	3 tablets in the morning 3 tablets in the evening	3 tablets in the morning 3 tablets in the evening
> 10 years	4 tablets in the morning 4 tablets in the evening	4 tablets in the morning 4 tablets in the evening	4 tablets in the morning 4 tablets in the evening

2. ACT Dosage in the Ivory Coast (Children from five years and Adults)

Age ranges	Dosages		
	Day 1	Day 2	Day 3
From 5 to 9 years	2 tablets in the morning 2 tablets in the evening	2 tablets in the morning 2 tablets in the evening	2 tablets in the morning 2 tablets in the evening
From 9 to 14 years	3 tablets in the morning 3 tablets in the evening	3 tablets in the morning 3 tablets in the evening	3 tablets in the morning 3 tablets in the evening
> 14 years	4 tablets in the morning 4 tablets in the evening	4 tablets in the morning 4 tablets in the evening	4 tablets in the morning 4 tablets in the evening

Note: the preparation and administration of the first dose should be supervised by the CHW.
Note: if the child vomits within 30 minutes of administration, the dose should be taken again, and the treatment should be completed by providing the mother or child with enough medication for the full three-day treatment course.

The dosage of Paracetamol differs depending on age. The number of tablets should be adjusted according to the available doses. The table below summarizes the dosage for 500 mg tablets of Paracetamol.

Age ranges	Dosages
1 year to less than 6 years	1/2 tablet in the morning 1/2 tablet at noon 1/2 tablet in the evening
6 years to less than 12 years	3/4 of tablet in the morning 3/4 of tablet at noon 3/4 tablet in the evening
12 years to less than 15 years	1 tablet in the morning 1 tablet at noon 1 tablet in the evening
15 years and older	2 tablets in the morning 2 tablets at noon 2 tablets in the evening

Note: in case of fever, the CHW should apply a wet wrap and administer Paracetamol as a single dose depending on the child's age to start treatment.

Section 7: Follow-up and Reference for Home Treatment for Malaria.

"We will discuss follow-up by the CHW after home management of cases of uncomplicated malaria."

After a patient is managed at home, the CHW should do a follow-up of three days with one visit per day: 24 hours, 48 hours and 72 hours post-treatment.

During this visit, the CHW should:

- Check the patient's overall health;
- Perform a new assessment at each visit (look for warning signs, T° measurement, etc.);
- Ensure availability and proper storage of the medications;
- Ensure sure the prescribed medications are taken properly;
- Teach the patient or caregiver to recognize the major warning signs that require immediate support to the community health center.

After 24 hours:

- If the condition worsens, the CHW should IMMEDIATELY take the patient to the community health center.
- If there is no change, if the condition improves, or if the patient is cured, the CHW should tell the patient to continue treatment until the end.
- If the patient has other symptoms the CHW should reassess the patient for other iCCM package diseases (ARI, diarrhea, malnutrition) and adjust the home management protocol if there are no warning signs.

After 48 hours:

- If the condition worsens or does not change, the CHW should IMMEDIATELY take the child to the community health center.
- If the condition improves, or if the patient is cured, the CHW should tell the patient to continue treatment until the end.
- If the patient has other symptoms the CHW should reassess the patient for other iCCM package diseases (ARI, diarrhea, malnutrition) and adjust the home management protocol if there are no warning signs.

After 72 hours:

- If the condition worsens or does not change, the CHW should IMMEDIATELY take the child to the community health center.
- If the condition improves, or if the patient is cured, the CHW should tell the patient to continue treatment until the end.
- If the patient has other symptoms the CHW should reassess the patient for other iCCM package diseases (ARI, diarrhea, malnutrition) and adjust the home management protocol if there are no warning signs.

CASE STUDY - Share the story with the participants. Make sure to answer all the comprehension questions. Then ask questions one at a time to the participants. Specify whether the work is to be done together, as a team, or individually. Tell participants if any of them will need to share their answers. Give a timeframe in which to do this work. Summarize the concept illustrated by this story at the end of the study.

Story:

Nassa is a very brave grandmother who takes care of her grandchildren. Every winter, Nassa prepares herbal teas to prevent her grandsons from developing malaria. She advises her grandchildren not to eat fresh crops or eggs to avoid contracting malaria.

Assan is a newly recruited CHW from the area where Nassa and her grandchildren live. During her HV, the CHW visits Nassa's family. After the usual greetings, the CHW explains the purpose of the visit. As Nassa is not convinced, she tells the CHW that she has been treating her grandchildren with herbal tea and Shea butter for years.

A few weeks later, two of her grandchildren become ill and, as usual, she uses her traditional method, but the children's symptoms worsen. Nassa remembers the presence of the CHW in the area and calls her to ask her to come back to see her grandchildren.

The CHW assesses the grandchildren and does not find any warning signs. However, the grandmother believes that her three-year-old grandchild had a fever last night and her 6-year-old grandchild currently has a fever.

Questions:

- What is the course of action that the CHW should take regarding the three year old child? Describe the treatment doses in detail, if treatments are needed.
- What is the course of action that the CHW should take regarding the six year old child? Describe the treatment doses in detail, if treatments are needed.
- What is the course of action that the CHW should take for the other three grandchildren, aged three, 11, and 16 years? Describe the treatment doses in detail, if treatments are needed.
- What follow-up should the CHW consider for these children?
- What advice should the CHW give to prevent the same situation from happening again?

Section 8: Assessment and Post-Test.

1. **Assessment:**

"We are going to do an assessment of this training module."

1. **ASK** participants what their thoughts are on this training module.
2. Then **ASK** the following questions:
    a. What aspects did you find most useful, and which should be maintained or even reinforced for the remainder of this training or for future training?
    b. What aspects were not beneficial to you and did not help you understand the concepts?
    c. What aspects can we improve?
3. **REMIND** participants that there is a suggestion box, and they should not hesitate to use it.
4. **REVIEW** the module objectives and ask participants if they achieved these objectives. If this is not the case, ask them why and summarize these objectives to achieve a better understanding.

2. **Post-test:**

- *Advise the participants that we are moving on to the post-test.*
- *Hand out a copy of the post-test to all participants.*
- *Read and go over the questions one at a time pausing (30 seconds per question) to encourage participation.*
- *At the end, thank all participants and collect the forms.*

Bibliographic References:

1. World Health Organization. Malaria [Internet]. 2020 [cited 15DEC2020]. Available at: https://www.who.int/fr/news-room/fact-sheets/detail/malaria
2. World Health Organization. Model IMCI handbook: Integrated Management of Childhood Illnesses [Internet]. Geneva; 2001. Available at: https://apps.who.int/iris/bitstream/handle/10665/66932/WHO_FCH_CAH_01.01_fre.pdf
3. WHO/USAID/URC/TDR/FIND. How to use a rapid diagnostic test (RDT): A Guide for Training at a Village and Clinic Level [Internet]. Geneva; 2008. Available at: https://cdn.who.int/media/docs/default-source/malaria/diagnosis/generic-pf-training-manual-web-fr.pdf?sfvrsn=2b5a7cb0_7&download=true
4. World Health Organization. Guidelines for Treatment of Malaria [Internet]. 3rd edition. Geneva: WHO; 2015. Available at: https://www.afro.who.int/sites/default/files/2017-06/9789241549127_eng.pdf
5. Ministry of Health. Republic of Mali. Mali National Malaria Control Policy [Internet]. Bamako; 2010. Available at: https://www.on-mali.org/pdf/malinationalpolicy.pdf
6. Ministry of Health. Republic of Mali. Malaria Control Strategic Plan 2013-2017 [Internet]. Bamako; 2013. Available at: https://www.severemalaria.org/sites/mmv-smo/files/content/attachments/2017-07-25/Mali%20malaria%20PStrag%202013-17PNLP_0.pdf
7. Ministry of Health. Republic of Mali. National Guidelines for the Management of Malaria Cases in Mali [Internet]. Bamako; 2016. Available at: https://www.severemalaria.org/sites/mmv-smo/files/content/attachments/2017-07-25/Mali%20treatment%20guidelines_0.pdf
8. Ministry of Health and Social Development. Republic of Mali. National Malaria Control Program. National Guidelines for the Management of Malaria Cases in Mali. Bamako; October 2020. Available at: http://cnom.sante.gov.ml/docs/Directives_PEC_Palu_2020.pdf
9. World Health Organization, Côte d'Ivoire. "World Malaria Day in Côte d'Ivoire: WHO encourages renewed political commitment and continued investment in malaria prevention and control." April 2022. Available at: https://www.afro.who.int/fr/countries/cote-divoire/news/journee-mondiale-de-lutte-contre-le-paludisme-en-cote-divoire-loms-encourage-le-renouvellement-de
10. Sanogo, Aliou Lousseyni. Morbidity and mortality of severe malaria in children 6 to 59 months of age in the pediatrics department of the Sikasso CSRéf. Thesis, University of Sciences, Techniques, and Technologies of Bamako, Faculty of Medicine and Dentistry. 21OCT2021. https://www.bibliosante.ml/bitstream/handle/123456789/4843/21M234.pdf?sequence=1