

# I Malaria



Malaria is a common, and often deadly, disease, but it can be prevented and cured. It is important for people with symptoms to get prompt treatment from a health facility. With proper treatment, malaria can be cured, but waiting to get treatment can lead to death. This chapter will focus on preventing, recognising and treating malaria.

*This publication is made possible by the generous support of the American People through the United States Agency for International Development (USAID) under the terms of agreement No. GPO-A-07-00004-00. The contents are the responsibility of the C-Change program, managed by AED, and do not necessarily reflect the views of USAID or the United States Government.*

# 1. Malaria overview



## Session objectives

By the end of this session, participants will be able to:

- Explain how malaria is transmitted
- Describe symptoms of malaria



## Session guide

1. **Ask:** Who has had malaria? Who has knows someone who had malaria? Encourage participants to share their experiences.
2. **Ask:** What is malaria? Allow participants to discuss.
3. **Ask:** What is a parasite? Allow participants to discuss. [Answer: A parasite is an organism that lives on or in another organism.]
4. **Explain** that malaria is an infection caused by a parasite that is carried from person to person, following a bite by a certain type of female mosquito. Malaria can make people very sick or die. Malaria is usually found in places with warm temperatures. Malaria parasites, which develop and live inside the mosquito, need warm temperatures to grow before they are old enough to be transmitted to humans. Although malaria can cause illness and death, it can be prevented and treated.
5. **Ask:** How do people get malaria? Allow participants to discuss. [The malaria parasites enter and leave the body through mosquito bites.]
6. **Ask:** Can all mosquitoes transmit malaria?
7. **Explain** that there are many different kinds of mosquitoes, but only 4 types of mosquitoes can pass on malaria parasites. *All malaria mosquitoes have white and black spots on their wings, but a mosquito with white and black spots is not necessarily a malaria mosquito.* Only female mosquitoes bite people. Male mosquitoes do not suck up blood and cannot pass on malaria parasites.
8. **Present** the following additional information on how malaria is transmitted.

People get malaria when one kind of a female mosquito that has the malaria parasites bites them and malaria parasites enter the person's blood. Once in a person's blood, the parasites travel to the liver and enter liver cells to grow and multiply. During this time, the infected person may or may not have symptoms. After some time (one week to several months), the parasites leave the liver cells and enter red blood cells. Once in the cells, the parasites continue to grow and multiply. After the parasites are finished growing, the infected red blood cells break open, freeing the parasites to attack and enter other red blood cells. Parasites are released when the red cells burst and they cause the fever, chills, and other malaria symptoms.

Since the malaria parasite is found in red blood cells, malaria can also be transmitted through blood transfusion, organ transplants, or the shared use of needles or syringes contaminated with blood. Malaria may also be transmitted from a mother to her foetus before or during delivery.

Malaria is not transmitted from person to person like a cold. You cannot get malaria from touching malaria-infected people. Anyone can get malaria. People who have many bites from mosquitoes infected with the malaria parasite are most at risk of becoming ill or even dying.

9. **Ask:** Where do mosquitoes breed? After participants have discussed, share the following information. Female mosquitoes need blood to produce eggs. The eggs are very small: you can hardly see them. They are laid on still or slow-flowing water. Usually the mosquitoes that bite you are breeding in water within 2 kilometres of the place where you live.
10. **Ask:** When and where do people usually get malaria? [Answer: Indoors between 10:00 p.m. and 6:00 a.m.]
11. **Ask:** What are the symptoms of malaria? [Answers: high fevers, shaking chills, and flulike symptoms, joint aches, head aches.]
12. **Ask:** What do you do if you or someone in your family has malaria symptoms?
13. **Ask:** How can you know for sure that you have malaria?
14. **Explain** that the only way to confirm if someone has malaria is for a health worker to examine a blood sample. It is a simple test that only needs a finger prick of blood that a health worker looks at under a microscope. Fever can be a symptom of many other illnesses and infections. It is important to be examined in a facility to know for sure if it is malaria so it can be treated properly. Some medicines can no longer be used to treat malaria because the parasites have become used to them, which is why it is important to go to a health facility rather than treating yourself with medicines.



## Key messages

- Malaria can be prevented.
- Malaria is easy to treat in all age groups, but prompt treatment is essential.
- People usually get malaria in the evening in their homes.

## 2: Preventing malaria



### Session objectives

By the end of this session, participants will be able to:

- Explain ways to prevent malaria
- Describe how they can prevent malaria in their home



### Session guide

1. **Ask:** what do you do to protect yourself from getting malaria? How do you help other members of your family from getting malaria? What do other people in our community do to prevent malaria? Encourage participants to discuss and share steps they take in their own lives and homes to prevent malaria.
2. After several participants have discussed and shared their experiences, **explain** that there are four main ways to prevent malaria:
  - Prevent mosquitoes from biting people and
  - Prevent infection and treat those who are infected
  - Control mosquito breeding
  - Kill mosquitoes
3. **Divide** participants into four groups and assign one of the four main ways to prevent malaria to each group. **Ask** each group to discuss specific things that they can do in their home and community related to their topic.
4. After 5-10 minutes, **ask** participants to come back to the larger group and present what they discussed. Ensure that the following activities are discussed by each group:

Prevent mosquitoes from biting people	Reduce transmission from people who are infected	Control mosquito breeding	Kill adult mosquitoes
<ul style="list-style-type: none"> <li>• Sleep under insecticide treated mosquito nets</li> <li>• Do not wash insecticide treated nets until it is time for the next treatment</li> <li>• Screen all windows and doors in the house, or at least in rooms where people sleep</li> <li>• Apply mosquito repellents to the skin</li> <li>• Burn mosquito coils</li> <li>• Wear long-sleeved clothing at night</li> </ul>	<ul style="list-style-type: none"> <li>• Give appropriate treatment to those who are infected to stop the spread of malaria</li> <li>• Give medicines to those at risk (pregnant women and children)</li> <li>• Visitors from non-malaria areas need to take medicines to prevent malaria called prophylaxis</li> </ul>	<ul style="list-style-type: none"> <li>• Eliminate places where mosquitoes can lay eggs</li> <li>• Fill and drain land that has standing water</li> <li>• Put special insecticides in the water to kill mosquito eggs</li> <li>• Remove empty containers (like tins) where water collects</li> </ul>	<ul style="list-style-type: none"> <li>• Spray rooms with insecticides before going to bed</li> <li>• Sleep under insecticide treated bed nets</li> </ul>

5. **Facilitate** a discussion about the group presentations by asking:
  - Do people in our community do all of these things to prevent malaria?
  - Why don't people do them?
  - How can we encourage people to do these activities?
6. **Explain** that if we do all of these activities, as well as treat the sick to stop further spread, we can reduce the risk of malaria for everyone in our community. We will probably not be able to get rid of malaria from our community completely, but we could greatly reduce the number of people who get malaria.
7. **Ask:** What changes can you make in your home to help reduce you and your family's risk of malaria infection? Encourage several participants to share.



## Key messages

- Malaria can be prevented by taking action at the home and in the community.
- There are three main ways to prevent malaria: Prevent mosquitoes from biting people, control mosquito breeding, and kill adult mosquitoes

## 3: Insecticide treated bed nets



### Session objectives

By the end of this session, participants will be able to:

- List different types of bed nets
- Explain the benefits of insecticide treated nets and particularly long-lasting insecticide treated nets
- Describe how to treat mosquito nets with insecticide



### Session guide

1. **Ask:** What are the different kinds of bed nets that you have seen for sale or in use in our community?
2. **Ask:** What is the difference between these different kinds of bed nets?
3. **Explain** that there are two main categories of bed nets, those that have been treated with a long-lasting insecticide (also known as LLITNs) and those nets that have not been treated at all.
4. **Ask** all participants to stand in the middle of the meeting space. Explain that you will read a characteristic of a bed net. If they think it is describing an untreated bed net move to the right, if they think it is describing a long-lasting insecticide treated bed net move to the left. After each statement is read, ask one or two participants to explain why they moved to their side.
  - Provide a high level of protection from mosquitoes. (Long-lasting insecticide treated nets)
  - Can let mosquitoes in to bite when people go in and out of the bed (Untreated Nets)
  - Kill mosquitoes that touch the net. (Long-lasting insecticide treated nets)
  - Reduce the number of mosquitoes in the house, inside and outside the net. (Long-lasting insecticide treated nets)
  - Are safe for people to use (Both)
  - Provide only some protection from mosquitoes. (Untreated Nets)
  - Also kill lice, ticks, and pests such as bedbugs and cockroaches. (Long-lasting insecticide treated nets)
  - Do not kill or repel mosquitoes. (Untreated Nets)
5. **Ask:** Who here sleeps under a bed net?  
Ask participants who do sleep under a bed net:
  - Why do you sleep under a bed net?
  - Does everyone in your family sleep under one?
  - Is it a treated bed net?Ask participants who do not sleep under a net:
  - Why don't you sleep under a bed net?

6. **Ask:** What advice would you give to a person or family who does not sleep under long-lasting insecticide-treated nets? Are there situations when a family cannot share a bed net? What should be done in those circumstances?
7. **Share** the following information:
  - Long-lasting insecticide treated nets kill and repel mosquitoes. These nets can work for up to 3 years or for about 20 washes. These nets do not have to be retreated during this time. After 21 washes, the long-lasting insecticide-treated nets should be discarded and a new long-lasting insecticide-treated net should be used
  - The long-lasting insecticide-treated nets for sale in Kenya are: PermaNet, Supanet, Duranet, and Yakool.
  - Long-lasting insecticide-treated nets are available for free for pregnant women and caregivers of children under 1 year of age at facilities. Sometimes nets are even available for caregivers with children under the age of years.
  - If you have an insecticide treated net (ITN) that is not long-lasting but has been treated it will require re-treatment with an insecticide at least every 12 months.
8. **Ask:** Who is most vulnerable to malaria in our families? Why? [Participants should mention pregnant women and children under 5 years of age.] **Ask:** Why is it important for these people to sleep under long-lasting insecticide treated bed nets?
9. **Facilitate** a discussion with the following questions:
  - Do you have a net in your home? What kind of a net do you have?
  - In your home do pregnant women and young children sleep under a net? If no, why not?
  - Who sleeps under the net? Why?
  - Why might it be more important for these people to sleep under the net?
  - What are benefits of having nets used by pregnant woman and young children compared to the head of household?
10. **Ask:** How do insecticide-treated bed nets benefit the community? Encourage participants to discuss.
11. **Explain** that insecticide treated nets kill mosquitoes. When whole communities use insecticide treated nets there are fewer mosquitoes carrying malaria parasites. This leads to a reduction in the number of malaria cases in an area, hence fewer children become sick from malaria or die.
12. **Ask** for two volunteers to role play the following scene in front of the group.
  - A father has bought one insecticide treated bed net for the family, but he insists on using it, so that he remains healthy so that he can go to work. His wife is pregnant and he has a young daughter. His brother tries to convince him to share the net with his pregnant wife and child or to buy another net.
13. After the role play, **ask** participants the following questions:
  - Do you agree with what the advice that was given and what the characters decided to do?
  - Would you have done anything differently?
  - How will the decisions the actors made influence their lives?
  - Is what happened similar to what would happen in our community?
  - Would anyone else like to perform this role play and show another way the conversation could go?



## Key messages

- Long-lasting insecticide treated nets are best for preventing malaria.
- It is especially important for pregnant women and young children to sleep under insecticide treated nets.

### Re-treating bed nets

Some families may have nets that are not long-lasting insecticide-treated nets. Long-lasting insecticide treated nets do not need to be re-treated, but untreated nets must be re-treated with insecticide. Retreating nets is simple and quick, but it is important to do it correctly:

- Only use recommended insecticides and re-treat nets at least every 12 months.
- Mix insecticide in the right amount of water for the net as indicated by the instructions on the package.
- Dip and dry the net so that the whole net is treated.
- Always read the instructions on the pack of insecticide and follow them carefully.

## 4: Malaria in pregnancy



### Session objectives

By the end of this session, participants will be able to:

- Explain why pregnant women are particularly at risk for malaria
- List how malaria can be prevented in pregnant women
- Recognize symptoms of malaria



### Session guide

1. **Explain** that since malaria is so common in our community many of us may not become as sick when we are infected; during our lives, we have developed immunity. Ask: Is this the case for all members of our community, or are there some groups who are still at risk? Which groups? [Children under five, pregnant women, people living with HIV infection, as well as visitors to malaria areas from non-malaria areas.]
2. **Explain** that during this session we will talk about malaria in pregnancy, in other sessions we will talk about malaria in children. Ask: Why is malaria so dangerous for pregnant women? Encourage participants to discuss.
3. **Share** the following information:
  - Pregnant women are more at risk for malaria infection because pregnancy lowers a woman's immunity to malaria. Pregnant women are more likely to become very ill or die if infected.
  - Malaria during pregnancy can cause severe anaemia, miscarriages, stillbirths, babies to be born small, and death.
  - When a pregnant woman is infected with malaria during pregnancy there are parasites in the placenta. This causes the foetus to not get adequate nutrition from the placenta and results in low birth weight babies.
  - Babies born with low birth weight may not survive and if they survive, they may not develop as they should.
4. **Explain** that often adult women have developed enough immunity to malaria that, even during pregnancy, **malaria infection may NOT cause a fever or other symptoms**. But that does not mean they are not at risk. Instead malaria causes anaemia in the mother with malaria parasites in the placenta. So even if pregnant women do not have a fever there can be serious risks for the woman and her baby. The parasites in the placenta can limit the amount of nutrients going to the foetus, so babies are born small for their age or can not develop properly.
5. **Ask:** Do you know any women who had malaria while they were pregnant? Encourage participants to discuss and share experiences.
6. **Ask:** What advice would you give to a pregnant woman about malaria? [Participants should mention: go for antenatal care and get medicine to prevent malaria, sleep under an insecticide-treated bed net, and go for treatment at a health facility immediately if they have malaria symptoms.]

7. **Explain** that it is especially important for pregnant women to protect themselves against malaria infection using all of the ways available to them. At ANC visits, pregnant women living in malaria endemic areas (mainly in sections of Nyanza, Western and Coastal Kenya) are given antimalarial medicines called SP (Sulfadoxine Pyrimethamine) to prevent malaria during pregnancy. Pregnant women should receive at least two doses, each at least 1 month apart, of the recommended antimalarial drug. The first dose is given at the first regularly scheduled ANC visit after the woman feels movement from the foetus. The second dose is given at the next scheduled visit. The medicine does not work if the pregnant woman only receives 1 dose! She must receive **both** doses to be protected from malaria. This medicine is called SP (Sulfadoxine Pyrimethamine) and it should be free of charge at all facilities. Ideally a pregnant woman should come for at least four ANC visits during pregnancy, with three visits after she has started to feel movement in the foetus. In addition to the antimalarial medicines, pregnant women are also given long-lasting insecticide-treated nets and iron/folate tablets. It is important for pregnant women to take all of these tablets to help prevent anaemia. Pregnant women can also get free insecticide treated bed nets from facilities, it is important to use these throughout pregnancy.
8. **Facilitate** a discussion with the following questions:
  - Has anyone (or anyone's wife) taken these medicines to prevent malaria during pregnancy?
  - Do most women in our community go for more than one ANC visit?
  - Why do some women not go for ANC visits?
  - What support do women need to go for ANC visits?
9. **Explain** that women who are pregnant for the first time or second time have the greatest risk for complications from malaria. They also might not attend antenatal services as often as other pregnant women, especially if they are unmarried or very young. It is important for all pregnant women to go for four ANC visits during their pregnancy and give birth at a health facility. This is best for the health of the mother and the baby.
10. **Ask:** How does HIV infection affect pregnant women and malaria? Encourage participants to discuss.
11. **Share** the following:
  - All pregnant women will be encouraged to be tested for HIV when they go to a health facility for an ANC visit. It is important for pregnant women to know their status so that if they are HIV positive, they can take steps to prevent passing the infection to the baby, as well as protect their own health.
  - HIV-infected pregnant women are at higher risk for malaria and if infected with malaria their infection is much more serious.
  - Pregnant women with HIV infection are more likely to have symptoms and more at risk for problems like giving birth early, giving birth to smaller babies, and limiting the natural immunity babies get from their mothers, making them more at risk for common childhood illnesses.
  - HIV-positive pregnant women should have more doses of antimalarial medicines and it is important that they attend ANC/PMTCT services during their pregnancy.
  - HIV in pregnancy combined with malaria increases the risk of severe anaemia and lessens any immunity that women may have developed during their lives.
  - Studies show that HIV-positive mothers with malaria are more likely to give birth to babies who are small for their age. These small babies have higher rates of mother-to-child transmission of HIV compared with babies born a normal size.
  - Malaria infection during pregnancy can increase the risk of mother-to-child transmission of HIV during pregnancy and during birth. Malaria can cause a higher viral load that can increase the risk of transmission during breastfeeding.

12. **Ask:** What advice would you give to a pregnant woman who was HIV positive about malaria?
13. **Explain** that in addition to the medicines that pregnant women can take to help prevent malaria, it is also important for pregnant women to use insecticide-treated bed nets.
14. **Facilitate** a discussion with the following questions:
  - Are all bed nets treated with insecticide?
  - Do most pregnant women in our community sleep under an insecticide treated net? Why or why not?
  - Where can pregnant women get insecticide treated nets?
15. **Share** the following information:
  - The use of an ITN by a pregnant woman benefits the woman as well as her family.
  - ITN use during pregnancy protects the pregnant woman from getting and helps babies to be born a normal weight.
  - ITN use also benefits the baby who sleeps under the net with the mother (we will talk about this more in the next session).
  - Long-lasting insecticide treated nets are available free of charge to pregnant women from health facilities.
16. Answer any questions participants have and share the key messages.



## Key messages

- Pregnant women have a greater risk of getting malaria and should sleep under insecticide treated nets.
- Pregnant women should go for antenatal visits and take two doses of antimalarial medicines and all of the iron/folate tablets.
- Pregnant women with HIV infection have an even greater risk for malaria and should go for ANC and PMTCT visits to learn how to protect themselves and their baby.

## 5: Malaria and children



### Session objectives

By the end of this session, participants will be able to:

- Describe malaria symptoms in children
- List ways malaria can be prevented in children
- Describe when to take a child for treatment
- Explain how children should be treated for malaria
- Describe malaria danger signs in children



### Session guide

1. **Ask:** In our community, what are the most common illnesses that children have during the first 5 years of life.
2. **Ask:** What happens to children who have malaria?
3. **Ask:** Does anyone have a story to share about a child they knew that had malaria?
4. **Explain** that children under 5 years of age are especially at risk for becoming very sick or dying from malaria because they do not have the immunity to malaria that adults have. In areas where malaria is common, it can be the leading cause of death and poor growth among young children.
5. **Ask:** What are the symptoms of malaria in children? [Malaria should be suspected if children have fever, vomiting, drowsiness or fits, or refuse to eat.]
6. **Ask:** How are children usually treated for malaria in our community? Encourage participants to share their personal experiences and observations.
7. **Share** the following:
  - Often mothers and other caretakers buy antimalarial and antifever drugs from kiosks and pharmacies.
  - Drug sellers are not always trained to give appropriate treatment, advice or information on when and how to take these medicines, which can cause serious problems. Children can receive the wrong type or the wrong amount of drugs when purchased outside of a health facility.
  - Even if they have the right drugs, children may not receive the right dosages.
  - In addition, using these medicines when children do not have malaria may cause the medicines not to work well later on (this is called drug resistance).
8. **Ask:** How should children be treated for malaria?
9. **Explain** the following:
  - Children should be taken to a health facility for treatment.

- A child with malaria needs to take all of the medicines that a health worker prescribes, even if the fever disappears rapidly. If the treatment is not completed, the malaria could become more serious and difficult to cure.
  - In addition to taking the antimalarial medicine, it is important for children with malaria to continue to eat and take additional fluids during illness; and continued fluids and feeding immediately after illness. Malaria burns up energy, and the child loses a lot of body fluids through sweating. The child should be offered food and drink frequently to help prevent malnutrition and dehydration. Frequent breastfeeding prevents dehydration and helps the child fight infections, including malaria. Children with malaria should be breastfed as often as possible.
  - Frequent malarial infection can slow children's growth and brain development and is likely to cause anaemia. A child who has had several bouts of malaria should be checked for anaemia.
  - All babies and children, sick or not, need to take enough micronutrients, especially iron and vitamin A.
14. **Ask:** What are the malaria danger signs that a child should be taken to a health facility immediately? [**Explain** that signs of severe malaria include: multiple fits, extreme weakness or exhaustion, coma, difficulty breathing.]
15. **Ask:** Why is it so important for children to get treatment for malaria immediately? [Participants should mention that children with malaria who fail to receive prompt and appropriate treatment may become much more ill. Children with a fever from malaria that is not treated within a day might die.]
16. **Share** the following information:
- If the malaria symptoms continue after treatment, the child should be taken to a health facility for help. The problem may be:
    - o the child is not receiving enough medicine
    - o the child has an illness other than malaria
    - o the medicine being used cannot treat the malaria (because of resistance), and another medicine is needed.
  - Children with a fever should be kept cool for as long as the fever persists by:
    - o sponging or bathing with cool (not cold) water
    - o covering the child with only a few clothes or one blanket.
17. **Explain** that even though malaria can be prevented and treated, in our community children still die because they lack access to proper care and medicine, or do not have access to preventive measures such as insecticide treated bed nets. **Ask:** What can we do in our families to be sure that malaria is prevented and that children receive prompt treatment? Encourage participants to share ideas.
18. **Ask** for two volunteers to role play the following scene in front of the group.
- A mother and her neighbour are talking. The neighbour notices the child seems to have a fever, be very tired, and have trouble breathing. The mother also mentions that the child has not been eating well. The neighbour talks with the mother about taking her child for treatment and why it is important not to wait.
19. After each role play, **ask** participants the following questions:
- Do you agree with what the advice that was given and what the characters decided to do?
  - Would you have done anything differently?
  - Is what happened similar to what would happen in our community?



## Key messages

- Children under 5 have a much higher risk of becoming infected with and dying from malaria.
- It is important for children under 5 to sleep under insecticide treated nets.
- Many children's lives can be saved by the prevention and early treatment of malaria.

## 6: Treating malaria



### Session objectives

By the end of this session, participants will be able to:

- Describe why it is important for people to receive treatment from a health facility
- Explain the risks of buying medicine to treat malaria without consulting a health worker



### Session guide

1. **Ask:** If someone in your family has a fever, what do you do? Encourage participants to share experiences.
2. **Ask:** If someone has a fever, do you think they have malaria? What are the other symptoms that make you think someone has malaria? Encourage participants to discuss.
3. **Explain** that in areas where malaria is very common, people may get the disease several times during their lives. This gives them some resistance to the disease, so the attacks of malaria often become less severe as they get older. However, adults who come from areas where malaria is not common can become very ill with malaria, just like children.
4. **Ask:** Who would you recommend a person with suspected malaria seek treatment from? [Possible responses include traditional healer, pharmacist, drug vendors, community health worker, health worker]
5. **Share** the following information:
  - Fever can be a symptom of many other illnesses and infections. It is important to be examined in a health facility to know for sure if it is malaria so it can be treated properly. Some medicines can no longer be used to treat malaria because the parasites have become used to them, which is why it is important to go to a health facility rather than treating yourself with medicines.
  - It is often difficult to tell whether a sickness is caused by malaria or some other disease, because the features may be similar. Therefore, if the patient's condition has not improved within 2 days after the start of an adequate malaria treatment, he or she needs urgent care in the nearest clinic or hospital, for further assessment and treatment.
6. **Ask:** Why is it important to go for treatment quickly if someone has malaria. [**Answer:** Infection with malaria, if not promptly treated, may cause kidney failure, seizures, mental confusion, coma, and death. Mild malaria should always be treated quickly because it can quickly develop into severe illness and death. It is important for people with malaria to take all the medication they are given, even if they start to feel better the medications should all be finished.]
7. **Ask** for two volunteers to role play the following scene in front of the group.

*Two friends are talking. One friend complains of having a fever and joint pain. He says that he has gone to the traditional healer for herbs but is still feeling sick. The other friend gives suggestions for what to do.*

8. After the role play, **ask** participants the following questions:

- Do you agree with what the advice that was given and what the characters decided to do?
- Would you have done anything differently?
- Is what happened similar to what would happen in our community?
- Would two other volunteers like to perform this role play?

9. **Ask** for two other volunteers to role play the following scene in front of the group.

*Two friends are talking after church. One friend says that she think her child has malaria because he has a fever. She says she is sure it is malaria and she is going to go home to give the child some of the pills she bought at the kiosk the last time she had malaria. She is very pleased that they did not finish all of the medicine last time and thinks it was good that she still has some remaining. The other friend listens and gives suggestions for what to do.*

10. After the role play, **ask** participants the following questions:

- Do you agree with what the advice that was given and what the characters decided to do?
- Would you have done anything differently?
- Is what happened similar to what would happen in our community?
- Would two other volunteers like to perform this role play?

11. After all role plays have been performed, **summarize** the role plays and ask participants to talk about how it relates to issues in our own community.



## Key messages

- Get treatment for malaria immediately from a health facility.
- Take all malaria medicines prescribed, even if you start to feel better.



## Background notes

Malaria is an infection caused by a parasite and carried from person to person following a bite from a female anopheles mosquito. Malaria can make people very sick or die. People with malaria are usually sick with high fevers, shaking chills, and flu-like illness. Although malaria can cause illness and death, it can be prevented.

Malaria is usually found in areas with higher temperatures, which is where mosquitoes usually live. Malaria parasites, which develop and live inside the mosquito, need warm temperatures to grow before they are old enough to be transmitted to humans.

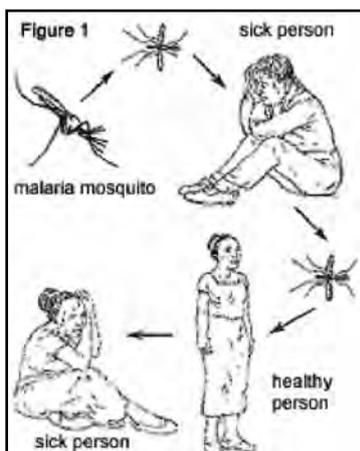
### Malaria transmission

Malaria is transmitted when a female anopheles mosquito carrying malaria parasites bites a person and passes on the parasite. When a mosquito bites, it takes a small amount of blood from the person that can have tiny malaria parasites. The parasite grows in the mosquito's stomach for a week or more, and then travels to the mosquito's salivary glands. The next time the mosquito bites someone; these parasites mix with the mosquito's saliva and are injected into the bite. Mosquitoes that transmit malaria mostly bite people indoors between 10.00 p.m. and 6.00 a.m.

Once in a person's blood, the parasites travel to the liver and enter liver cells to grow and multiply. During this time, the infected person has no symptoms. After some time (one week to several months), the parasites leave the liver cells and enter red blood cells. Once in the cells, the parasites continue to grow and multiply. After the parasites mature, the infected red blood cells break open, freeing the parasites to attack and enter other red blood cells. Parasites are released when the red cells burst and they cause the fever, chills, and other malaria symptoms. When a mosquito bites an infected person, it ingests malaria parasites and the cycle of transmission continues.

Since the malaria parasite is found in red blood cells, malaria can also be transmitted through blood transfusion, organ transplant, or the shared use of needles or syringes contaminated with blood. Malaria may also be transmitted from a mother to her foetus before or during delivery, but medical workers usually take care of this when a mother delivers at a facility.

Malaria is not transmitted from person to person like a cold. You cannot get malaria from touching malaria-infected people. Anyone can get malaria. People who have many bites from mosquitoes infected with the malaria parasite are most at risk of becoming ill or dying. Young children and pregnant women are also at a high risk of malaria infection because their bodies have little or no immunity to malaria, so they are more likely to become very ill if infected and possibly die.



When a mosquito bites a person it sucks up blood. If the person has malaria, some of the parasites in the blood will be sucked into the mosquito.

The malaria parasites multiply and develop in the mosquito. After 10-14 days they are mature and ready to be passed on to someone else.

If the mosquito now bites a healthy person, the malaria parasites will enter the body of the healthy person. This person will then become ill.

*From WHO. Malaria: A Manual for Community Health Workers*

## Preventing malaria

The following things can help you and your family prevent malaria:

- Sleep under insecticide treated bed nets and re-treat them at regularly if the net is not a long lasting ITN. (If a family has a pregnant woman or young children, it is very important that these people use the nets before anyone else. They are most at risk.)
- Do not wash insecticide treated nets until it is time for the next treatment. Regular nets usually need retreatment every 12 months. Long lasting ITNs do not need retreatment and last 3 years or for about 20 washes.
- Reduce the number of mosquitoes in and around your home by:
  - Removing empty containers (like tins) where mosquitoes can breed
  - Draining nearby pools of water
  - Screening doors and windows against mosquitoes if possible
- Spray insecticides on your home's walls to kill mosquitoes that come inside
- Wear insect repellent and long-sleeved clothing when you are outside at night
- Give medicines to prevent malaria among high-risk groups
- Treat those with malaria properly so they cannot cause malaria to be transmitted

### **Bed nets**

In addition to nets that have to be treated with insecticide, there are now new long-lasting insecticide-treated nets that can repel and kill mosquitoes for up to 3 years or for about 20 washes. These nets do not have to be retreated during this time. The long-lasting insecticide-treated nets for sale in Kenya are called PermaNet, Supanet, Duranet and Yakool.

If you have a net that is not long lasting be sure to retreat the net with insecticide every 12 months. When whole communities use insecticide treated nets there are fewer mosquitoes carrying malaria parasites. The advantages for the community are that there is less severe malaria and fewer children die, fewer children become sick from malaria, and young children are healthier and grow better

Treating nets with insecticide is simple and quick, but it is important to do it correctly:

- Only use recommended insecticides and re-treat nets at the right time
- Mix insecticide in the right amount of water for the net
- Dip and dry the net so that the whole net is treated
- Always read the instructions on the pack of insecticide and follow them carefully

The table below compares insecticide treated nets with untreated nets.

Insecticide Treated Nets	Untreated Nets
<ul style="list-style-type: none"><li>• Provide a high level of protection from mosquitoes.</li><li>• Kill mosquitoes that touch the net.</li><li>• Reduce the number of mosquitoes in the house, inside and outside the net.</li><li>• Also kill lice, ticks, and pests such as bedbugs and cockroaches.</li><li>• Are safe for people to use.</li></ul>	<ul style="list-style-type: none"><li>• Provide some protection from mosquitoes.</li><li>• Let mosquitoes in to bite:<ul style="list-style-type: none"><li>- When a person enters or leaves.</li><li>- If there is a hole or tear in the net.</li><li>- If the net is badly hung.</li><li>- When skin touches the net.</li></ul></li><li>• Do not kill or repel mosquitoes.</li></ul>

## Mosquito breeding

Mosquitoes breed wherever there is still water; in ponds, swamps, puddles, pits, drains and in the moisture on long grass and bushes. They also breed along the edges of streams and in water containers, tanks and rice fields.

The number of mosquitoes can be reduced by:

- Filling in or draining places where water collects
- Covering water containers or tanks
- Clearing bushes around houses

Malaria affects the entire community. Everyone can work together to reduce the places where mosquitoes breed and to organize regular treatment of mosquito nets with insecticide. Communities should ask all health workers and political leaders in their regions to help them prevent and control malaria.

## Signs and symptoms of malaria

Malaria can vary from mild to serious disease. Most people with malaria have:

- Fever (hot body) or a history of fever lasting a few days
- Headache
- Body and joint pains
- Feeling cold and sometimes shivering
- Loss of appetite
- Sometimes-abdominal pains, diarrhoea, nausea and vomiting

Malaria may cause anaemia and jaundice (yellow colouring of the skin and eyes) because of the breakdown of red blood cells. Infection with malaria, if not promptly treated, may cause kidney failure, seizures, mental confusion, coma, and death. For most people, symptoms begin 10 days to 4 weeks after infection, although a person may feel ill as early as 7 days or as late as 1 year after. If you think you, or someone you are caring for, has malaria, go to a health facility immediately. Different malaria parasites cause different patterns of malaria

## Treating malaria

Malaria can be treated. If the right medicines are used, people who have malaria can be cured. However, the disease can continue if it is left untreated or if it is treated with the wrong medicine. Some medicines are no longer effective because the parasite is resistant to them, which is why it is important to go to a health facility rather than treating yourself with medicines bought over the counter in chemists and from local shops.

Malaria should be treated as soon as possible, before it becomes life threatening. People who have any of the above symptoms should go to a health centre as soon as possible. Mild malaria should always be treated quickly because it can quickly develop into severe illness and death. It is important for people with malaria to take all the medication they are given.

To be sure someone is treated properly, it is important that caregivers recognize early symptoms and danger signs. For children, danger signs include:

- Looking unwell
- Not eating or drinking
- Being tired
- Losing consciousness
- Having convulsions
- Vomiting
- Having a high fever
- Breathing fast or having difficulty breathing

It is important that caregivers seek urgent care from a health care provider if a child is experiencing any of the above symptoms.

## Malaria during pregnancy

Pregnant women are at special risk from malaria infection. Malaria infection during pregnancy can have dangerous effects on both the mother and foetus, including anaemia (thin blood) in the mother, miscarriage, premature delivery, and delivery of babies who are smaller than normal, called low birthweight infants (less than 2500 g). Babies who are born underweight are more likely to be sick or die during their first year. Malaria during pregnancy is particularly dangerous for women with their first pregnancies and for women who are HIV-positive.

### **Prevention and control of malaria during pregnancy**

Pregnant mothers should go for four (4) antenatal visits. During antenatal visits, pregnant women will be given two doses of antimalarial medicine called SP (Fansidar) to prevent malaria. These drugs are not harmful to the mother or the baby. Often a pregnant woman can have malaria but shows no signs of having malaria. For example, she may not have a fever or any other symptoms. This is very dangerous because she can still pass malaria onto her unborn baby. To protect the mother and the unborn baby from possible malaria, the Ministry of Health recommends that all pregnant women receive two treatment doses of antimalarial medicine when they attend the antenatal clinic during the pregnancy, whether they appear to have malaria or not. It is especially important for pregnant women and children under 5 years of age to sleep under insecticide treated nets.



### **Gender and malaria**

Gender awareness plays a role in the event of any type of illness. Men, women, boys, and girls of a family should have equal access to health services, as well as the ability to seek out those services. One sex should not be favoured over another. Pregnant women and children under five years of age are very vulnerable to malaria because it can be dangerous to their health and can cause them to die. A protective measure like a bed net is often used by the male in the household so that he can go to work without sickness. However, these resources need to be shared and used to protect the pregnant women and children who face more danger if they get malaria. It is also important for pregnant women to receive medicine that would help prevent malaria during pregnancy, but this requires money which is often controlled by the husband. A husband's understanding and involvement in health care decisions and prevention measures is very important.

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