**Malaria Case Management Training Manual for Health Professionals in Ethiopia**

**Guide for Facilitators**



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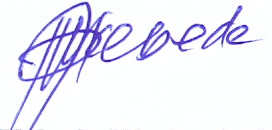
# Foreword

Malaria is a major public health problem in Ethiopia. About 75% of the total area of the country is considered malarious and about 60% of the population living in these areas is at risk of malaria. According to the World Malaria Report of 2015 (WMR 2015), the country reported an estimated 2.1 million malaria cases and 213 deaths in 2013.

The National Malaria Prevention, Control and Elimination Program (NMCP) strategy (NSP 2014-2020) aims to achieve the goals of near zero malaria deaths (no more than 1 confirmed malaria death per 100,000 population at risk); reduction of malaria cases by 75% from baseline of 2013; and elimination of malaria in selected low transmission areas. To achieve the goals and objectives set out, the National Malaria Prevention, Control and Elimination program needs to have appropriately planned and targeted delivery of essential malaria interventions, including: early diagnostic testing of suspected malaria and prompt treatment of confirmed cases with effective artemisinin-based combination therapy (ACT); and application of appropriate vector control interventions, particularly the use of insecticide-treated nets (LLINs) and indoor residual spraying (IRS). To implement these interventions, the availability and readiness of trained and skilled health workforce is critical.

This training manual on malaria case management has been developed to support the staff involved in malaria prevention, control and elimination program in Ethiopia in the effective organization and execution of malaria diagnosis and case management services. The manual incorporates basics on vector control, epidemics detection and response, supply chain management, and monitoring and evaluation. Thus, it is believed this training material is comprehensive as well as timely. Therefore, all partners working in the area are advised to strictly use this manual whenever they organize training for clinicians. This avoids use of different training materials for similar competence and provides basic understanding on malaria prevention, control and elimination interventions.

Lastly, as the country is planning to go for a subnational malaria elimination program, there is a critical need for having well trained health personnel at all levels. Thus, it is my firm belief that our program partners would redouble their efforts in supporting the Ministry in its ambitious goal of ensuring availability of well-trained clinicians who could accurately diagnose and manage malaria cases at all tier of the health system. I can assure that the Ministry would maximize its efforts in the fight against malaria until the disease is wiped out from the country.

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Kebede Worku (MD, MPH)

State Minister of Health

# Abbreviations

|  |  |
| --- | --- |
| Abt/PHSP | Abt Associates Private Health Sector Program |
| ACIPH | Addis Continental Institute of Public Health |
| ACT | Artemisinin-based Combination Therapy |
| API | Annual Parasite Incidence |
| EPHI | Ethiopian Public Health Institute |
| FMOH | Federal Ministry of Health |
| G6PD | Glucose-6- Phosphate Dehydrogenase |
| HEW | Health Extension Worker |
| HMIS | Health Management Information System |
| HRP-2 | Histidine Rich Protein II |
| IFHP | Integrated Family Health Program |
| IMNCI | Integrated Management of Newborn and Childhood Illness |
| IPD | Inpatient Department |
| IPLS | Integrated Pharmaceuticals Logistics System |
| IPT | Intermittent Preventive Treatment |
| IRS | Indoor Residual Spraying |
| LLIN | Long Lasting Insecticide Treated Nets |
| LMIS | Logistics Management Information System |
| MACEPA | Malaria Control and Elimination Partnership in Africa |
| M&E | Monitoring and Evaluation |
| MFTT | Mass Fever Testing and Treatment |
| MIS | Malaria Indicator Survey |
| MPFT | Mass Presumptive Fever Treatment |
| NMCP | National Malaria Control Program |
| OPD | Outpatient Department |
| PATH | Program for Appropriate Technology in Health |
| PCR | Polymerase Chain Reaction |
| PFSA | Pharmaceuticals Fund and Supply Agency |
| PHCU | Primary Health Care Unit |
| PHEM | Public Health Emergency Management |
| pLDH | Plasmodium Lactate Dehydrogenase |
| PLMP | Pharmaceuticals Logistics Master Plan |
| PMI | President’s Malaria Initiative |
| RBC | Red Blood Cell |
| RDT | Rapid Diagnostic Test |
| RRF | Report and Requisition Form |
| SBCC | Social Behavioral Change Communication |
| SCM | Supply Chain Management |
| SOP | Standard Operating Procedure |
| SPR | Slide positivity rate |
| TAC | Technical Advisory Committee |
| TET | Therapeutic Efficacy Testing |
| TOR | Terms of Reference |
| TWG | Technical Working Group |
| UNICEF | United Nations Children’s Fund |
| USAID | United States Agency for International Development |
| WBC | White Blood Cell |
| WHO | World Health Organization |

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Most of the contents of this training manual have been adopted from the WHO training manual on malaria control: case management, guide for participants. Also, training materials from the FMOH and partner organizations have been used.

The review and preparation process for this training manual was coordinated by the National Malaria Control Program (NMCP). Dr. Kebede Etana, NMCP/FMOH has played a pivotal role in overall coordination of the process. Financial support for the workshop to develop the training material was provided by Abt Associates/PHSP.

Table1. List of Contributors in the Preparation of the Guide

|  |  |
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# Methodology

The content of the training manual has been prepared based mainly on *WHO training module on malaria control: case management, guide for participants* and on *WHO’s 3rd edition, guidelines for the treatment of malaria, the national malaria guideline* and on other technical documents and existing FMOH training materials. The manual was prepared through a process involving a Technical Expert Committee representing malaria experts from key partners, training and academic institutions, malaria researchers, and FMOH malaria experts.

The need for a simplified and standardized training manual for clinical health workers on malaria case management that would serve for all on-the job training, both for public and private sectors, all over the country was felt during field missions to regions and during observations made in training sessions on malaria case management. In addition to this, there were recommendations from researchers and facilitators at various health training institutions on the need to have a standardized training manual. These observations and recommendations were taken up by FMOH that requested the malaria technical advisory committee (TAC) to prepare the manual. The TAC delegated the malaria case management technical working group (TWG) to develop the manual. Accordingly the TWG took the responsibility to review the existing manual and prepare an updated one. The following steps were followed to prepare the guide:

* Several TWG consultations were held at FMOH level
* The initial draft and outline was prepared by FMOH experts
* A 4-day retreat was held from 19 - 22 September 2016 for in-depth technical consultation on the draft document and to review and finalize the initial draft
* Further updated draft circulated to the TWG member for final inputs
* The TWG met again on 3 October 2016 to review the updated draft document for its content and completeness
* The draft document was reviewed and finalized by the TWG and submitted to FMOH for comments /or endorsement.
* It was pretested and the comments were accommodated
* It was submitted for Human Resources Directorate of FMOH for approval and registration

# About this manual

This facilitator guide is designed primarily to assist those responsible for training health professionals involved in malaria case management. This module contain all instructions and materials needed to enable facilitators to help participants develop the knowledge and skill necessary to provide standard malaria diagnosis and treatment services. Furthermore, it uses a problem-solving approach in which the facilitators provide guidance but do not directly assist the participants in carrying out the exercises. Facilitators who are not familiar with this training system are encouraged to read this introduction carefully.

Facilitators should keep this manual with them during preparation and facilitation of each session.

**The Training Package**

The training package includes a participant manual, a facilitator’s guide, power point presentations and video shows.

***Participant Manual*:** The participant manual is designed to provide all information needed to conduct the course in a logical manner. It serves as the "text" for the participants and the "reference source" for the facilitator.

***Facilitator's Guide*:** The facilitator's guide is for use by course facilitators. It provides an outline of the curriculum and guidance on how to conduct each session.

**Approach to Training**

This training package is grounded in two specific principles. First, the training methodologies used here are grounded in competency based skills acquisitions and learner centered, participatory learning based on the principles of adult education. Second, the reference manual and facilitator's guide are divided into learning units. A modular approach to the organization of this training content allows trainees and organizers the flexibility to tailor individual course to the specific needs of different training participants and situations.

Learners utilizing the materials in this training meet knowledge-based objectives through theoretical training contained in the modules. Each learning unit includes the presentation of information, active practice through participatory activities such as demonstration, group work and case studies. Skills- based objectives are addressed by practical attachment with coaching feedback and plenary discussions in the classroom.

**The Training Modules**

This facilitator's guide consists of eleven learning units. The orderly arrangements of the learning units are designed to enable participants to acquire step by step all the knowledge and skills they need to suspect, diagnose and manage malaria.

Each of the learning units is interactive, providing learners with questions and activities to make their learning as relevant, stimulating and effective as possible. By taking the time to answer all the questions and complete any activities, learners have the opportunity to draw on their own experience, reflect on current practice, digest new concepts and apply them to their work place.

Each learning unit begins with learning objectives, which explain what learners will be able to do when they have completed it. Upon completing the learning unit, learners can then assess for themselves whether they have achieved the objectives.

**The contents for each Learning Unit are summarized as follows:**

**Learning Unit I:** Introduction to epidemiology of malaria in Ethiopia and specific regional state. It deals with the trend of malaria and the eco-epidemiological stratification for Ethiopia. Finally, it introduce the national strategic plan for malaria prevention, control and elimination (2017 - 2020).

**Learning Unit II**: it describe the malaria vector biology, behavior, similarities and differences of adult mosquito and larvae. This learning unit introduce the life cycle of mosquitos and factors affecting the development cycle. Finally, it deals with vector control strategies and their importance.

**Learning Unit III**: this learning unit deals with the etiologic agents of malaria. It describes the mode of transmission and the life cycle of the parasites. In addition, the clinical and laboratory evidences for uncomplicated malaria, its treatment at different levels of health facilities will be discussed.

**Learning Unit IV:** This learning unit introduces training participants with the approach in fever among children using assess, classify, identify and treat principles of integrated management of newborn and childhood illnesses (IMNCI). Furthermore, the unit explores the assessment of fever in a child with measles.

**Learning Unit V**: it deals with the approach to an adult patient with fever and identify possible causes of fever in adults. Trainees are expected to be capable of taking a comprehensive medical history and performing physical examination. In addition they will also be able to order and interpret laboratory investigations and reach to relevant diagnosis

**Learning Unit VI:** it covers the definition of severe malaria and explains its pathophysiology. In addition, it identifies factors that expose patients for the development of severe malaria and covers the chemotherapeutic regimens, emergency and supportive measures.

**Learning Unit VII:** explore the effect of malaria in pregnancy, HIV, malnutrition and tuberculosis. It also deals with the management of uncomplicated and severe malaria in these special groups.

**Learning Unit VIII:** deals with the different methods of parasitological confirmation of malaria parasites and explain the components of quality assurance. It also explains the advantages and limitations of thin & thick blood films and RDTs.

**Learning Unit IX:**  Covers the national Integrated Pharmaceutical Logistics Management System (IPLS). It introduce with the tools of supply chain management system (bin card, stock cards, RRF, IRRF etc.)

**Learning Unit X:**  Introduce malaria outbreak and epidemics to trainees. It also describes the scientific methods of forecasting, early warning, detection and responses. It demonstrates the filling and interpretation of epidemic monitoring chart

**Learning Unit XI:** Introduce the national malaria monitoring and evaluation framework. It covers the advantage of gathering health facility data, and demonstrate utilization of information for evidence based decision making.

**Learning Unit XII:** Participants will visit a health facility to have practical experience on the theoretical explanations. It also gives opportunities for trainees to develop their skill in history taking, physical examination, ordering and interpreting laboratory results, appreciate clinical findings in patients with uncomplicated and severe febrile diseases, malaria logistics management system and malaria Health Management Information System.

**The Learning Units**

The module is designed for health professionals who diagnose and treat patients with malaria in the course of their work. It can be used alone as a standalone course on case management or as one element of comprehensive malariology course.

The principal objectives of the training are listed in the Introduction to the training manual for participants, which facilitators are asked to read before proceeding. This module is intended to stimulate active learning by working through a series of exercises. The exercises will be carried out on the basis of the training manual for participants, preferably in small groups.

Participants are taught the salient clinical manifestations of malaria. Common errors in malaria case management are highlighted. The participants acquire step by step all the knowledge and skills they need to suspect, diagnose and manage severe malaria. This type of training is performance-based and is highly effective. Each Learning Unit of the training manual for participants begins with a list of learning objectives which summarize the knowledge, skills and attitudes that each trainee should have acquired by the end of the unit.

Facilitators and their colleagues should be satisfied that everyone has achieved the stated objectives before proceeding to the next Learning Unit It is convenient to arrange the work of the participants in small group sessions; some discussion work can be done in plenary sessions.

Core Competencies for trainees

After completing this course the following core competencies are expected to attain by all trainees:

* Identify the larvae and adult forms of anopheles mosquito
* Perform a comprehensive clinical evaluation that is history taking, and performing physical examination order and interpret laboratory tests for patients with fever
* Assess, classify and select appropriate treatment for a child with fever using the IMNCI approach.
* Diagnose, treat and conduct follow up care for uncomplicated malaria cases as per the national malaria guideline.
* Identify cases with treatment failure and provide the appropriate management.
* Diagnose, treat and conduct follow up for patients with severe and complicated malaria cases as per the national guidelines
* Identify patients who need urgent referral and give the appropriate pre referral treatment.
* Diagnose and treat malaria in special groups like patients with HIV, malnutrition and pregnancy
* Request and report malaria commodities and maintain adequate stock status
* Fill and interpret malaria epidemic monitoring chart
* Record and report timely all malaria cases using HMIS and PHEM requirements.
* Use data for informed decision making.

Course syllabus for five days basic malaria case management training for health professionals

**Course goal**

To equip health professionals with the basic knowledge, skills, attitudes and practices needed to manage malaria cases in line with the national recommendations.

**Course objectives:**

* Describe global and national burden of malaria
* Identify principles of approach to fever in children and adult patients
* Able to take a comprehensive history, perform physical examination, order and interpret laboratory tests.
* Describe the basis of malaria diagnosis and treatment according to the national guideline
* Identify larva and adult forms of anopheles mosquito
* Explain malaria microscopy and rapid diagnostic test.
* Explain malaria commodities supply chain system
* Able to fill and interpret malaria epidemic monitoring chart
* Able to record and report malaria data

Number of facilitators

It is recommended that each day at least two facilitators shall co-facilitate this training.

**Facilitator and trainee selection criteria**

Due to the interactive nature of the training design, it is highly recommended to have experienced facilitators on modular trainings methodologies. Moreover, facilitators shall have experience of attending, trainees, engaging themselves with high level professionalism.

Specific criteria to recruit facilitators presented below:

* Content expert on malaria
* Certified facilitator with testimony of TOT for Malaria Case Management.
* Competence in managing a child with fever, adult fever, uncomplicated and severe malaria patients.
* Ability to commit the time required for whole course period.
* Familiar with delivering course using modular training approaches.

Specific criteria to recruit training participants

* Nurses, health officers or medical doctors who provide clinical services in adult and pediatric OPD, inpatient department, ANC clinic, HIV chronic care clinic or TB clinic
* Health workers/academicians who are involved in teaching of clinical students

Class size

It is suggested that the class size of 25 – 30 participants would allow optimal participation.

**Training facilities**

A number of basic facilities and equipment must be organized before training can begin. In some hospitals/health centers these are readily available but in others it may be necessary to improvise or to modify existing resources. There may be long intervals between ordering supplies and getting them delivered, but training should not be delayed unnecessarily because the best equipment is not available: much can be achieved even with relatively limited facilities.

Ideally, one large room should be available for presentations and group discussions; pictures projected by the overhead and LCD slide projectors will be seen more easily if the level of lighting can be controlled. Chairs and small tables or desks will be needed for this room. Whatever the conditions, it is advisable to ensure that the participants are as comfortable as possible.

**Teaching equipment**

For teaching sessions and group discussions, if possible the following items should be available:

* LCD projector
* Computer (laptop)
* Screen for slide projection (a white sheet is an adequate substitute)
* Colored markers
* Facilitators guide
* PowerPoint Presentation (LCD & Laptop)
* Flip chart/white board
* Video shows
* Malaria Rapid Diagnostic Test kits (RDTs kits)
* Check lists for the practical clinical session
* Registration and attendance forms
* Daily and over all training evaluation forms

**Learning materials**

The materials listed below should be provided for each participant. Where supplies have to be ordered, this should be done well in advance of the course; many items are difficult to obtain at short notice:

* Participant manual
* Sheets of paper for the exercises during the working groups
* IMNCI recording forms
* Malaria epidemic monitoring chart
* M & E tools for malaria
* IPLS tools (bin Card, Stock Card, RRF and IRRF)
* Notebook
* Ballpoint pens

**Course duration**

In ideal set up 40 hours are needed to cover the contents of the course. The amount of time may be modified depending on the educational background and experience of participants, number of participants and learner’s need

**Target audience**

The trainees should be practicing clinicians (physicians, health officers or nurses) or those involved in teaching clinical students

**Evaluation of training**

Evaluation of the training is achieved by collecting feedback from learners and facilitators at the end of each day of the training and at the end of the course. When facilitators review feedbacks from learners daily, they can often make immediate changes to improve the course. Daily evaluation and end of course evaluation forms are included in this manual. Pretest questionnaires are included in this guide to assess participants’ knowledge and experience before the training so as to reorient the course content and approach after reviewing the test results. More over the pretest results will be used to assess the knowledge and competence gained after the training by comparing against the post test results.

**Certificate**

The attendance and performance of each participant should be noted during the course and the record retained for future reference.

**Note:** it is important to stress to the participants that they must take time to read each Learning Unit carefully before attending the class in which it will be considered. The time allotted for the course is based on the assumption that the corresponding unit in the training manual for Participants has been studied in advance.

Criteria: 100% of attendance and post test score greater than 70% for basic training and 80% for TOT.

**Adaptation of course content**

This training manual is prepared as a standalone, learner centered course for a group of 25-30 trainees. Adaptation may be needed to address learners’ need, the number of learners attending and the time or logistical constraints.

**Arrangement of training room**

Training rooms should be arranged based on the availability of space and facilitators’ preference. Most facilitators are familiar with the customary “U”-shaped training set up where the tables are lined up with participants facing each other and the facilitator(s). If the chairs do not have fixed supports for notebooks, it would be helpful to have small desks or tables available. The room should be arranged so that participants sit in groups, preferably in a semi-circle. Everybody should have a clear view of the flipchart and projector screen.

The group compositions can be changed occasionally if this is preferred or left the same throughout the course. For the pre- and post-test evaluations, participants must be seated apart from one another and work alone. The group activities could all take place in the same room and time is saved by not having to change places.

**Principles of Adult Learning**

1. **Things to keep in mind when working with adult learners:**
2. Adults bring considerable experience with them, therefore they wish to speak, participate and contribute to the training. Adults dislike long lecture and one-way communication. Facilitators should:

* Encourage participation by all learners
* Ask about the learners experience
* Encourage the learners to share experiences with each other

1. Adults want courses that focus on real life problems and tasks rather than academic materials. The facilitator should:

* Use real life problems and examples where appropriate
* Ask learners to share their own stories when time permits

1. Adults learn with relevance. The learning must connect clearly and directly with tasks faced by the learner on the job or in life. The facilitator should:

* Follow up on answers to questions when they don't know
* Provide background and supporting evidence for course content

1. Adults learn best in comfortable settings. Therefore, physical discomfort will distract or create negative feelings. The facilitator should:

* Allow frequent breaks during instructional times
* Encourage learners to dress comfortably/casually
* Orients self and learners to the facility with regards to phones, restrooms, etc.
* Creates a classroom set up conducive for learner interaction and learning

1. Adult want positive reinforcement and feedback about errors at the time it occurs. The facilitator should:

* Handle unexpected situations or disrespect with minimal confusion or emotions
* Processes after each exercise, activity or role play
* Give lots of praise and encouragement
* Provide specific behavioral observations about errors

1. Adult are accustomed to being active. They should be given an opportunity for active participation whenever possible. The facilitator should:

* Encourage participation by all learners
* Allow sufficient time for all activities
* Ask open ended questions to encourage discussion
* Use learners name to encourage connection to the class

1. Adults need to maintain high self-esteem. Therefore, participants need to maintain high self-esteem to deal with the demands of a training course. The facilitator should:

* Show respect to all participants
* Continually support and challenge them
* Recognize participants career accomplishment

1. Adults learn with humor. A little lightness, amusement and fun can keep the training from being boring. The facilitator should:

* Create an enjoyable participant centered atmosphere
* Be creative when presenting materials in training

1. **The role of the facilitator in adult learning**

The facilitator's role is to facilitate the learning experience of the adult participant. To that end, you should create a climate in which participants can accomplish course outcomes and explore participants' real life experiences to help them learn.

1. **Methods for educating adults**

***Presentation and Discussion***

Use didactic presentations (as directed on the following page) to present scientific and technical content. Avoid reading directly from the overheads or slides. Instead, supplement them with examples, practical problems, and discussion questions. Elicit feedback from the audience at critical junctures; encourage discussion. Keep your didactic presentation short (30 minutes maximum) and use interactive training methods (role-play, group work, case studies, or discussion) in between long presentations.

***Small-Group Discussions***

Facilitate small-group discussions to foster team coherence. Those discussions provide facilitators with an opportunity to validate or modify participants' perceptions and knowledge. Once participants become used to group discussions, the two-way exchange of information between them and the facilitators makes this a very effective learning activity. People share their knowledge and experience with the rest of the group and stimulate each other’s thoughts on the subject in hand.

* Assign a topic, issue or question that participants can address in small groups.
* Designate a leader to facilitate and summarize the group's findings.
* Consider the task objective as you determine how to constitute groups. You might divide participants according to discipline (nurses or doctors) or any other relevant category. If you want the groups spilt up randomly you could ask participants to count off by threes (or any small number); the first person is in group 1, the second is in group 2, the third is in group 3, the fourth is in group 1 and so on.

***Case Studies***

Present culturally relevant hypothetical clinical situations that participants may come across during their clinical practice. Ask participants to propose solutions.

***Interactive Exercises and Games***

Use interactive exercises to facilitate teambuilding and reinforce learning.

* Invite participants to consider a specific topic.
* Pose questions, allowing time for participants to record their answers
* Encourage participants to discuss their answers and exchange ideas
* Record responses on the flipchart and encourage participants to respond to the group's feedback.

***Demonstrations, examples***

* These are designed to reinforce the learning process. Clear examples help to clarify concepts and establish principles of malaria case management. The facilitators should have many examples ready to use, but in addition trainees should also be invited to give examples –this is a strong reinforcement. (RDTs procedure )

***Clinical work and visits to health facilities***

* Visits to health facilities for teaching purposes need to be well informed about the visit to medical staff of the facility and planned in advance to be sure that appropriate cases are available. In addition the facilitators should caution the participants before the visit to behave themselves in a professional manner and not to criticize procedures or discuss the patients’ prognosis with the client or attendants while inside the facilities. All discussions and critical observations should be made back in the class room.
* Visits will be arranged for bedside teaching activities, to review the data management and supply chain management systems.

1. **Facilitation Tips**

A facilitator plays a unique role in helping course participants understand uncomplicated and severe malaria. Although you might be an expert in technical content and training, your role in this course extends beyond lecturing or providing information. You need to inform, support and acknowledge implementation issues within the social and cultural context of the existing training setting to ensure a successful experience for all training participants.

A facilitator helps participants learn through individual and group discussions.

**1. Preparation**

Module sessions usually require some preparation beforehand. You should be thoroughly familiar with module content. Advance preparations for all modules include:

* Obtain, organize, and prepare the materials (daily agenda, flipcharts, markers, masking tapes, etc) for each session beforehand.
* Arranging the room to accommodate the specific module activities. For example for a PowerPoint presentation, the room should be setup so that all learners will be able to see the presentation. Flipcharts should be placed where all can see. Small group work, role plays and practice with models all require different room arrangements.
* Preparing icebreaker and energizer activities.
* Preparing PowerPoint slides by loading the PowerPoint files in advance.
* Read and understand key points and take-away messages

As a facilitator, your responsibilities include the following:

* Introduce each module and key concept
* Lead group discussions
* Ask questions and answer questions
* Explain ideas and clarify issues
* Discuss how participants can apply the information to their own work
* Give constructive feedback
* Provide technical assistance during the health facility visit

You are encouraged to go beyond formal lecturing. It is your job to answer questions, talk with participants about exercises, lead group discussions, and give participants any help they need.

Familiarity with the Ethiopian cultural environment is essential to effective group facilitation. Your training strategies should require modification to respect various cultural standards. For example, in some societies, cultural norms dictate acceptable eye contact or physical proximity of the facilitator and participants.

**2. Eliciting participation from all participants**

To take key underlying issues and foster discussion, the facilitator should actively engage participants who express different viewpoints. In some settings, the group might accept the position or approach presented in the curriculum. In others, the group could need additional time to reach consensus on complex issues.

**3. Time management**

Time is allocated for each session in the course outline. If the group exceeds the allotted time for a given session, the deviation should be acknowledged. The group should then decide on strategies for saving time in later sessions. General time guidelines are provided for each activity in each module. Guidelines should be customized to reflect the knowledge and experience level of the group.

1. **Facilitation tips for new facilitators**

Even the most experienced facilitator will feel awkward when teaching a new course the first few times. To help the new facilitator, we included the following tips and information for new facilitators.

***Calm your nervousness before the training:***

When preparing to conduct training, facilitators commonly feel a bit anxious and nervous. However, the following can help you as a facilitator manage your anxiety:

* Organize your materials several days, if not weeks before the training. Try not to leave tasks for the day before the training; prepare as much as you can ahead of time.
* Arrange to have your training room set up in a banquet style, if possible. This will provide for a more comfortable learning environment, will facilitate small group discussion, and will provide you with more flexibility when walking around during your presentations.
* Practice makes perfect! Pay special attention to your assigned activity and practice in your room in front of a mirror.
* Arrange to see and possibly re-arrange your training room the day before the training begins. Use this time to place participant manuals and necessary items (for example, pads, paper, markers, etc.) on the tables.

Training rooms may not always be available until the day of the training, in which case prepare to arrive at least 1 ½ hours early to take care of any last minute changes or preparation and to get comfortable in your training environment.

* Go to bed early the night before. A good night's rest will help you be your best when leading the course.
* Personally welcome participants at the door as they come in. You should not appear frazzled or tired on the first day of training.

***Attend to all participants***

As in counseling, facilitators need to make eye contact and pay attention to each participant. Be aware of a natural blind spot-with participants seated up front directly on your right (if you are right-handed) and/or the left (if you are left-handed).

***Maintain high energy level***

It is important, especially in the mornings and after lunch, to maintain a high level of energy to help your participants learn and move through the course work.

***Use energizer***

Prepare energizer activities beforehand. These activities help maintain high level of energy and active participation.

***Dealing with difficult participants***

It is important to acknowledge to yourself, as the facilitator, that there are often three types of participants (the prisoner, the vacationer, and the learner).

The "Prisoner," for a variety of reasons, feels forced to be at the training. Attending this training is usually a job requirement or a recommendation from a superior. As a result, he or she feels that they have no choice but to be at the training and may not appear motivated, may not volunteer, and may not be your ally as you start this training.

The "Vacationer" wants to attend this training to get away from his or her daily activities, or chooses this training specifically for its location and what may occur outside the training venue (for example, relatives in the area, nice part of town or country, etc.).

The "Learner" is there to learn and is very eager to apply what will be learned when he or she returns to his or her site. The learner is also eager to understand the usefulness of the contents and materials of the training.

Regardless of the dynamics of your participants, you will have to gain buy-in and develop a relationship with all of them. If you were able to contact participants prior to the training and have a brief discussion with them you may have gained a better understanding of their motivation to take this course and which type of participants they are. Even if you were not able to contact participants before the course, knowing that participants may be a part of your training for a variety of reasons will help you understand their perspectives and handle any resistance accordingly.

***Speak to a difficult participant (outside the training room)***

If any participant is disruptive or making it difficult for the rest of participants to learn, allow the other learners to manage the issue first. You will find that learners will often manage difficult or disruptive participants on their own. However, if participants don't do this, at your earliest convenience (during a break or lunch) tell the participant that he or she is being disruptive and refer to the ground rules and reinforce the importance of sticking to those rules.

Never reprimand your disruptive participant in front of the larger group! When training adults, it is important to "save their face" or they may become resentful and try to challenge you throughout the remaining of the training.

***Change the dynamics of the group by changing seating arrangements***

If a participant is mostly disruptive to you, you can change the dynamics by changing the seating arrangements (when participants return from a break or lunch). You can make a general statement like: "*In order to help to get participants get acquainted with as many participants as possible, you will now be asked to change seats."* You can strategically seat the difficult participant(s) up front in your blind spot (on you're left if your left-handed, and on you're right if your right-handed). You may also change the dynamics of the group by helping people meet as many participants as possible.

***Dealing with side bar conversations***

Deal with side-bar conversations tactfully. Initially, try to avoid asking the participant(s) to be quiet in front of the large group. First try walking over to the table where the discussion is taking place and speak from that location. (Usually when the large group's attention is focused on the location of a side conversation, those people naturally want to stop talking). If you are standing next to someone who continues to talk, gently place your hands on the table and glance at him or her to indicate that you would like them to pay attention. This will usually work. However, if it doesn't, at your first break or opportunity away from the large group, let the person know (if other participants have not) that their talking is interfering with the learning environment and process.

***Dealing with initial resistance***

This training may be a "new" type of training for some, be prepared for some resistance in the beginning; especially when introducing this training package for the first time.

***Use overhead projectors effectively***

When using overhead projectors (including power point) to display your overheads, it is important to remember to turn the machine off after you review the overhead. The white light and noise of the overhead can often be a distraction to participants. It should be turned off once participants have had time to write down any information in their note books.

***Using a "pregnant pause"***

In training, there is something called a "pregnant pause"; this is the pause between asking participants a question and receiving a response. Understand that participants process questions in different ways and although it may be a bit awkward for you as the facilitator, by pausing and allowing participants to process your question and form a response, and not filling in the gaps and move on participants will fill in the gap for you. Facilitators have to be comfortable with allowing silence and not "filling in the gaps" too soon by moving on or asking another question.

There will be times when, no matter how long you allow the silence to continue, no one will comment. The take-home message here is to allow the silence for a moment and manage your own discomfort.

1. **Characteristics of effective training**

Regardless of the purpose of intended audiences, all effective training courses share certain characteristics. In an effective training:

* Facilitators and learners understands exactly what learners are expected to do sat the end of the course
* The training methods enable learners to meet the objectives of the training
* Training builds on the existing skills and experience of learners
* New knowledge and skills are presented in a context that is meaningful and relevant to learners
* Learners are actively engaged in the learning process
* Training utilizes and effective mix of training methods to meet the needs of different learning styles
* Learners have the opportunity to practice applying new knowledge and skills
* Learners receive constructive feedback on their performance
* Learners have enough time to meet the objectives of the training
* Facilitators accept feedback from learners and use this feedback to make improvements to the training
* Training is evaluated to measure the extent to which facilitators and learners met the training objectives

Table.1 Malaria Case Management Training Schedule.

| Day | Time | Topic |
| --- | --- | --- |
| 1 | 8:30-9:00 | Registration |
| 9:00-10:30 | Opening remark  Introduction to the training  Objectives and expected outcomes  Introduction of facilitators and participants  Setting ground rules  Expectations of participants  Admin issues  Pretest |
| 10:30-11:00 | Tea break |
| 11:00-12:30 | Malaria program overview |
| 12:30-2:00 | Lunch |
| 2:00-3:30 | Malaria vector control |
| 3:00-4:00 | Uncomplicated malaria |
| 4:00-4:30 | Tea break |
| 4:30-5:30 | Uncomplicated malaria |
| 2 | 8:30-9:00 | Recap |
| 9:00-10:00 | Approach to fever in children (1) |
| 10:00-10:30 | Tea break |
| 10:30-12:30 | Approach to fever in children including exercises (2) |
| 12:30-2:00 | Lunch |
| 2:00-3:30 | Approach to fever in adults (1) |
| 3:30-4:00 | Tea break |
| 4:00-5:30 | Exercises on approach to fever in adults (2) |
| 3 | 8:30-9:00 | Recap |
| 9:00-10:00 | Severe malaria (1) |
| 10:00-10:30 | Tea break |
| 10:30-11:30 | Severe malaria (2) |
| 11:30-12:30 | Severe malaria exercises (1) |
| 12:30-2:00 | Lunch |
| 2:00-3:00 | Severe malaria exercises (2) |
| 3:00-4:00 | Malaria in special groups |
| 4:00-4:30 | Tea break |
| 4:30-5:30 | Malaria laboratory diagnosis (1) |
| 4 | 8:30-9:00 | Recap |
| 9:00-10:00 | Malaria laboratory diagnosis (2) |
| 10:00-10:30 | Tea break |
| 10:30-12:30 | Malaria epidemic including exercise on EMC |
| 12:30-2:00 | Lunch |
| 2:00-3:30 | Supply chain management including introducing IPLS tools |
| 4:00-4:30 | Tea break |
| 4:30-5:30 | Malaria monitoring and evaluation including introducing M&E tools |
| 5 | 8:30-12:30 | Health facility visit   * OPD (fever in children and adults) * IPD (severe febrile disease preferably severe malaria) * Recording and reporting * Supply chain management (malaria commodities) |
| 12:30-2:00 | Lunch |
| 2:00-4:00 | Feedback from health facility visit |
| 4:00-4:30 | Tea break |
| 4:30-5:30 | * Post test * Course evaluation * Closing |

Climate setting and course overview

|  |  |  |  |
| --- | --- | --- | --- |
| Day 1 Session 1: Climate setting and course overview | | | |
| Time | Session objectives | Process | Materials |
| **120 minutes** | **By the end of this sessions participants will be able to:**   * Get to know each other and get to know the facilitators * Link their expectation to the objectives of the training * Familiarize with the training materials * Setting ground rules /norms | **Activity 1: Registration and official opening (60 minutes)**  Registration and welcome by representatives of Organizations facilitating the training course. | Registration form |
| **Activity 2: Participants introduction (25 minutes)**  Let participants to introduce each of them through addressing the following points: name, profession, place of work, exposure related to malaria case management, likes and or dislikes. | Make sure that all participants have received note book and ball point pen. |
|  |  | **Activity 3: Explore participant expectation /course overview**    Using flip chart and markers the training facilitators shall list down all participants’ expectations from this training course.  Briefly introduce all learning units using PowerPoint Presentations and participants manuals.  Link the participants expectations with this training course objectives | Facilitators guide, PowerPoint slides , Flip chart and Markers |
|  |  | **Activity 4: Establish Norms for the course (10 minutes)**  Inform the participants the need to have some ground rules in order to achieve the training objectives and help to create a conducive environment where every bodies feels free to ask questions, express views, and make mistakes without fear or being criticized.  Brain storm with participants to come out with ground rules they want everyone to follow. Give Couple of examples: punctuality, active participation etc.  Assign responsible person for time keeping, recap sessions, daily evaluation. | White board or Flip Chart and Markers |
| **Activity 5: Pretest (30 minutes)**  The facilitators shall brief tell participants the purpose of the pre-test, number of pages and questions, anonymity, scoring, area of focus and post-test**.**  Distribute pretest questions to participants. Remind then after they spent 20 minutes and collect all questionnaires after 30 minutes. | Copies of the pretest questionnaires. |

**Steps /activities**

* Register participant
* Invite guest of honor to officially open the training.
* Introduce trainees and facilitators
* The facilitator should begin by introducing him/herself (and write the name on the flipchart and describe briefly his/her background and job). The assistant facilitators should then introduce themselves in the same way. The participants should introduce themselves next, giving brief information about their jobs, place of work, etc.
* The participants will have been given their copies of the training manual for Participants. After allowing about 10 minutes for them to read through the Introduction, a brief outline should be given of the various topics to be covered.
* The methods of work should also be explained, e.g. that working in small groups with facilitators should make learning easier. The importance of exercises, which make up much of the course, should be stressed, as they provide the best way of acquiring the necessary skills.
* The facilitator shall explore the expectations of participants and write lists on the flip chart.
* The facilitator should go through the objectives of the various Learning Units.
* The facilitator may wish to raise other subjects at this time.
* The participants should be encouraged to discuss the training program – what they expect from it, any aspects of the content or the arrangements that may be causing concern, etc.
* Finally, the subject of evaluation should be introduced, explaining that evaluation will be a continuous process throughout the training course.
* Points to emphasize are that the pre- and post-tests should not cause anxiety as they are part of the learning experience and their purpose is to allow the facilitator and facilitators to assess the participants’ starting level and to correct mistakes and clarify misunderstandings.

# Learning Unit 1- Malaria Program Overview

Day1 Session 2:

|  |  |
| --- | --- |
| **Learning unit 1: Malaria program overview** | |
| **Duration:**  90 minutes  **Material:**  Flip chart / whiteboard, Markers, PowerPoint slides, LCD, Laptops, Participant manual  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Describe the epidemiology of malaria in Ethiopia and specific region * Describe the malaria trend in Ethiopia * Describe the eco-epidemiological strata of malaria in Ethiopia * Explain the National Strategic Plan for Malaria Prevention, Control and Elimination in Ethiopia, 2014 – 2020  |  |  |  | | --- | --- | --- | | Content | Methods | Duration | | Epidemiology of malaria | Brain Storming and Interactive Lecture  How do you classify Ethiopia based on malaria transmission? Why?  Epidemiology of malaria in Ethiopia  Stable and unstable transmission | 15 minutes | | Malaria trend in Ethiopia | Interactive Lecture  Malaria Morbidity trends  Malaria Admission trends  Malaria Death trends  Number of Health Facility  Factors affecting malaria transmission  Parasite, vector and human factors | 15 minutes | | Eco-epidemiological strata of malaria in Ethiopia | Interactive lecture  Using PowerPoint slides show the four eco-epidemiological classification of Ethiopia (i.e.  Free, Low, Moderate and High malaria transmission areas). | 10 minutes | | Ethiopia national malaria strategic plan | Discussion and lecture  Introduce NSP 2014- 2020  Brief the Goals of NSP  Summary of interventions | 20 minutes | | Malaria epidemiology in the specific region | Interactive power point presentation | 30 minutes | |

**Steps**

* Read the purpose of learning unit one
* Describe the objectives and make sure the trainees understand them.
* Brainstorm: How do trainees classify malaria transmission in Ethiopia? Why?
* Then, continue with power point presentations on epidemiology of malaria in Ethiopia.
* Lecture using PowerPoint presentation on trends of malaria morbidity, admission and mortality of Ethiopia.
* Brain storming: What are the factors affecting malaria transmission?
* And continue with interactive PowerPoint Presentations.
* Interactive lecture using PowerPoint presentation on eco-epidemiological classification of Ethiopia.
* Brain Storming: what should be done to prevent, control and eliminate malaria in Ethiopia?
* PowerPoint presentation on NSP, goals, and summary of interventions.
* Power point presentation on region specific malaria situation using the following template
* Summarize the session by reviewing the learning objectives

|  |  |
| --- | --- |
| Region |  |
| Total population |  |
| Population at risk of malaria |  |
| Proportion of malarious area |  |
| API |  |
| Transmission season (s) |  |
| Structure of malaria team |  |
| Number of health facilities (HP, HC, Hospital, private) |  |
| Health service coverage |  |
| Major achievements by strategy |  |
| Community empowerment |  |
| Case management (diagnosis and treatment) |  |
| Selective vector control |  |
| Surveillance |  |
| Malaria epidemic preparedness |  |
| Strengths and opportunities |  |
| Challenges |  |
| The way forward |  |

# Learning Unit 2- Malaria Vector Control

Day1 Session 3

|  |  |
| --- | --- |
| **Learning unit 2: Malaria Vector Control** | |
| **Duration:**  90 minutes  **Material:**  PowerPoint slides, LCD, Laptop, Participant manual  Video on the biology of anopheles mosquito  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing this learning unit, the participants will be able to:   * Describe the malaria vector biology, behavior, and differentiate the different mosquito types and their larvae, * Describe the life cycle of mosquitoes and factors that affecting the life cycle, * Describe the types of vector control strategies, * Describe the importance of implementing vector control strategies for malaria control.  |  |  |  | | --- | --- | --- | | **Content** | **Methods** | **Duration** | | Malaria Vector Biology | Interactive Lecture | 20 minutes | | Life Cycle of Anopheles mosquito | Interactive Lecture | 15 minutes | | Malaria Vector Behavior | Interactive Lecture | 15 minutes | | Malaria Vector Control Methods | Brain Storming and Lecture | 23 minutes | | Malaria Entomology | Show the video (WHO 2- the biology of Anopheles Mosquito. | 17 minutes | |

**Steps**

Read the purpose of learning unit two

Describe the learning objectives of unit two and make sure the trainees understand them.

Continue PowerPoint presentation on malaria vector biology.

Precede PowerPoint presentation on life cycle of Anopheles mosquito.

Compare and contrast *Anopheles* and *Culicines* mosquitos

Describe factors affecting life cycle (Water, Temperature, and Humidity)

Brainstorm: what are the malaria vector control methods?

Interactive power point presentation on malaria vector control methods

Show the video

Summarize the session by reviewing the learning objectives

# Learning Unit 3 - Uncomplicated Malaria

Day 1 Sessions 4:

|  |  |
| --- | --- |
| **Learning Unit 3: Uncomplicated Malaria** | |
| **Duration:**  90 minutes  **Material:**  PowerPoint slides, LCD, Participant manual  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Identify the etiologic agents of malaria * Describe modes of transmission and life cycle of malaria parasites * Explain clinical presentation of non-complicated malaria * Diagnose and treat non complicated malaria * Manage malaria at different levels of the health facility in Ethiopia  |  |  |  | | --- | --- | --- | | **Content** | **Methods** | **Duration** | | Etiologic agent of malaria | PowerPoint Presentations | 15 minutes | | Mode of transmission and Life cycle of the parasite | PowerPoint Presentations | 15 minutes | | Clinical Presentation and diagnosis of uncomplicated malaria | PowerPoint Presentations and discussion | 30 minutes | | Management of malaria at different levels of health facility | PowerPoint Presentations and discussion | 30 minutes | |

**Steps**

**Activity of uncomplicated malaria:**

Start this session by explaining the learning unit objectives.

Discuss on the etiologic agents of the disease malaria, explain mode of transmissions and life cycle of the parasite. Encourage participant to ask questions in the middle of your presentation and at the end. Precede presenting management of uncomplicated malaria cases in different health tier level.

**Daily evaluation (10 minutes)**

Distribute the daily evaluation form to participants. Remind participants to rehearse the courses they took today. And prepare themselves for recap session for day two.

# Learning Unit 4 - Approach to Fever In Children/ IMNCI

**Activity 1: Recap and evaluation of day one sessions (30 minutes)**

Invite two to three participants to recap the key lessons of day one. Present their day one evaluation finding. Make the necessary clarifications and take note for course delivery adjustments in the process and content of course.

Day 2 Session 1

|  |  |
| --- | --- |
| **Learning Unit 4: Approach to fever in children (Integrated Management Of Newborn and Childhood Illnesses [IMNCI])** | |
| **Duration:**  180 minutes  **Material:**  Participant manual, IMNCI recording form for exercise  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Ask the mother about fever in children * Check for general danger signs * Assess a child with fever * Classify a child with fever * Select appropriate treatment for a child with fever  |  |  |  | | --- | --- | --- | | **Content** | **Methods** | **Duration** | | Assessment of fever in children | Modular Presentation | 60 minutes | | Classify and treat a child with fever | Modular Presentation | 30 minutes | | Classify and treat a child for measles | Modular Presentation | 20 minutes | | Exercises | Group Work | 40 minutes | | Discussion and summarization | Plenary discussions | 20 minutes | |

**Steps**

Read the purpose of learning unit three.

Describe the objectives and make sure the trainees understand them.

Give time for the trainees to read the descriptions on how to assess fever in a child. Ensure that the participants understand the definition of fever in children.

Continue reading on assessment of malaria risk, identifying general danger signs, look and feel stiff neck, and bulging fontanel. Look for sign suggesting for measles.

Discuss and ensure that participants have understood the important points

Introduce the IMNCI recoding forms.

Classify fever and select appropriate treatment, follow up and counselling.

Introduce the whole processing using the scenario of Paulos as described in participant’s manual.

**Activity 2: Case study 3.1.**

**Exercise 3.1: Small Group discussion on case studies**

|  |  |
| --- | --- |
| **Purpose** | To help participants practice Assess, classify, Identify treatment and treat, follow up and counselling based on IMNCI approaches. |
| **Materials** | IMNCI recording forms |
| **Time** | 60 minutes |
| Activities | Divide participants into four groups (6 – 8 members in each group) and instruct to work on case studies. For each case scenarios the group need to properly fill relevant information (patient identification, reason for health facility visit, number of visit and assess for fever, classify risk, identify treatment, treat patients, schedule follow up and counselling services. |
|  | **Group 1:Abdi**  Participants will learn how to classify comorbid conditions in a febrile child in addition to malaria |
|  | **Group 2: Leya**  Participants will learn that malaria test is still essential in a child who has explanation for fever like measles |
|  | **Group 3:Sitti**  Participants will learn that a child with negative malaria test result doesn’t require treatment for malaria |
|  | **Group 4: Lemlem**  Participants will learn thattreatment for alternative causes of fever is required for patients with evidence of alternative diseases and negative malaria test result |

**Steps**

Divide trainees into four groups. Then guide to work on the four case studies. Encourage them to fill all the necessary information on the IMNCI recording form. Then facilitate the plenary discussion. The correct answers are filled in the following four IMNCI forms.

**Answers to Exercise 3.1.**

***Case 1: Abdi***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MANAGEMENT OF THE SICK CHILD AGE **2 MONTHS UP TO 5 YEARS**  Child’s Name: Abdi Age 36 months Sex M Weight: 9.4 kg Lt/Ht 92 cm Temp 37 0C  **Ask**: What are the child’s problems? feels hot, cough Initial visit? 🗸 Follow-up visit? \_\_\_\_  **Assess** (Circle all signs present, tick or fill dashes/spaces) **Classify** | | | | |
| **Check For General Danger Signs**  Not Able To Drink Or Breastfeed  Convulsing Now  Vomits Everything  Lethargic Or Unconscious  History Of Convulsions | | | |  |
| **Does The Child Have Cough Or Difficult Breathing?** Yes 🗸 No\_\_\_\_\_ | | | | Pneumonia |
| For how long? 3 Days |  Count the breaths in 1 minute. 51 breaths/minute. Fast breathing?   Look for chest indrawing.   Look and listen for stridor. | | |
| **Does The Child Have Diarrhoea?** Yes \_\_\_\_\_ No 🗸 | | | |  |
| For how long? \_\_\_\_\_\_\_\_\_ Days    Is there blood in the stool? | |  Look at the child’s general condition. Is the child:  Lethargic or unconscious? Restless and irritable?   Look for sunken eyes.   Offer the child fluid. Is the child:  Not able to drink or drinking poorly?  Drinking eagerly, thirsty?   Pinch the skin of the abdomen. Does it go back:  Very slowly (> 2 seconds)? Slowly? | |
| **Does The Child Have Fever?** (by history/feels hot/temperature ≥37.50C) Yes 🗸 No\_\_\_\_ | | | | Malaria |
| - Decide **Malaria** risk: High/Low No,  - If “ no” malaria risk, Has child traveled to  malarious area in the last 30 days?  - For how long has the child had fever? 5 Days  - If >7 days, has fever been present every day?  - Has child had measles within the last 3 months? | | |  Look or feel for stiff neck.   Look for bulging fontanel   Look for runny nose   Look for signs of **Measles Now**: Generalized rash, And one of these: Cough, Runny nose or Red eyes.   Blood Film or RDT: Positive\_\_🗸\_ Negative\_\_\_\_ Not Done\_ |
| **If the child has measles now or**  **within the last 3 months:** | | |  Look for mouth ulcers: If Yes, are they deep and extensive?   Look for pus draining from the eye.   Look for clouding of the cornea. |  |

***Case 2: Leya;***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Management Of The Sick Child Age **2 Months Up To 5 Years**  Child’s Name: Leya Age 5 months Sex F Weight: 5 kg Lt/Ht 55 cm Temp 36.5 0C  **Ask**: What are the child’s problems? feels hot, cough Initial visit? 🗸 Follow-up visit? \_\_\_\_  **Assess** (Circle all signs present, tick or fill dashes/spaces) **Classify** | | | | |
| **Check For General Danger Signs**  Not Able To Drink Or Breastfeed  Convulsing Now  Vomits Everything  Lethargic Or Unconscious  History Of Convulsions | | | |  |
| **Does The Child Have Cough Or Difficult Breathing?** Yes 🗸 No\_\_\_\_\_ | | | | Cough or cold |
| For how long? 2 Days |  Count the breaths in 1 minute. 43 breaths/minute. Fast breathing?   Look for chest indrawing.   Look and listen for stridor. | | |
| **Does The Child Have Diarrhoea?** Yes \_\_\_\_\_ No 🗸 | | | |  |
| For how long? \_\_\_\_\_\_\_\_\_ Days    Is there blood in the stool? | |  Look at the child’s general condition. Is the child:  Lethargic or unconscious? Restless and irritable?   Look for sunken eyes.   Offer the child fluid. Is the child:  Not able to drink or drinking poorly? Drinking eagerly, thirsty?   Pinch the skin of the abdomen. Does it go back:  Very slowly (> 2 seconds)? Slowly? | |
| **Does The Child Have Fever?** (by history/feels hot/temperature ≥37.50C) Yes 🗸 No\_\_\_\_ | | | | Malaria |
| - Decide MALARIA risk: High/Low No,  - If “low or no” malaria risk, Has child traveled to  malarious area in the last 30 days?  - For how long has the child had fever? 2 Days  - If >7 days, has fever been present every day?  - Has child had measles within the last 3 months? | | |  Look or feel for stiff neck.   Look for bulging fontanel   Look for runny nose   Look for signs of MEASLES NOW : Generalized rash,  And one of these: Cough, Runny nose or Red eyes.   Blood Film or RDT: Positive\_\_\_\_ Negative\_\_\_\_ Not Done 🗸 |
| **If the child has measles now or**  **within the last 3 months:** | | |  Look for mouth ulcers: If Yes, are they deep and extensive?   Look for pus draining from the eye.   Look for clouding of the cornea. | Measles with eye or mouth complications |

***Case 3: Sitti***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Management Of The Sick Child Age **2 Months Up To 5 Years**  Child’s Name: Sitti Age 12 months Sex F Weight: 7.2 kg Lt/Ht 73 cm Temp 36.5 0C  **Ask**: What are the child’s problems? feels hot Initial visit? 🗸 Follow-up visit? \_\_\_\_  **Assess** (Circle all signs present, tick or fill dashes/spaces) **Classify** | | | | |
| **Check For General Danger Signs**  Not Able To Drink Or Breastfeed  Convulsing Now  Vomits Everything  Lethargic Or Unconscious  History Of Convulsions | | | |  |
| **Does The Child Have Cough Or Difficult Breathing?** Yes \_\_\_ No 🗸 | | | |  |
| For how long? \_\_\_\_\_\_ Days |  Count the breaths in 1 minute. breaths/minute. Fast breathing?   Look for chest indrawing.   Look and listen for stridor. | | |
| **Does The Child Have Diarrhoea?** Yes 🗸 No\_\_\_\_ | | | | No dehydration |
| For how long? 2 -3 Days    Is there blood in the stool? | |  Look at the child’s general condition. Is the child:  Lethargic or unconscious? Restless and irritable?   Look for sunken eyes.   Offer the child fluid. Is the child:  Not able to drink or drinking poorly?  Drinking eagerly, thirsty?   Pinch the skin of the abdomen. Does it go back:  Very slowly (> 2 seconds)? Slowly? | |
| **Does The Child Have Fever?** (by history/feels hot/temperature ≥37.50C) Yes 🗸 No\_\_\_\_ | | | | Fever  No malaria |
| - Decide **Malaria** risk: High/Low No,  - If “low or no” malaria risk, Has child traveled to  malarious area in the last 30 days?  - For how long has the child had fever? 2 Days  - If >7 days, has fever been present every day?  - Has child had measles within the last 3 months? | | |  Look or feel for stiff neck.   Look for bulging fontanel   Look for runny nose   Look for signs of **Measles Now** : Generalized rash,  And one of these: Cough, Runny nose or Red eyes.   Blood Film or RDT: Positive\_\_\_\_ Negative 🗸 Not Done \_\_\_\_ |
| **If the child has measles now or**  **within the last 3 months:** | | |  Look for mouth ulcers: If Yes, are they deep and extensive?   Look for pus draining from the eye.   Look for clouding of the cornea. |  |

***Case 4: Lemlem***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Management Of The Sick Child Age **2 Months Up To 5 Years**  Child’s Name: Lemlem Age 36 months Sex F Weight: 10 kg Lt/Ht 91 cm Temp 38 0C  **ASK**: What are the child’s problems? Cough, rash Initial visit? 🗸 Follow-up visit? \_\_\_  **ASSESS** (Circle all signs present, tick or fill dashes/spaces) **CLASSIFY** | | | | |
| **CHECK FOR GENERAL DANGER SIGNS**  Not Able To Drink Or Breastfeed  Convulsing Now  Vomits Everything  Lethargic Or Unconscious  History Of Convulsions | | | |  |
| **Does The Child Have Cough Or Difficult Breathing?** Yes 🗸 No\_\_\_\_\_ | | | | Pneumonia |
| For how long? 2 Days |  Count the breaths in 1 minute. 42 breaths/minute. Fast breathing?   Look for chest indrawing.   Look and listen for stridor. | | |
| **Does The Child Have Diarrhoea?** Yes \_\_\_\_ No 🗸 | | | |  |
| For how long? \_\_\_\_\_\_\_\_\_ Days    Is there blood in the stool? | |  Look at the child’s general condition. Is the child:  Lethargic or unconscious? Restless and irritable?   Look for sunken eyes.   Offer the child fluid. Is the child:  Not able to drink or drinking poorly? Drinking eagerly, thirsty?   Pinch the skin of the abdomen. Does it go back:  Very slowly (> 2 seconds)? Slowly? | |
| **Does The Child Have Fever?** (by history/feels hot/temperature ≥37.50C) Yes 🗸 No\_\_\_\_ | | | | Fever:  No Malaria |
| - Decide MALARIA risk: High/Low No,  - If “low or no” malaria risk, Has child traveled to malarious area in the last 30 days?  - For how long has the child had fever? 3 Days  - If >7 days, has fever been present every day?  - Has child had measles within the last 3 months? | | |  Look or feel for stiff neck.   Look for bulging fontanel   Look for runny nose   Look for signs of MEASLES NOW : Generalized rash,  And one of these: Cough, Runny nose or Red eyes.   Blood Film or RDT: Positive\_\_\_ Negative 🗸 Not Done \_\_\_ |
| **If the** child has measles now **or**  **within the last 3 months:** | | |  Look for mouth ulcers: If Yes, are they deep and extensive?   Look for pus draining from the eye.   Look for clouding of the cornea. | Measles |

**NB: Cellulitis is classified in “other” section of the IMNCI classification**

# Learning Unit 5- Diagnosis and Treatment of Fever in Adults

Day2 Session 2

|  |  |
| --- | --- |
| **Learning unit 5: Diagnosis and Treatment of Fever in Adults** | |
| **Duration:**  180 minutes  **Material:**  Flip Chart, Markers, PowerPoint slides, LCD, Participant manual  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Define acute fever * List possible causes of fever * List common reported causes of fever in Ethiopia * Describe clinical approach (History, physical examination and investigation) to a patient with acute febrile illness * List differential diagnosis of acute febrile illnesses * Outline management principles of acute febrile illnesses  |  |  |  | | --- | --- | --- | | Content | Methods | Duration | | Possible causes of fever | Presentation and Discussions | 30 minutes | | Clinical approach to adult patient with acute fever | Presentation and Discussions | 40 minutes | | Differential Diagnosis of acute fever | Presentation and Discussions | 25 minutes | | Management Principles of acute febrile illness | Presentation and Discussions | 25 minutes | | Exercise | Group Work | 60 minutes | |

**Steps /Activities**

Read the objectives of the learning unit.

Describe the objectives of the unit and make sure the trainees understand them.

Brainstorm: what are the causes of fever?

Interactive presentation on the causes of fever

Interactive power point presentation on clinical approach to adult patient with fever

Interactive power point presentation on differential diagnosis and management principles of acute fever in adults

Divide the participants into four groups of 6-8 members and give them one exercise for each group

**Activity 2: Case study 3.1.**

**Exercise 3.1: Small Group discussion on case studies**

|  |  |
| --- | --- |
| **Purpose** | To help participants practice clinical evaluation, making differential diagnosis, selecting most likely diagnosis and management of adult patient with acute fever. |
| **Materials** | Participants’ manual |
| **Time** | 60 minutes |
| Activities | Divide participants into four groups (6 – 8 members in each group) and instruct to work on case studies. For each case scenarios the group need to discuss and document the answers to each question on their participants’ manual. |
|  | **Case 1** participants will learn that a patient with negative malaria test doesn’t require treatment for malaria. They will also learn identifying focus of infection and considering age and sex specific differential diagnosis |
|  | **Case 2** participants will learn probable diagnosis of typhoid fever in a patient whose malaria test is negative and who doesn’t have other causes of fever. |
|  | **Case 3** participants will learn diagnosis and treatment of uncomplicated malaria in a patient who is living in non malarious area but having travel history to malaria endemic area |
|  | **Case 4** participants will learn how to identify life threatening condition in a febrile patient and administering emergency management. |

**Answers for the Exercises**

1. A 28 year old female Bank manager living in malaria endemic area came to you with fever of two days duration. She has arthralgia and myalgia. She had two episodes of vomiting.
   * What additional information will you ask her?
     + Describe the pattern of the fever (intermittent? Continuous? Remittent?)
     + Take more information on arthralgia and myalgia (location, mode of onset, severity, presence of function abnormality, time variation)
     + Describe vomiting: content of the vomitus, estimated amount of the vomitus
     + Symptoms related to different systems to look for focus of infection
     + Sexual history and HIV status
     + Menstruation history, LMP, check for pregnancy related complications
   * Physical examination showed, acutely sick looking woman, To=39.3oC, left side costo-vertebral angle tenderness. No other abnormal finding
   * What is your differential diagnosis
     + Malaria
     + Acute Pyelonephritis
     + Pneumonia (patients with basal pneumonia may have costo vertebral angle tenderness)
     + If there are symptoms suggesting focus of infection, likely causes are pyogenic meningitis, tonsillitis, septic abortion
     + Typhoid and typhus or relapsing fever are less likely as she has better socio economic status(bank manager)
   * What laboratory test will you order? And what do you expect?
     + Thick and thin Blood microscopy (may show hemoparasites of malaria or RF)
     + Hgb (normal or low)
     + WBC and differential (normal or increased: mainly polymorphs)
     + Urinalysis (may show increased white cells)
     + HIV test (can be negative or positive)
     + Laboratory results to be given to participants in the middle of their discussion are (BF negative, Hgb: 13g/dl, WBC: 15,600/uL, PITC: NR, U/A: protein and sugar negative, many pus cells/HPF seen)
   * What is the treatment for your most likely diagnosis?
     + Treat for pyelonephritis with antibiotics
2. A 20 year old man living in a malaria endemic area presents with a 1 week history of fever, headache, abdominal pain and constipation. He has a high temperature (39°C) and his spleen is palpable. He says the fever is worsening over time.
   * What additional information will you ask him?
     + Describe the headache: location, mode of onset, intensity, interference with daily activity, sleep or food, variation with time
     + Describe the abdominal pain: location, mode of onset, intensity, interference with sleep or eating
     + Is the constipation absolute?
     + Associated symptoms of other systems, to look for focus of infection
     + Sexual history and HIV status
   * What causes do you think of?
     + Malaria
     + Typhoid fever
     + Intra-abdominal abscess
     + Diseases with focus (e.g. pneumonia, tonsillitis, pyelonephritis, meningitis)
   * What laboratory tests will you order?
     + Hemoglobin, WBC and differential, Blood film (microscopy), blood culture. (other tests depending on availability)
     + Laboratory test results to be given to participants in the middle of their discussion (Hgb: 15g/dl, WBC: 7800/uL, BF negative)
   * Write the complications for your first differential diagnosis
     + Intestinal perforation and intestinal bleeding
3. A thirty year old man visited a health centre because he had fever for three days. He lives in Addis Ababa. He gives history of travel to malaria endemic area three weeks back.
   * What additional history and physical examination will you check?
     + Check for danger sings and focus of infection
   * What laboratory tests will you order?
     + Hemoglobin, WBC and differential, blood film, HIV test, others depending on the finding
   * If blood film shows *P.falciparum* ring stage, outline the steps in the management of this patient
     + Specific antimalarial treatment
     + Supportive treatment (for fever and pain)
     + Advise the patient
     + Arrange follow up
4. A 22 year old male patient presented with high grade fever, head ache and vomiting of four days. On physical examination he is restless and talks irrelevant words. You find that he has stiff neck. History is obtained from his father.
   * What additional history will you ask?
     + Characterize the reported symptoms like headache and vomiting
     + Obtain further information about his restlessness (mode of onset, progress
     + Other neurologic symptoms (seizure, body weakness)
   * What laboratory tests will you order?
     + Haemoglobin, WBC and differential, blood film, PITC, CSF analysis and others depending on other findings and availability
     + Laboratory results to be given to participants in the middle of their discussion is (BF: negative, WBC: 14,600/uL, CSF is cloudy and 1200 WBC/uL, PITC: NR)
   * How do you treat him?
     + ABC of life
     + 40% dextrose
     + Antibiotics for meningitis

**Activity 3**

**Daily evaluation (10 minutes)**

Distribute the daily evaluation form to participants. Remind participants to rehearse the courses they took on second day. And prepare themselves for recap session for day three.

# Learning Unit 6 – Severe Malaria

**Activity 1: Recap and evaluation of day two sessions (30 minutes)**

Invite two to three participants to recap the key lessons of day one. Present their day two evaluation finding. Make the necessary clarifications and take note for course delivery adjustments in the process and content of course.

Day 3 Sessions 1:

|  |  |
| --- | --- |
| **Learning unit 6: Severe Malaria** | |
| **Duration:**  240 minutes  **Material:**  Participant manual, LCD  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Define severe malaria * Discuss the host-parasite interaction that contributes to the pathogenesis of severe malaria * List the determinants of severe malaria and identify groups at high risk * Make a diagnosis of severe falciparum malaria * Describe the recommended antimalarial chemotherapeutic regimens for severe malaria * Specify the emergency and supportive measures and follow-up guidance for malaria patients with different types of complications  |  |  |  | | --- | --- | --- | | Content | Methods | Duration | | Define severe malaria | Interactive modular presentation | 20 minutes | | Pathogenesis of severe malaria | Interactive modular presentation | 20 minutes | | Picture quiz | Small group work | 40 minutes | | Management of severe malaria | Interactive modular presentation | 60 minutes | | Video on Artesunate preparation and administration | Video show | 10 minutes | | Exercise | Group exercise | 90 minutes | |

**Steps /Activities**

Read the objectives of the learning unit.

Describe the objectives of the unit and make sure the trainees understand them.

Interactive modular discussion on definition and pathogenesis of severe malaria

Divide the participants into groups of 3-4 members and give them the picture quiz

Discuss the picture quiz with the participants in plenary

Interactive modular discussion on management of severe malaria

Show video on preparation of injectable Artesunate: <https://www.youtube.com/watch?v=5-9n0OkeFGw>

Divide the participants into groups of 5-6 members and give them case studies on severe malaria

Discuss the case studies in plenary

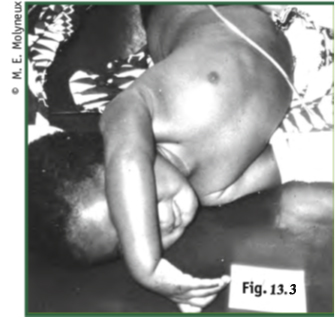
Summarize the learning unit

**Answer for Exercises**

Picture quiz and answers

A number of picture plates have been provided below. They are to help in guiding the participants on interpretation of physical signs of severe disease in children and adults, decisions on differential diagnoses, and determination of the tests that need to be carried out.

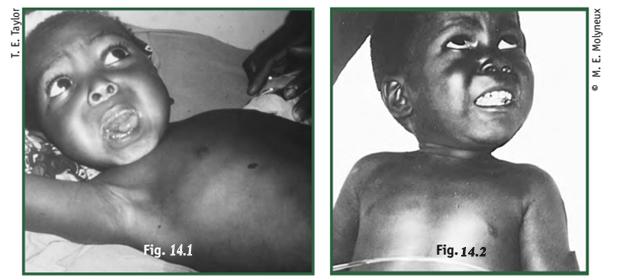


  
The children seen in figures 13.1, 13.2 and 13.3 were all brought to a clinic in an area where P. falciparum is hyperendemic. Each child is unconscious and has a heavy P. falciparum parasitaemia. The children are 3 to 5 years old. They are febrile (axillary temperature: 38°C– 40°C). They have been immunized against measles, diphtheria, tetanus, and whooping cough through the EPI services.  
**Question 1**What do pictures 13.1–13.3 show?Opisthotonos. There is also posturing of the arms in various positions. These features indicate severe cerebral dysfunction.

**Question 2**What is the differential diagnosis?All these features may be due to cerebral malaria. The most important differential diagnosis is meningitis; it must also be remembered that any form of meningoencephalitis, including rabies, may present in a similar way; hypoglycaemia due to any cause, one of which is malaria, may also present with this clinical picture. Kernicterus may also cause cerebral dysfunction.

**Question 3**What tests should be carried out?Blood glucose; lumbar puncture; other tests depend on the particular circumstances and response to treatment.  
Additional tests to carry out in the management of this patient that are:

*i)* appropriate and *ii)* available in the facilities in which they work.



The children seen in figures 14.1 and 14.2 each have a short history of fever followed by progressive loss of consciousness. Both are in deep coma and have a heavy P. falciparum parasitaemia. They are 3 and 4 years old. Neither has been immunized against the common childhood diseases.

**Question 4**What do the pictures seen in Figures 14.1 and 14.2 show?Conjugate deviation of the eyes to the left (Fig. 14.1) or upwards (Fig. 14.2). The patient in figure 14.1 also has a sustained posture of the right arm, and the child in figure 14.2 appears to have contraction of lower facial muscles, causing a grimace.

**Question 5**What could be the explanation for this?These features, like those of figures 13.1 to 13.3 indicate a cerebral disorder. They may also be part of, or follow immediately after, a convulsion of any cause. All the conditions discussed under questions 2 and 3 must be considered in these patients, and the same tests should be done.



The patient seen in figure 15 has P. falciparum malaria. She was admitted in coma, treated with quinine and recovered consciousness. Two days later she had a convulsion and collapsed into coma again.

**Question 6**What are the possible causes of the convulsion and subsequent coma?

1. Hypoglycaemia
2. A recrudescence of malaria (not responding to quinine)
3. Meningitis

**Question 7**What investigations would you carry out to ascertain the causes?

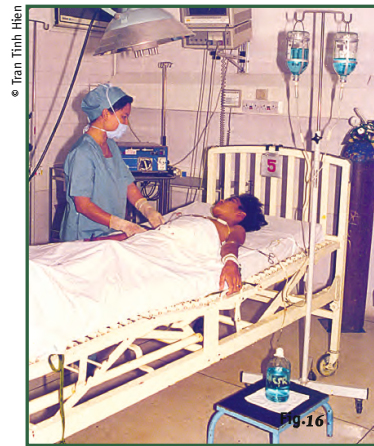
1. Blood glucose test, using a “stix” method, or glucometer if available
2. Blood film (thick film)
3. Lumbar puncture
4. Blood culture

**Question 8**

How will you manage this patient?

1. Anti-malarials
2. The comatose patient should be given meticulous nursing care. The nurse should turn the patient every two hours or so. Allowing the patient to lie in a wet bed will promote bed sores..
3. If hypoglycaemia is detected by blood testing or suspected on clinical grounds,  
   give 50ml of 50% dextrose by intravenous bolus injection (rapid injection of 50ml of ﬂuid).
4. Follow with an intravenous infusion of 5% or 10% dextrose.
5. Continue to monitor blood glucose level in order to regulate the dextrose infusion. Remember that hypoglycaemia may recur even after intravenous bolus of 50% dextrose.
6. The patient must be treated with broad spectrum antibiotics without waiting  
   for culture results. If the results of blood culture and sensitivity testing become  
   available, give the appropriate antibiotics, if not continue with the broad spectrum antibiotics.
7. Monitor and record the level of consciousness using the Glasgow coma scale,  
   or for younger children the Blantyre scale, and the temperature, respiratory rate,  
   pulse and blood pressure.

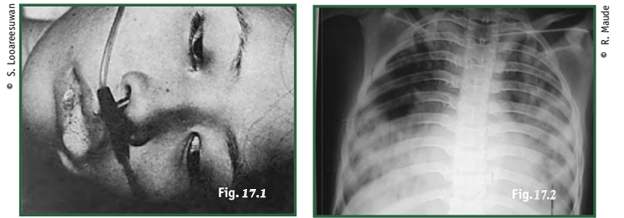
Figure 16. Shows the supportive treatment given to a patient with severe falciparum malaria.



**Question 9**What exactly does the picture seen in figure 16 show?Peritoneal dialysis in progress in a hospital in a rural location. A patient with acute tubular necrosis can be kept alive by peritoneal dialysis until the kidneys recover, usually over a period of a few weeks.

**Question 10**What is the most frequent complication in severe falciparum malaria that leads the physician to carry out this procedure?Renal failure. Dialysis is indicated if the patient remains oliguric after adequate rehydration and the blood urea and creatinine rise progressively, in the absence of facilities for standard dialysis.

**Question 11**What are the complications to be feared in carrying out this procedure in rural hospitals?Peritoneal dialysis should not be undertaken lightly in a rural hospital setting. Bleeding and secondary infections are common complications and the mortality associated with the procedure is high. Early referral to a dialysis center is usually preferable.

Figures 17.1 and 17.2 refer to the clinical and radiological presentation of a woman soon after delivery. She has severe falciparum malaria with hyperparasitaemia and the condition shown in figures 17.1 and 17.2 was preceded by difficulty in breathing with an increased respiratory rate.

**Question 12**What is the condition suggested by these pictures?Acute pulmonary edema that developed suddenly after delivery. The ﬂuid balance of the woman was positive. Figure 17.2 is the radiographic appearance of acute pulmonary edema.

**Question 13**What is the differential diagnosis for this condition?Aspiration bronchopneumonia, pneumocystis pneumonia and metabolic acidosis. Without good facilities for emergency radiography it may be difficult to differentiate acute pulmonary edema from aspiration bronchopneumonia and metabolic acidosis although, in the later, examination of the chest is usually normal.

**Patient A**The place: A country where P. falciparum malaria is transmitted in forested areas but not in  
the main cities.  
The patient: A woman aged 25 years is brought to the outpatient department of the central  
hospital in the capital. She is a local resident, the wife of a business executive, and is in the  
seventh month (28 weeks) of her first pregnancy.  
The patient became ill five days ago, with chills, sweating and headaches. An antibiotic was  
prescribed and her condition seemed to improve, but yesterday she developed rigors and  
persistent vomiting. A blood film at the local clinic showed malaria parasites, and oral quinine   
(600mg every 8 hours) was prescribed. She took two doses.

Today she has been referred to your hospital because of restlessness and increasing mental confusion. Examination shows a semiconscious woman who is unable to speak. She withdraws her hand from a painful stimulus but cannot localize a stimulus applied to the sternum or forehead. There is no neck stiffness, jaundice, pallor or rash. Axillary temperature is 39°C, pulse rate 90/min, blood pressure 110/70mmHg. The uterine fundus is palpable (26–28 weeks), and the fetal heart can be heard.

**Question 1***What tests are urgently required?*

1. *Blood glucose.* Pregnant women are susceptible to hypoglycaemia with any stress or infection, and they are particularly likely to develop hypoglycaemia (due to hyperinsulinaemia) during treatment with quinine. This patient is pregnant and has already received some quinine; she has altered consciousness. Hypoglycaemia is therefore a strong possibility and must be checked for urgently.
2. *Haematocrit/haemoglobin and parasite density.* Because the patient is pregnant she may already be anaemic due to iron or folate deficiency and increased plasma volume. Malaria may rapidly exacerbate anemia. The risk of developing pulmonary edema is increased in patients with severe anemia.
3. *Lumbar puncture and blood culture if possible.* Meningitis may co-exist with malaria and can be impossible to identify without examination of the cerebrospinal ﬂuid. Septicemia may complicate severe malaria. In pregnancy there is increased susceptibility to bacterial infections – e.g. pneumococcal infections – including septicemia and meningitis.

**Question 2***If the blood glucose is 1.2mmol/l (22mg/dl) what treatment should be given?* Intravenous dextrose. Remember, hypoglycemia may be recurrent and severe in pregnancy; monitor the blood glucose level frequently

**Question 3**The blood film shows *P. falciparum* rings “++++”, and the cerebrospinal ﬂuid is normal except for low glucose.

1. *What antimalarial drug should be administered and by which route?*Parenteral Artesunate is preferred over quinine in the all trimesters, both because of its antimalarial efficacy and because quinine is associated with recurrent hypoglycemia. Intravenous route is preferable, but if not possible, intramuscular route should be used. Assume that the patient is 6 months pregnant and parenteral quinine is the only available parenteral medicine.
2. *Should a loading dose of quinine be given? Justify your answer.*No, because the patient has received quinine within the last 24 hours, and a loading dose may therefore lead to dangerously high blood levels of the drug.
3. *What nursing procedures are important during this treatment?*An important nursing responsibility is to control the rate of infusion. If quinine is allowed to run too rapidly, hypotension and hypoglycemia may develop and the patient may become dangerously overloaded with ﬂuid. On the other hand, if the infusion is too slow, inadequate blood levels of the drug may be achieved, and the patient may become dehydrated. Meanwhile, care of the semiconscious patient is essential. As she is restless she must be protected from falling and from pulling out drip lines. Other important nursing procedures are discussed in the following sections. Monitoring of the fetal heart rate and well-being is also very important.
4. *In a health unit without facilities for parenteral therapy, what alternative treatment could be considered?*Make urgent efforts to refer and transfer the patient to a facility which has facilities for parenteral therapy and adequate monitoring and management of the pregnancy. But give the first dose of an antimalarial drug while referral arrangements are being made.

**Question 4**After six hours the patient becomes increasingly restless. The respiratory rate increases to 40/minute. The blood glucose level is normal.  
*Under these conditions, what diagnostic steps should be taken?*Look for evidence of pulmonary edema, which may complicate falciparum malaria, especially in pregnancy.  
Review the urinary volumes passed, the volumes of intravenous ﬂuid (including dextrose) given, and the ﬂuid balance. This emphasizes the need for precise monitoring and recording of ﬂuid intake and output – another important responsibility of those who nurse the patient. Assess the central venous pressure (clinically or, if possible, with the help of a central venous pressure line). Examine carefully for gallop rhythm, basal crepitations and hepatic enlargement.

**Question 5**

 **Fig 18**

**Fig 18**

*A chest X-ray gives the picture shown Figure 18 What is the diagnosis and treatment?* This X-ray suggests pulmonary edema or acute respiratory distress syndrome (ARDS). The mechanisms of these two conditions are different, but the clinical and radiological pictures are similar. Both are serious complications. The most important treatment is to correct ﬂuid overload if present, using intravenous diuretics, ﬂuid restriction and even careful venesection. ARDS can only be diagnosed on the basis of arterial blood gas measurements. It requires assisted ventilation with careful attention to blood gases and even with these facilities the prognosis is poor.

**Question 6***What other observations are particularly important in this patient?*Fetal heart rate. Fetal distress is common in malaria, especially if there is high fever. Assisted vaginal delivery or even caesarean section must be considered if fetal distress is severe.

**Question 7***What other questions should this patient’s relatives be asked?*Ask about travel – when has she visited parts of the country where transmission of malaria occurs? Has she received a blood transfusion recently (alternative source of malarial infection)

**Patient B**The place: A rural clinic in an area where P. falciparum is hyperendemic. Various antimalarial  
medicines are available, but intravenous infusions cannot be given.  
The patient: A child aged 20 months became feverish two days ago and has vomited several  
times today. One hour ago the child had a convulsion, described by the mother as a repetitive  
twitching of limbs and mouth, followed by unresponsiveness for a few minutes. The child is  
now febrile (39.3°C), conscious, and able to localize and respond to a painful stimulus. Malaria  
rapid diagnostic test shows a positive result for P. falciparum. The child repeatedly vomits any  
antimalarial medicine given by mouth.

**Question 1**

1. *Does the child have cerebral malaria?*No. The fact that the child is now fully conscious suggests that the convulsion was a “febrile convulsion” rather than a component of cerebral malaria. Convulsions occur in cerebral malaria but they are not usually followed by a rapid recovery of consciousness.
2. *What should be done about the convulsions?*Make sure that the risk of a further convulsion is minimized by reducing the child’s temperature (paracetamol, tepid sponging and fanning).

**Question 2**The district hospital is 30km away; the journey will probably take several hours by bus.

1. *Should the patient be referred to hospital?*The decision to refer will depend on facilities at the health center. This child needs antimalarial drugs and ﬂuids, and should receive these at a center able to give them and able to observe the child’s progress carefully.
2. *What treatment should be given in the meantime?*Because the child is persistently vomiting, the first dose of antimalarial drug should be given parenterally or rectally. The options are rectal Artesunate, intramuscular quinine or intramuscular artemether. Recent studies suggest that a loading dose of quinine (20mg salt/kg) can be given safely by the intramuscular route, as long as the patient has not received quinine or quinidine in the preceding 24 hours or meﬂoquine in the preceding 3 days. A reasonable approach is to give quinine 10mg/kg IM immediately, then 10mg/kg (the remainder of the loading dose) IM after 4 hours). Artesunate suppositories can be given as pre-referral treatment. Because of the history of a febrile convulsion, make sure the mother continues to give her child tepid sponging and fanning to reduce the risk of further convulsions. This child may cease to vomit soon after the injection, especially if the temperature has been successfully lowered. It may then be possible to continue treatment by mouth, without referral to a larger center. If the child is referred to a larger center, make sure that the child is given dextrose by mouth or nasogastric tube during the period of travel.

**Question 3**On arrival at the district hospital, the child was still unable to take oral medication and was admitted. A thick blood smear showed P. falciparum rings “++++” and he was given quinine IV. On the third day, there had been some improvement but the child was still febrile and the parasitaemia reduced a little. *Does this suggest that the child has drug-resistant malaria?***No**. Fever commonly persists, and the degree of parasitaemia may remain similar for up to 24 hours after the start of treatment, even if the parasite is fully sensitive to the drug being given. By 48 hours, however, the density of parasitaemia should be greatly reduced and the patient should be considerably better. Nevertheless other possible causes of fever should be checked.

**Question 4**The child was able to feed and take oral medication on the third day.  
*Should the parenteral treatment with quinine be continued?***No**. Parenteral antimalarials in the treatment of severe malaria should be given for a minimum of 24 hours, once started (irrespective of the patient’s ability to tolerate oral medication earlier). The patient already received parenteral quinine for two days. As the child can swallow, the treatment should be completed by giving a complete course of either the recommended first-line ACT.

**Question 5**On completion of the treatment, a further blood test showed gametocytes “+”. *What should be done about the gametocytes present in the blood after treatment?*Gametocytes are commonly found in the blood for several days or even weeks after successful treatment of falciparum malaria; they do not indicate failure of treatment, with the current management gametes are covered with PQ single dose.

**Patient C**The place: A country where P. falciparum is hyperendemic.  
The patient: A male economist aged 28 years, was born and brought up locally, but attended  
university in northern Europe for five years. He returned home last month. One week ago he developed fever. He decided this could not be malaria because he had grown up in a malaria-endemic area and believed he was therefore immune. Two days ago he became confused, especially at night. He stayed in bed and was attended by a servant who called the doctor today because the patient was increasingly confused. The last urine he had passed was a small volume of very dark ﬂuid 24 hours ago.  
On examination, the patient was a well-nourished adult man. He was afebrile with a rectal  
temperature of 36.5°C. He was restless but could give brief appropriate answers to questions,  
and could localize the site of a painful stimulus. He was jaundiced and his mucous membranes  
were pale. There was some bleeding from the gums, and there were a few retinal haemorrhages  
in both eyes.

**Question 1**

1. *What is the differential diagnosis?*Consider all diseases that may progress to encephalopathy with jaundice: fulminant hepatitis, yellow fever, other viral fevers, relapsing fever, septicaemia, community acquired pneumonia (which is commonly accompanied by jaundice), leptospirosis, alcohol excess, sickle cell crisis, trypanosomiasis, etc. Nevertheless, in the circumstances of this patient, in particular the failure to pass urine, severe falciparum malaria must be the most likely diagnosis. Retinal haemorrhages are common in severe malaria, and do not on their own indicate the presence of abnormal bleeding tendency.
2. *Was the patient right to think he was immune to malaria? Justify your answer.*No. Immunity to malaria is partial, and may be almost completely lost after an absence of a few years from the endemic area.

**Question 2**The thick blood film shows *P. falciparum* rings “++++” and the thin blood film shows that 26% of red cells are parasitized.

1. *What else should be looked for in the thin blood film?*Platelets. Thrombocytopenia is usual in falciparum malaria, but may be particularly severe in this patient who has signs of a bleeding tendency. Severe thrombocytopenia may be evident on a thin blood film.
2. *What other tests are necessary to investigate the bleeding tendency?*Platelet count and prothrombin time. In addition a bedside test that might be positive in the presence of a low platelet count is Hess’s test. If possible it would be interesting to know the levels of plasma fibrinogen and fibrin degradation products (FDPs). If the platelet count and plasma fibrinogen are very low in a patient with spontaneous bleeding, the bleeding can be attributed to disseminated intravascular coagulation (DIC). However, if only the thin blood film can be done, scantiness of platelets in the presence of bleeding in a patient with malaria suggests DIC: Hess’s test may or may not be positive. The best bedside test for the presence of abnormal bleeding due to DIC is the bleeding time (described in *Guide for Participants*). In this patient this is likely to be prolonged, since there is abnormal bleeding spontaneously from the gums. A record of bleeding time  
   would be useful in order to monitor progress in response to treatment.
3. *What treatment is needed for the bleeding?*Screened fresh blood transfusion. If facilities allow, alternative treatment should be based on laboratory tests. If, in the patient with spontaneous bleeding, thrombocytopenia is the only abnormality, give platelet concentrates; if laboratory results show DIC give platelet-rich plasma or fresh frozen plasma with additional platelets. Vitamin K is not helpful because the bleeding is not due to vitamin K deficiency. Since this patient may also need blood transfusion for malarial anemia, it would be wise to prepare urgently as many safe units of whole fresh blood as possible. It is assumed that specific treatment for malaria has already been given.

**Question 3**The patient has not passed urine for 24 hours.  
*What kind of investigations and actions are appropriate?*Palpate the abdomen to see if the bladder is distended. Try to get the patient to pass urine. If he cannot do so, catheterize with full sterile procedure, in order to record urine volumes carefully. Test the urine (if any) by all routine methods and if possible, for sodium concentration and specific gravity. The management needed is then that of any patient with suspected acute tubular necrosis – i.e. attempt to correct any underhydration by careful saline infusion (urine specific gravity > 1.015 and sodium < 20mmol/l suggests dehydration). Some authorities use drugs such as furosemide (furosemide) and low-dose dopamine in an attempt to achieve ﬂow of urine. High dose furosemide given with aminophylline infusion can be used. The efficacy of these treatments remains unconfirmed. Measure the plasma urea, creatinine and electrolytes if possible. If acute tubular necrosis becomes established, intensive care is required, with peritoneal dialysis or hemodialysis if necessary.

**Question 4**15ml of dark brown urine was obtained by catheter. The urine ‘stix’ tests showed albumin “++”, blood “++++”, conjugated bilirubin “++”, urobilinogen “++”. Microscopy of the urine showed no cells and a few casts.  
*How are the results of the urine test to be interpreted?*The presence of “blood” in the urine (i.e. hemoglobin) in the absence of red blood cells indicates that there is free hemoglobin in the urine, as a result of intravascular hemolysis, a complication of severe falciparum malaria. Bilirubinuria indicates that there is some increase in the conjugated bilirubin in the plasma, as a result of hepatic involvement in malaria. Urobilinogen appears in the urine when there is unconjugated hyperbilirubinaemia, as in haemolysis. Proteinuria is usual in the presence of acute tubular necrosis, which is the commonest form of renal failure to complicate falciparum malaria.

**Question 5**Acute renal failure is confirmed.

1. *Is it possible that the kidneys may recover?*Yes. In acute tubular necrosis, recovery commonly takes place within a period of a few days or weeks. It is therefore important to keep the patient alive, if possible, by dialysis (if necessary peritoneal dialysis) because full recovery is then likely, without the need for continued long-term dialysis.
2. *What therapy should be given to this patient with acute renal failure?*Artesunate IV/IM should be used in preference to quinine. The dosage of Artesunate does not need adjustment in patients with vital organ dysfunction. If parenteral Artesunate is not available, quinine therapy should be given. If acute renal failure is confirmed, the first dose of quinine should be the same as in any patient with severe malaria, but if acute renal failure becomes established, doses should be reduced by 50% from the third day onwards.   
   **Note:** peritoneal dialysis can be life-saving and is achievable without excessively expensive equipment. However, it requires experience and competence. Guidelines for indications and methods of peritoneal dialysis are available and must be taught to hospital staff, who may be responsible for management of patients with severe malaria. Fortunately, acute renal failure is rare in African children with severe malaria but it is seen in adults, especially in semi-immune populations.

**Patient D**The place: A country with hyperendemic P. falciparum malaria in low-lying areas but no malaria transmission on the high central plateau.  
The patient: A woman aged 19 years was brought to a clinic in the malaria-endemic area. The medical officer recorded that the patient gave a history of fever for the past three days with rigors and vomiting. On examination she was febrile with an axillary temperature of 39.1°C and slightly jaundiced. She was fully conscious. Because she had never been out of the country, the doctor considered it unlikely that she was suffering from P. falciparum malaria, but nevertheless checked a thin blood film. No malaria parasites were seen on the film so he diagnosed hepatitis and advised rest and a fat-free diet.

**Question 1**

1. *Do you think the medical officer was right to decide that this patient did not have malaria? Justify your answer.***No**. Because the doctor did not take into consideration the history and investigations.
2. *Could the doctor have done better with:* *The history?*Poor knowledge of the epidemiology of malaria in the country. The medical officer considered malaria unlikely because the patient had not been out of the country. He/she should have enquired about the patient’s travel history: if the patient had lived all her life in the highlands, she would be highly susceptible to malaria when visiting the lowlands. The possibility of blood transfusion and contact with jaundiced persons should also be checked.  
    *The investigations?*Inadequate knowledge of procedures for laboratory malaria diagnosis. A diagnosis of malaria was dismissed because there were no malaria parasites on the thin film. It is much easier to identify a scanty parasitaemia on a thick film than a thin film. A thick film should have been done. Even if that was negative for malaria parasites, the doctor should have been prepared to consider a diagnosis of malaria and repeat the thick film after a few hours. If facilities allow, liver enzymes could be measured to help diagnose acute hepatitis.

**Question 2**Two days later the patient was brought back to the clinic by anxious relatives. She had become drowsy and was not answering questions properly. On examination the patient was afebrile, slightly jaundiced and confused. She could not answer questions but could withdraw her hand from a painful stimulus. The possible diagnoses considered were fulminant hepatitis, sickle-cell crisis, relapsing fever and cholecystitis. Malaria was ruled out because she was not febrile. Treatment was started urgently with tetracycline intravenously and enemas to empty the large bowel. She remained unconscious and her temperature rose to 38°C; a blood film now showed scanty *P. falciparum* parasitaemia. This was considered “probably incidental” because low-grade parasitaemia was common among young adults in the area.

1. w*hat errors were made in clinical judgment?***First,** malaria was ruled out because she was apyrexic. Malarial fever is variable and a single measurement is never sufficient to indicate the absence of malaria. Occasionally, patients with severe malaria remain afebrile for long periods despite being severely ill.  
   **Second**, the low-grade parasitaemia was considered unimportant. Patients with severe malaria usually do have heavy parasitaemia, but some patients have low grade peripheral parasitaemia despite having severe malaria. This is because of withdrawal of trophozoites and sequestration of parasites in the capillaries of the internal organs.
2. *What errors were made in the treatment of the patient?***First**, a young woman should not be treated with tetracycline unless she is definitely known not to be pregnant. No mention is made of any attempt to discover whether the patient was pregnant. Tetracycline is also likely to be harmful in viral hepatitis, so this disease should have been excluded before the treatment.  
   **Second**, the patient was parasitaemic and ill enough to require parenteral treatment, parenteral Artesunate should have been prescribed. If not available, parenteral quinine (with appropriate precautions, see *Question 3*) would have been given. **Thirdly**, an important mistake here was not to consider hypoglycemia, a serious but treatable possibility in a patient with jaundice who becomes confused or drowsy – could be due to hepatic necrosis in hepatitis, or to malaria itself.

**Question 3**The next day the patient was increasingly febrile and the parasitaemia had increased. The parenteral Artesunate (IV or IM), the preferred antimalarial medicine for the treatment of severe malaria, was out of stock. Therefore, quinine 20mg base/kg was given intravenously to run over one hour in normal saline, to be repeated 8-hourly. Twenty-four hours later the patient became increasingly breathless. There were no signs in the chest but pneumonia was diagnosed and treated with penicillin. Twelve hours later the patient was still breathless and suddenly had a convulsion. Her level of consciousness deteriorated and she died ten hours later.

1. *What errors were made in administration of quinine?*The dose of quinine of 20mg base/kg is too high; the correct loading dose is  
   20mg of quinine dihydrochloride salt (16.7mg base)/kg. One hour is too fast  
   for an intravenous infusion of quinine (especially of a loading dose); infusion over 3–4 hours is preferable.
2. *What errors were made in diagnosis of clinical complications?*Pulmonary edema and hypoglycemia were not considered. Pulmonary edema is particularly likely in a patient with renal impairment who receives excessive ﬂuid orally or parenterally. Acute renal failure should therefore also be looked for carefully in this patient.

# Learning Unit 7 – Malaria in Special Risk Groups

Day 3 Sessions 2

|  |  |
| --- | --- |
| Learning unit 7: Malaria and special groups | |
| **Duration:**  60 minutes  **Material:**  PowerPoint slides, LCD, Participant manual  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Describe the relationship between malaria and pregnancy and lactation * List measures to prevent malaria during pregnancy * State the recommended therapeutic regimens for the treatment of uncomplicated and severe malaria during pregnancy and lactation * Describe the prevention of malaria during pregnancy * Describe the effect of malnutrition on malaria * Describe the effect of HIV on malaria  |  |  |  | | --- | --- | --- | | Content | Methods | Duration | | Malaria and pregnancy | Interactive PowerPoint Presentation | 15 | | Malaria & malnutrition | Interactive PowerPoint Presentation | 15 | | Malaria & HIV | Interactive PowerPoint Presentation | 15 | | Malaria & TB | Interactive PowerPoint Presentation | 15 | |  |  |  | |

**Steps**

Read the purpose of learning unit seven

Describe the learning objectives and make sure the trainees understand them.

Continue with interactive PowerPoint presentation on interactions of malaria with pregnancy, malnutrition, HIV and TB

Remind trainees there are no evidences to modify recommended treatments but these groups of patients need strict follow ups.

Summarize the learning unit

**Daily evaluation (10 minutes)**

Distribute the daily evaluation form to participants. Remind participants to rehearse the courses they took on third day. And prepare themselves for recap session for day four.

# Learning Unit 8 Malaria Laboratory Diagnosis and Quality Assurance

**Activity 1: Recap and evaluation of day four sessions (30 minutes)**

Invite two to three participants to recap the key lessons of day one. Present their day two evaluation finding. Make the necessary clarifications and take note for course delivery adjustments in the process and content of course.

Day 4 Sessions 1

|  |  |
| --- | --- |
| **Learning unit 8: Malaria Laboratory Diagnosis and Quality Assurance** | |
| **Duration:**  120 minutes  **Material:**  PowerPoint slides, LCD, Participant manual, RDT test kits  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Describe the different methods used for diagnosing malaria * Explain the significance of microscopy and RDT in malaria control * Explain the principle and general procedure of microscopy and RDT * Describe the significance of performing microscopic thick and thin blood film slides * Describe the principles of quality assurance of malaria laboratory diagnosis * Describe activities of EQA schemes of malaria laboratory diagnosis  |  |  |  | | --- | --- | --- | | Content | Methods | Duration | | Different methods of malaria diagnosis | PowerPoint presentation | 10 minutes | | Principles and general procedures of microscopy | PowerPoint presentation | 30 minutes | | Principles and general procedures of RDT | PowerPoint presentation | 30 minutes | | Quality assurance of malaria laboratory diagnosis | PowerPoint presentation | 30 minutes | | RDT demonstration | Group work | 20 minutes | |

**Steps/ Activities**

Read the purpose of learning unit eight

Describe the learning objectives and make sure the trainees understand them.

Continue with interactive PowerPoint presentation on different methods of malaria diagnosis. And process to principles, general procedures of malaria microscopy and RDTs.

Continue with PowerPoint presentations on malaria quality assurance.

Invite one volunteer trainee to get blood sample. Demonstrate the steps of performing RDTs, reading and interpreting results.

Summarize the learning unit

# Learning Unit 9 – Malaria Epidemic Detection and Response

Day 4 Sessions 2:

|  |  |
| --- | --- |
| **Learning unit 9: Malaria Epidemic Detection and Response** | |
| **Duration:**  `120 minutes  **Material:**  PowerPoint slides, LCD, Participant manual, malaria epidemic monitoring (norm) chart , blue and red pens  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Define malaria outbreak and epidemics * Describe the purpose of malaria epidemic forecasting and early warning * Explain the basic principles of malaria epidemic detection and response.  |  |  |  | | --- | --- | --- | | Content | Methods | Duration | | Malaria outbreaks and epidemics | Brainstorm & PowerPoint Presentation | 20 | | Malaria epidemic forecasting and early warning | PowerPoint Presentation | 20 | | Malaria epidemic detection and response | PowerPoint Presentation | 20 | | Exercise on malaria epidemic monitoring chart | Group Work | 60 | |

**Steps or Activities**

Read the objectives of the learning unit.

Describe the objectives of the unit and make sure the trainees understand them.

Brainstorm: what does outbreak means? What about Epidemics?

Continue with an interactive presentation on similarities and difference of outbreak and epidemics.

Then, proceed with an interactive power point presentation on malaria epidemic forecasting and early warning.

Divide the participants into four groups of 6-8 members and give them one exercise for each group.

Facilitate the on decision of maximum expected cases: i.e. 450 for threshold 2X last year and 300 for threshold identified using 2nd largest number.

Summarize the learning unit.

**Activity 2: Group exercise**

**Exercise 10.1: Small Group discussion on epidemic monitoring chart**

|  |  |
| --- | --- |
| **Purpose** | To help participants practice identifying threshold through selecting the second largest number out of five years weekly organized data and/or doubling the previous one year weekly organized data. |
| **Materials** | Participants’ manual, Malaria epidemic chart, red and blue ink pens |
| **Time** | 60 minutes |
| Activities | Divide participants into four groups (6 – 8 members in each group) and instruct to work on two group exercise. During the exercise each group members need to actively participate in answering each question presented on their participants’ manual. |
|  | **Exercise 1:** participants will learn selecting the second largest number out of five year weekly organized data. They will also learn how to fill the basic information’s on the malaria epidemic monitoring chart and plotting the threshold with red ink pen; plotting the recent year weekly data using blue ink pen. Finally, they are expected to interpret the results of the line graphs. |
|  | **Exercise 2** participants will learn doubling the previous year weekly organized malaria data to determine the threshold. They will also learn how to fill the basic information’s on the malaria epidemic monitoring chart and plotting the threshold with red ink pen; plotting the recent year weekly data using blue ink pen. Finally, they are expected to interpret the results of the line graphs. |

**Answer to group exercises:**

**Exercise 1: One year data**

| **Week no. (EFY)** | **Week no (WHO)** | **2007** | **doubling Previous year data** | **This year (2008)** |
| --- | --- | --- | --- | --- |
|
| **1** | 28 | 38 | 76 | 36 |
| **2** | 29 | 62 | 124 | 101 |
| **3** | 30 | 73 | 146 | 122 |
| **4** | 31 | 142 | 284 | 135 |
| **5** | 32 | 104 | 208 | 176 |
| **6** | 33 | 67 | 134 | 200 |
| **7** | 34 | 124 | 248 | 250 |
| **8** | 35 | 130 | 260 | 261 |
| **9** | 36 | 129 | 258 | 261 |
| **10** | 37 | 125 | 250 | 255 |
| **11** | 38 | 87 | 174 | 244 |
| **12** | 39 | 138 | 276 | 230 |
| **13** | 40 | 139 | 278 | 269 |
| **14** | 41 | 178 | 356 | 267 |
| **15** | 42 | 208 | 416 | 233 |
| **16** | 43 | 164 | 328 | 199 |
| **17** | 44 | 114 | 228 | 145 |
| **18** | 45 | 103 | 206 | 67 |
| **19** | 46 | 105 | 210 | 53 |
| **20** | 47 | 105 | 210 | 52 |
| **21** | 48 | 81 | 162 | 45 |
| **22** | 49 | 42 | 84 | 18 |
| **23** | 50 | 33 | 66 | 22 |
| **24** | 51 | 36 | 72 | 30 |
| **25** | 52 | 38 | 76 | 35 |
| **26** | 1 | 24 | 48 | 20 |
| **27** | 2 | 20 | 40 | 22 |
| **28** | 3 | 21 | 42 | 35 |
| **29** | 4 | 32 | 64 | 26 |
| **30** | 5 | 30 | 60 | 25 |
| **31** | 6 | 23 | 46 | 20 |
| **32** | 7 | 25 | 50 | 21 |
| **33** | 8 | 23 | 46 | 25 |
| **34** | 9 | 26 | 52 | 16 |
| **35** | 10 | 13 | 26 | 5 |
| **36** | 11 | 23 | 46 | 15 |
| **37** | 12 | 43 | 86 | 25 |
| **38** | 13 | 21 | 42 | 16 |
| **39** | 14 | 21 | 42 | 30 |
| **40** | 15 | 13 | 26 | 45 |
| **41** | 16 | 11 | 22 | 60 |
| **42** | 17 | 8 | 16 | 62 |
| **43** | 18 | 9 | 18 | 60 |
| **44** | 19 | 10 | 20 | 25 |
| **45** | 20 | 9 | 18 | 10 |
| **46** | 21 | 8 | 16 | 15 |
| **47** | 22 | 9 | 18 | 16 |
| **48** | 23 | 17 | 34 | 17 |
| **49** | 24 | 32 | 64 |  |
| **50** | 25 | 34 | 68 |  |
| **51** | 26 | 47 | 94 |  |
| **52** | 27 | 62 | 124 |  |

NB: Week 5 - 11 there were malaria epidemics and week 40 – 43 too.

**Exercise 2: Five years data**

| Week no. (EFY) | Week no (WHO) | 2003 | 2004 | 2005 | 2006 | 2007 | second largest number | This year |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|
| 1 | 28 | 19 | 42 | 44 | 8 | 38 | 42 | 36 |
| 2 | 29 | 52 | 49 | 47 | 10 | 62 | 52 | 101 |
| 3 | 30 | 31 | 44 | 45 | 12 | 73 | 45 | 122 |
| 4 | 31 | 31 | 51 | 53 | 94 | 142 | 94 | 135 |
| 5 | 32 | 97 | 67 | 56 | 114 | 104 | 104 | 176 |
| 6 | 33 | 42 | 73 | 67 | 94 | 67 | 73 | 200 |
| 7 | 34 | 74 | 61 | 71 | 82 | 124 | 82 | 250 |
| 8 | 35 | 53 | 123 | 46 | 57 | 130 | 123 | 261 |
| 9 | 36 | 41 | 58 | 92 | 79 | 129 | 92 | 261 |
| 10 | 37 | 76 | 136 | 118 | 70 | 125 | 125 | 255 |
| 11 | 38 | 116 | 113 | 134 | 37 | 87 | 116 | 244 |
| 12 | 39 | 94 | 145 | 128 | 73 | 138 | 138 | 230 |
| 13 | 40 | 93 | 102 | 194 | 103 | 139 | 139 | 269 |
| 14 | 41 | 108 | 692 | 171 | 52 | 178 | 178 | 267 |
| 15 | 42 | 34 | 178 | 168 | 59 | 208 | 178 | 233 |
| 16 | 43 | 49 | 165 | 232 | 59 | 164 | 165 | 199 |
| 17 | 44 | 27 | 183 | 145 | 44 | 114 | 145 | 145 |
| 18 | 45 | 16 | 283 | 111 | 34 | 103 | 111 | 67 |
| 19 | 46 | 55 | 141 | 150 | 40 | 105 | 141 | 53 |
| 20 | 47 | 33 | 133 | 112 | 20 | 105 | 112 | 52 |
| 21 | 48 | 40 | 122 | 87 | 25 | 81 | 87 | 45 |
| 22 | 49 | 40 | 95 | 102 | 30 | 42 | 95 | 18 |
| 23 | 50 | 19 | 67 | 71 | 30 | 33 | 67 | 22 |
| 24 | 51 | 26 | 56 | 21 | 38 | 27 | 38 | 30 |
| 25 | 52 | 23 | 55 | 34 | 29 | 6 | 34 | 35 |
| 26 | 1 | 8 | 42 | 6 | 36 | 14 | 36 | 20 |
| 27 | 2 | 12 | 42 | 27 | 38 | 17 | 38 | 22 |
| 28 | 3 | 10 | 42 | 43 | 49 | 21 | 43 | 35 |
| 29 | 4 | 20 | 17 | 34 | 59 | 32 | 34 | 26 |
| 30 | 5 | 34 | 17 | 46 | 20 | 30 | 34 | 25 |
| 31 | 6 | 18 | 10 | 34 | 22 | 23 | 23 | 20 |
| 32 | 7 | 12 | 19 | 33 | 24 | 25 | 25 | 21 |
| 33 | 8 | 37 | 10 | 27 | 61 | 23 | 37 | 25 |
| 34 | 9 | 32 | 18 | 37 | 29 | 26 | 32 | 16 |
| 35 | 10 | 31 | 24 | 28 | 17 | 13 | 28 | 5 |
| 36 | 11 | 22 | 19 | 22 | 12 | 23 | 22 | 15 |
| 37 | 12 | 17 | 39 | 31 | 22 | 43 | 39 | 25 |
| 38 | 13 | 5 | 19 | 19 | 16 | 21 | 19 | 16 |
| 39 | 14 | 22 | 19 | 28 | 25 | 21 | 25 | 30 |
| 40 | 15 | 29 | 16 | 28 | 19 | 13 | 28 | 45 |
| 41 | 16 | 17 | 32 | 25 | 6 | 11 | 25 | 60 |
| 42 | 17 | 28 | 11 | 32 | 8 | 8 | 28 | 62 |
| 43 | 18 | 17 | 34 | 40 | 13 | 9 | 34 | 60 |
| 44 | 19 | 12 | 17 | 27 | 9 | 10 | 17 | 25 |
| 45 | 20 | 16 | 18 | 14 | 1 | 9 | 16 | 10 |
| 46 | 21 | 31 | 34 | 29 | 2 | 8 | 31 | 15 |
| 47 | 22 | 38 | 22 | 23 | 1 | 9 | 23 | 16 |
| 48 | 23 | 29 | 33 | 14 | 1 | 17 | 29 | 17 |
| 49 | 24 | 19 | 32 | 35 | 1 | 32 | 32 |  |
| 50 | 25 | 27 | 10 | 25 | 1 | 34 | 27 |  |
| 51 | 26 | 36 | 20 | 34 | 1 | 47 | 36 |  |
| 52 | 27 | 15 | 32 | 36 | 4 | 62 | 36 |  |

Nb: week 2 to week 16 there were malaria epidemics and week 39 – 44 too.

### Exercise 3: 6 years data

### Weekly malaria cases in 2003–2008 (EFY).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Week no. (EFY) | Week no (WHO) | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | second largest number | This year (2009) |
| 1 | 28 | 16 | 42 | 105 | 36 | 14 | 42 |  | 33 |
| 2 | 29 | 12 | 42 | 100 | 38 | 17 | 22 |  | 35 |
| 3 | 30 | 16 | 42 | 103 | 49 | 21 | 34 |  | 40 |
| 4 | 31 | 20 | 17 | 134 | 59 | 32 | 40 |  | 39 |
| 5 | 32 | 34 | 17 | 146 | 20 | 30 | 39 |  | 33 |
| 6 | 33 | 18 | 10 | 134 | 29 | 23 | 27 |  | 30 |
| 7 | 34 | 30 | 19 | 133 | 24 | 25 | 25 |  | 29 |
| 8 | 35 | 37 | 10 | 127 | 41 | 23 | 42 |  | 42 |
| 9 | 36 | 32 | 18 | 137 | 29 | 26 | 29 |  | 35 |
| 10 | 37 | 31 | 24 | 128 | 17 | 13 | 32 |  | 30 |
| . |  | . | . | . | . | . | . |  | . |
| 51 | 26 | 26 | 40 | 134 | 32 | 39 | 39 |  | . |
| 52 | 27 | 23 | 35 | 110 | 27 | 25 | 33 |  | . |

* 1. 2005 shows abnormally high number of malaria cases; You exclude
  2. 2nd largest numbers: 36, 38, 42,40, …..39,27
  3. Plot graph

# Learning Unit 10 – Supply Chain Management

Day 4 Sessions 3:

|  |  |
| --- | --- |
| **Learning unit 9: Supply Chain Management** | |
| **Duration:**  90 minutes  **Material:**  PowerPoint slides, LCD, Participant manual, Bin Card, Stock Card, RRF, IRRF etc  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Describe supply chain management * Define pharmaceutical supply chain management * Understand logistics cycles * Define and understand drug quantification * Fill the different LMIS forms  |  |  |  | | --- | --- | --- | | Content | Methods | Duration | | Explanation of supply chain management | PowerPoint Presentation | 15 minutes | | Drug quantification | PowerPoint Presentation | 15 minutes | | Procedure of request and acquisition of drugs by health facilities | PowerPoint Presentation | 30 minutes | | Demonstrate how to fill the different LMIS forms | Demonstration | 30 minutes | |

**Steps**

Read the objectives of the learning unit.

Describe the objectives of the unit and make sure the trainees understand them.

Continue with an interactive presentation on definition of logistics management, pharmaceutical supply chain management and Logistics Management Information System (LMIS).

Then, proceed with an interactive power point presentation on drug quantification, reporting and requisition using IPLS tools.

Demonstrate how to fill the LMIS tools

Summarize the learning unit

# Learning Unit 11 – Monitoring and Evaluation

Day 4 Sessions 4:

|  |  |
| --- | --- |
| **Learning unit 11: Monitoring and Evaluation** | |
| **Duration:**  90 minutes  **Material:**  PowerPoint slides, LCD, Participant manual  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Identify the definition and purpose of M&E. * Understand the Ethiopian Malaria Program M&E framework * Recognize national malaria related indicators and how they are generated * Recognize the importance of evidence-based decision making * Demonstrate how to fill different M&E forms  |  |  |  | | --- | --- | --- | | Content | Methods | Duration | | Ethiopia malaria program M & E framework | PowerPoint Presentation | 45 minutes | | Malaria indicators | PowerPoint Presentation | 15 minutes | | Evidence based decision making | PowerPoint Presentation | 15 minutes | | Demonstrate filling of M&E forms | Demonstration | 15 minutes | |

**Steps /Activities**

Read the objectives of the learning unit.

Describe the objectives of the unit and make sure the trainees understand them.

Brainstorm: what monitoring and evaluation means?

Continue with an interactive presentation on Ethiopia national malaria program monitoring and evaluation framework.

Then, proceed with an interactive power point presentation on malaria program indicators, source of information and time lines. In addition, introduce HMID and PHEM reporting requirements.

Show participant the importance of consistent, complete and timely report of evidence base decision making and utilization at primary health care level.

Demonstrate filling of different M&E forms

Summarize the learning unit

**Daily evaluation (10 minutes)**

Distribute the daily evaluation form to participants. Remind participants to rehearse the courses they took on fourth day. And prepare themselves for recap session for day five.

# 

# Learning Unit 12 – Health Facility Visit

**Activity 1: Recap and evaluation of day four sessions (30 minutes)**

Invite two to three participants to recap the key lessons of day four. Present their day four evaluation finding. Make the necessary clarifications and take note for course delivery adjustments in the process and content of course.

Day 5 Sessions 1:

|  |  |
| --- | --- |
| **Learning unit 12: Health facility visit** | |
| **Duration:**  300 minutes  **Material:**  Form, IMNCI register form, Health facility check list, patient follow up, PowerPoint slides, LCD, Participant manual, gown  **Preparation:**  Read the chapter and prepare well before the classes start. | Learning objectives  After completing the learning unit, the participants will be able to:   * Describe the profile of malaria in the health facility by analyzing HMIS and PHEM registers and reports. * Take a history and conduct a clinical examination of (a) a patient with severe malaria, and (b) a patient with an uncomplicated febrile illness, who are being treated in the hospital * Assess, classify and identify appropriate treatment for a child with fever using the IMNCI approach * Describe the supply chain system of the health facility  |  |  |  | | --- | --- | --- | | Content | Methods | Duration | | Patient evaluation & document review | Practical Attachment | 180 minutes | | Plenary | Discussions | 120 minutes | |

**Steps**

Arrange preferably a hospital in advance for the clinical visit

Get consent from the representative of the health facility for the practice

Identify and select appropriate cases from the adult or pediatric in patient department (severe febrile cases, preferably severe malaria) one day before the visit

Select febrile adult and pediatric patients for evaluation of uncomplicated febrile illness

Introduce participants about the different checklists and formats to be used for assessment of data management and supply chain management

Divide participants into four groups and orient them the activities they will perform in each respective groups.

Facilitators will assist the group during the visit in the different departments

Arrange a plenary session in the training hall to discuss the findings and topics each group learned from the field visit

**Checklist for Health Facility Visit**

**Malaria data management**

Review the data from the previous reporting period

1. HMIS
   1. OPD HMIS register
      1. Number of malaria suspected cases \_\_\_\_\_\_\_\_\_\_\_\_\_
      2. Number of malaria cases
         1. *Plasmodium falciparum* \_\_\_\_\_\_\_\_
         2. *Plasmodium vivax* \_\_\_\_\_\_\_\_\_\_\_\_
         3. Mixed infection (*P. falciparum* and *P. vivax*) \_\_\_\_\_
   2. Tally sheet
      1. Number of clinical malaria cases \_\_\_\_\_\_\_\_\_\_\_
      2. *Plasmodium falciparum* \_\_\_\_\_\_\_\_
      3. *Plasmodium vivax* \_\_\_\_\_\_\_\_\_\_\_\_
      4. Mixed infection (*P. falciparum* and *P. vivax*) \_\_\_\_\_\_\_\_
   3. Laboratory register
      1. Number of patients tested for malaria \_\_\_\_\_\_\_\_\_\_
      2. *Plasmodium falciparum* \_\_\_\_\_\_\_\_
      3. *Plasmodium vivax* \_\_\_\_\_\_\_\_\_\_\_\_
      4. Mixed infection (*P. falciparum* and *P. vivax*) \_\_\_\_\_\_\_\_
   4. HMIS reporting form
      1. Number of patients suspected for malaria \_\_\_\_\_\_\_\_\_\_
      2. Number of patients tested for malaria \_\_\_\_\_\_\_\_\_\_
      3. *Plasmodium falciparum* \_\_\_\_\_\_\_\_
      4. *Plasmodium vivax* \_\_\_\_\_\_\_\_\_\_\_\_
      5. Mixed infection (*P. falciparum* and *P. vivax*) \_\_\_\_\_\_\_\_
   5. Give your comments with regard to data completeness, consistency \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. PHEM
   1. Review the PHEM book
      1. Number of patients suspected for malaria \_\_\_\_\_\_\_\_\_\_
      2. Number of patients tested for malaria \_\_\_\_\_\_\_\_\_\_
      3. *Plasmodium falciparum* \_\_\_\_\_\_\_\_
      4. *Plasmodium vivax* \_\_\_\_\_\_\_\_\_\_\_\_
      5. Mixed infection (*P. falciparum* and *P. vivax*) \_\_\_\_\_\_\_\_
   2. Give your comments with regard to data completeness \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Epidemic monitoring chart
   1. Comment on threshold, is it updated? What is the interpretation?

**Checklist for Health Facility Visit**

**Malaria drug supply management**

Visit pharmacy

Review RRF and IRRF forms of the previous reporting period

* Are all columns filled appropriately? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Check availability of drugs

* Artemether-lumefantrine
  + AL 6x1
  + AL 6x2
  + AL 6x3
  + AL 6x4
* Chloroquine
  + Tablet
  + Syrup
* Artesunate injection
* Quinine tablets
* Quinine injection
* Primaquine
* RDT
* Other (specify)

If there is drug shortage, find out the reason \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Checklist for Health Facility Visit**

**Fever in adult patient and severe malaria**

Identify a patient with acute fever or a patient with severe febrile disease

Age \_\_\_\_\_\_\_\_\_\_\_\_ sex \_\_\_\_\_\_\_\_\_\_ Address \_\_\_\_\_\_\_\_\_\_\_\_

Chief compliant:

History of present illness:

Systemic review

|  |  |  |
| --- | --- | --- |
|  | Normal or abnormal? | Describe if abnormal |
| General |  |  |
| HEENT |  |  |
| Respiratory |  |  |
| Cardiovascular |  |  |
| Gastrointestinal |  |  |
| Genitourinary |  |  |
| Integumentary |  |  |
| Musculoskeletal |  |  |
| CNS |  |  |

Differential diagnosis:

Laboratory investigations that you order:

Actual laboratory findings:

Most likely diagnosis:

Treatment:

**Checklist for health facility visit, IMNCI**

|  |  |  |
| --- | --- | --- |
| MANAGEMENT OF THE SICK CHILD AGE **2 MONTHS UP TO 5 YEARS**  Child’s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Age\_\_\_\_\_\_ months Sex \_\_\_\_\_ Weight: \_\_\_\_\_kg Lt/Ht \_\_\_\_\_\_\_ cm Temp \_\_\_\_\_0C  **ASK**: What are the child’s problems? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Initial visit? \_\_\_\_\_ Follow-up visit? \_\_\_\_  **ASSESS** (Circle all signs present, tick or fill dashes/spaces)  **CLASSIFY** | | |
| **CHECK FOR GENERAL DANGER SIGNS**  NOT ABLE TO DRINK OR BREASTFEED  CONVULSING NOW  VOMITS EVERYTHING  LETHARGIC OR UNCONSCIOUS  History of CONVULSIONS | |  |
| **DOES THE CHILD HAVE COUGH OR DIFFICULT BREATHING?** Yes \_\_\_\_\_ No\_\_\_\_\_ | |  |
| For how long? \_\_\_\_\_\_ Days |  Count the breaths in 1 minute. \_\_\_\_\_\_ breaths/minute. Fast breathing?   Look for chest in-drawing.   Look and listen for stridor. |
| **DOES THE CHILD HAVE DIARRHOEA?** Yes \_\_\_\_\_ No\_\_\_\_ | |  |
| For how long? \_\_\_\_\_\_\_\_\_ Days    Is there blood in the stool? |  Look at the child’s general condition. Is the child: Lethargic or unconscious? Restless and irritable?   Look for sunken eyes.   Offer the child fluid. Is the child: Not able to drink or drinking poorly? Drinking eagerly, thirsty?   Pinch the skin of the abdomen. Does it go back: Very slowly (> 2 seconds)? Slowly? |
| **DOES THE CHILD HAVE FEVER?** (by history/feels hot/temperature ≥37.50C) Yes\_\_\_ No\_\_\_\_ | |  |
| - Decide MALARIA risk: High/Low No,  - If “low or no” malaria risk, Has child traveled to malarious area in the last 30 days?  - For how long has the child had fever? \_ Days  -If >7 days, has fever been present every day?  - Has child had measles within the last 3 months? |  Look or feel for stiff neck.   Look for bulging fontanel   Look for runny nose   Look for signs of MEASLES NOW : Generalized rash,  And one of these: Cough, Runny nose or Red eyes.   Blood Film or RDT: Positive  **\_\_** Negative\_\_\_ Not Done \_\_\_\_ |
| **If the child has measles now or**  **within the last 3 months:** |  Look for mouth ulcers: If Yes, are they deep and extensive?   Look for pus draining from the eye.   Look for clouding of the cornea. |  |

**End of course Activities (130 minutes)**

Day 5 Sessions 2:

|  |  |  |  |
| --- | --- | --- | --- |
| **End of Course Evaluation** | | | |
| **Time** | **Session Objectives** | **Process** | **Materials** |
| 130 minutes | By the end of this session:   * The knowledge and competencies gained by the training participants will be evaluated * Participants will evaluate the five days sessions * Participants will explore the strength, weakness, opportunities and threats (SWOT) of the training and identify the key action points on the way forward * Certificate of participation will be awarded and the course will be adjourned with official closing remarks | **Activity 1: Posttest (30 minutes)**  Briefly explain the purpose of the test: it is to assess the knowledge gained by the participants after the course. And inform the participant to use their code number to maintain the anonymity.  Distribute the post-test questionnaires to the participants and collect after 30 minutes. | Post-test questionnaire |
| **Activity 2: End of course evaluation (15 minutes )**  Distribute end of course evaluation form to participants and collect after 15 minutes.  Make sure to tell the participants that the form is anonymous. | End of course evaluation form |
| **Activity 3: Group work on SWOT Analysis (40 minutes)**  Divide participants into four to five small groups with a member of 6- 8 participants. And instruct them to work on the question listed below.  Make sure that each team has its own chairperson and reporter or note taker. Provide flipchart and makers. Allow them 20 minutes for discussion and preparation  What are the SWOTs of the training?  What are you recommend to improve the training?  What should be done as a follow up to this training?  What other comments do you have about the training?  Allow each team to present their response in plenary sessions within 5 minutes. Then facilitate a 1o minutes plenary discussion. | Flip chart and markers |
|  |  | **Activity 4: Certificate and closing (35 minutes)**  Invite officials to hand over the certificates to participants and close the course officially. | Certificates |

Annex 1- Pre and Post- test

**Code: \_\_\_\_\_\_\_\_\_\_\_\_**

**Section 1: Choose the Best Answer**

1. People who are at risk for severe malaria include all except:
2. Children under the age of five years
3. Adult men living in stable malaria transmission area
4. Pregnant women
5. HIV infected patient during AIDS stage
6. All members of the population in areas of unstable malaria transmission
7. One of the following is not feature of severe malaria
8. Headache
9. Altered consciousness
10. Frequent vomiting
11. Unable to sit or stand
12. Difficult breathing
13. A 4 years old boy presented to you with generalized body weakness of one day duration. His mother said he has fever since the past four days and from high malaria risk. On examination his temperature is 39.40C and he is not responding for external stimulus. Blood film showed *P. falciparum* ring stage. Which of the following is not appropriate action?
14. Treat him with parenteral Artesunate
15. Treat him to prevent low blood sugar level
16. Reduce the fever with anti-pyretic
17. Treat him with cotrimoxazole since it can work for malaria and bacterial infection
18. Give IM Ampicilline and gentamycin
19. Which one is true about severe malaria?
    * 1. Hypoglycemia may be a manifestation of severe malaria
      2. In a patient strongly suspected to have severe malaria and negative blood film parental Artesunate should not be given
      3. Nursing care for patients with severe malaria doesn’t have significant impact in the outcome of the patient.
      4. Persistent vomiting is not a feature of severe malaria.
      5. All manifestations of severe malaria are always due to P. falciparum.
20. Select the correct match:
21. Difficulty of breathing-------- Hemoglobinuria
22. Dark urine-------- Pulmonary edema
23. Deep & labored breathing ------- Metabolic acidosis
24. Jaundice------Cerebral malaria
25. Reduced urine volume---------Disseminated Intravascular Coagulation (DIC)
26. Which is not true about malaria in pregnancy?
27. Uncomplicated malaria in pregnant women should be managed as a case of severe malaria.
28. Artesunate can be used for severe malaria management in all trimesters of pregnancy.
29. Hypoglycemia, anemia, cerebral malaria and pulmonary edema are common forms of severe malaria
30. Intermittent preventive treatment (IPTp) with Sulfadoxine-Pyremethamine is not recommended in Ethiopia.
31. Chloroquine and quinine with the right dose are safe in all trimester of pregnancy
32. All cases define uncomplicated malaria except:
33. Fever for 02days with RDT positive and no vital organ dysfunction
34. Fever for 01day with blood microscopy positive and no vital organ dysfunction
35. Microscopy positive for mixed infection and no vital organ dysfunction
36. Fever for 03 days, BF positive and evidence of vital organ dysfunction
37. Reported fever a day back, BF positive with no vital organ dysfunction.
38. Select the incorrect treatment
39. P.falciparum--------Artemether lumefantrine + single dose Primaquine
40. Mixed infection by RDT------- Artemether lumefantrine + single dose Primaquine
41. P.falciparum in 10weeks pregnant -----Artemether lumefantrine
42. P.vivax---------Chloroquine + Primaquine for 14days
43. P.falciparum in infants <3months -------- Artemether lumefantrine
44. A 20 years old client who is from malarious area presented to the OPD with fever of 04 days duration and upon examination you found a temperature record of 39 degree Celsius and no other remarkable physical findings. Which step is wrong in the management of this patient?
45. Order microscopy to check for malaria
46. Give the patient AL & CQ even though blood microscopy is negative
47. Look for other causes of fever other than malaria if microscopy is negative.
48. Advice the patient to come back at any time if the condition worsens
49. Advice the patient on how to prevent malaria and drug compliance.
50. Which of the following doesn’t contribute to malaria treatment failure?
51. Rational drug use
52. Anti-malaria drug resistance
53. Non -compliance with dosing regimen
54. Substandard drugs
55. Frequent vomiting
56. All are benefits of Artemether lumefantrine except:
57. Fast blood parasite elimination
58. Helps to clear gametocyte
59. Reduce fever promptly
60. No organ specific toxicity
61. Prevents relapse
62. Gemechu is 38 years old and lives in malarious area. He presented to OPD with fever of two days. What will you do to Gemechu?
63. Give him anti malaria drug empirically
64. Take more history and do physical examination to sort out the cause of the fever
65. Order blood film, Widal and Weil Felix without further examination
66. Refer him urgently to higher health facility
67. Give him paracetamol and appoint him after one day
68. While you evaluate a patient with fever, one is not true?
69. We need to consider infectious and non- infectious causes of fever
70. Before taking detailed history, look for life threatening conditions and manage immediately
71. Order appropriate tests to look for the cause of fever
72. No need to do blood film if you find the focus of infection for a patient from high risk malaria
73. Follow up of the patient is one important component in the management of fever.
74. The most feared complication of primaquine is
75. Hemolytic anemia
76. Abdominal cramp
77. Diarrhea
78. Fever
79. Skin rash
80. Which is the incorrect focus of infection matching?
81. Costo-vertebral angle (CVA) tenderness-------------Acute pyelonephritis
82. Exudative and red tonsils-------Acute tonsillitis
83. Swollen, tender, hot and red joint---------Septic arthritis
84. Neck stiffness---------- pneumonia
85. Pus from the ear-------------Ear infection
86. Not possible cause of fever in HIV infected patients
87. Malaria
88. Opportunistic infections
89. Immune reconstitution inflammatory syndrome (IRIS)
90. Drug reactions
91. None
92. A 30 years old prisoner from malarious area presented to the emergency OPD with fever & epistaxis of 02days and upon examination he had a systolic BP of 50mmHg, jaundice, petechial rashes and prostration. Which is a wrong clinical decision for this patient?
93. Malaria is less likely as he has jaundice and petechial rashes
94. Secure an IV line and resuscitate with IV fluids immediately
95. Order blood film for haemoparasites
96. Consider typhus and relapsing fever as the differentials
97. Consider severe malaria
98. Fever in children will be considered by all except:
99. Fever by history
100. A temperature record > 37.50C
101. If you feel hot in the axillae
102. Only if the temperature record is ≥ 37.50C
103. Fever by history and temperature record is < 37.50C
104. Which one is not correct while you asses a child with fever:
105. Always check the general danger signs first
106. Assessment for measles is not required
107. Assess the risk of malaria
108. Do BF or RDT if the child is from malarious area
109. Check for neck stiffness and bulging fontanelles
110. Not common cause of fever in children in Ethiopia:
111. Malaria
112. Measles
113. Acute ear infection
114. Acute pyelonephritis
115. Viral URTI
116. The advantage of malaria microscopy over RDT is
     1. It can detect other hemoparasites
     2. Doesn’t need advanced skill
     3. Doesn’t need sophisticated laboratory set up
     4. Can detect sequestrated parasites
     5. Result is available more rapidly
117. One of the following is important to avoid stock out of antimalarial drugs
     1. Submit request and report form timely to PFSA
     2. Inform the woreda health office when antimalarial drugs are finished
     3. Inform PFSA for refill upon finishing the drugs at hand
     4. Stock preferably the 6x4 form of Artemether lumefantrine
     5. Keep stock of drugs at woreda level
118. One is not the purpose of malaria data recording and reporting
     1. Drug quantification
     2. Detect malaria epidemic
     3. Define malaria epidemiology
     4. Measure service quality
     5. Treat a patient according to the national guidelines
119. Anopheles mosquito differs from others by
     1. Its larva hangs down from the water surface
     2. Its larva rests parallel to the water surface
     3. Female adult rests parallel to the surface
     4. Female adults have very much shorter palps than proboscis
     5. Eggs clamps together
120. Unstable malaria transmission is characterized by
     1. Severe malaria is not common in adults
     2. Risk of epidemics
     3. Malaria transmission occurs throughout the year
     4. People have partial immunity to malaria
     5. Asymptomatic malaria infection is very common

**Answer Key for pretest and post- test exam**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1. B** | **2. A** | **3. D** | **4. A** | **5. C** |
| **6. A** | **7. D** | **8. C** | **9. B** | **10. A** |
| **11. E** | **12. B** | **13. D** | **14. A** | **15. D** |
| **16. E** | **17. A** | **18. D** | **19. B** | **20. D** |
| **21. A** | **22. A** | **23. E** | **24. B** | **25. B** |

# Annex 2- Daily Training Evaluation

**Day---------------**

Please respond to the following questions about the module/s covered today

1. When were you most engaged and interested today and why?
2. Which module topics were most useful to you?
3. What topic would you have liked us to cover in more detail?
4. Were the objective for each module/s met? If not why?

Please give grading to the following entities

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No** | **Description** | **Not good** | **Fair** | **Good** | **Very good** | **Great** |
| 1 | The facilitators were |  |  |  |  |  |
| 2 | The training atmosphere was |  |  |  |  |  |
| 3 | The sequence or flow of activities was |  |  |  |  |  |
| 4 | Organization of topics was |  |  |  |  |  |
| 5 | Clarity of objective was |  |  |  |  |  |
| 6 | Timing |  |  |  |  |  |
| 7 | Participation |  |  |  |  |  |
| 8 | Overall rating of today’s session |  |  |  |  |  |
|  |  |  |  |  |

# Annex 3. Overall Training Evaluation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Evaluation Points** | **Strongly agree** | **Agree** | **Disagree** | **Strongly disagree** |
| The overall organization of the training programme was satisfactory |  |  |  |  |
| The training programme covered all the subject matter in adequate detail. |  |  |  |  |
| The facilitators had sufficient knowledge & facilitation skills to provide you with the necessary skills and competence. |  |  |  |  |
| The time allocated to each part of the training was adequate relative to the total time available. |  |  |  |  |
| The use of the various teaching methods listed below was appropriate. |  |  |  |  |
| A) Large group presentations including plenary sessions |  |  |  |  |
| B) Practical demonstrations |  |  |  |  |
| C) Laboratory work and facilities (including equipment) |  |  |  |  |
| D) Small group discussions |  |  |  |  |
| E) Self-study |  |  |  |  |
| F) Picture quizzes, Video shows and exercises |  |  |  |  |
| The audiovisual materials (slides, overhead projection, etc.) used in the training were very helpful |  |  |  |  |
| The teaching materials provided were satisfactory in all respects |  |  |  |  |
| The general atmosphere of the training course made this a good learning experience |  |  |  |  |
| Every effort was made to help you achieve the learning objectives. |  |  |  |  |
| You were able to achieve all the learning objectives of the training programme |  |  |  |  |
| The clinical attachment at the health facility was very helpful |  |  |  |  |

* Is there any topic in this training which is not important and should be removed? If yes which is it?
* Is there any topic that should be added to make the training more useful?
* Did the facilitators present the materials clearly?
* Other comments

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Annex Malaria OPD Form | |  |  |  |  |  |  |  |
| SNO | Disease Facility | Regions/ zone/woreda/HF | Age breakdown | | | | | | Total |
| Male | | | Female | | |
| Male<=4 | Male 5-14 | Male >=15 | Female <=4 | Female 5-14 | Female>=15 |  |
| **101** | Malaria (clinical without laboratory confirmation) |  |  |  |  |  |  |  |  |
| **102** | Malaria (confirmed with P. falciparum) |  |  |  |  |  |  |  |  |
| **103** | Malaria (confirmed with species other than P. falciparum) |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Annex Malaria IPD form | | | | |  |  |  |  |  |  |  |  |  |  |
| Sn | Disease Facility | Regions/ zone/woreda/HF | Age breakdown | | | | | | | | | | | | **Total** | |
| Male | | | Female | | | Male | | | Female | | |
| Morbidity Male <=4 | Morbidity Male 5To14 | Morbidity Male >=15 | Morbidity Female <=4 | Morbidity Female 5To14 | Morbidity Female >=15 | Mortality Male <=4 | Mortality Male 5To14 | Mortality Male >=15 | Mortality Female <=4 | Mortality Female 5To14 | Mortality Female >=15 |  |
| 101 | Malaria (clinical without laboratory confirmation) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 102 | Malaria (confirmed with P. falciparum) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 103 | Malaria (confirmed with species other than P. falciparum) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Annex Malaria **Service Delivery**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | | | | | |  | |  | |
| Sn | **Activity** | Month | | | | | | | | | | | | | | | | |
| **Malaria** | Regions | | | | | | | | | | | | | | | | |
| C1.4.2.5.3 | **Malaria positivity rate** |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |
| 4.2.5.3.1 | Number of slides or RDT positive for malaria |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |
| 4.2.5.3.1.1 | Less than 5 years : males |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |
| 4.2.5.3.1.2 | : females |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |
| 4.2.5.3.1.3 | 5-14 years : males |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |
| 4.2.5.3.1.4 | : females |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |
| 4.2.5.3.1.5 | Greater than or equal to 15 years : males |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |
| 4.2.5.3.1.6 | : females |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |
| 4.2.5.3.1.7 | Total number of slides or RDT performed for malaria diagnosis |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | |