

# MALARIA CASE MANAGEMENT

## DESK GUIDE



**Directorate of Malaria Control  
Ministry of Health  
Pakistan**

**Bullet Key:**

- Main step: This refers to a main point/area under consideration
- ✓ Sub-step: This refer to two or more sub-points related to the main step.
- Condition: This refers to conditionality (if), and usually followed by an action statement under that particular condition
- ☞ Recommended action: This refers to an action, in light of above considerations.

# Malaria : Case Management Guide

## Diagnosing Clinical Malaria in People with Fever

Greet, ask their name, and ask what the problem is?

### IF THE PATIENT COMPLAINS OF FEVER, ask:

- How long has he/she been suffering from fever?
- Does he/she have chills? headache? or general body aches?
- **Ask about symptoms related to other febrile illness**
- Has he she taken any treatment? If yes, what medicines and for what duration?

### Examine for these signs:

- Count the pulse
- Take the temperature (is it > 101 F)
- Assess the rate of breathing (rapid or very rapid).

Age	2-11 mths	1-4 years	5-12 years	13 Yrs and older
Rapid is more than	50/min	40/min	30/min	20/min
Very rapid is more than	60/min	50/min	40/min	30/min

- Look for chest indrawing, subcostal recession and listen for crepitations
- Look for signs associated with any other cause of febrile illness
- Look for anemia and jaundice or other signs of severe illness (page 2)

### DECIDE THE LIKELY PROBLEM (S), ADVISE AND TREAT:

**If another cause of fever is found, treat the other cause**

### **But suspect Malaria if:**

- Fever but with no other apparent cause found
- Fever is accompanied with chills, PLUS any one of the following: headache, or general body aches, or profuse sweating, or history of malaria in recent past.
- ❑ **If patient is at the microscopy center**
  - ☞ Explain importance of blood smear exams and send the patient to laboratory along with FC5 request form for blood smear examination.
- ❑ **If patient is not at the microscopy center,**
  - ☞ Declare “clinical malaria” and look for signs/symptoms of severity (see page 2)
  - ❑ If malaria is uncomplicated, check for the treatment already taken and:
    - ☞ Give 1<sup>st</sup> line anti-malarial drug, if anti-malarial drug not taken (see page3-4), OR
    - ☞ Give 2<sup>nd</sup> line anti-malarials, If patient has not responded to 1<sup>st</sup> line drugs (p.3-4).
  - ❑ If malaria is found severe, refer to a hospital for specialized care (see p. 7 - 8).

## Confirming the Malaria Diagnosis

### CONFIRMING MALARIA DIAGNOSIS (at Microscopy Center):

All Malaria suspects are confirmed at the microscopy center.

- The patient visits the laboratory and get his/her blood smears examined.
- ☐ **If blood film (thick & thin) is positive:**
  - Diagnose as confirmed case of malaria (either *P. vivax* or *P. falciparum*)
  - ☐ If *P. vivax*
    - Treat the patient as per guidelines on (page 3-4).
  - ☐ If *P. Falciparum*
    - Assess the **severity** (uncomplicated or severe) of malaria on the basis of clinical signs and symptoms.
    - ☐ If **uncomplicated** *P. falciparum* malaria is diagnosed, check for the treatment already taken.
      - ☞ Give 1<sup>st</sup> line anti-malarial drug if anti-malarial drug not taken (see page3-4), OR
      - ☞ Give 2<sup>nd</sup> line anti-malarials if the patient has already taken the 1<sup>st</sup> line drug (p.3-4).
    - ☐ If **severe** *P. falciparum* malaria is diagnosed,
      - ☞ Refer to a hospital for inpatient specialized care (see p. 7 – 8).
- ☐ **If blood film is negative:**
  - ☞ Manage the patient as a case of clinical malaria. (see page 1).

### Clinical Features of Malaria

#### Uncomplicated malaria

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• <b>Fever</b></li> <li>• Chills</li> <li>• Headache</li> <li>• Body aches and pains</li> <li>• Malaise</li> </ul> | <ul style="list-style-type: none"> <li>• Vomiting or diarrhea</li> <li>• Poor or loss of appetite</li> <li>• Body weakness</li> </ul> |
|---|---|

#### Severe malaria

In addition to the symptoms of uncomplicated malaria, if any one or more of the these signs and symptoms - treat as severe malaria **and** refer to hospital

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Altered level of consciousness- Lethargy or coma</li> <li>• Confusion or agitation</li> <li>• Generalized Convulsions</li> <li>• Not able to drink/breastfeed</li> <li>• Not able to sit up unassisted (extreme weakness)</li> <li>• Hemoglobinuria or bleeding tendency</li> <li>• Jaundice</li> </ul> | <ul style="list-style-type: none"> <li>• Severe anemia (Hb &lt; 5gm/dL or hematocrit &lt; 15%)</li> <li>• Acute renal failure (Urine output &lt; 400ml/ 24hrs)</li> <li>• Shock (Systolic BP &lt; 50 mm Hg in children or 80 mm Hg in adults)</li> <li>• Hyperparasitemia (10,000/ µl blood)</li> <li>• Hyper pyrexia (&gt;101 °F)</li> <li>• Hypoglycemia (&lt; 2.2 mmol or 40 mg/dl)</li> </ul> |
|--|---|

## Deciding the Treatment

### Deciding the Treatment:

First, second and third line treatment for a malaria patient is selected on the basis of smear results, plasmodium species and severity of disease. Each patient is offered the selected first line treatment, and non-responding cases are offered the second and/or third line treatment (as given in table below):

Plasmodium species	Severity of Malaria	Treatment			Remarks
		First Line	Second Line	Third Line	
<b>Falciparum Seen</b>	Uncomplicated	Chloroquine+ Primaquine	Sulfadoxine+ Pyrimethamine (SP)	Quinine	Primaquine given as Single dose
		Give Artesunate+ SP (ACT) when available.	→	Quinine	Artesunate: 4mg / kg/day for 3 days SP: single dose
	Severe	Oral/IM Quinine	→	-	<i>At FLCF:</i> Give 1 <sup>st</sup> dose of quinine and refer to hospital. <i>If administered IM, dilute with normal saline to a concentration: 60 mg/ml.</i>
<b>Vivax Seen</b>	Uncomplicated	Chloroquine+ Primaquine	-	-	Primaquine is given for 14 days
<b>Not seen or not examined (i.e. clinical malaria)</b>	Uncomplicated (Clinical Malaria)	Chloroquine	Sulfadoxine+ Pyrimethamine (SP)	-	Primaquine contraindicated without microscopic confirmation
	Severe (Clinical malaria)	Quinine	-	-	<i>At FLCF:</i> Give 1 <sup>st</sup> dose of quinine and refer to hospital. <i>If administered IM, dilute with normal saline to a concentration: 60 mg/ml.</i>

FLCF is First Level Care Facility

#### Important points to remember:

- Anti-malarial should be given by weight, especially in children.
- Primaquine should **Not** be given to:
  - Patients without microscopic confirmation of vivax.
  - Pregnant women & children under 4 years of age
  - Patients with Glucose-6-Phosphate Dehydrogenase deficiency
  - Patients who have received a complete dose of Artesunate + SP
- Sulfadoxine + pyrimethamine is **Not** recommended for:
  - Children under 2 months of age
  - First trimester of pregnancy

# Prescribing Drugs to Uncomplicated Malaria Patients

## DOSAGE SCHEDULE OF ORAL ANTI-MALARIALS

<b>CHLOROQUINE</b>							<b>SULFADOXINE + PYRIMETHAMINE (SP)</b> 25 mg of sulfadoxine per kg wt. as a single dose
<b>Day 1. 10 mg base/kg wt, Day 2. 10 mg base/kg wt</b>							
<b>Day 3. 5 mg base/kg wt</b>							TABLETS & SYRUP each tab. & 5 ml TSF contains 500 mg sulfadoxine + 25 mg pyrimethamine
Tablets 150 mg base (250 mg salt)				Syrup 50 mg base per 5 ml (teaspoonful- TSF)			
<b>Weight – kg (Age)</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	
5-6 kg (< 4months)	0.5	0.25	0.25	1.5 TSF (7.5 ml)	0.75 TSF (3.75 ml)	0.75 TSF (3.75 ml)	-
7-10 kg (4-11 months)	0.5	0.5	0.5	1.5 TSF (7.5 ml)	1.5 TSF (7.5 ml)	1.5 TSF (7.5 ml)	0.5*
11-14 kg (1-2 Yrs)	1	1	0.5	3 TSF (15 ml)	3 TSF (15 ml)	1.5 TSF (7.5 ml)	0.75
15-18 kg (3-4 Yrs)	1	1	1	3 TSF (15 ml)	3 TSF (15 ml)	3 TSF (15 ml)	1
19-24 kg (5-7 Yrs)	1.5	1.5	1	4.5 TSF (22.5 ml)	4.5 TSF (22.5 ml)	3 TSF (15 ml)	1.5
25-35 kg (8-10 Yrs)	2.5	2.5	1	-	-	-	2
36-50 kg (11-13 Yrs)	3	3	2	-	-	-	2.5
50 + kg (Above 14Yrs)	4	4	2	-	-	-	3

\* This dose of sulfadoxine + pyrimethamine is for children 2 – 11 months\*

**Artesunate: Give 4 mg/ kg body weight (give together with SP)**

### Administering Primaquine as Anti-Relapse or as Gametocidal Therapy

<b>Primaquine – 15 mg base tablets</b>						
<b>Anti-Relapse Therapy (for Vivax) 0.25 mg base / kg/ day for 14 days</b>						<b>Gametocidal Therapy (for Falciparum) 0.75 mg base / kg</b>
<b>Weight – kg (Age)</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 4</b>	<b>Day 5 continued till day 14</b>	<b>Single Dose</b>
<b>5–18 kg (0-4 Yrs)</b>	-	-	-	-	-	-
<b>19-24 kg (5-7 Yrs)</b>	0.25	0.25	0.25	0.25	0.25	0.75
<b>25-35 kg (8-10 Yrs)</b>	0.5	0.5	0.5	0.5	0.5	1.5
<b>36-50 kg (11-13 Yrs)</b>	0.75	0.75	0.75	0.75	0.75	2.25
<b>50 + kg (Above 14 Yrs)</b>	1	1	1	1	1	3

## Educating Malaria Patients

- **Enquire** the patient about:
  - ✓ Exposure to mosquito bites in the last 2 – 3 weeks?
  - ✓ Use of any personal protection measures and especially consistent ITN use?
  - ✓ Any other family member has fever, especially < 5-year-old children and their mothers.
  
- **Inform** the patient that:
  - ✓ He/she is suffering from malaria, which is curable with proper treatment.
  - ✓ Good quality anti-malarial medicines are available free-of-cost.
  - ✓ Show him/her the prescribed medicine and explain:
    - The medicine she/he is being given and in what dosage?
    - Take medicine at what times and for how many days?
  - ✓ Delayed and in-complete treatment can lead to serious health problems.
  - ✓ Take plenty of liquids, especially important with children, and continue to eat.
  - ✓ Self-medication, without proper clinical assessment, can lead to serious health problems.
  
- **Encourage** the patient to:
  - ✓ Bring to the health facility any family members with recent onset of fever
  - ✓ Use personal protection measures such as impregnated mosquito nets every night.
  - ✓ Report to the health facility/worker, if symptoms worsen/persist
  - ✓ Seek advice from a health worker within 24 hours if any new symptoms/complaints develop
  
- **Ask** if he/she has any queries/concerns? If yes, respond.

## Following up Malaria Patients

Every patient treated for malaria (clinical or confirmed) must be advised to report back to the health facility if their symptoms continue after completion of the prescribed treatment. If the symptoms worsen, they should report back immediately.

- If patient reports back with persistent symptoms.
- ☞ For all cases, assess and manage accordingly for severe malaria (see page 7 - 8).
- ☞ Re-examine the slide for malarial parasites.

### **Confirmed Falciparum Malaria:**

- If patient found positive for falciparum.
- ☞ Treat with 2<sup>nd</sup> line anti-malarial (if previously treated with 1<sup>st</sup> line drugs)
- ☞ Advise patient to report back, if symptoms persist/worsen or new complaints.

### **Confirmed Vivax Malaria:**

- If patient found positive for vivax.
- ☞ Treat with 2<sup>nd</sup> line anti-malarial (if previously treated with 1<sup>st</sup> line drugs)
- ☞ Advise patient to report back, if symptoms worsen/persist or new complaints.

### **Clinical Malaria:**

- If patient found negative for malaria parasites.
- ☞ Exclude other likely causes of fever
- ☞ Treat with 2<sup>nd</sup> line anti-malarial (if previously treated with 1<sup>st</sup> line drugs)
- ☞ Advise patient to report back, if symptoms worsen/persist or new complaints

## Managing Severe Illness Patients at FLCF

**IF CLINICAL FEATURES ARE SUGGESTIVE OF SEVERE MALARIA (page 2), THEN:**

**At FLCF: Do the Following, then refer urgently:**

- Give first dose of oral/IM quinine (If administered IM, dilute with normal saline to a concentration: 60 mg/ml).
- Manage the patient symptomatically
  - ☐ If patient has a high grade fever ( $>101^{\circ}$  F)
    - ☞ Tepid sponging, fanning, paracetamol or an injectable anti-pyretic.
  - ☐ If patient has convulsions
    - ☞ Give IV diazepam (0.15 mg/kg body weight upto 10 mgs for an adult) or IM Paraldehyde (0.1 mg/kg body weight)
  - ☐ If patient has a severe hypoglycemia (40 mg/dl or 2.2 mmol or classical symptoms of anxiety, sweating, dilatation of the pupils, breathlessness, oliguria, a feeling of coldness, tachycardia and light-headedness.):
    - ☞ Give Dextrose - 50% (Dilute with equal volume of water for injection/saline and give slowly intravenously over 5 minutes).
    - ☞ In the absence of dextrose 25% or 50%, give sugar and water mixture orally.
  - ☐ If patient has altered level of consciousness
    - ☞ Clear airway, maintain IV line & exclude hypoglycemia. Advice on positioning patient on left lateral side during referral
  - ☐ If patient has fever with very rapid breathing
    - ☞ Give first dose of treatment for pneumonia and refer to hospital.
- Fill in the Referral Form (FC2), inform the patient / relatives and advice on/facilitate transportation (if possible).

## Managing Severe Malaria Patients at Hospitals

**IF CLINICAL FEATURES ARE SUGGESTIVE OF SEVERE MALARIA, THEN**

**At Hospital: Do the Following:**

- Assess the overall condition of patient
- Prescribe suitable anti-malarial (see table below). Remember, the majority of severe malaria deaths occur within the first 24 hours of admission to hospital-so immediate action can save lives!

**Prescribing Drugs to a Severe Malaria Case (at Hospital)**

Formulation	Dilution	Route	Loading dose	Maintenance dose	Remarks
Inj. Quinine 300 mg /ml (1 ml ampoule)	Diluted in 10ml isotonic fluid / kg body weight	IV (rate controlled infusion)	20mg salt /kg body weight given over a period of 4 hours	10mg salt/ kg body weight every 8 hours for 7 days (given over a period of 4 hours)	For IV use, give next dose after 8 hours from the beginning of the previous dose.  Start oral Quinine when patient is able to swallow, to complete the 7 days course.
Inj. Quinine 300 mg /ml (1 ml ampoule)	Diluted to 60mg/ml.	IM	20mg salt /kg body weight	10mg salt/ kg every 8 hours for 7 days.	Start oral Quinine when patient is able to swallow, to complete the 7 days course.
Tab Quinine 300mg salt	-	Oral	20mg salt /kg body weight.	10mg salt/ kg every 8 hours for 7 days	-

- Manage complications
- Record and report the occurrence and outcomes.

**Arrangements at Hospitals:**

- Ensure that severely ill patients are given priority at registration & on the ward.
- Ensure that severely ill patients receive adequate medical care in a ward.
- Avoid unnecessary movement of patient or delay in commencing treatment.

## Case Definitions

### In Areas Without Access to Laboratory-based Diagnosis

#### **Clinical Uncomplicated Malaria:**

A patient with signs and/or symptoms of uncomplicated malaria, who receives anti-malarial treatment, without laboratory confirmation of diagnosis.

#### **Clinical Severe Malaria:**

A patient requiring hospitalization for signs and/or symptoms of severe malaria, who receives anti-malarial treatment, without laboratory confirmation of diagnosis.

#### **Probable Malaria Death:**

Death of a patient who has been diagnosed with clinical severe malaria, without laboratory confirmation of diagnosis.

### In Areas With Access to Laboratory-based Diagnosis

#### **Confirmed Uncomplicated Malaria:**

A patient with signs and/or symptoms of uncomplicated malaria, who receives anti-malarial treatment, with laboratory confirmation of diagnosis.

#### **Confirmed Severe Malaria:**

A patient requiring hospitalization for signs and/or symptoms of severe malaria, who receives anti-malarial treatment, with laboratory confirmation of diagnosis.

#### **Confirmed Malaria Death:**

Death of a patient who has been diagnosed with severe malaria, with laboratory confirmation of diagnosis.

#### **Malaria Treatment Failure:**

A patient with confirmed uncomplicated malaria and a history of having taken the correct dosage and followed the regimen of the nationally recommended anti-malarial treatment, but who presents with asexual parasitaemia on blood smear within 14 days of the start of treatment.

#### **Asymptomatic Malaria**

Laboratory confirmation (by microscopy or immuno-diagnostic tests) of parasitaemia in a person with no recent history of signs/symptoms of malaria.

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