



Revised (Current) Malaria Treatment Regimen

Updated Version 2016

(6th Revision)

**National Malaria Control Program
Directorate General of Health Services
Ministry of Health & Family Welfare
Dhaka, Bangladesh**

List of contributors

SL	
1.	Prof. (Dr) Sanya Tahmina, Director Disease Control & Line Director CDC, DGHS
2.	Prof. M. A. Faiz, Professor of Medicine, Ex. DG, , DGHS, Mohakhali Dhaka
3.	Prof. Emran Bin Yunus, Professor of Nephrology (Ret.), Chittagong Medical College, Chittagong
4.	Prof. Md. Ridwanur Rahman, Professor of Medicine, Sh.S.MCollege,Dhaka
5.	Dr. Robed Amin , Associate Professor Medicine, Dhaka Medical College
6.	Dr. Rasihda Samad, Associate Professor Padiatric , Chittagong Medical College, Chittagong
7.	Dr. Anirudha Ghose, Associate Professor, Medicine, Chittagong Medical College, Chittagong
8.	Dr, A.K.M Saiedur Rahman, Deputy Director, CDC, DGHS
9.	Dr. Md. Abdur Raquib, AD, M&PDC, DGHS, Mohakhali, Dhaka
10.	Dr. Abdullah Abu Sayeed, Junior Consultant, Medicine, Chittagong General Hospital, Chittagong
11.	Dr. M,M Aktaruzzaman, DPM, National Malaria Control Program, DGHS, Mohakhali Dhaka
12.	Dr. Mohammad Jahirul Karim, DPM , Filariasis and HTSS Program, CDC, DGHS
13.	Dr. Abu Nayeem Md. Sohel, Evaluator, NMCP, DGHS
14.	Dr. Md. Nazrul Islam, M&E Expert, NMCP, DGHS
15.	Dr. Md. Mosiqure Rahman, Epidemiologist, NMCP, DGHD
16.	Anjan Saha, MIS/IT Expert, NMCP, DGHS
17.	Ms. Shaheen Akhter, Training Expert, NMCP, DGHS
18.	Dr. Moktadir Kabir, Program Coordinator, BRAC Health Program
19.	Dr. Shamsun Naher, Program Manager, Malaria Control Program, BRAC
20.	Dr. Kamar Rezwan, NPO, VBDC, WHO, Bangladesh*

Malaria Treatment Regimen 2016

. Revised treatment regimen for malaria has been adapted for:

- ❖ early definitive diagnosis and prompt treatment (EDPT)
- ❖ prevention or delay in development of drug resistance
- ❖ interruption of transmission
- ❖ reduction of morbidity and mortality

The Malaria Treatment Regimen 2016 differs in few areas from malaria treatment regimen 2014

Malaria case definition:

I. Falciparum Malaria (FM)

a. Uncomplicated malaria (UM) :

- ❖ Fever or history of fever within last 48 hours
and
- ❖ Absence of convincing evidence of any other febrile illness
and
- ❖ No features of severe malaria
and
- ❖ High index of suspicion based on time, place and person – (Enquiring about high risk groups – Jhum Cultivator, Forest goers, new arrival, No travel to endemic area, short term travelers)
and
- ❖ Presence of asexual form of Plasmodium falciparum in Blood Slide Examination(BSE) or Rapid Diagnostic Test (RDT) +ve for P. falciparum

The diagnosis of malaria should be confirmed through RDT or BSE as symptom based clinical diagnosis of malaria may be unreliable.

b. Severe Malaria (SM)

- ❖ Fever or history of fever within last 48 hours
and
- ❖ One or more of the following clinical or lab features of severity:

Clinical:

- ❖ Change of behavior, confusion or drowsiness
- ❖ Altered consciousness or coma (cerebral malaria)
- ❖ Generalized convulsions > 2 episodes in 24 hours
- ❖ Difficulty in breathing due to acute pulmonary oedema (with a respiratory rate > 30/min, often with chest indrawing and crepitations on auscultation) or
- ❖ Acute Respiratory Distress Syndrome (ARDS) or deep breathing (acidotic breathing) (rapid, deep, laboured breathing).
- ❖ Circulatory collapse or shock: Compensated shock is defined as capillary refill ≥ 3 s or temperature gradient on leg (mid to proximal limb), but no hypotension. Decompensated shock is defined as systolic blood pressure < 70 mm Hg in children or < 80 mm Hg in adults, with evidence of impaired perfusion (cool peripheries or prolonged capillary refill) or (algid malaria)
- ❖ Clinical Jaundice
- ❖ Severe Prostration, i.e extreme generalized weakness for the patient cannot walk, stand or sit without assistance and in small child failure to feed
- ❖ Severe Vomiting leading to 'non per os'.
- ❖ Bleeding tendency or abnormal spontaneous bleeding including recurrent or prolonged bleeding from nose, gums or venepuncture sites; haematemesis or melaena
- ❖ Severe Anemia
- ❖ Oliguria (<400 ml/24 hrs or 0.5ml/kg/hr over 6 hours)

Laboratory:

- ❖ Acidosis: A base deficit of > 8 mEq/L or, if not available, a plasma bicarbonate level of < 15 mmol/L or venous plasma lactate ≥ 5 mmol/L.
- ❖ Hypoglycaemia: Blood or plasma glucose < 2.2 mmol/L (< 40 mg/dL)

- ❖ Severe malarial anaemia: Haemoglobin concentration ≤ 5 g/dL or a haematocrit of $\leq 15\%$ in children < 12 years of age (< 7 g/dL and $< 20\%$, respectively, in adults) with a parasite count $> 10\,000/\mu\text{L}$
 - ❖ Renal impairment: Plasma or serum creatinine $> 265\ \mu\text{mol/L}$ (3 mg/dL) or blood urea $> 20\ \text{mmol/L}$
 - ❖ Jaundice: Plasma or serum bilirubin $> 50\ \mu\text{mol/L}$ (3 mg/dL) with a parasite count $100\,000/\mu\text{L}$
 - ❖ Pulmonary oedema: Radiologically confirmed or oxygen saturation $< 92\%$ on room air
 - ❖ Hyperparasitaemia: *P. falciparum* parasitaemia $> 10\%$
- and**
- ❖ **Presence of asexual form of *P. falciparum* in BSE or +ve RDT for *P. falciparum***

II. **Vivax Malaria (VM):**

- ❖ Fever or history of fever within last 48 hours
- and**
- ❖ Absence of convincing evidence of any other febrile illness
- and**
- ❖ High index of suspicion based on time, place and person— (Enquiring about high risk groups – Jhum Cultivator, Forest goers, new arrival, No travel to endemic area, short term travellers)
- and**
- ❖ **Presence of asexual form of *Plasmodium vivax* in Blood Slide Examination (BSE) or Rapid Diagnostic test (RDT) +ve for *P. vivax***

N.B: Results of RDT may be false positive in patient who received antimalarial drugs over 4 weeks. Very low parasite count may be missed by RDT.

Revised Malaria Treatment Regimen:

1. Falciparum Malaria (FM)

a. Uncomplicated Malaria (UM)

Objective of Treatment of uncomplicated Malaria:

The clinical objectives of treating uncomplicated malaria are to cure the infection as rapidly as possible and to prevent progression to severe disease. "Cure" is defined as elimination of all parasites from the body. The public health objectives of treatment are to prevent onward transmission of the infection to others and to prevent the emergence and spread of resistance to antimalarial drugs.

First line treatment:

Artemether +Lumefantrine combination (ACT)– 6divided doses over 3days

Drug	Day	No of Dose	Time	5-<15 Kg	15-<25 Kg	25-<35 Kg	>35- Kg
Artemether +Lumefantrine combination (ACT)	Day-1	1 st	0 hour	1	2	3	4
		2 nd	8 hour	1	2	3	4
	Day-2	3 rd	24 hour	1	2	3	4
		4 th	36 hour	1	2	3	4
	Day-3	5 th	48 hour	1	2	3	4
		6 th	60 hour	1	2	3	4

Artemether + Lumefantrine combination (ACT) (20mg +120 mg)should be started immediatelyafter confirming the diagnosis (0 hours). The second dose should be given 8 hours after thefirst dose. The subsequent dose will be given 24 hours after first dose or 16 hours after giving second dose. Then the dose are to be given 12 hourly until the total 6 doses have been achieved. The calculated dose for adult and children are given in the box (e.g. for adults 4 tab stat. Second dose is given 8 hours after first dose. Then 4 tab 12 hourly for two days).

Absorption of lumefantrine is enhanced by co-administration with fat. Patients or caregivers should be informed that this ACT should be taken immediately after food or a fat containing drink (e.g. milk), particularly on the second and third days of treatment.

If for any reason Artemether + Lumefantrine combination (ACT) cannot be given then

Alternative treatment:

❖ **Artesunate + Amodiaquine**

Formulations currently available: A fixed-dose combination in tablets containing 25 + 67.5 mg, 50 + 135 mg or 100 + 270 mg of artesunate and amodiaquine, respectively

Target dose and range: The target dose (and range) are 4 (2–10) mg/kg bw per day artesunate and 10 (7.5–15) mg/kg bw per day amodiaquine once a day for 3 days. A total therapeutic dose range of 6–30 mg/kg bw per day artesunate and 22.5–45 mg/kg bw per dose amodiaquine is recommended.

Body weight (kg)	Artesunate + amodiaquine dose (mg) given daily for 3 days
4.5 to < 9	25 + 67.5
9 to < 18	50 + 135
18 to < 36	100 + 270
≥ 36	200 + 540

Treatment failure after amodiaquine monotherapy was more frequent among children who were underweight for their age. Therefore, their response to artesunate + amodiaquine treatment should be closely monitored.

Artesunate + Amodiaquine is associated with severe neutropenia, particularly in patients co-infected with HIV and especially in those on zidovudine and/or cotrimoxazole. Concomitant use of efavirenz increases exposure to amodiaquine and hepatotoxicity. Thus, concomitant use of artesunate + amodiaquine by patients taking

ate + amodiaquine by patients taking zidovudine, efavirenz and cotrimoxazole should be avoided, unless this is the only ACT promptly available.

No significant changes in the pharmacokinetics of amodiaquine or its metabolite desethylamodiaquine have been observed during the second and third trimesters of pregnancy; therefore, no dosage adjustments are recommended.

No effect of age has been observed on the plasma concentrations of amodiaquine and desethylamodiaquine, so no dose adjustment by age is indicated. Few data are available on the pharmacokinetics of amodiaquine in the first year of life.

❖ Artesunate + Mefloquine

Formulations currently available: A fixed-dose formulation of paediatric tablets containing 25 mg artesunate and 55 mg mefloquine hydrochloride (equivalent to 50 mg mefloquine base) and adult tablets containing 100 mg artesunate and 220 mg mefloquine hydrochloride (equivalent to 200 mg mefloquine base).

Target dose and range: Target doses (ranges) of 4 (2–10) mg/kg bw per day artesunate and 8.3 (7–11) mg/kg bw per day mefloquine, given once a day for 3 days.

Body weight (kg)	Artesunate + amodiaquine dose (mg) given daily for 3 days
4.5 to < 9	25 + 67.5
9 to < 18	50 + 135
18 to < 36	100 + 270
≥ 36	200 + 540

Mefloquine was associated with increased incidences of nausea, vomiting, dizziness, dysphoria and sleep disturbance in clinical trials, but these symptoms are seldom debilitating, and, where this ACT has been used, it has generally been well tolerated.

To reduce acute vomiting and optimize absorption, the total mefloquine dose should preferably be split over 3 days, as in current fixed-dose combinations.

As concomitant use of rifampicin decreases exposure to mefloquine, potentially decreasing its efficacy, patients taking this drug should be followed up carefully to identify treatment failures.

❖ Dihydroartemisinin + Pyperaqueine

Children weighing <25kg treated with dihydroartemisinin + piperaqueine should receive a minimum of 2.5 mg/kg bw per day of dihydroartemisinin and 20 mg/kg bw per day of piperaqueine daily for 3 days.

Body weight (kg)	Dihydroartemisinin + piperaqueine dose (mg) given daily for 3 days
5 to < 8	20 + 160
8 to < 11	30 + 240
11 to < 17	40 + 320
17 to < 25	60 + 480
25 to < 36	80 + 640
36 to < 60	120 + 960
60 < 80	160 + 1280
>80	200 + 1600

Other alternative treatment:

- ❖ Quinine 7days + Tetracycline 7days (Q7+T7) or
- ❖ Quinine 7days + Doxycycline 7 days (Q7+D7) or
- ❖ Quinine 7days + Clindamycin 7days (Q7+C7)

(Tetracycline and Doxycycline are contraindicated in children younger than 8 years old and in pregnant and lactating women)

Tab Quinine is to be given at a dose of 10mg/kg body weight 8 hourly for 7 days. The calculated dose for adults and children are given in the box.

Body weight (kg)	Weight in Kg					Duration
	3-9	10-19	20-29	30-39	40+	
Quinine TDS Tab. 300 mg Sulphate	¼	½	1	1 ½	2	Treatment 7 days

- ❖ Tetracycline: 250 mg 6 hourly for 7 days
- ❖ Doxycycline: 100 mg once daily for 7 days
- ❖ Clindamycin: 10mg/kg twice daily for 7 days

The Artemether + Lumefantrine (ACT) & Quinine + Tetracycline/ Doxycycline / Clindamycin can be alternatively used if there is failure of any regime. So if a patient had received Artemether+Lumefantrine (ACT) and after completion of the course still have uncomplicated malaria (parasitaemia), he or she will be treated with Quinine + Tetracycline/ Doxycycline / Clindamycin and if any patient had received Quinine + Tetracycline/ Doxycycline / Clindamycin with completed course still have uncomplicated malaria (parasitaemia) will be treated with ACT.

Reducing the transmissibility of *P. falciparum* infections:

Primaquine: 0.25mg/kg single dose to be given on 1st day of ACT or Q7T7/Q7D7 treatment

Primaquine should not be given to:

- ❖ Pregnant women
- ❖ infants < 6 months of age and
- ❖ women breastfeeding infants < 6 months of age

Treating uncomplicated *P. falciparum* malaria in special risk groups

Infants less than 5kg body weight

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

Patients co-infected with HIV

In people who have HIV/AIDS and uncomplicated *P. falciparum* malaria do not use artesunate + amodiaquine if they are also receiving efavirenz or zidovudine.

Non-immune travelers

Treat travellers with uncomplicated *P. falciparum* malaria returning to nonendemic settings with an ACT.

Uncomplicated hyperparasitaemia

Persons with *P. falciparum* hyperparasitaemia (4 to 10%) are at an increased risk of treatment failure, severe malaria and death. They should receive 1st dose of ACT and immediately admitted in the nearest hospital for close monitoring and treatment.

Special issues:

Plasmodium knowlesi: Human infections with the monkey malaria parasite *P. knowlesi* are being reported from the forested regions of South-East Asia.

Mixed Malaria Infections:

Mixed malaria infections are common in endemic areas. In Bangladesh *Plasmodium falciparum* and *vivax* are common mixed malaria infections. Although *P. knowlesi* has also been reported which may be a part of mixed infection. Mixed infections are best detected by nucleic acid-based amplification techniques, such as PCR; they may be underestimated with routine microscopy.

Several RDTs cannot detect mixed infection or have low sensitivity for detecting vivax malaria. BSE is preferable over RDT in mixed infection.

b. Severe Malaria (SM):

Severe malaria is a medical emergency and the patient should be treated in a hospital.

Objective of Treatment of Severe malaria:

The main objective of the treatment of severe malaria is to prevent the patient from dying. Secondary objectives are prevention of disabilities and prevention of recrudescence. Management of severe malaria comprises clinical assessment of the patient, specific antimalarial treatment, additional treatment and supportive care. Death from severe malaria often occurs within hours of admission to a hospital, so it is essential that a highly effective parenteral antimalarial drug to be given as soon as possible.

❖ Specific antimalarial treatment of SM:

- ❖ IV Artesunate is the antimalarial of choice.
- ❖ If for any reason IV Artesunate cannot be given, then IM Artesunate or IM Artemether will be given.
- ❖ IV Quinine drip/IM Quinine are alternative parenteral anti-malarial if IV/IM Artesunate/IM Artemether are not available. Loading dose of Quinine should be given.
- ❖ Parenteral treatment is either:
- ❖ Intravenous Artesunate- 2.4mg/kg body weight at 0 hr, 12 hrs, 24hrs and then 24 hourly until the patient can tolerate oral medication but not more than 5 days. At least three doses or upto 24 hrs treatment with IV Artesunate should be used.
- ❖ IV Artesunate for children weighing less than 20kg should be 3mg/kg body weight per dose.
- ❖ IV Artesunate dose will remain same for organ dysfunction (e.g-renal failure, hepatic failure etc)

Or

- ❖ Intramuscular artemether (3.2 mg/kg stat followed by 1.6mg/kg daily until the patient can tolerate oral medication but not more than 5 days.

Or

- ❖ Quinine dihydrochloride 20mg salt/kg stat followed by 10mg/kg/8hourly. This may be given by slow intravenous infusion over 3 -5 hours, or by intramuscular injection to the anterior thigh diluted 1:1 in sterile fluid (the first 20mg/kg dose is split into 10mg/kg to each anterior thigh). After 6 doses (including loading dose) the quinine dose will be reduced to 15-20 mg salt/kg body wt per day until the patient can take oral medication

Follow on treatment:

- ❖ Full dose of ACT (6 dose: e.g. 24 tab for adults) should be given once the patient can tolerate oral medication for follow on treatment.
- ❖ If for any reason ACT cannot be given for follow on treatment after IV Artesunate/Quinine, then oral Quinine and Tetracycline/Doxycycline/Clindamycin for 7 days should be given(Quinine, 10 mg/kg/dose 8 hourly).

Pre referral treatment:

Pre referral treatment saves life.

- ❖ Artesunate suppository should be used in all patients under 6 years during referral to hospital. Dose: 10 mg/kg body weight
- ❖ For all above 6 years: IM Artesunate/IM Artemether/IM Quinine should be given
- ❖ Quinine dihydrochloride- 20mg salt/kg stat IM should be given half in each thigh.
- ❖ Hospitalization is a must for complete treatment

2.Vivax Malaria (VM):

The clinical objectives of treating vivax malaria are to cure the infection as rapidly as possible and to prevent relapse. The public health objectives of treatment are to prevent onward transmission of the infection to others and to prevent the emergence and spread of resistance to antimalarial drugs.

If BSE&/or RDT is positive for *P. vivax* then it will be labeled as VM.

Treatment of Vivax Malaria (VM):

Chloroquine 3 days +Primaquine 14 days (CQ3+PQ14)

Dose Schedule:

- ❖ Chloroquine (CQ):
- ❖ 1st day: 10mg/kg (4 tabs for adult)
- ❖ 2nd day: 10mg/kg (4 tabs for adult)
- ❖ 3rd day: 5mg/kg (2 tabs for adult)

- ❖ Primaquine:
- ❖ To be given along with chloroquine from first day.
- ❖ 0.25mg/kg for 14 days

Precaution:

G6PD deficient patient can develop severe haemolysis after getting primaquine, which can manifest by anemia, jaundice, yellow colour of urine, vomiting and haemoglobinuria. If any one of these develops, then the drug should be stopped and patient should be hospitalized for blood transfusion and supportive management.

Patient receiving 14 days' Primaquine should have follow up information (Pharmacovigilance).

Treatment of Mixed Malaria Infections:

Mixed infection will be treated with ACT for 3 days and Tab. Primaquine for 14 days.

Malaria in pregnant women

❖ **Falciparum Malaria (FM)**

a. **Uncomplicated Malaria (UM):**

Like non-pregnant woman with ACT in all trimester of pregnancy. Alternate treatment will be 7 days of quinine + clindamycin. (Q7+ Clind 7)

Primaquine is contraindicated in any trimester of pregnancy and lactation upto 6 months.

b. **Severe Malaria (SM):**

- ❖ IV Artesunate is preferred antimalarials for SM in all trimester of pregnancy
- ❖ IM Artemether can be given in all trimester if for any reason IV Artesunate can not be given.
- ❖ In absence of parenteral Artemisinin derivative, IVQ/IMQ (Alternatively) should be given. Loading dose of Quinine should be given
- ❖ Oral follow on treatment after IV Artesunate/IM Artemether/IV quinine is ACT full dose
- ❖ **Vivax Malaria (VM):**
- ❖ Chloroquine 3 days (CQ3)

Chloroquine is safe in all trimester of pregnancy. Primaquine should be avoided in pregnancy. Radical cure can be done by primaquine during postpartum period preferably after 6 month if mother is nursing with breast feeding . During pregnancy

If the patient developed recurrent attack of vivax malaria, Chloroquine can be given in every episode of illness. Chloroquine is still highly sensitive and effective in vivax malaria.

Chemoprophylaxis for malaria:

May be used for special risk group (Children and short time travelers) but discouraged.

Bangladesh is a multi-drug resistant Falciparum area. Chloroquine, SP have very high failure rates. Quinine and Artemisinin derivatives are not suitable for prophylaxis.

So, recommendations are:

- ❖ To use personal preventive measures (bed net, mosquito repellents, protective wears etc.)
- ❖ All febrile episodes (up to 4 weeks following visit) should be investigated for malaria by RDT/ BSE and treatment with ACT if positive. If cannot be tested for Malaria, should be treated with ACT on suspicion.
- ❖ Mefloquine (250mg weekly for adult) may be used: to be started 2 weeks before and 4 weeks following visit.

Rationale for use/not to use of other drugs available in the market:

Chloroquine: Failure rate is high, so it should not be used in falciparum cases.

Sulphadoxine+Pyremethamine(Fansidar) : Failure rate is high, so it should not be used in malaria cases.

Quinine Monotherapy: Effective but not recommended

Mefloquine Monotherapy: Effective but not recommended

Artesunate Monotherapy: Effective but not recommended

**Monotherapy is less effective and leads to early development of resistance and not recommended.

Implementation of treatment guideline

1. All health care providers should be trained on National Guideline.
2. Parasitological diagnosis of Malaria and drugs should be made available at all level.

3. RDT should be the method of choice for parasitological diagnosis at the community level.
4. Static health services should use microscopy or RDT for parasitological diagnosis
5. Use RDT for Patients presenting in odd hours or in private health setting.
6. Provision of drugs for pre referral treatment at the community.
7. Education of the patient/attendant regarding completion of treatment should be emphasized.

MALARIA

DIAGNOSIS AND MANAGEMENT CHART

FOR Health Care Provider

Fever of history of fever with
High suspicion of malaria

Yes

BSE or RDT

+ve for
Falciparum (FM)

+ve for
Vivax (VM)

-ve

Unconsciousness
and/or Confused
and/or Convulsion
and/or Prostration
and/or Jaundice
and/or Severe
Anaemia
and/or Acidosis
and/or ARDS.

Any feature of
Severity

Any feature of
Severity

Yes

No

Yes

No

SM

UM

SM

UM

Diagnose
Clinically and
Record

Treat
Accordingly

Repeat
BSE/RDT if
Suspicion is very
high

If the patient
has severe
symptoms
then follow
N.B

Use Treatment B:

1. IV Artesunate/IM
Artemether as
preferred agent

2. IVQ/IMQ

Followed by ACT as
oral follow on
agent.

Use Treatment A:

1. ACT 6 Dose

(24 Tab - Adult)
2. Quinine 7 Days +
Tetra/Doxycycline/
Clindamycin 7 Days
(in Specific Situation as
alternative)

Use Treatment C:

Tab. Chloroquine
(CQ) - 3 Days
Plus
Tab. Primaquine - 14
Days

N.B: If pt is very sick and BSE/RDT are not available with very high suspicion of malaria, then Parenteral treatment should be started immediately. RDT is preferred over BSE in urgent situation.

1. This chart is prepared for P.falciparum and vivax endemic zone.
2. Drug history is important as BSE may be negative despite malaria disease. RDT would become more important in those cases. BSE is more important for SM cases for diagnosing and monitoring in treatment
3. UM: uncomplicated malaria; VM: Vivax malaria; SM: Severe malaria
4. BSE: blood slide examination; RDT: rapid diagnostic test, ACT: Artemisinin based combination therapy (e.g. Artemether+Lumefantrine)

Treatment –A (UM)

Drug	Day	No of Dose	Time hrs	5- <15 Kg	15- <25 Kg	25- <35 Kg	>35- Kg
Artem ether + Lumefantrine	Day-1	1 st	0	1	2	3	4
		2 nd	8	1	2	3	4
	Day-2	3 rd	24	1	2	3	4
		4 th	36	1	2	3	4
	Day-3	5 th	48	1	2	3	4
		6 th	60	1	2	3	4

Treatment –C (VM)

Drug	Day	Weight in Kg						
		3-5	6-9	10-19	20-29	30-39	40-49	50+
Chloroquine Tab. 150mg base	Day-1	1/4	1/2	1	1 1/2	2	3	4
	Day-2	1/4	1/2	1	1 1/2	2	3	4
	Day-3	1/4	1/2	1	1 1/2	2	3	4

2. In Specific & special situation (e.g. pregnancy and child <5 kg)

Drug	Weight in Kg					Duration
	3-9	10-19	20-29	30-39	40+	
Quinine TDS Tab. 300 mg Sulphate	1/4	1/2	1	1 1/2	2	Treatment 7 days

3. (a) Q7+T7 or Q7+D7 may be alternative(s)

Tetracycline: 250 mg 6 hourly (adult)-4mg/kg 6 hourly children (above 8yrs)

Doxycycline:100mg twice daily(adult); 3mg/kg/day twice daily dose

3 (b) Alternative Regimen: Artesunate + Amodiaquine

Body weight (kg)	Artesunate + amodiaquine dose (mg) given daily for 3 days
4.5 to < 9	25 + 67.5
9 to < 18	50 + 135
18 to < 36	100 + 270
≥ 36	200 + 540

(c) Artesunate plus Mefloquine

This is currently available as separate scored tablets containing 50 mg of artesunate and 500 mg base of Mefloquine, respectively

Dosing schedule of artesunate plus Mefloquine

Age	Dose in mg (no. of tablets)						
	Artesunate				Mefloquine		
	Day-1	Day-2	Day-1	Day-3	Day-1	Day-2	Day-3
5-11 Months	5-11 Months	25(1/2)	25	25	--	125 (1/4)	--
1-6 years	1-6 years	50 (1)	50	50	--	205(1/2)	--
7-13 years	7-13 years	100(2)	100	100	--	500(1)	250(1/2)
>13years	>13years	200(4)	200	200	--	1000(2)	500(1)

TREATMENT B (SM)

<p>Artemesinin derivatives: (First Line treatment)</p> <p>Artesunate: 2.4 mg/kg (loading dose) IV followed by 2.4 mg/kg at 12 hours, then 2.4 mg/kg daily for 6 days, if the patient is able to swallow, the daily dose of ACT can be given orally.</p> <p>Artemether: 3.2 mg/kg (loading dose) IM followed by 1.6 mg/kg daily for 5 days. If the patient can swallow, the daily dose of ACT can be given orally.</p> <p>Oral follow on treatment:</p> <p>ACT [Oral Artemether+Lumefantrine]: (After IV Artesunate/ IM artemether only).Dose- 6 doses</p> <p>Note: IV Artesunate for patient less than 20kg should be started with dose of 3mg/kg stat</p>	<p>Quinine: (If Artemesinin are not available) Loading dose: Quinine dihydrochloride 20 mg salt/kg of body weight (loading dose) by infusion over 4 hours in 5% dextrose saline (5-10 ml/kg of body weight depending on the patients overall fluid balance).</p> <p>Maintenance dose: Eight to twelve hours after the start of the loading dose, give a maintenance dose of quinine 10mg salt/kg of body weight in dextrose saline diluted as above over 4 hours. This maintenance dose should be repeated every 8-12 hours, calculated from the beginning of the previous infusion until the patient can take oral medication (e.g. 08hrs,16hrs,24hrs).</p> <p>Oral Quinine: Quinine sulphate 10mg salt/kg, 8 hourly to complete a 7 day course of treatment(IV+ Oral) with additional Tetracycline /Doxycycline/Clindamycin during oral follow on treatment.</p>
---	---

Dosing schedule of artesunate plus Mefloquine

Age	Dose in mg (no. of tablets)						
	Artesunate				Mefloquine		
	Day-1	Day-2	Day-1	Day-3	Day-1	Day-2	Day-3
5-11 Months	5-11 Months	25(1/2)	25	25	--	125 (1/4)	--
1-6 years	1-6 years	50 (1)	50	50	--	205(1/2)	--
7-13 years	7-13 years	100(2)	100	100	--	500(1)	250(1/2)
>13years	>13years	200(4)	200	200	--	1000(2)	500(1)

TREATMENT B (SM)

<p>Artemesinin derivatives: (First Line treatment)</p> <p>Artesunate: 2.4 mg/kg (loading dose) IV followed by 2.4 mg/kg at 12 hours, then 2.4 mg/kg daily for 6 days, if the patient is able to swallow, the daily dose of ACT can be given orally.</p> <p>Artemether: 3.2 mg/kg (loading dose) IM followed by 1.6 mg/kg daily for 5 days. If the patient can swallow, the daily dose of ACT can be given orally.</p> <p>Oral follow on treatment:</p> <p>ACT [Oral Artemether+Lumefantrine]: (After IV Artesunate/ IM artemether only).Dose- 6 doses</p> <p>Note: IV Artesunate for patient less than 20kg should be started with dose of 3mg/kg stat</p>	<p>Quinine: (If Artemesinin are not available) Loading dose: Quinine dihydrochloride 20 mg salt/kg of body weight (loading dose) by infusion over 4 hours in 5% dextrose saline (5-10 ml/kg of body weight depending on the patients overall fluid balance).</p> <p>Maintenance dose: Eight to twelve hours after the start of the loading dose, give a maintenance dose of quinine 10mg salt/kg of body weight in dextrose saline diluted as above over 4 hours. This maintenance dose should be repeated every 8-12 hours, calculated from the beginning of the previous infusion until the patient can take oral medication (e.g. 08hrs,16hrs,24hrs).</p> <p>Oral Quinine: Quinine sulphate 10mg salt/kg, 8 hourly to complete a 7 day course of treatment(IV+ Oral) with additional Tetracycline /Doxycycline/Clindamycin during oral follow on treatment.</p>
---	---

<p>IV Artesunate dose will be remain same for organ dysfunction (e.g. renal failure, hepatic failure etc)</p>	
---	--

<p>ACT should be taken immediately after food or a fat containing drink (e.g. milk)</p>	
---	--