MALARIA

(Extracted from National Vector Borne Disease Control Programme. Guidelines on Malaria Control)

1. All fever cases should preferably be investigated for malaria by Microscopy or Rapid Diagnostic Kit (RDK).
2. The first line of treatment is Chloroquine and the second line is ACT (Artesunate+Sulpha Pyrimethamine) combination. In case resistant to these formulations and to treat severe and complicated malaria Quinine will be the drug of choice.
3. Microscopically positive *Plasmodium falciparum* (Pf) cases should be treated with Chloroquine in therapeutic dose of 25 mg/kg body weight over three days and single dose of Primaquine 0.75mg/kg bw on the first day. This practice is to be followed at all levels including VHWs like DDCs/FTDs/ASHA as well.
4. Microscopically positive *Plasmodium vivax* (Pv) cases should be treated with Chloroquine in full therapeutic dose of 25 mg/kg body weight over three days. This practice is to be followed at all levels including VHWs like DDCs/FTDs/ASHA etc. Primaquine can be given in dose of 0.25mg/kg bw daily for 14 days under medical supervision only, to prevent relapse.
5. Fever cases positive by RDK should be treated according to the diagnosed species as described above. However, if RDK for only Pf is used, negative cases showing sign and symptom of malaria without any other obvious causes should be considered as clinical malaria and treated with Chloroquine in full therapeutic dose of 25 mg/kg body weight over three days.
6. In situations where diagnosis by microscopy or RDK is not possible, cases showing sign and symptom of malaria without any other obvious causes should be considered as clinical malaria and treated with Chloroquine in full therapeutic dose of 25 mg/kg body weight over three days in low risk area, while in high risk area, single dose of Primaquine 0.75 mg/kg bw should also be given on the first day. This practice is to be followed at all levels including VHWs like DDCs/FTDs/ASHA as well.
7. ACT is the first line of antimalarial drug for treatment of P.falciparum in Chloroquine resistant areas. The dose is 4mg/kg bw of artesunate daily for 3 days + 25mg/ kg bw of sulphadoxine/sulphalene + 1.25 mg per kg bw of pyrimethamine on the first day. ACT should be given only to confirmed P. falciparum cases found positive by Microscopy or Rapid Diagnostic kits. Compliance and full intake is to be ensured. Primaquine may not be given with ACT combination as Artesunate reduces gametocyte carriage.
8. The area/PHC showing a treatment failure more than 10% (both Early and Late Treatment Failures) to the tested drug Chloroquine in the minimum sample of 30 cases, should be switched over to the alternate antimalarial drug i.e. Artesunate Sulpha-Pyrimethamine (ACT) combination.
9. Change of drug to second line of treatment may also be implemented in a cluster of PHCs around the resistant foci after taking into consideration the epidemiological trend of *P.falciparum* (Pf >30%) and clinical response in these areas and approval of Directorate of NVBDCP.
10. Resistance should also be suspected if in spite of full treatment with no history of vomiting, diarrhoea, patient does not respond within 72 hours parasitologically. Such patients should be given alternative drug i.e. ACT combination and report to concerned District Malaria / State Malaria Officer / ROHFW Pf monitoring teams for monitoring of drug sensitivity status.
11. In areas with high disease burden, high proportion of Pf, inadequate facilities for laboratory diagnosis inaccessibility and relatively poor communication facilities and the Pf Chloroquine resistant pockets, ACT may also be given on clinical diagnosis of malaria by a trained medical officer or trained paramedical personnel after excluding other common causes of fever.
12. In cases resistant to CQ and SP-ACT, oral Quinine with Tetracycline or Doxycline can be prescribed.
13. Mefloquine should only be given to Chloroquine / multi drug resistant uncomplicated P.falciparum cases only in standard doses as prescribed by WHO. This drug is to be made available through the depot system and only to be provided to patients against the prescription of medical practitioners supported by

laboratory report showing asexual stage of P.falciparum parasite and not gametocyte alone and other species.

14. Primaquine is contra indicated in pregnant woman and infants.

15. Chemoprophylaxis is recommended in selective cases. It is recommended for

    a) Pregnant women in high-risk areas and

    b) Travellers, including service personnel who temporarily go on duty to high malarious areas. In Chloroquine sensitive areas, weekly dose of Chloroquine will be given, but in Chloroquine resistant areas it should be supplemented by daily dose of Proguanil. However chemoprophylaxis should not exceed 3 years due to the cumulative toxic effect of Chloroquine.

16. In severe and complicated *P.falciparum* malaria cases intravenous Quinine/ parenteral Artemisinine derivatives (for adults and non-pregnant women only) are to be given irrespective of Chloroquine resistance status. In case of non-availability of the above drugs, Chloroquine 10 mg/kg bw in isotonic saline should be infused over 8 hours followed by 15 mg/kg bw in the next 24 hours. This treatment may continue till such time Quinine/Artemesinine derivatives become available.

17. Migratory labour/project population: Since these groups belong to high risk category, they need to be screened on weekly basis and treated accordingly.

18 All the medical, paramedical and village level health volunteers should be adequately trained before their involvement in the programme.

19. Artesunate tablets should not be administered as monotherapy. It should invariably be combined with sulpha pyrimethamine tablets in prescribed dosages.

Annexure - 1

DRUG SCHEDULE FOR TREATMENT OF MALARIA UNDER NVBDCP

1. Chloroquine

Chloroquine base	Day 1	10mg/kg	(600 mg adult)
Chloroquine base	Day 2	10mg/kg	(600 mg adult)
Chloroquine base	Day 3	5mg/kg	(300 mg adult)

Dosage as per age groups

Age in years	Day 1 Tab. Chloroquine	Day 2 Tab. Chloroquine	Day - 3 Tab. Chloroquine
<1	½	½	¼
1-4	1	1	½
5-8	2	2	1
9-14	3	3	1½
15 & above	4	4	2

2 Primaquine

PRIMAQUINE IS CONTRAINDICATED IN INFANTS AND PREGNANT WOMEN

Dosage as per age groups

a) P. falciparum

Age in years	Primaquine On Day 1		
	mg base	No. of Tablets (2.5 mg base)	No. of Tablets (7.5 mg base)
<1	Nil		0
1-4	7.5	3	1
5-8	15	6	2
9-14	30	12	4
15 and above	45	18	6

(b) P. vivax

Age in year	Primaquine		
	mg base	Daily dose for 14 days* No. of Tablets (2.5mg base)	No. of Tablets (7.5mg base)
<1	Nil	Nil	Nil
1-4	2.5	1	⅓
5-8	5.0	2	⅔
9-14	10.0	4	1⅓
15 & above	15	6	2

* Primaquine for 14 days should be given under medical supervision only

3 Artesunate + Sulpha-pyrimethamine (ACT) combination

Age wise dose schedule for AS+SP

Age		1st Day (number of tabs)*	2nd Day (number of tabs)	3rd Day (numbers of tabs)
<1Year	AS	½	½	½
	SP	¼	Nil	Nil
1-4 Years	AS	1	1	1
	SP	1	Nil	Nil
5-8 Years	AS	2	2	2
	SP	1½	Nil	Nil
9-14 Years	AS	3	3	3
	SP	2	Nil	Nil
15 and above	AS	4	4	4
	SP	3	Nil	Nil

Strength of each Artesunate tablet: contains 50mg & each Sulpha Pyrimethamine (SP) tablet contain 500 mg sulphadoxine/sulphalene and 25mg Pyrimethamine

* Artemisinin group of drugs is not recommended in pregnancy

**Primaquine may not be given with ACT combination as Artesunate reduces gametocyte carriage.

4. Severe and complicated malaria cases

(a) In severe and complicated malaria of P.falciparum (clinically/microscopically confirmed) parenteral artemisinin or Quinine is the drug of choice, irrespective of Chloroquine resistance status of the area.

(b) Quinine salt .10mg /kg bw 8 hrly in 5% dextrose saline is preferred. Patients should be switched over to oral Quinine as early as possible and oral dose is 10 mg/kg bw 8 hrly not exceeding 2gm in a day in any case. Minimum total duration for Quinine therapy should be for 7 days including both parenteral and oral doses.

(**c**) Injectable form of artemisinine derivatives may be used for the management of severe and complicated malaria **(For adults and non-pregnant only)** in the dosage given below:

Artesunate: 2.4 mg/kg bw IM/IV followed by 1.2 mg/kg bw after 12 hours**,** then 1.2 mg/kg bw once daily for total duration of 5 days.

Artemether: 1.6 mg/kg bw IM followed by 1.6 mg/kg bw daily for total of 6 injections or 1.6 mg/kg bw IM injection twice daily for 3 days, a total of 6 injections.

Arteether: 150 mg daily IM for 3 days in adults only.

Artemisinin 10 mg/kg bw at 0 and 4 hours followed by 7 mg/kg bw at 24, 36, 48 and 60 hours.

5. Chemoprophylaxis

In Chloroquine sensitive areas-Chloroquine

In Chloroquine resistant areas-Chloroquine+ Proguanil

Chemoprophylaxis is to be started a week before arriving to malarious area for visitors and for pregnant women prophylaxis should be initiated from second trimester.

Start with loading dose of 10 mg/kg bw and followed by a weekly dose of 5 mg/kg bw. This is to continue till 1 month after delivery in case of pregnancy and in travellers till one month after return from endemic area. The terminating dose should be radical treatment for P.vivax i.e 25 mg/kg bw over 3 days along with 0.25 mg/kg bw of primaquine for 14 days under medical supervision.

Chemoprophylaxis with Chloroquine is not recommended beyond 3 years because of its cumulative toxicity.

In Chloroquine resistant areas chemoprophylaxis is recommended with Chloroquine 5 mg/kg bw weekly supplemented with proguanil 200mg daily.