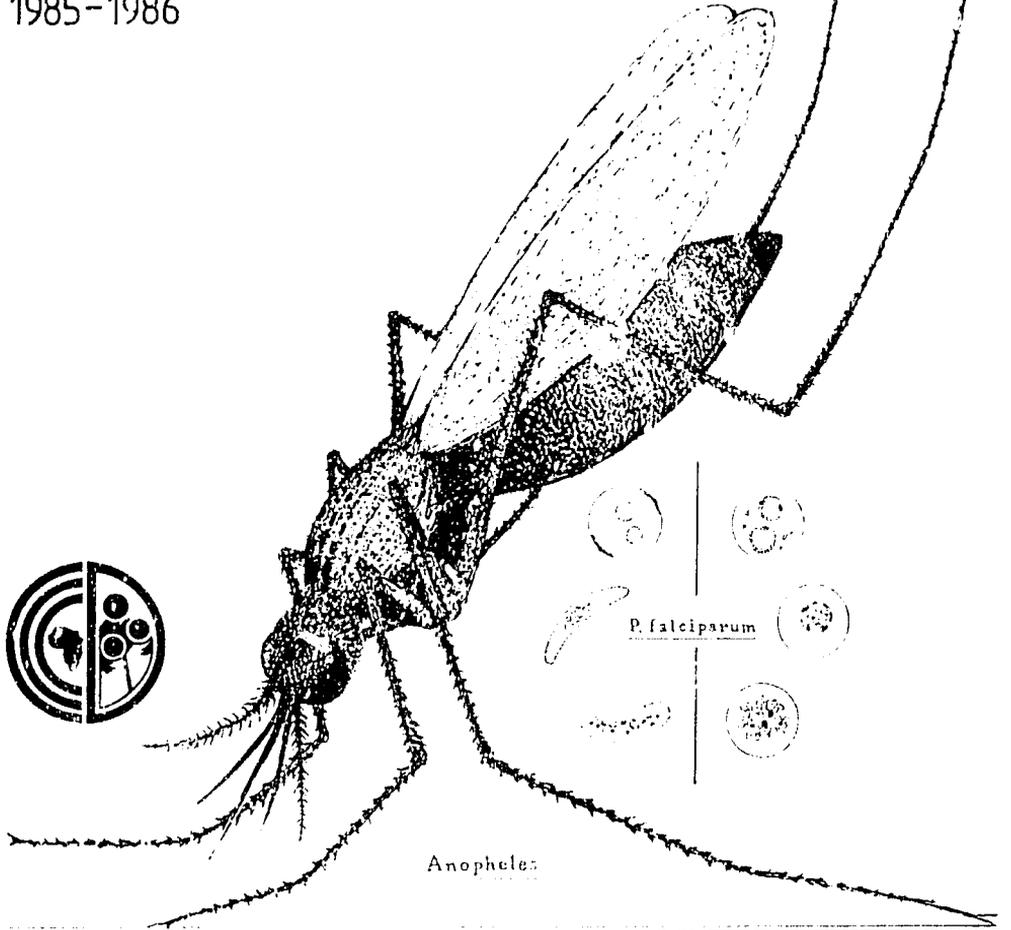


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MALAWI

GUIDE FOR MANAGEMENT OF MALARIA

1985-1986



FOR PHYSICIANS, CLINICAL OFFICERS,
MEDICAL ASSISTANTS AND
SENIOR NURSING STAFF

An Official Document of the
MALAWI MINISTRY OF HEALTH

GUIDE FOR MANAGEMENT OF
ACUTE FALCIPARUM MALARIA
IN MALAWI
1985-1986

FOR PHYSICIANS, CLINICAL OFFICERS,
MEDICAL ASSISTANTS AND
SENIOR NURSING STAFF

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PREFACE

The Ministry of Health, after systematic study of the malaria situation in Malawi, has adopted the World Health Organization recommended strategy for malaria control in Africa. This strategy, completely integrated within the primary health care system, is aimed at decreasing mortality and the duration of morbidity associated with malaria by proper treatment of malaria infection and chemoprophylaxis of pregnant women. During the next five year period other strategies of malaria control, aimed at decreasing the incidence of malaria, will be evaluated and appropriately integrated within primary health care.

INTRODUCTION

Over the past 3 years, clinicians across the country have encountered cases of smear-proven falciparum malaria that do not respond to the recommended dose of chloroquine. At the same time, the incidence of cerebral malaria and abortions associated with malaria has been noted to be higher than before.

In February, 1984 the Ministry of Health formed the National Malaria Control Committee to study the problem and to make necessary recommendations for effective control of malaria.

From August to December 1984, six surveillance centres across the country were studied for the presence of chloroquine resistant falciparum malaria. The WHO 7-day in-vivo method was used to test for resistance, and at two sites the WHO in-vitro method was used to confirm in-vivo results. The 7-day in-vivo test examines the peripheral blood for parasites during a period of 7 days after treatment for malaria is begun; it is based on the principal that

any individual who has parasites present on the 7th day after treatment was begun has parasites resistant to the dose of chloroquine being studied.

Children under the age of five years with thick smears positive for malaria were tested with two different dosages of chloroquine: a single dose of 10 mg/kg, and a three day course of 25 mg/kg (10 mg/kg the first and second days, 5 mg/kg the third day). Chloroquine in a single dose of 10 mg/kg was studied among 26 children at the start of the study, but when it was seen that there was a high level of resistance (84% of children had malaria parasites present on the seventh day after treatment) no more children were studied at this dose.

Chloroquine, in a dose of 25 mg/kg, was then tested among 246 children with thick smears positive for malaria at the six surveillance centres. Ninety-two percent of the children who had fever at the time treatment was begun became afebrile within 3 days, and remained afebrile through the seventh day after treatment was begun.

A total of 127 (57%) of the 224 children who completed the study showed resistance to chloroquine at this dose, with parasites present on the seventh day after treatment was begun, but in much lower densities (See map, centrefold).

In-vitro (laboratory) testing at two of the surveillance centres confirmed that chloroquine resistant parasites are widely distributed throughout Malawi.

In January 1985, 7-day in-vivo testing of amodiaquine as an alternative drug to chloroquine was conducted at Kamuzu Central Hospital. As was done for chloroquine, amodiaquine was tested in 2 doses, 10 mg/kg single-dose and 25 mg/kg three-dose therapy. Four (11%) of the 35 children studied after treatment with amodiaquine in a dose of 10 mg/kg showed resistance, with parasites present on the seventh day after treatment, while none of the 38 children studied after 25 mg/kg had parasites present on the seventh day.

In-vivo studies of amodiaquine in a dose of 25 mg/kg were then extended to a

Full 21 days, and fansidar in a single dose of 25 mg sulfa/kg was tried in parallel. Fourteen days after treatment with amodiaquine 25 mg/kg was begun, 6 of 34 (18%) children showed resistance; 21 days after treatment with amodiaquine 25 mg/kg was begun, 12 of 35 (34%) children showed resistance. None of the 31 children treated with one dose of fansidar showed resistance on the 7th, 14th or 21st day after treatment.

Based on these studies, chloroquine, amodiaquine and fansidar have all been determined to have a place in malaria control in Malawi. The National Malaria Control Committee recommends the following five strategies for malaria control:

1. presumptive treatment of fevers
2. continuous monitoring of anti-malaria efficacy
3. selective antimalarial chemoprophylaxis
4. vector control
5. health education.

1. PRESUMPTIVE TREATMENT OF FEVERS

1.1 CHILDREN UNDER FIVE

All children under five who have fever or other signs and symptoms recognized by health personnel as malaria should be treated with an appropriate dose of oral antimalarial, either syrup or tablet, unless severe vomiting or altered state of consciousness requires an injectable antimalarial. The current treatment of choice for malaria is chloroquine in a dose of 25 mg/kg. If a scale is not available, the following therapy tables may be used:

Therapy Table 1: CHLOROQUINE 150 MG BASE/DOSE TABLE

Age Group	Weight Range (KG)	Day 1 No. of Tabs	Day 2 No. of Tabs	Day 3 No. of Tabs	Total Tabs
Under 6 months	3.4-7.4	1/2	1/2	1/4	1 1/4
6-11 months	7.5-9.9	3/4	3/4	1/4	1 3/4
1-3 years	10.0-14.4	1	1	1/2	2 1/2
4-5 years	14.5-18.4	1 1/2	1 1/2	3/4	3 3/4

Therapy Table 2: CHLOROQUINE SYRUP 50 MG
BASE/5ML

Age Group	Weight Range (KG)	Day 1 No. of ML	Day 2 No. of ML	Day 3 No. of ML	Total ML
Under 6 months	3.4-7.4	7.5	7.5	5	20
6-11 months	7.5-9.9	10	10	5	25
1-3 years	10.0-14.4	15	15	7.5	37.5
Over 3 years	Use tablets as per Therapy Table 1				

Fever in many children will be due to other causes, such as measles, diarrhoeal diseases, upper respiratory infections, etc. Presumptive treatment should be given to these individuals as well because of the high frequency of concurrent malaria infections. Every child with fever should be treated presumptively for malaria; those who have signs and symptoms of other diseases must be treated for these diseases as well.

Concurrent with presumptive treatment for malaria, children under five should be treated with aspirin by mouth in order to immediately

decrease the fever until the antimalarial has had an effect. In addition, highly febrile children should be given a sponge bath by wiping the body with a cool water-soaked cloth or sponge, letting the body air dry, and repeating as needed to lower the child's temperature. If fever persists for more than 72 hours after initiation of treatment or symptoms worsen, the child should be referred for admission.

A child with fever requires more than the normal amount of fluids, and mothers should be encouraged to provide extra breastfeeding and increased amounts of clean water or other liquids.

The following table gives correct aspirin doses for children under 5:

Therapy Table 3: 300 MG ASPIRIN/TABLET DOSE
TABLE

<u>Age Group</u>	<u>*Aspirin Dose (300 mg Tablets)</u>
Under 2 years	1/4 tablet every 4 hours
2 years	1/2 tablet every 4 hours
3 years	3/4 tablet every 4 hours
4-5 years	1-2 tablets every 4 hours

* Parents should give doses until the fever goes away, but not more than 3 days in

succession. Prolonged fever could indicate other diseases. Another fever-lowering drug such as paracetamol can be used in place of aspirin.

1.2 CHILDREN OVER FIVE AND ADULTS

All children over five and adults with fever, headache and/or other signs and symptoms recognized as malaria should be treated with chloroquine in a dose of 25 mg/kg. If a scale is not available the following therapy tables may be used:

Therapy Table 4: CHLOROQUINE 150 MG BASE/
TABLET DOSE TABLE

Age Group	Weight Range (KG)	Day 1 No. of Tabs	Day 2 No. of Tabs	Day 3 No. of Tabs	Total Tabs
6 years	14.5-18.4	1 1/2	1 1/2	3/4	3 3/4
7-11 years	18.5-34.9	2 1/2	2 1/2	1	6
12-15 years	35.0-59.9	4	4	2	10
16 years and over	60.0 and over	4	4	2	10

INTERNATIONAL HEALTH INFORMATION SYSTEM:
SENTINEL SURVEILLANCE FOR CHLORO-
QUINE RESISTANT MALARIA AT DOSE OF
5mg/kg, CHILDREN LESS THAN 5 years,
1984 - 1985

KARONGA

58% RESISTANT

RUMPHI

64% RESISTANT

DWANGWA

65% RESISTANT

LILONGWE

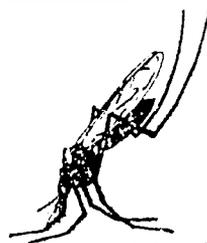
41% RESISTANT

MANGOCHI

58% RESISTANT

MACHINGA

63% RESISTANT



As for children under five, aspirin should be used in conjunction with anti-malarial therapy for older children and adults, in a dose of 1-2 tablets every four hours. Likewise, increased fluid intake should be encouraged among children over five and adults with fever.

1.3 MALARIA RESPONSE TO TREATMENT

When presumptive treatment in the doses above has failed to decrease the fever and/or alleviate symptoms of malaria within 1 day (24 hours) at home, mothers should immediately take their child and/or adults should present to a health centre for further evaluation and treatment. When presumptive treatment in a health centre or hospital has failed to decrease the fever and/or alleviate symptoms of malaria within 3 days (72 hours) after the first dose of antimalarial, an alternative drug, such as amodiaquine in a dose of 25 mg/kg, or fansidar in a dose of 25 mg sulfa/kg should be used. If a scale is not available the following therapy tables may be used:

Therapy Table 5: AMODIAQUINE 200 MG BASE/
TABLET DOSE TABLE

Age Group	Weight Range (KG)	Day 1 No. of Tabs	Day 2 No. of Tabs	Day 3 No. of Tabs	Total Tabs
Under 6 months	3.4-7.4	1/4	1/4	1/4	3/4
6-11 months	7.5-9.9	1/2	1/2	1/4	1 1/4
1-3 years	10.0-14.4	3/4	3/4	1/2	2
4-6 years	14.5-18.4	1	1	1/2	2 1/2
7-11 years	18.5-34.9	2	2	1	5
12-15 years	35.0-59.9	3	3	2	8
16 years and over	60.0 and over	3	3	2	8

Therapy Table 6: FANSIDAR TABLET DOSE TABLE

Age Group	Number of tablets (single dose)
Under 4 years	1/2
4-8 years	1
9-14 years	2
15 years and over	3

If the fever has decreased and/or symptoms of malaria have been alleviated within 3 days (72 hours) after the first dose of antimalarial, but recur at a later time, patients should again be treated as in Therapy Tables 1 and 2.

1.4 CEREBRAL MALARIA

Cerebral malaria, that is malaria with depression of level of consciousness and/or persistent convulsions, should be immediately treated with a drug to which resistance does not exist. Such a drug is quinine, which should be available in all hospitals, and all cerebral malaria should be treated using quinine as follows:

- quinine, 10 mg/kg given as a 1 hour intravenous infusion (dissolved in enough intravenous solution to produce less than 1 mg quinine/ml fluid), repeated every 8 hours until level of consciousness improves so that oral medications can be taken
- after oral medications can be taken, quinine 25 mg/kg each day in 3 doses until the total days using intravenous and oral quinine is 7 days or quinine may be given for 3 days only followed by a single dose of fansidar OR 5 days of low-dose tetracycline
- in addition, hypoglycaemia must be treated by adequate glucose intake as determined by regular dextrostix testing
- other causes of fever with convulsions or unconsciousness, such as meningitis, should be

ruled out with cerebrospinal
fluid examination

- convulsions should be managed
with intravenous Diazepam
- dehydration should be cor-
rected .

1.5 LABORATORY DIAGNOSIS OF MALARIA

Thick Blood Smears, stained with
field stain or geimsa, are one method of
confirming whether or not an individual
has malaria. Any thick smear containing
malaria trophozoites is diagnostic for
malaria. In most instances thick blood
smears are not required to diagnose malaria,
and this can be done by noting clinical
signs and symptoms alone. Thick smears are,
however, useful in the following instances,
and should be performed if possible for:

- monitoring patients who have
been treated presumptively
and still have signs and
symptoms 3 days (72 hours)
after beginning treatment

- monitoring patients with fever and cerebral signs such as lethargy or convulsions or other signs/symptoms requiring hospitalization
- during in-vivo drug testing.

2. SELECTIVE MONITORING OF IN-VIVO
ANTIMALARIAL EFFICACY

Because the development of chloroquine resistance is presently occurring throughout Malawi, continuous monitoring of antimalarial efficacy in combatting clinical signs and symptoms of malaria, and, in certain instances, in clearing blood parasitemia, is required.

A continuous monitoring unit for malaria drug study has been set up in the Central Region Satellite of the Community Health Sciences Unit, where continuous study will determine best current medication/dosage schedules for malaria. As schedules change, they will be published and distributed to all medical practitioners as

required.

3. SELECTIVE ANTIMALARIAL CHEMOPROPHY-
LAXIS

Weekly antimalarial prophylaxis of chloroquine or amodiaquine in a dose of 5 mg/kg should be given to the following four categories of patients:

- pregnant women
- patients who are on immuno-suppressive drugs or for some other reason are immuno-suppressed
- children with recurring febrile convulsions
- children with sickle cell disease.

Because chloroquine prophylaxis increases pressure on P. falciparum and leads to selection of resistant strains, routine chemoprophylaxis of healthy children under five will not be continued. Therefore, it is very important that

presumptive treatment as outlined in Section 1 be initiated immediately, whenever a child develops fever.

4. VECTOR CONTROL

Rural and urban population should be motivated through appropriate health education, and community volunteer groups/health committees should be encouraged to actively participate in vector control activities by:

- eliminating mosquito breeding sites by removal or filling of all water collection areas which could serve as mosquito breeding sites
- practicing personal protection measures against mosquito bites, when feasible, by use of:
 - mosquito nets
 - repellents
 - window screens

- local urban government vector control by residual spraying with WHO approved insecticide and larvicide in urban areas as required.

5. HEALTH EDUCATION

Appropriate health education messages should be designed after current knowledge, attitudes and practices about malaria have been determined. These messages should be developed by health educators and aimed at all segments of the population including:

- mothers/other adults
- village health committees
- shopkeepers
- school children.

All possible media for health education within the primary health care system, including radio, schools, person-to-person and health centre demonstrations should be used to provide health education support to the malaria control programme.

ADDENDUM:

CHEMOPROPHYLAXIS FOR EXPATRIATE POPULATIONS

For expatriates living in Malawi, chloroquine alone is recommended for chemoprophylaxis in a dose of 5 mg base/kg once weekly for children and 300 mg base once weekly for adults. If at any time during chemoprophylaxis a fever is noted and thick smear is positive for malaria, the patient should be treated with amodiaquine 25 mg base/kg over three days or Fansidar 25 mg sulfa/kg provided there is no known allergy to sulfa.

Alternatively, amodiaquine in a dose of 7 mg base/kg once weekly for children and 400 mg base once weekly for adults may be used for short term chemoprophylaxis.

Chemoprophylaxis with maloprim is not recommended because of its low content of pyrimethamine and the relatively short (3 day) duration of dapsone levels in the blood, while the use of other antimalarial drugs for chemoprophylaxis is controversial.

The danger of retinal damage with prolonged chloroquine use is real, and slit lamp examination periodically or, if at any time visual disturbance occurs during long-term chemoprophylaxis with chloroquine, is recommended.