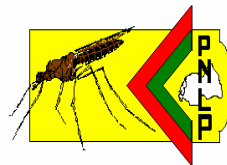


REPUBLIC OF RWANDA



MINISTER OF HEALTH
B.P. 84 KIGALI

**THE NEW THERAPEUTICAL APPROACH INSTRUCTIONS
OF MALARIA IN RWANDA**



National Program of Malaria Control

MANAGEMENT OF UNCOMPLICATED MALARIA

- **In family:** - reinforcement of IEC guidelines for the Malaria symptoms recognition by the family members and preventative measure like use of insecticide treated bed nets.

The aim of this management is to access the nearest Health Centre but we have to lower fever by damp wrapping (or tepid sponging)

- **In community:** the worker health role is:
 - to make population conscious of the uncomplicated or severe Malaria signs recognition
 - to refer population to an Health Centre quick (or fast) consultation
 - to make population conscious of insecticide treated bed nets using

- **To the Health Centre:**

- It's better to give the first purpose treatment after blood smear
- The first purpose treatment is an association of Sulfadoxine-Pyrimethamine (SP) and Amodiaquine.

Sulfadoxine-Pyrimethamine: single dose treatment using tablets containing 500 mg of Sulfadoxine plus 25 mg of Pyrimethamine.

Dosage: 25 mg per Kg of Sulfadoxine or one tablet per 20 Kg of body weight.

And Amodiaquine.

Dosage: 10 mg per Kg of body weight one time daily for 3 days using tablets containing 200 mg base of Amodiaquine.

- Do not exceed 3 SP tablets 525 mg for adults
- The two drugs are taken in association from the first day
- Without improvements in 72 hours, make sure of the following instructions given in the antimalarial drugs prescriptions, examine the patient:

If blood smear is positive, treat with quinine per os of 30 mg quinine salt per Kg of body weight three times daily for 7 days.

If blood smear is negative, find others aetiologies.

In presence of negative blood smear with a high clinical suspicion of Malaria, treatment for uncomplicated Malaria should be given and categorize this case like a **uncomplicated Malaria presumed** (or putative).

In case of contraindications(antimalarial drugs mentioned below) like allergy to sulfamide, severe liver disease or kidney failure and children aged under 2 months, the first purpose treatment is quinine per os of 30 mg quinine salt per Kg of body weight three times daily for 7 days.

- It's obligatory to make a blood smear before treating with quinine

PS: In fever persistence after 48 hours of quinine treatment, investigate an associated pathology.

MANAGEMENT OF SEVERE MALARIA.

- ***Minimum criteria required to an Health Institution for the management of severe Malaria:***
 - Well trained and equipped health workers
 - Existence of constant clinical and laboratory monitoring twenty four hours to twenty four hours
 - Take blood for diagnostic smear, monitoring of blood sugar, haematocrit, haemoglobin
 - Urine analyse to seek sugar (diagnosis of diabetes), proteins (diagnosis of high blood pressure, eclampsia)
 - Do lumbar puncture
 - Transfusion possibility in case of severe Malaria
- ***If an Health Institution don't fulfil these conditions:***
 - Make a rapid clinical diagnosis
 - Take blood for diagnostic smear
 - Give medical care before transfer. Those are:
 - Intramuscular quinine in emergency with a loading dose of 20 mg per Kg of body weight divided in half into the two thighs (do not exceed 1200 mg).

The quinine will be dilute like this: add 4 ml of distil water or physiological solution to 2 ml (600 mg) of quinine salt for getting 100 mg per ml.

➤ Symptomatical treatment if need will be:

- If temperature more than 38.5°C
 - Damp wrapping (tepid sponging)
 - Paracetamol 15 mg/Kg orally or intramuscular
Novalgine of 1 g for adults or 0.01 to 0.02 mg/Kg for children if oral route contraindicated

- Hypoglycaemia prevention

- Give sugar water at 10% per os or per nasogastric sonde of 5 ml/Kg for children and 50 to 100 ml for adults.

10% of sugar water is prepare like this: for having 100 ml of 10% sugar water, add 10 g of sugar into 100 ml of clear water

- In case of convulsions

- 0.5 mg/Kg of body weight of intrarectal Diazepam should be given to children or intravenous 10 mg to adults
- prevent hypoglycaemia
- low fever if need

➤ Then refer the patient to the nearest Hospital with information of medical realized actions and blood smear made.

- ***District Hospital and private Hospital***

- It's the first level of severe Malaria management
- Quinine is the drug of choice for severe Malaria treatment

➤ For children and adults:

Administer intravenous quinine with a loading dose of 20 mg/Kg of body weight in 5-10 ml/Kg of body weight of isotonic solution or 5-10% glucose over 4 hours (do not exceed 1200 mg). Then after instaurate a 5-10% glucose perfusion over 8 hours. Twelve hours after start of loading dose, give maintenance dose of quinine :10 mg/Kg over 4 hours. This

maintenance dose should be repeated every 12 hours, calculated from the beginning of the previous infusion, until the patient can swallow. Give quinine orally as soon as possible with a dose of 30 mg quinine salt per Kg of body weight three times daily to complete a treatment for 7 days.

PS: The loading dose should not be given if the patient has received a correct dose of quinine in the 12 hours or Mefloquin in the 7 days before.

➤ Symptomatical treatment

The following associated complication require a special attention:

- Hyperthermia (hyperpyrexia)

Paracetamol tablets should be given orally with a dose of 15 mg/Kg of body weight repeatable 4 times daily.

This drug is available in powder which should be administered orally or by nasogastric sonde, or by rectal route for a patient unable to swallow.

Administer intramuscular Novalgine in case of those ways are inaccessible (inaccessibility of those ways)

- Convulsions

Administer intrarectal Diazepam for children (0.5 mg/Kg).

Recurrent seizures should be treated with intramuscular Phenobarbital 10-15 mg/Kg.

Diazepam should be administered by intravenous slow injection or through the rectum with dose of 10 mg for adults.

Because of (according to) Diazepam undesirable effects, a strict monitoring is require during administration of this drug.

- Severe anaemia

Transfusion should be envisaged when haematocrit for a well hydrated patient fall below 15% or haemoglobin concentration less than 5 g/dl.

(Complete blood) total blood is administered with dose 20 mg/Kg of body weight.

If renal function is good, small doses of intravenous diuretic (example: Furosemide) should be administered during blood transfusion to avoid circulatory overloading (overload).

Globular concentrate (culot) is administered with dose of 10 mg/Kg of body weight.

For malnourished children, anaemia is improved (corrected) with total blood: 10 mg/Kg of body weight and it's recommended to extend transfusion.

For children, Furosemide is administered with dose of 1 mg/Kg of body weight.

The blood pocket must flow over 3-4 hours maximum to prevent contamination risk of pierced(perforated) pocket. This recommendation is both available for adults and children. For the flow adjustment (rate): 1 ml of total blood correspond to 20 drops and 1 ml of globular concentrate correspond to 15 drops.

To transfuse a blood pocket during (over) 3-4 hours, adjust the flow to 25-30 drops per minute.

For weakened patient (cardiac decompensation) ,slow down transfusion rhythm and administer Furosemide.

- Hypoglycaemia

Hypoglycaemia must be excluded in all patient with severe Malaria. If hypoglycaemia cannot be excluded by blood testing, comatose or very ill adults patient should be given a test dose of 20-50 ml of 50% dextrose by intravenous injection given over 5-10 minute (1 ml/Kg of 50% glucose for children).

However, the routine administration of 50% dextrose to all patient with severe Malaria is not recommended because of rebound hypoglycaemia.

Monitoring of the clinical condition and blood sugar must continue even if hypoglycaemia is initially controlled and the patient is receiving intravenous glucose.

To prevent hypoglycaemia is advisable to maintain 5-10 ml/Kg of a 5% glucose perfusion or 3-4 ml/Kg of a 10% glucose

perfusion. The 10% glucose perfusion is obtained from (with) 5% and 50% glucose solution.

- Respiratory distress
 - Administer oxygen
 - check (verify) severe anaemia, manage heart failure (cardiac insufficiency) and treat (manage) pulmonary oedema
- coma
 - evaluate the coma depth (profundity) (Blantyre or EVDI for children, Glasgow or EVDI for adults) regularly (at least 2 times daily).
 - If necessary (need) do lumbar puncture
 - Check glycaemia and manage
 - Check temperature and manage
 - Manage convulsions
 - Safe lateral position (position on side)
 - Aspirate (vacuum) if necessary
 - Monitoring and calculator of fluid balance
 - Change posture at least 4 times daily
- Renal failure

This condition is better managed in a national reference hospital

MANAGEMENT OF MALARIA DURING PREGNANCY.

- ***Management of uncomplicated Malaria***

- **In community and home:**

- Reinforce IEC guidelines for reminding Malaria signs and prompt (encourage) women to consult on time
- Health animator (health leader) are the action pivot (action centre) for consulting sensibilisation and preventative method use like treated bed nets

➤ **In health institution:**

Sulfadoxine-Pyrimethamine is contraindicated during the first trimester of pregnancy. Orally quinine is recommended in first purpose with dose of 30 mg/Kg of body weight (do not exceed 1200 mg) 3 times daily for 7 days.

Association Sulfadoxine-Pyrimethamine plus Amodiaquine is recommended in first purpose during the second and third trimester of pregnancy except in case of contraindications, the treatment is Quinine with dose indicated above.

• ***Management of severe Malaria***

Apply the same management of different others groups at different health levels.

- Quinine is not contraindicated during pregnancy whatever the gestational age
- Hypoglycaemia is frequent in this condition
- Check regularly foetal vitality

LABORATORY DIAGNOSIS

The optical microscopy diagnosis is used for parasitological diagnosis.

Parasitological density method is reserved in research situation or particularly situation of severe Malaria or in case of therapeutic failure.

We conduct an average count (enumeration or numbering) of eight thousand leukocytes per microliter.

The parasitological density enumeration should be stated (expressed) as follows:

Parasite per microliter of blood = $\frac{\text{Number of counted parasite} \times 8000}{\text{Number of counted leukocyte}}$

The following semi-quantitative method expressed as one of the 4 plus (cross) is required for indicating parasitological count (enumeration):

+ : 1-10 parasite for 100 blood smear field (chambers)

++ : 11-100 parasite for 100 blood smear field (chambers)

+++ : 1-10 parasite per blood smear field (chambers)

++++ : 11-100 parasite per blood smear field (chambers)

This method is recommended (advisable) in the illness management and for quality control.

CHEMOPROPHYLAXIS

Reserved only (solely) to traveller from Malaria unharmed area.

For this indicated person, it's better to begin chemioprophylaxis at least one (a) week before the journey, to maintain it during the period into Malaria area, and continue until 4 weeks after leaving the area (international traveller).

The following recommended drugs are:

➤ **Mefloquin 250 mg**

Prophylactic dose is 250 mg base per week for adults and 5 mg/Kg of body weight for children.

➤ **Doxycyclin**

Prophylactic dose is 100 mg base per day.

This drug is contraindicated for children aged less than 8 years and women during pregnancy or breastfeeding period.

Annexe 1

MODIFIED CHANGED GLASGOW COMA LATTER (BLANTYRE)

		Marks
Eyes mouvement :	Well adapted (follow mothers face or objects.....	1
	Not adapted (unsuited).....	0
Réponse verbale :	Appropriate (suitable) cry.....	2
	Moan (groan) or inappropriate cry.....	1
	None.....	0
Best motor answer :	Locate(localize) painful stimuli *.....	2
	Remove (take off) limb in reaction of pain **	1
	No specificical or absence of answer	0

* knuckles rubbing on the patient sternum

** firm pressure on the thumbnail pencil placed horizontally

Add all section marks to obtain total marks of modified Glasgow latter.

Annexe 2

Amodiaquine

The table below is based on total dose of 30 mg base/kg over 3 days for tablets containing 200 mg of chlorhydrate.

WEIGHT (KG)	AGE	NUMBER OF TABLETS 200mg BASE		
		Day 1	Day 2	Day 3
5-6	2- 4 months	¼ of tablet	¼ of tablet	¼ of tablet
7-10	4-11 months	½ of tablet	½ of tablet	½ of tablet
11-14	1-2 years	¾ of tablet	¾ of tablet	¾ of tablet
15-18	3-4 years	1 tablet	1 tablet	1 tablet
19-24	5-7 ans	1+1/4 tablet	1+1/4 tablet	1+1/4 tablet
25-35	8-10 years	1+ ½ tablet	1+ ½ tablet	1+ ½ tablet
36-50	11-13 years	2 + ½ tablet	2 + ½ tablet	2 + ½ tablet
50+	14 years and over	3 tablets	3 tablets	3 tablets

Annexe 3

Sulfadoxine-Pyriméthamine

Single dose treatment using tablets containing 500 mg Sulfadoxine plus 25 mg Pyrimethamine.

WEIGHT (KG)	AGE	NUMBER OF TABLETS 525mg
5-6	2-3 months	¼ of tablet
7-10	4-11 months	½ of tablet
11-14	1-2 years	¾ of tablet
15-18	3-4 years	1 tablet
19-29	5-9 years	1 + ½ of tablet
30-39	10-11 years	2 tablets
40-49	12-13 years	2 + ½ of tablet
50+	14 years and over	3 tablets

Annexe 4

Quinine (orale)

The table below is based on a maintenance dose of 10 mg salt/kg of body weight 8 hourly for 7 days using tablets of 300 mg salt. over 3 days for tablets containing 200 mg of chlorhydrate.

AGE (YEARS)	NUMBER TABLETS 300MG	OF
< 1 year	¼ of tablet	
1-3 years	½ of tablet	
4-6 years	½ of tablet	
7-11 years	1 tablet	
12-15 years	1+ ½ of tablet	
15 years and over	2 tablets	