

MALARIA MANAGEMENT SUMMARY 2019

SSV SIKO

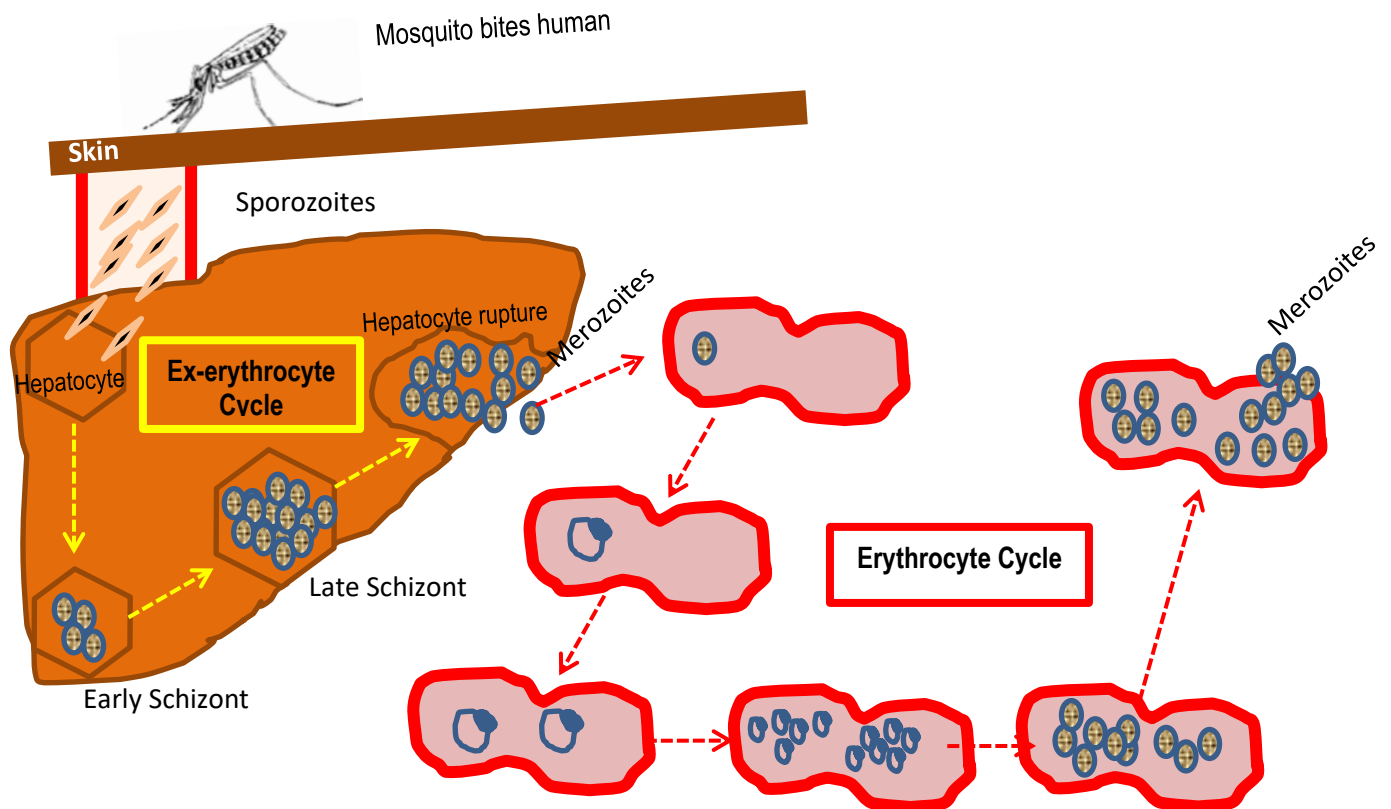
AETIOLOGY

The causative micro-organisms are plasmodium species and the following plasmodia cause malaria infection in humans

1. *Plasmodium falciparum*
2. *Plasmodium vivax*
3. *Plasmodium ovale*
4. *Plasmodium malariae*
5. *Plasmodium knowlesi*

Infection with *P. falciparum* results in the most severe form of malaria. *P. ovale*, *vivax* and *malariae* usually have a benign disease. Plasmodium is in the saliva of female anopheles mosquito and transmitted to humans when the mosquito bites a human. *Anopheles Gambiae* is the most common the most common in Africa.

The incubation period following a mosquito bite is typically 7 – 30 days but can extend up to 12 months.



EPIDEMIOLOGY

Over 90% of malaria deaths are due to *falciparum* infection. Severe / complicated malaria is caused by *P. falciparum*. Severe / complicated malaria is usually fatal in the absence of a basic medical care. 1% of patients with severe malaria die even with treatment.

The following are malaria endemic areas:

- ▲ Africa
- ▲ Middle East
- ▲ South Asia
- ▲ South-East Asia
- ▲ East Asia
- ▲ Central America

- ♠ South America
- ♠ Caribbean

DIAGNOSIS

Diagnosis of malaria should be considered in anyone who presents with a febrile illness while in a malaria area or recently left malaria area.

The following question must be asked when malaria is suspected

1. Travel history (up to 1 year): places travelled, dates and durations of stay
2. Malaria prophylaxis history
3. Previous exposure to malaria infection
4. Co-morbid medical conditions example TB, HIV, renal disease, diabetes

Uncomplicated cases

- Ambulant
- Normal mental status
- Urine output adequate of 0.5 ml/kg/hour
- Takes oral medication

Sign of severe (complicated) malaria

- Prostration (severe general body weakness)
- Sleepiness, unconsciousness or coma, convulsions
- Respiratory distress and/or cyanosis
- Shock
- Jaundice
- Renal failure
- Repeated vomiting
- Hypoglycaemia
- Severe anaemia (Hb < 7 g/dL)
- Haemoglobinuria/black urine
- Abnormal bleeding

Malaria rapid diagnostic test

Giemsa stained smears

Thick smears for malaria detection and thin smears for malaria species recognition and quantification. Repeat smears 4-8 times before confirming negative results.

FBC, U&E, LFTs, blood glucose, coagulation screen.

PROPHYLAXIS

There are 3 agents used for chemoprophylaxis for Plasmodium infection

1. Mefloquine weekly
2. Atovaquone-proguanil – Malanil daily
3. Doxycycline daily

Note: Mefloquine is taken weekly while doxycycline and Atovaquone-proguanil are to be taken daily.

Prophylactic agent	Before entering area	In high risk area	After leaving
Mefloquine	1 week before	Weekly	4 Weeks
Atovaquone-proguanil	1-2 days before	Daily	7 days
Doxycycline	1-2 days before	Daily	30 days

Table 1: Comparison of selected malaria prophylactic agents.

1. Mefloquine – Lariam®

- 1 tab (250mg) weekly
- 1 week before
- Weekly in the area
- Weekly for 4 weeks after leaving the area
- Notes
 - May be associated with neuropsychiatric side effects



2. Atovaquone-proguanil – Malarone®

- 1 tab (250/100mg) daily
- 1 to 2 days before
- Daily in area
- For 7 days after return
- Most expensive



MALARONE™
(atovaquone and proguanil HCl)
Tablets

3. Doxycycline

- 1 tab (100mg) daily
- 1 to 2 days before
- Daily in area
- For 4 weeks after return
- Notes
 - Contraindicated in pregnancy and kids < 8 years old



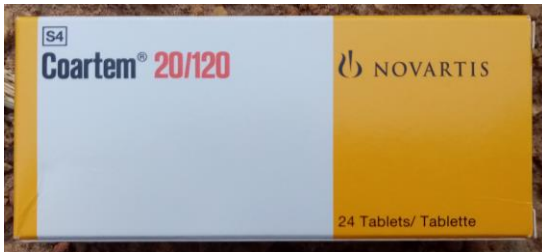
TREATMENT

The treatment of plasmodium infection is divided into the uncomplicated and severe malaria. The STANDARD TREATMENT GUIDELINES AND ESSENTIAL MEDICINES LIST FOR SOUTH AFRICA – HOSPITAL LEVEL ADULTS

2015 Edition advises that Malaria should be treated at primary health care level in areas of South Africa where malaria occurs seasonally. In other areas, patients should be referred to a hospital for treatment. Uncomplicated malaria is treated with oral medication. Complicated malaria is treated with intravenous medication in a high setting.

Uncomplicated:

Coartem has been approved in South Africa as a 6-dose course of treatment administered over only 3 days. Coartem has a remarkable efficacy and safety profile, extremely well tolerated, used for treatment not prophylaxis and for emergency standby treatment



Oral Coartem (Artemether-lumefantrine) regimen

Day 1: 4 tabs STAT, repeat after 8 hours.	= 8 tabs
Day 2: 4 tabs B.D.	= 8 tabs
Day 3: 4 tabs B.D.	= 8 tabs

Weight kg	Tablet Artemether/lumefantrine 20/120 mg	Age months/years
>5–15 kg	1 tablet	6 months–3 years
>15–25 kg	2 tablets	>3–8 years
>25–35 kg	3 tablets	>8–12 years
>35 kg	4 tablets	>12 years and adults

Table 2: Suggested age and weight dosing of Artemether/lumefantrine.

Or use following alternative

Oral Quinine + doxycycline or clindamycin

Quinine 10 mg/kg [max 600 mg] 8 hourly 7/7 P.O.

Doxycycline 200 mg daily 7/7 PO

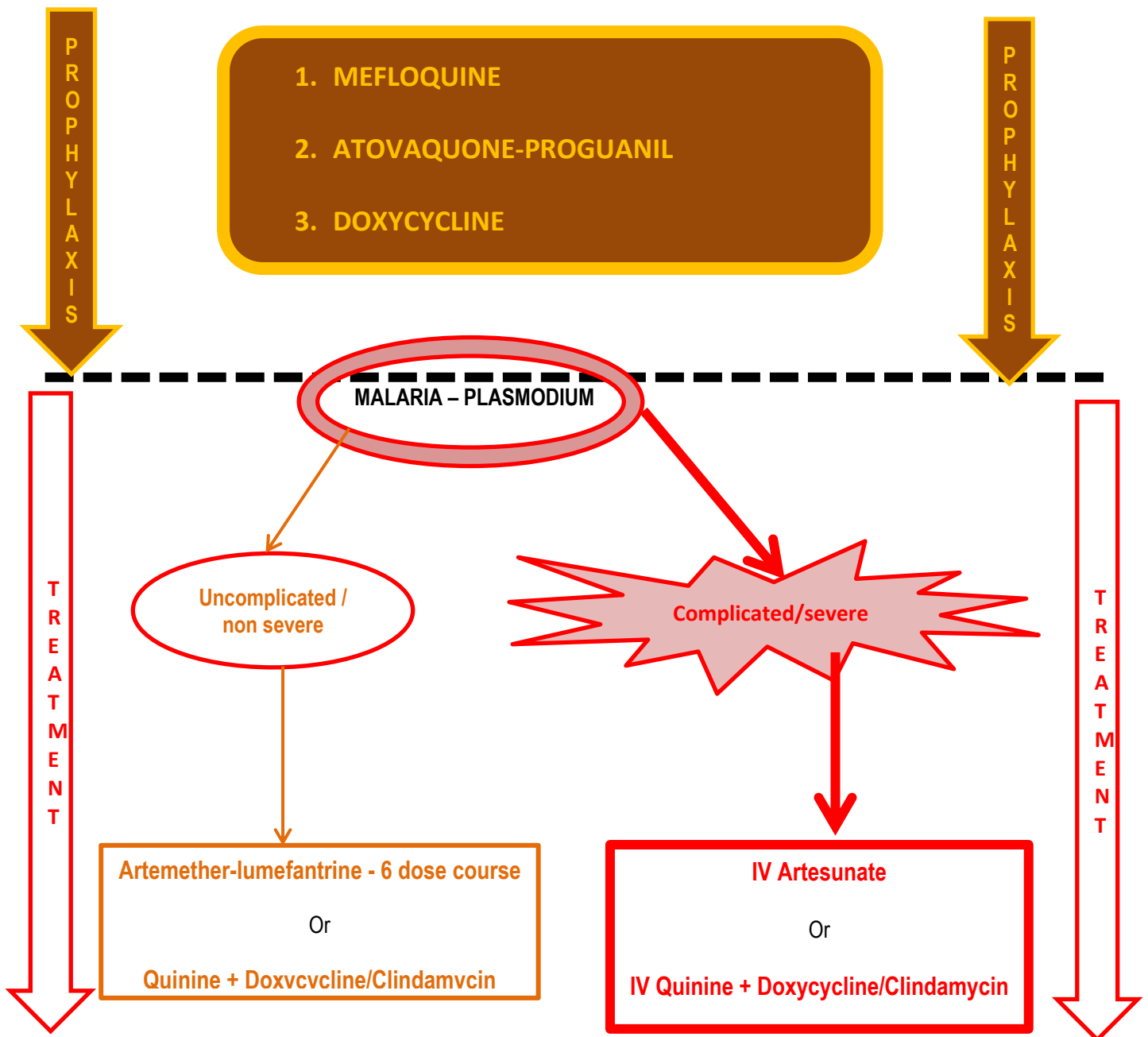
Clindamycin 10 mg/kg bd 7/7

Sever malaria treatment

IV Artesunate + doxycycline or clindamycin

IV Quinine + doxycycline or clindamycin

MALARIA PROPHYLAXIS AND TREATMENT



BIBLIOGRAPHY

1. Kumar P, Clark M. Kumar and Clark's Clinical Medicine. 7th ed. London: Elsevier Limited; 2009. Chapter 4, Infectious diseases, tropical medicine and sexually transmitted infection; p.153-157.
2. Rossiter D, Blockman M, Barnes KI, Cohen K, et al. South African Medicines Formulary. 9th ed. Cape Town: The Division of Clinical Pharmacology, Faculty of Health Sciences University of Cape Town; 2010. P, Antiparasitic Products; p. 500-510.
3. Steyn D. Adult Vaccination [Unpublished Lecture Notes].INM414. Internal Medicine, University of the Free State; lecture - given 2013 Mar 13.
4. Vojvodic M, Young A. 2014 Toronto Notes. 30th ed. Toronto: Toronto Notes for Medical Students Inc; 2014. Chapter 16, Infectious Diseases; p.33.
5. Kayser FH, Bienz KA, Eckert J, Zinkernagel RM. Medical Microbiology. 10th ed. Stuttgart: Thieme; 2005.Chapeter 9, Protozoa; p 476-478.
6. Elliott E. The Apicomplexa. [Unpublished lecture notes]. MJR214. Medical Microbiology, University of the Free State; lecture given - 2010 Apr 09