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WHAT TO DO DURING A POSSIBLE MALARIA ATTACK

Every increase in body temperature (from 38 °C in the armpit) lasting more than 24 hours and occurring during or up to three months after a stay in an area where malaria is endemic - whether accompanied by other signs and symptoms or not - must be considered as a malaria attack until proved otherwise and requires swift medical attention.

Always keep a thermometer on hand and check your body temperature regularly (every eight hours) if you feel unwell, even if you do not think that you have a fever! The first days of a malaria infection can often be relatively mild and can easily be confused with other conditions, but the longer you wait to start the correct treatment, the higher the risk of severe illness, complications and even death. The only way to confirm (or rule out) a malaria diagnosis is by means of a blood test (“thick drop” and “smear” in combination with a rapid test). After you return to Belgium, you should insist on this test being done **urgently** whenever you have a fever (until three months after leaving the malaria zone) and on obtaining the result within a few hours!

The use of any of the options summarised below for emergency treatment for malaria, implemented at your own initiative following your return home, can result in dangerous errors and is absolutely not recommended!

In the case of **warning symptoms** such as **fever lasting longer than three days, dark urine, jaundice, shortness of breath or reduced consciousness, an urgent hospitalisation is indicated.**

The following **treatment schedules** have been selected, because their effectiveness is close to 100 %. Many other schedules are possible, but they are definitely less effective.

SCHEDULE A: Atovaquone/proguanil[®] (first choice)

- contains 2 active substances in one tablet: 250 mg atovaquone + 100 mg proguanil) (costs 43,31 € for a box of 12 tablets).

Children >40 kg and adults should take **four tablets once a day, at the same time of day for three consecutive days. Atovaquone/Proguanil[®] should preferably be taken with some food or with milk. Sometimes the intake of this medicine can cause vomiting**

For children the dose must be adapted:

5-8 kg	2 paediatric tablets/day at once, during 3 successive days
9-10 kg	3 paediatric tablets/day at once, during 3 successive days
11-20 kg	1 tablet for adult/day at once, during 3 successive days
21-30 kg	2 tablets for adult/day at once, during 3 successive days

31-40 kg	3 tablets for adult/day at once, during 3 successive days
> 40 kg	4 tablets for adult/day at once, x 3 days = dose for adult
1 paediatric tablet Atovaquone/Proguanil Junior [®] contains 62,5 mg atovaquone and 25 mg proguanil.	

SCHEDULE B: combinations with artemisinin derivates

-To be used when atovaquone/proguanil is not a good choice

-Very effective medicine which is used in case of non-complicated malaria

- Can be used during pregnancy in second and third trimester; can only be used during first trimester or during lactation when no other alternative is available.

-Before administration, an ECG should be performed because it can prolong QTc

-For this reason it should not be given with other medication that causes prolongation of QTc like antibiotics given to treat travellers' diarrhoea

-Available one of the two following combination drugs with **artemisinin derivative**:

Eurartesim[®] : (contains 2 active ingredients in one tablet: 40 mg of dihydroartemisinin + 320 mg piperaquine; costs +/- 52€ for a box of 12 tablets).

- on an empty stomach

- must be taken as a single dose, at the same time each day, for **three consecutive days**

- **Adults**, depending on the weight:

36-74 kg: 3 tablets of 320 mg/40 mg per day (9 tablets in total)

75 to 100 kg: 4 tablets of 320 mg/40 mg per day (12 tablets in total)

Children and babies:

- 5 to 7 kg : half a tablet of 160 mg/20 mg a day (in total 1,5 tablets)

- 7 to 13 kg : 1 tablet of 160 mg/20 mg a day (in total 3 tablets)

- 13 to 24 kg :1 tablet of 320 mg/40 mg a day (in total 3 tablets)

- 24 to 36 kg : 2 tablets of 320 mg/40 mg a day (in total 6 tablets)

Riamet[®] : (In Africa available as **Co-artem**), contains two active ingredients in one tablet: **artemether** 20 mg + lumefantrine 120 mg); costs +/- 38€ for a box of 24 tablets).

-To be taken with food

-A treatment contains 6 doses spread over 3 days, to be taken at diagnosis, 8 hours later, 24 hours later and then every 12 hours (36, 48 and 60 hours later); the number of tablets contained in 1 dose depends on de body weight:

For adults and children of at least 12 years and 35 kg: 4 tablets for each dose, so in total 24 tablets

For children and babies weighing between 5 and 35 kg:

- Between 5 and 15 kg: 1 tablet for each dose

- Between 15 and 25 kg: 2 tablets for each dose

- Between 25 and 35 kg: 3 tablets for each dose

NB. The medicine **Artemisinin and its derivatives** are currently available in many countries in the Far East and also in several countries in sub-Saharan Africa. Since 2005 the World Health Organisation rejects the use of artemisinin as monotherapy, because of the fear of resistance. Only the combination with another effective malaria treatment is acceptable. (“ACT” = “artemisinin combination therapy”), for example with doxycycline (as with quinine), mefloquine (Lariam[®]), Lumefantrine.

Tea or herb tablets made from the extracts of the Artemisia annua plant are not recommended because of the insignificant, sometimes even absent, effectiveness.

SCHEME C:

Quinine in combination with doxycycline is also very effective, but is not very useful as a “stand-by emergency treatment”.

QUININE (capsules of 500 mg quinine sulphate) or **QUINIMAX[®]** (tablets of 500 mg, not available in Belgium). This means for the average **adult: 500 mg** every 8 hours **for 4 days**. If the fever drops slowly, it is advisable to continue quinine for several more days, 1 capsule every 12 hours. In Southeast Asia and in the Amazon region, one has to take quinine for 7 days.

At the same time, (if retching or vomiting occurs, wait until the third day) start with either:

- **DOXYCYCLINE (VIBRAMYCINE[®], VIBRATAB[®] or DOXYLETS[®], etc.)** 2 tablets of 100 mg (= 3.5 mg per kg) **the first day**, followed by **1 tablet of 100 mg (= 2 mg per kg) per day** during the next **6 days**.
- Or **TETRACYCLINE** 20 mg per kg (maximum **3 x 500 mg per day**) **for 7 days**.

The dosage for **children** above 8 years is adjusted according to body weight (quinine: identical schedule as for adults; 10 mg per kg) and should be administered every 8 hours.

- Quinine sulphate has to be prepared by the pharmacist. If the capsules are kept in a closed brown glass bottle with a desiccant, the expiring date will be after **one year** (in a cardboard box it will expire much earlier).
- When the malaria attack is only treated with quinine (e.g. only with Quinimax[®] injections), there is a small but genuine risk of a later relapse of malaria, since it is not always possible to eliminate all the parasites with this treatment.
- Tetracycline and doxycycline alone are too weak to be used as anti- malaria treatment. Therefore, they should **always** be combined **with quinine or an artemisinin derivative**.
- If the medication is vomited, it is necessary to give quinine by intravenous infusion (drip), in the same dosage, every 8 hours, each drip over 4 hours (this concerns quinine bishydrochloride). As soon as the patient is better, quinine can be given orally, combined with tetracycline or doxycycline.
- If it is not possible to administer an infusion, then quinine can be given by intramuscularly injection (in the thigh muscle), in the same dosage, every 8 hours (= 3 injections per day). (**NEVER ALLOW YOURSELF TO BE INJECTED INTRAVENOUSLY: RISK OF CARDIAC ARREST OR FATAL DROP IN BLOOD PRESSURE**).
- Taking tetracycline and doxycycline can cause hypersensitivity reactions in the skin when exposed to sunlight. Therefore be careful with direct exposure to sunlight.

- Tetracycline and doxycycline are **not** recommended for **children under the age of 8 years** or **during pregnancy** (because of possible discoloration of teeth). When there is no alternative available, **quinine** can be continued during **7 to 10 days** or it can be combined with clindamycine (5 mg/kg 4x per day to 600 mg 3x per day during 5 days).

NB.

- **Halofantrine (HALFAN®): is no longer commercially available in Belgium and is no longer recommended as stand-by treatment for malaria!**
- **Mefloquine (LARIAM®): is no longer used in practice as malaria treatment due to possible side effects.**

The World Health Organisation advises the following dosage for an **adult** who takes Lariam® as emergency treatment on his own initiative: **2 tablets of 250 mg, followed by 2 tablets of 250 mg after 8 hours**. This dosage is lower than the one mentioned in the instructions! It is adjusted because Lariam®. **In our opinion, there are enough reasons not to take Lariam® as self-medication when no adequate medical support is possible.**