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GLOBAL EDUCATION

Treatment of uncomplicated malaria

Prof. François Nosten

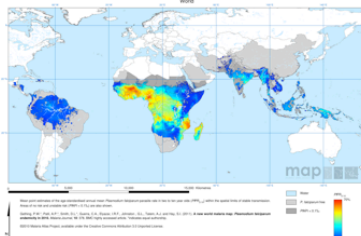
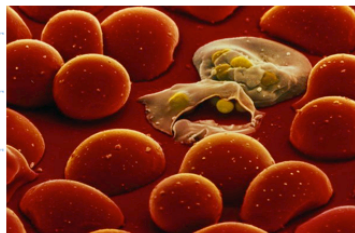
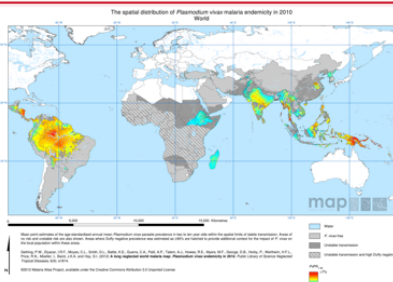
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The treatment of uncomplicated malaria *P.falciparum* and *P.vivax*



Some important points



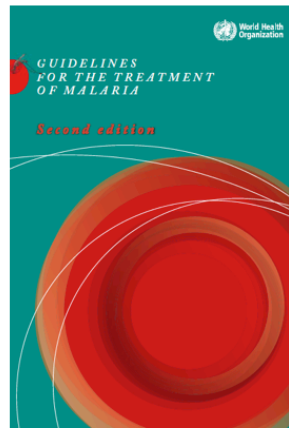
- **The correct approach:**
 - **Early:** within 48 hours of fever onset.
 - **Diagnosis:** confirmed biological diagnosis.
 - **Treatment** with an **Artemisinin based Combination Therapy (ACT).**
- **Aim is to obtain a complete parasitological cure.**
- **Prevent resistance by:**
 - Using drugs in combination.
 - Using quality drugs.
 - Promoting good adherence to treatment and optimum dosing.
 - Using drugs only in patients who need them.
 - Interrupting transmission.



WHO treatment guidelines 2010



- Guidelines are evidence based and revised regularly
- ACTs first line (3 days)
- Use Fixed Combinations
- High parasitological cure (95%)
- Change policy if < 90% cure rate

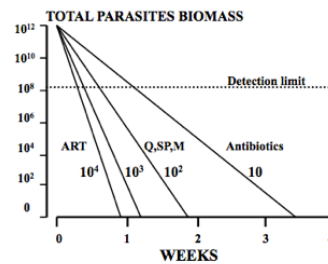


<http://www.who.int/malaria/publications/atoz/9789241547925/en/>

Pharmacokinetics and Pharmacodynamics

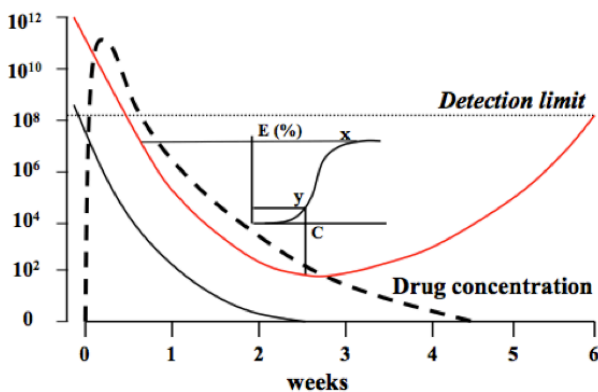


- The dispositions of the drugs are essential determinants of their efficacy.
 - Absorption, elimination
- The pharmacodynamic parameter of interest is the parasite killing rate.
 - PRR_{48} : parasite reduction ratio at 48h (1 cycle)



Adapted from: N. White 1998

Total parasites



ACTs: Three day treatments

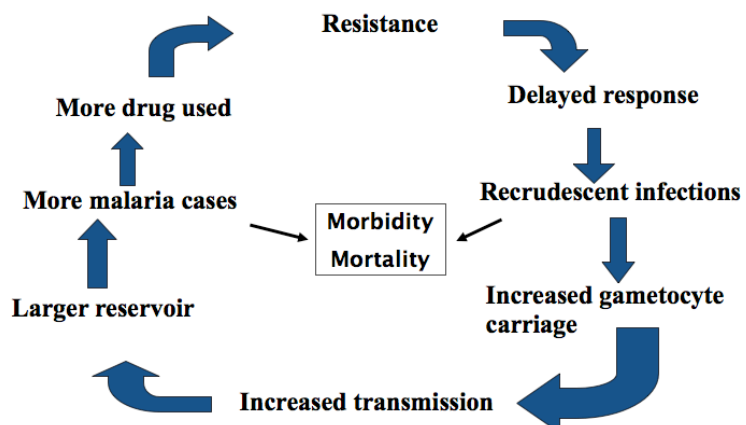
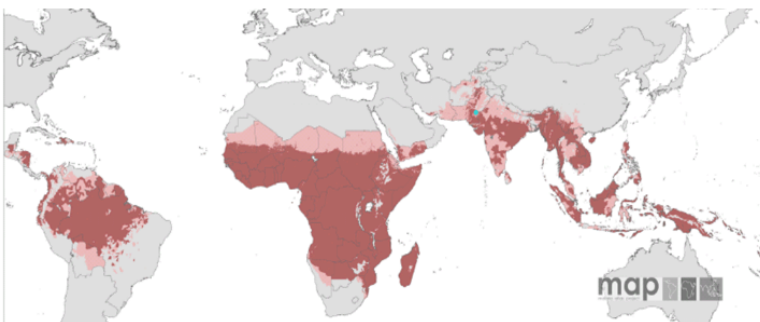


- Mefloquine (25 mg/kg) + artesunate (12 mg/kg): 1 dose a day
- Artemether (10 mg/kg) + lumefantrine (60 mg/kg): 2 doses /d with food
- DHA (6.4 mg/kg) + piperaquine (51 mg/kg): 1 dose per day
- Dosing will need to be adapted to particular patients such as young children and pregnant women.



Primaquine, 0.25 mg/kg single dose to further reduce transmission

Antimalarial drug resistance



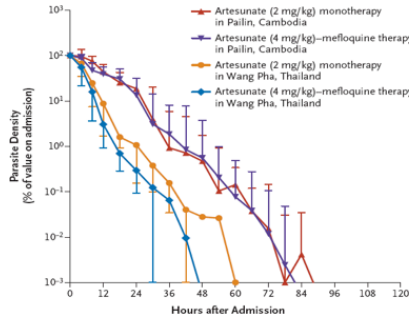
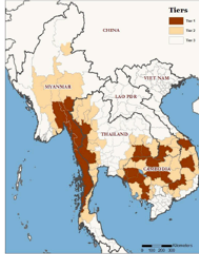
THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Artemisinin Resistance in *Plasmodium falciparum* Malaria

Arjen M. Dondorp, M.D., François Nosten, M.D., Poravuth Yi, M.D., Debashish Das, M.D., Aung Phae Phyo, M.D., Joel Tarning, Ph.D., Khin Maung Lwin, M.D., Frederic Ariey, M.D., Wanunee Hanpithakpong, Ph.D., Sue J. Lee, Ph.D., Pascal Ringwald, M.D., Kamolrat Silamut, Ph.D., Mallika Imwong, Ph.D., Kessinee Chotwanich, Ph.D., Phurath Lim, M.D., Trent Herdman, Ph.D., Sen Sam An, Shunmay Yeung, Ph.D., Pratap Singhavivannan, M.D., Nicholas P.J. Day, D.M., Niklas Lindengardh, Ph.D., Duong Socheat, M.D., and Nicholas J. White, F.R.S.

Four stages of the Greater Mekong subregion (January 2010)



Recommendations for uncomplicated *P.falciparum* malaria



1. Use an ACT (3 day) as first line treatment.
2. Prefer quality (GMP) fixed combinations.
3. Respect contraindications: allergy, pregnancy (1st trimester).
4. Encourage adherence to treatment.
5. For recrudescence infections use:
 - A different ACT
 - Quinine + antibiotic (7 days)
 - Artesunate + antibiotic (7 days)
6. Primaquine: 0.25 mg base/kg single dose



http://www.who.int/malaria/diagnosis_treatment/treatment/who_pq_policy_recommendation/en/

Treatment options for *P.vivax*



- Chloroquine (25 mg base/kg)
- Amodiaquine (30 mg base/kg)
- ACTs
- Primaquine
 - (0.25 to 0.5mg base/kg/d for 14 days)
- Tafenoquine (single dose)
- Requires G6PD testing.



Special groups of patients



- **Infants:**
 - More likely to develop severe infections.
 - Often under-dosed.
- **Pregnant women:**
 - More susceptible to malaria.
 - More likely to develop complications.
 - Detrimental effects on the fetus.
- **Travellers:**
 - Non-immune, at risk of complications because of delayed diagnosis.



Treatment of uncomplicated malaria

