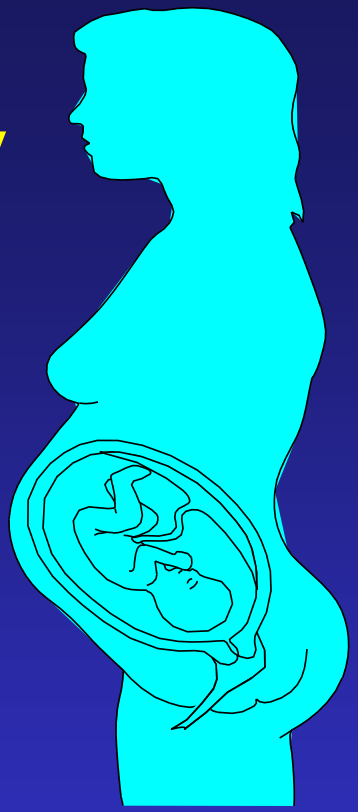
Malaria during Pregnancy Updates and issues surrounding IPTp



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Malaria during pregnancy

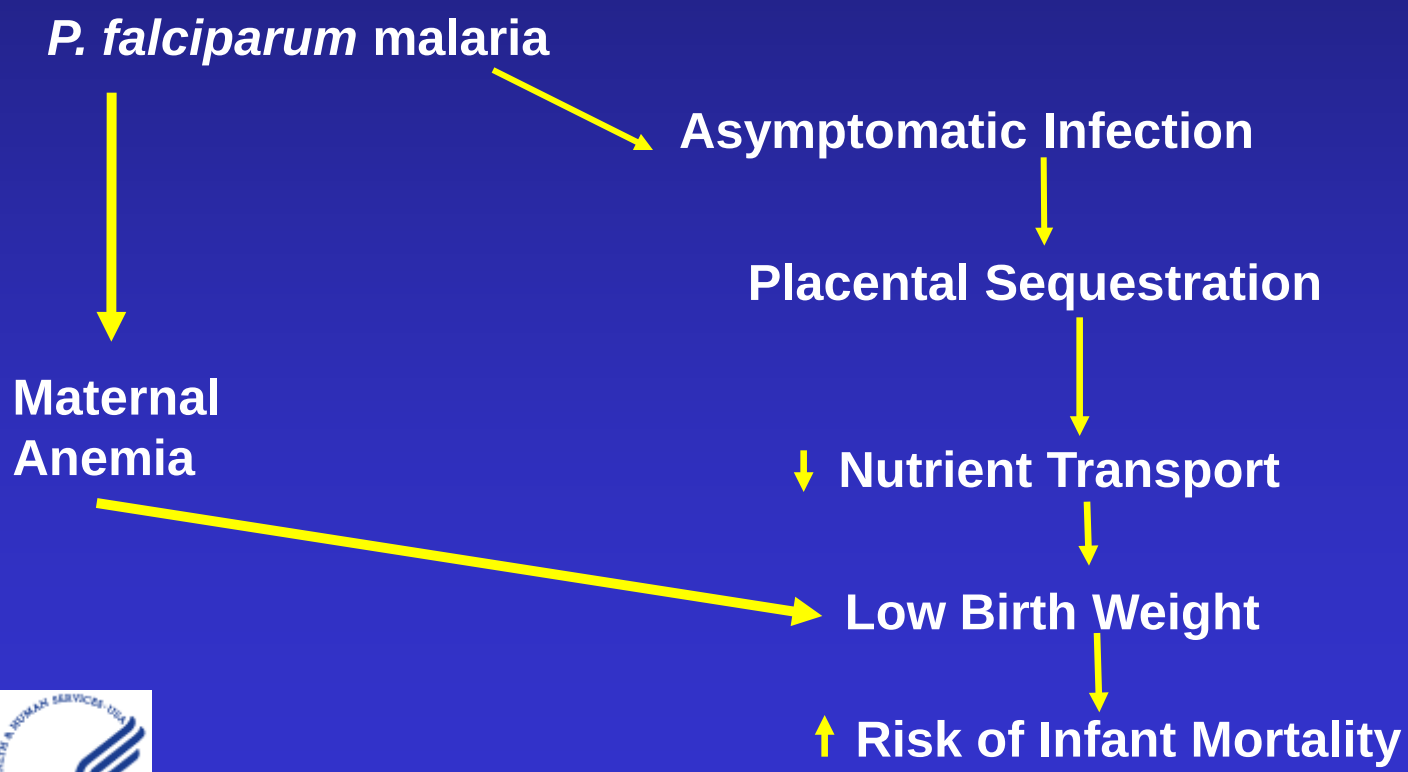
- Approximately 45 million pregnancies occur annually in malarious areas

  ~25 million of those in sub-Saharan Africa
- Perinatal effects depend on intensity of transmission
  - Low and High malaria transmission area

Malaria during pregnancy in high/moderate transmission area Impact of disease

- In sub-Saharan Africa MIP is estimated to account for:
  - 8 – 14% of low birth weight
  - 8 – 36% of preterm delivery
  - 3 – 8% of all infant deaths
  - 2 – 15% of maternal anemia

Malaria during pregnancy high/moderate transmission area



WHO recommendation for control of MIP in high/moderate malaria transmission area

- Insecticide-Treated Nets
- Effective Case Management
- Intermittent Preventive Treatment (IPT)
- Anemia prevention

Intermittent preventive treatment (IPTp) with SP: program effectiveness evaluations

Site	Study design	Anemia	Placental parasitemia	Birth weight
Malawi, Verhoeff 1998	Observational: Delivering women: comparing 2 or 3 doses of SP vs. 1 dose	Mean Hb increased (multigrav. only)	NS	LBW decreased, Mean BW increased
Malawi, Rogerson, 2000	Observational: Delivering women; number of doses of IPTp/SP vs. outcome measures	Mean Hb increased, anemia decreased (2-dose only	Reduced (1 and 2 doses)	LBW decreased, Mean BW increased
Kenya, Van Eijk, 2004	Observational: Delivering women; number of doses of IPTp/SP vs. outcome measures	NA	Reduced	LBW decreased, Mean BW increased
Burkina Faso, Sirima 2006	Program evaluation: ANC/DU; number of doses of IPTp/SP vs. outcome measures	NS	Reduced (2 and 3 doses)	LBW decreased (3 doses)

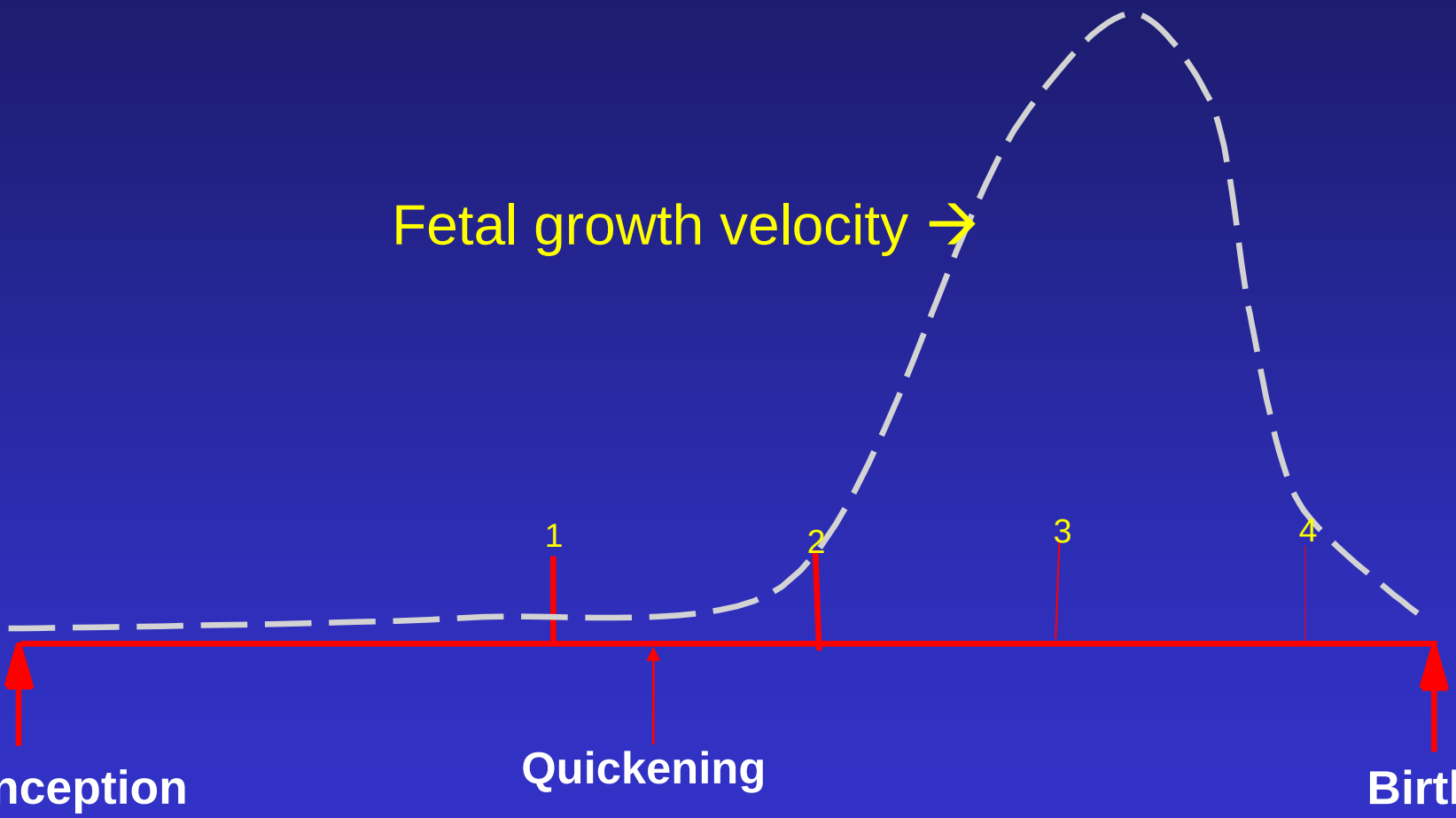
SP = sulfadoxine-pyrimethamine; Hb Hemoglobin; LBW Low birth weight

NS = not statistically significant ($p > 0.05$)

Program collaboration with ANC

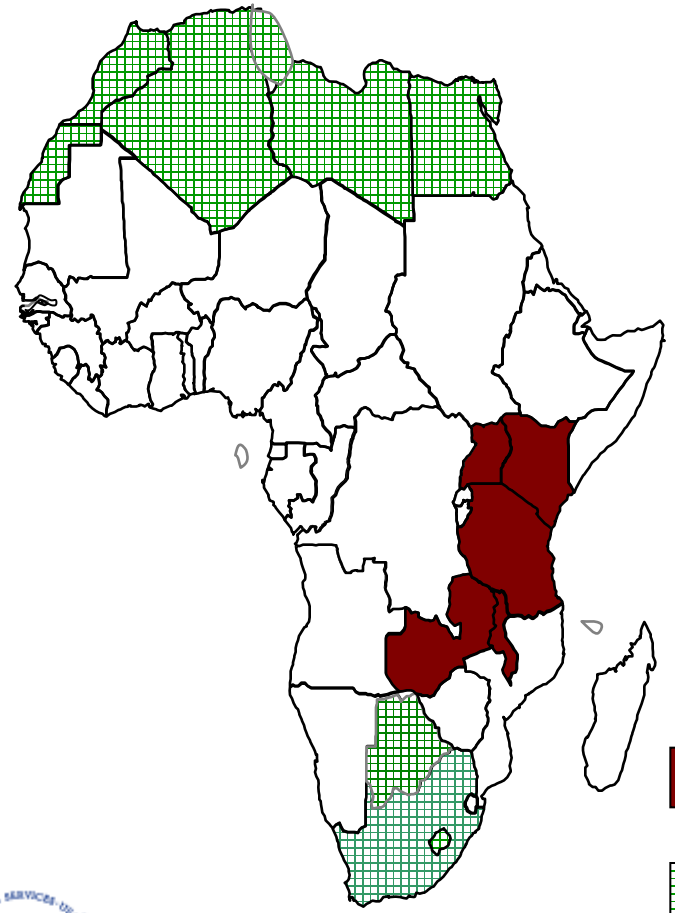
- Schedule of 4 ANC visits for normal pregnancy
- First visit before quickening where LLIN is given
- Three visits after quickening and IPTp given at each scheduled ANC (but not more frequently than monthly interval)

Intermittent preventive treatment

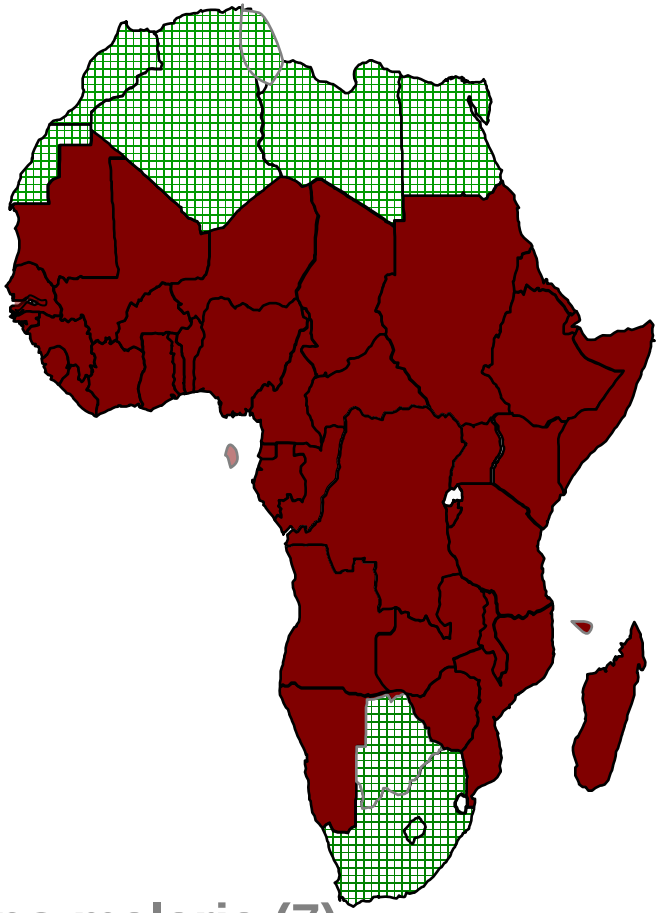


Status of IPTp policy and implementation in Africa

2001



2008



IPTp policy

Very little or no malaria (7)

No IPT policy

CDC

SAFER·HEALTHIER·PEOPLE

Increasing SP resistance

- Meta analysis (ter Kuile JAMA 2007)
  - Shows IPTp-SP remains efficacious even with in-vivo SP resistance in <5yo of up to 50%
  - So WHO expert technical committee recommends that in countries that are already implementing IPTp-SP, continue to do so and evaluate its effectiveness (generic protocol for measuring IPTp-effectiveness currently being finalized)

- Monitoring of SP resistance in pregnant women:
  - Therapeutic efficacy
  - Preventive efficacy

- Alternate antimalarial drug (even ACTs) as option for IPT
  - Good safety profile
  - Efficacy
  - Program feasibility

ISTp???

IPTp with SP: summary of evidence and benefits

- 2 doses of IPT with SP is associated with:
  - Reduction in 3rd trimester maternal anemia
  - Reduction in placental malaria parasitemia
  - Reduction in low birth weight
- At least 2 doses required for optimal benefit
- Regimen is safe and well tolerated
- Not recommended in HIV+ women receiving daily CTX

HIV Among Pregnant Women in sub-Sahara Africa

- Estimated 27 million people in Africa living with HIV/AIDS
- 55% of sub-Sahara Africa adult HIV infection in reproductive-age women
- Estimated increase in MIP attributable to HIV is 5.5% and 18.8% for populations with HIV prevalence of 10% and 40%

Effect of HIV on Malaria

Kisumu, Kenya, 1996-1999

N=2539	Prevalence		RR (95% CI)
HIV (24.9%)	HIV+	HIV-	
Peripheral malaria	29.1	17.1	1.70 (1.52-1.90)
Placental malaria	30.7	18.1	1.70 (1.22-2.36)
Clinical malaria	9.4	3.1	3.01 (2.36-3.85)
Hospitalization (all causes)	4.3	2.7	1.59 (1.16-2.20)

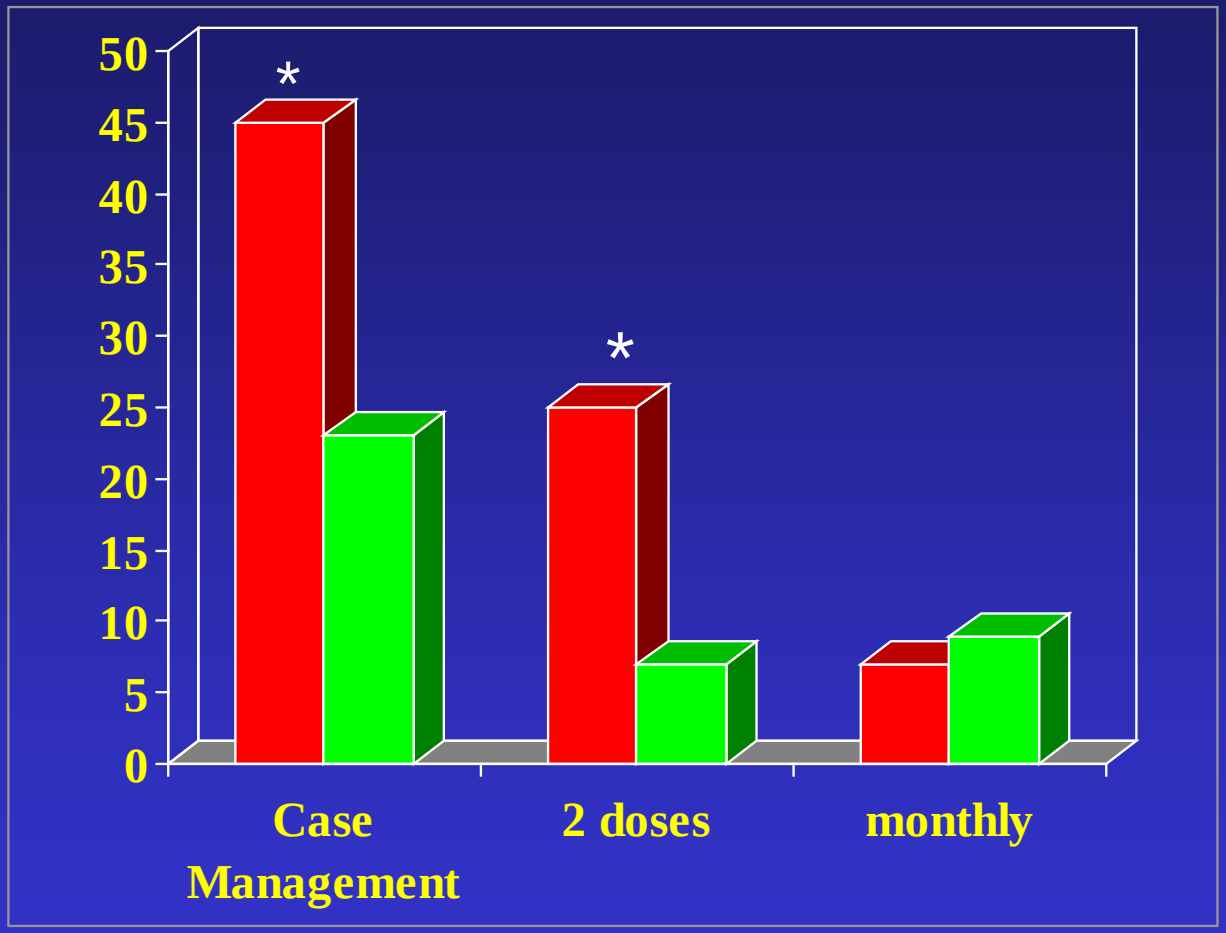
van Ejik et al. AIDS, 2003

Effect of HIV on Malaria

Characteristics of HIV+ and HIV- pregnant women in Malawi	HIV+ (n=152)	HIV- (n=2,601)	P-value
Peripheral parasitemia at enrollment	54.4%	41.7%	<0.01
Peripheral parasitemia at delivery	34.7%	18.2%	<0.01
Placental malaria infection	38.2%	22.5%	<0.01
Reported fever at enrollment	36.8%	21.0%	<0.01
Geometric mean parasite density/µl (primigravida)	4,390	1,375	<0.01

Steketee R.W et al. 1996, HIV and Malaria in Pregnancy, AJTMH 55 suppl 55

Effect of IPT on placental parasitemia, by HIV status



* p<0.01

HIV infection, Pregnancy and Malaria -program overlap-

- Intervention overlaps
  - Diagnosis
  - Treatments: complexity and costs of Tx, resistance; potential for drug interactions; systems of pharmacovigilance
  - OI prophylaxis with CTX (an antimalarial)
  - HIV-infected persons need malaria prevention

HIV infection, Pregnancy and Malaria -conclusion-

- Coordinated action by Malaria, HIV and Reproductive Health programs
  - To strengthen antenatal and delivery care services:
    - ITNs & IPT for malaria: VCT & PMTCT
    - Laboratory support
    - Prompt treatment with highly effective antimalarial drugs to HIV-infected persons with malaria

- Questions