A and two failed for indicator B (one failed for both). Decision Rules were established only for process (ownership) indicators. Other projects may reduce sample size to 19 per municipality instead of 19 per census tract. A survey using 30 clusters with 10 households per cluster would have result in about a third of the number visited using the LQAS methodology described above. Such cluster sampling would not have identified failing census tracts for later quality control follow-up. Choosing the LQAS sample size is a compromise between the precision required to identify specific problem areas, the resources available to carry out the survey, and the larger costs of "mop up" that would be required in a larger area (necessary with smaller sample) as opposed to a smaller area (necessary with a larger sample)

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SPONTANEOUS POSTPARTUM CLEARANCE OF *PLASMODIUM FALCIPARUM* IN BENINESE WOMEN

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The effects and consequences of gestational malaria are well documented, still little is known about malaria in the immediate postpartum. A single study published in the 1980s demonstrated that women who were parasitaemic at delivery cleared their parasitaemia spontaneously within 48 hours postpartum. To confirm this phenomenon we investigated the spontaneous early postpartum evolution of malaria infections at delivery in Beninese women. Women were part of a large clinical trial which aimed to compare the efficacy of sulfadoxine-pyrimethamine and mefloquine for intermittent preventive treatment. Women who were infected with *Plasmodium falciparum* at delivery had a control of their parasitaemia in the early postpartum, as soon as the infection was detected. No antimalarial drugs were given unless women were symptomatic. Giemsa-stained thick blood smears were used to estimate parasite densities. Smears were recorded as negative if no parasite was detected after the examination of 200 microscope fields. 1601 women were recruited for the trial. Of them, 1346 (84%) had a peripheral thick blood smear at delivery. Thirty five (2.5%) women were infected with *P. falciparum* at delivery. For 17 (49%) of them, follow-up was not informative as they had received an antimalarial drug before being controlled. Eighteen women (51%) were not treated and they cleared their parasitaemia spontaneously. In these women, parasite clearance occurred within 5 days postpartum (2 days in median). At delivery, their median parasite density was 1659/mm^3 (range [93-85143]). Seventy-two percent (n=13) of them had a placental malaria infection simultaneously. They were primigravid in 50% of cases (versus 25% for the whole population of the trial). In conclusion, all women infected with *P. falciparum* at delivery who did not receive an antimalarial drug cleared their parasitaemia spontaneously within 5 days after delivery. This result supports the idea that, being a privileged site for the sequestration and multiplication of parasites, the placenta facilitates the persistence of parasitaemia during pregnancy, and its elimination induces a rapid clearance of parasites postpartum.

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SINGLE-NUCLEOTIDE POLYMORPHISM IN *PLASMODIUM VIVAX* POPULATIONS FROM RURAL AMAZONIA

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Plasmodium vivax is the most prevalent human malaria parasite in Brazil. Understanding the genetic structure of *P. vivax* is essential to predict how fast phenotypes of interest, such as drug resistance, originate and spread in populations. Few genome markers are, however, available for the study of this species. Here we examined the levels of single-nucleotide polymorphisms (SNPs) diversity in 54 field isolates of *P. vivax,* collected in a well-characterized area in rural Brazilian Amazonia from March 2004 to May 2005. Two sets of SNPs were used: (a) 119 SNPs across 100 kb of chromosome 8 of *P. vivax* and (b) 11 SNPs at 2 loci (*pvmdr-1* and *pvcrt-o*) putatively associated with drug resistance in *P. vivax*. SNP typing was carried out by a competitive allele-specific polymerase chain reaction. Of the 119 SNPs analyzed, 34 (28.5%) were excluded because of poor or unspecific amplification. Of the 85 SNPs successfully typed, 39 were intergenic and 46 were located in open reading frames (ORFs). Of the 46 SNPs located in ORFs, 36 were synonymous and 10 were non-synonymous substitutions. Most SNPs (51) were monomorphic, and the probability of being monomorphic was significantly higher among SNPs located in ORFs (72%), than among those found in intergenic regions (46.1%) (P = 0.021, Fisher exact test). In the 54 parasite samples, we first analyzed the set of 85 SNPs at chromosome 8, revealing 40 different haplotypes among isolates. Only 4 haplotypes were shared by more than 1 isolate, and in 3 more instances of identical haplotypes were collected from the same subject with consecutive *P. vivax* infections, 2-3 months apart. These results suggest *P. vivax* relapses with genetically identical parasites. The analysis of SNPs in drug resistance associated genes *pvcrt-o* and *pvmdr1*, revealed that all 5 *pvcrt-o* SNPs tested were monomorphic (only wild-type found) in our samples population. The mutation Y976F of *pvmdr1*, previously described as associated with chloroquine (CQ) resistance, was found 3 of 48 samples analyzed and co-occurred with the mutation F1076L. Although *P. vivax* resistance to CQ remains uncharacterized in this area, we are currently evaluating the efficacy of CQ-primaquine regimen in local population. Further analyses of these results, combined with genotyping of additional parasites collected in the same area between August 2005 and August 2007, are expected to provide new insights into the temporal dynamics of haplotype diversity in *P. vivax*.

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THE NET EFFECT OF NUMBERS: FACTORS ASSOCIATED WITH USE OF INSECTICIDE-TREATED NETS IN KENYA AFTER MASS DISTRIBUTION

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Mass distribution of large numbers of insecticide-treated nets (ITNs) is an important strategy to decrease the burden of malaria in endemic countries. In 2006, Kenya distributed 3.4 million ITNs to children <5 years in two mass campaigns. Our objective was to determine current ownership and use of ITNs in malarious areas of Kenya, with a focus on the factors associated with utilization. We conducted a nationwide Malaria Indicator Survey in June-July, 2007, during peak malaria transmission season using a personal digital assistant (PDA) based-questionnaire. Using probability proportional to size sampling, we selected 200 villages from 63 malarious districts in seven provinces. After mapping each village using Global Positioning System-equipped PDAs, we randomly selected 36 households per village. Univariate and multivariate logistic regression analyses were used to identify predictors for ITN use. Nationally, 62.5% of households (HH) (N=6854) owned one or more nets and 48.9% one or more ITNs, an increase from 21.8 and 5.9% pre-campaign, respectively. The night before the survey, 39.7% of children <5 (n=5864) and 41.7% of pregnant women (n=524) had slept under an ITN. Several demographic characteristics were independently associated with ITN use in HHs that own at least one ITN; however, in both univariate and multivariate analyses the strongest predictors of ITN use were age <5 years compared to those over 40 years (adjusted OR=1.64; 95% CI 1.40-1.91) and increasing number of ITNs in a household (adjusted OR= 2.16; 95% CI 2.00-2.33). Use for all persons, children <5 years, and pregnant women increased as the number of ITNs in the HH increased. Use for all persons living in a HH with only one ITN was 40.1%, two ITNs 61.1%, and three

Briand Valérie, Bottero J., Massougbodji A., Cot Michel. (2008)

Spontaneous postpartum clearance of plasmodium falciparum in beninese women

In : 57th American Society of Tropical Medicine and Hygiene annual meeting. The American Journal of Tropical Medicine and Hygiene, 79 (6), 62- art. 210

ASTMH Annual Meeting, 57., La Nouvelle Orléans (USA), 2008/12/07-11

ISSN 0002-9637