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A NEWER WAY TO CATCH THE AGE-OLD BUG

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Worldwide, an estimated 350-500 million clinical cases and approximately 1 million deaths caused by malaria occur annually, primarily among children aged <5 years living in sub-Saharan Africa (*1*). The majority of the malaria cases diagnosed in US are imported from malaria-endemic regions. A Giemsa-stained blood film is usually the first test for malaria detection but diagnostic accuracy depends on film quality and expertise of laboratory personnel. Effective treatment of malaria requires precise laboratory diagnosis of the four different *Plasmodium* species (*P. falciparum*, *P vivax*, *P ovale* and *P malariae*). A nineteen year old male had recently emigrated from Afghanistan came to the Emergency department with complaints of fever and chills associated with fatigue and generalized myalgia. Physical examination was remarkable for a temperature of 103F and pallor. Initial labs showed hemoglobin of 11.5 g/dL, white blood cell count of 3.4 x 109/L and platelets were 44 x 109/L. Total Bilirubin was 4.1 mg/dL and rest of the blood chemistry was normal. Initial Malaria smear was reported positive for *P Ovale* by both the Hospital Microbiology Lab and State Public Health Laboratory. However, Polymerase chain reaction (PCR) testing of the blood sample later identified the species as *P Vivax*. He was treated with the appropriate dose of Chloroquine followed by primaquine to eliminate latent hypnozoites. The patient responded well to the treatment and was discharged home. In conclusion, successful treatment of Malaria necessitates accurate diagnosis of the offending *Plasmodium* species. Cure of *P vivax* and *P ovale* mandates treatment to eradicate liver hypnozoites where as *P falciparum* infection can result in multiorgan failure requiring parenteral treatment. Microscopy which is quick and cheap can sometimes misidentify the *Plasmodium* species. PCR is a useful complement to microscopy in order to reliably identify the different *Plasmodium* species especially in situations where there is low level of parasitaemia, mixed infections and when there is lack of trained laboratory personnel.

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QUALITY OF ARTEMISININ-BASED COMBINATION THERAPY PRESCRIPTION AND DISPENSING IN BAMAKO, MALI, WEST AFRICA

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Increasing resistance of malaria parasites to chloroquine has pushed many African countries to adopt artemisinin-based combination therapy (ACT) for the treatment of uncomplicated malaria. Correct use of the ACT strategy is imperative to guarantee the effectiveness of treatment and avoid the spread resistance to ACT. We have conducted this study in order to assess the quality of the prescription and the dispensation of ACTs in randomly selected health centers across Bamako. Our study was a cross-sectional study conducted between April and July of 2008. An interview, via questioner, was administered to patients presenting at the clinic for malaria and to physicians, pharmacists, and other health workers who give prescriptions of antimalarials or work in the pharmacy. In total, 52 prescribers, 72 dispensers and 92 patients were included. Our study has shown that the ACT constituted the primary malaria treatment of choice among prescribers (75%) and dispensers (78.8%). 59.7% of dispensers and 73.1% of prescribers were reported that they were aware of the ACT recommendations by the National Malaria Program (NMCP). The majority of the prescribers (71.15%) and of the dispensers (84.72%) followed the ACT recommendations of the NMCP. However, 57.61% of the prescriptions against malaria did not contain ACT. Many patients (41.30%) did not understand the dosing of the prescribed ACTs which may increase likelihood of emergence of resistance to ACT. Almost all of the prescription containing ACT was a generic drug (97.72%; n = 44). The prices of the ACTs varied between 140 and 3.380 FCFA with an average of 750 FCFA (1 dollar = 500 FCFA). According to prescribers and dispensers, ACT constitutes their first choice (75% of prescribers and 78.8% of the dispensers). However, 57.61% of the prescriptions against malaria did not contain any ACTs. The majority of prescribers (71.15%) and dispensers (84.72%) were favorable to the NMCP's recommendations of malaria treatment in Mali.

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LOW GAMETOCYTE DENSITIES RESTRICT THE DEVELOPMENT OF *PLASMODIUM FALCIPARUM* WITHIN *ANOPHELES GAMBIAE* WITH IMPLICATIONS FOR THE HUMAN RESERVOIR OF INFECTION AND PARASITE ELIMINATION

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Density-dependent processes regulating the development of the malaria parasite within the mosquito may influence parasite transmission and could have important implications for the control and the elimination of the parasite. Data from mosquito feeding experiments conducted on naturally found parasite-vector combinations from across Africa were collated to generate a dataset of more than 12,000 mosquitoes which had been fed on blood from a total of 327 different human patients. Gametocytemia was estimated by either microscopy or quantitative nucleic acid sequence-based amplification. Mosquito infectivity was assessed by both the presence of viable oocysts and the number of oocysts identified in infected mosquitoes. A range of mathematical techniques was used to show that the relationship between gametocytemia and oocyst presence and density was best described by a sigmoidal curve, indicating that sporogonic development is restricted at both low and high gametocyte densities. Gametocytemia surveys conducted in Burkina Faso are used to illustrate how these density-dependent regulatory processes will influence the contribution of children to overall transmission. The implications of the results for prospects of malaria elimination are discussed.

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IMPACT OF INFRASTRUCTURE DEVELOPMENT SUPPORT ON CLINICAL TRIALS CAPACITY DEVELOPMENT IN AFRICA: INDEPTH-NETWORK-MALARIA CLINICAL TRIALS ALLIANCE

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The Malaria Clinical Trials Alliance (MCTA), a programme of INDEPTH-Network, was launched in 2006 with two broad objectives: to facilitate the timely development of a network of centres in Africa with the capacity to conduct clinical trials of malaria vaccines and drugs under conditions of Good Clinical Practice (GCP); and to support, strengthen and mentor the centres to facilitate their progression towards self-sustaining research centres. Sixteen research centres or sites in 10 African malaria-endemic countries that were already working with the Malaria Vaccine Initiative or the Medicines for Malaria Venture were selected. Assessment visits based on a standard questionnaire were conducted for all the sites to assess their strengths and requirements for research capacity strengthening, in order to conduct a phase lll malaria vaccine and drug trials. Assessments were made of the needs for infrastructure strengthening and short-term

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