The World Health Organization estimate that about 90% of all malaria deaths in the world occur in Sub-Saharan Africa where between 1.0 and 2.7 million people, mostly children under the age of 5 years die each year. Treatment for malaria is currently complicated by the development of parasite resistance to commonly used antimalarial drugs largely due to lack of compliance. Home management of diseases is a common practice in most African settings and a big proportion of patients administer selfmedication prior to seeking treatment when the illness presents with fever, fatigue, general malaise and flu-like symptoms. The practice may lead to extensive use and misuse of antimalarial drugs, which coupled with inconsistency in application of treatment guidelines, may further aggravate the spread of antimalarial drug resistance. This indiscriminate and inappropriate drug use has contributed to the emergence and spread of resistant parasites.

This cross-sectional study was designed to determine and compare drug resistance, prior drug use, diagnostic and prescribing practices in 5 health facilities in a malaria endemic Bungoma District, Kenya. The study also determined the relationship between antimalarial drugs utilization and use of thermometer in malaria diagnosis, and the prevalence of antimalarial drug resistance. A randomized non-blinded in-vivo P. falciparum resistance monitoring study was performed on 586 under 5-year-old children. Drug history and treatment prescribing habits were studied on 2039 patients presenting at Out-Patient Department/Maternal Child Health clinics. Demographic, clinical and laboratory investigation data were collected for each patient and recorded in case record forms. Data processing and analysis was done using SPSS, by descriptive statistics, for baseline values etc., Chi-Square test with Yates' correction was for comparisons of categorical variables/proportions and the Student t-test test for comparison of means between drug arms and populations. All tests were done 2-tailed and were tested at the 0.05 significance level.

The results obtained in the analysis after exclusion of patients lost to follow-up showed a significant variation in the efficacy of SP and AQ between study populations. In the AQ treatment arm, 93.3 % to 100% of the cases treated were fully cured while only 45.5% to 80% of patients in SP responded to treatment in the populations studied. Adequate Clinical Response (ACR) varied between treatment drugs and facilities. About 90 ACR (range; 88.4-100) was obtained in the AQ treatment arm and less than 90% in the SP arm (range; 75 - 89). High parasitological treatment failures (> 25%) were seen in areas with higher prevalence of prior home treatment, although there was no direct relationship. Non-use of thermometer as a diagnostic tool was corresponding to a high prevalence of antimalarial drug resistance. AQ was faster in fever clearance compared to SP. There was persistent gametocytaemia in patients treated with SP and no significant differences in clinical scores and recovery from malarial anaemia. However, there was a significant gain in HB between baseline and day 14 in both treatment arms.

These results indicate an unacceptably high resistance to both first and second-line antimalarials, and if confirmed by further national-wide research findings form the basis o regulate antimalarial drug use at the community level and to immediately change antimalarial treatment policy in Kenya.