Cambodia is moving towards malaria elimination. There is a need to strengthen active detection and response systems to all malaria cases in elimination settings. Although several pilot focused screening and treatment attempts were conducted during the World Health Organization’s containment project, there is still a need to better understand the mechanisms by which reactive case detection strategies contribute to reducing and sustaining transmission below the critical level in these settings. Based on series data from Cambodia Malaria Surveys conducted in 2004, 2007 and 2010, out of the total number of households found with at least one case of asymptomatic parasitaemia (not with fever), 16% had other individuals infected in the same household. This suggests that screening households for asymptomatic parasitaemia where a case of febrile malaria is reported may help avert episodes of malaria and reduce transmission.

In Pallin (Cambodia), a fully functional malaria alert system (Day O SMS system) is currently in place where village malaria workers (VMWs) test, treat, and track malaria cases at the village level.

**Aim**

The long-term overarching goal of the project is to generate the necessary information to develop an intervention tool consisting of screening households with a malaria case and eliminating the asymptomatic reservoir.

**Objective**

To understand the feasibility and potential impact of screening for asymptomatic malaria in households where a febrile case of malaria has been reported (index household).

**Methods**

**Study Site**

The study site includes all 114 malaria endemic villages within Pallin Province in Cambodia (see map), and is being conducted from July 2013–June 2014. Green dots indicate geographical coordinates where a case investigation has taken place.

**Sampling**

All households with malaria infected patients identified through VMWs and at Pallin health facilities throughout the study period are eligible for the study. Control households will be sampled by taking the five nearest houses every 15th index case and the 10 nearest houses every 30th index case. In addition, every month five additional households within the study site will be chosen at random and used as control households.

**Data Collection**

VMWs residing in intervention villages are screening all household members of the index cases. Screening of malaria parasitaemia by VMWs is being done by RDT and patients testing positive are treated according to the national guidelines. In addition, each participant tested is interviewed using a structured case investigation form. This includes basic demographic characteristics, history of travel/residence outside of the area (to identify possible origin of infection), type of work, etc. Each household is also being geo-referenced to identify potential geographical clustering of cases.

**Data Analysis**

Data is being entered and verified using EpiData® software, and is being analysed using Stata® version 12. P-values < 0.05 are being used to indicate statistically significant differences.

**Ethical Review**

Ethical clearance was received from the Cambodian National Ethics Committee for Health Research.

**Results**

From July 2013 to January 2014, a total of 1416 individuals within 250 index households and 560 individuals within 110 control households have been screened for malaria parasites. We have received RDT results for all 1976 individuals and microscopy results for 1089 individuals, however PCR results are still outstanding (See Table 1). Preliminary RDT results show 90.8% of index cases were positive for Pf, 7.2% for P, and 2% Miled. Preliminary microscopy results show the risk of being positive is 2.6 times greater in Households (HH) with an index case as compared to those HHs without an index case.

**Challenges**

- Cases are usually detected in very remote areas which makes it very difficult for the investigation team to access, especially in the rainy season. Our team routinely has to walk several kilometers to reach study HHs.
- Re-active screening consumes significant time and human resources. We found that a team of 5-6 people can complete approximately 2 HHs per day (with an average of 6 members in each HH).
- Need for a sensitive molecular tool for field use that would allow for a more accurate diagnosis and prompt treatment. Potential use of other diagnostic techniques such as LAMP are being explore in this project.

**Discussion and Conclusions**

This study will serve as the basis to evaluate a novel strategy to reduce the malaria reservoir and prevent malaria episodes among individuals harboring malaria parasites. Results will provide evidence on whether Active Case Detection and Treatment (ADAT) activities are operationally feasible and effective in an area where pre-elimination conditions already exist and a malaria alert system is fully functional.

This information can be a valuable addition to the strategy to eliminate *P. falciparum* & *P. vivax* infections by 2015 and 2020, respectively.

**Keywords:** malaria elimination, re-active surveillance, Western Cambodia

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**References**


**Keywords:** malaria elimination, re-active surveillance, Western Cambodia