

Malaria and schistosomiasis surveillance prior to the implementation of a large scale irrigation scheme reveals potential for future transmission

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The Malawi government is undertaking large scale irrigation project sponsored by the World Bank which will transform the lower Shire Valley in the southern part of the country. The irrigation scheme will convert over 40,000 hectares into agricultural land for small holder farmers in an area with large scale inter-annual variations in rainfall and unpredictable harvests. Malaria and Schistosomiasis are endemic in the area. Therefore, the current study aims to ascertain current levels of disease endemicity and transmission potential as a baseline to be compared with transmission levels during and after implementation.

Malaria vectors are collected with CDC light traps and protopack aspirations (indoor and outdoor) in 90 households across three villages in the irrigation catchment area. Schistosomiasis snail hosts are collected through the inspection of water habitats, dams, pond, rivers and irrigation canals. *Cercaria* shedding of schistosomes in infected snails are observed using a microscope and schistosomes identified using a qPCR tool. Malaria and schistosomiasis disease testing for cases and incidences are being monitored through school surveys on a biannual basis targeting 1000 pupils. These tests are being done using RDTs for malaria and urine and blood tests for schistosomiasis.

The preliminary data show malaria prevalence rates of 9.7% [95% CI 8.80%-10.59%], and 34.8% [95% CI 33.40%-36.29%] for urogenital schistosomiasis and 1.8% [95% CI 1.43%-2.24%] intestinal schistosomiasis. Key schistosome snails including *Biomphalaria pfeifferi* (the intermediate host for intestinal schistosomiasis) have been identified in the region. Entomological surveillance shows that *An. gambiae* s.l. dominates specimens caught with the presence of potential zoophilic and alternative malaria vector species (e.g. *An. pretoriensis*).

The implementation of the large scale irrigation project in the lower Shire has the potential to escalate the already existing disease burden. There is urgent need to intensify surveillance of these diseases and promote control and prevention strategies that will enhance the economic gains from the irrigation scheme while minimizing the public health impacts that compromise the attainment of Malawi's Government vision of food self-sufficiency.