Targeted vector control interventions have been applied since 2008 without appreciable impact on disease burden. The timing and targeting of vector control measures are not guided by an informed entomological baseline. This study was aimed at providing entomological information on the seasonal abundance, spatial distribution and *Plasmodium falciparum* sporozoite infections in the local malaria vector species in order to guide implementation of vector control in the district.

Methods Entomological studies were conducted intermittently spanning the rainy, cold-dry, and hot-dry seasons from 2015–2016. Mosquitoes were collected by CDC light traps, identified to species both morphologically and by PCR techniques. Circumsporozoite ELISA assay was used to detect *P. falciparum* in mosquito salivary glands.

Results A total of 5437 female *Anopheles funestus* and *An. gambiae* and over 6000 culicines, mostly *Mansonia* mosquitoes were collected. The peak number of the *An. funestus* from all sites occurred in July. Overall *P. falciparum* infection rates in *An. funestus* were Kilwa island 2.7% (4/146), Mainland 2.5% (3/122), Chisenga island 0.4% (1/220), Isokwe 5.9% (2/34) and in *An. leesoni* from Kilwa 33% (1/3). The highest number of *An. gambiae* was collected from Kilwa and none was found infected with *P. falciparum* regardless of collection site.

Conclusions The annual IRS conducted between September and December may be ineffective in controlling malaria as this misses the vector peak abundance and peak transmission season. Two rounds of IRS covering more areas would be needed to control the two vector species with different population peak seasons and malaria transmission.

PA-040 SEASONAL ABUNDANCE AND SPOROZOITE RATES IN MALARIA VECTORS IN NCHELENGE INCLUDING ISLANDS OF LAKE MWERU AN AREA WITH A HIGH BURDEN OF MALARIA IN NORTHERN ZAMBIA

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Background Nchelenge district is a holoendemic malaria transmission zone in northern Zambia. The district occurs in a region characterised by a mix of water, marshes, islands and lagoons presenting a uniquely suitable ecology for mosquitoes. Annual indoor residual spraying (IRS) campaigns are carried out between September and December synchronised with other regions in the country with different environmental conditions.

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