

Controlling vectors and engaging communities to prevent dengue in Cambodia

Assessing whether school children and community members can be engaged to reduce mosquito numbers and dengue incidence in schools and households

Background

Dengue is the most rapidly spreading mosquito-borne viral disease in the world and is a key public health issue in Cambodia.^[1] While there remain challenges to accurate diagnosis and reporting, estimates suggest that up to three in every 1,000 people are infected with dengue each year. Associated costs to the country have been estimated at US\$14.4 million (£11.1 million) annually, with the economic burden often falling hardest on poorer families.^[2]

Dengue transmission is particularly prevalent in urban and semi-rural settings, but can be found in most areas of Cambodia. Dengue carrying mosquitoes, *Aedes aegypti*, mainly breed in standing water around human dwellings. Many Cambodians lack access to improved sources of drinking water so tend to store water in large containers, which are key breeding sites for *Aedes* larvae. High levels of resistance to chemical larvicides among *A. aegypti* mosquitoes precludes their usage as a dengue control strategy.

Country

Cambodia

Donor

World Health Organization's Tropical Diseases Research Unit

Length of project

April 2018 – April 2020

Partners

Bournemouth University

Cambodian Ministry of Education, Youth and Sport

Cambodian Ministry of Health

Global Health Asia Institute at the University of Mahidol

Institute of Tropical Medicine Antwerp

National Center for Parasitology, Entomology and Malaria Control

World Health Organization's Tropical Diseases Research Unit

As yet, no treatment or vaccine for dengue is available for mass distribution. Therefore, preventing and limiting transmission requires a multi-faceted approach that combines effective vector control tools, behaviour change communication interventions, and entomological monitoring.^[3] Better still if it is a sustainable, biological control method, as with this project.

Project outline and objectives

In a collaborative partnership, two Cambodian ministries (the Ministry of Health and Ministry of Education, Youth and Sport) will come together, with Malaria Consortium and partners, to implement a cross-sectoral dengue prevention project. This approach aims to reduce mosquito breeding sites and limit the spread of dengue by trialling a socio-ecological vector control strategy that combines evidence-based biophysical (i.e. guppy fish distribution for larval source control, and the introduction of low-cost mosquito traps) with social (i.e. behaviour change communication and participatory dengue surveillance activities) interventions.

The project will take place in schools and households in rural Prey Chhor, a district in Kampong Cham province with one of the highest incidence rates for dengue in the country.

Activities

Malaria Consortium will work in partnership to:

- bring together experts from a range of disciplines to deliver an integrated socio-ecological systems approach for dengue prevention and control
- scale up existing community-driven biological vector control interventions in schools and surrounding villages, establishing nurseries of larvae-eating guppy fish to reduce the number of mosquitoes, as well as widely distribute locally-made inexpensive mosquito traps

- support a community organisation to produce affordable mosquito oviposition traps (which have the potential to reduce adult vector populations and lower disease burden) for use in schools and households
- deliver context-specific health education classes and community information campaigns (focusing on techniques for dengue prevention and control) to strengthen communities' understanding of the disease and to promote related behaviour change
- undertake participatory epidemiological mapping; local communities will work with researchers to record dengue incidence
- monitor and evaluate each of the interventions via baseline and endline surveys, focus group discussions and in-depth interviews conducted at several points during the project
- package and translate the results into relevant, contextualised outputs to promote best practice and influence local and national level policy change.

Outcomes

This project will not only reveal the acceptability, sustainability and impact of a multi-sectoral and interdisciplinary systems approach to dengue prevention and control, but will also build understanding around how such an approach can be implemented, coordinated and managed.

If successful, the project will expand the evidence base for effective dengue prevention and control, and be used to encourage political support for future interventions of a similar nature. Its findings will be disseminated through local and national stakeholder fora and events.

References

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3. World Health Organization. Research priorities for the environment, agriculture and infectious diseases of poverty: Technical Report of the TDR Thematic Reference Group on Environment, Agriculture and Infectious Diseases of Poverty. Geneva: World Health Organization; 2013. WHO Technical Report Series; no 976. Available at: http://apps.who.int/iris/bitstream/10665/78129/1/WHO_TRS_976_eng.pdf.

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Cover image: Guppy fish, integrated vector management intervention, Cambodia

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