

Control of mosquito vectors of malaria may be enhanced by a new method of biocontrol

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Biopesticides containing a fungus that is pathogenic to mosquitoes may be an effective means of reducing malaria transmission, particularly if used in combination with insecticide-treated bednets (ITNs), according to a modelling study conducted by Dr. Penelope Hancock from Imperial College London. Results of the study show that incorporating this novel vector control technique into existing vector management programmes may substantially reduce malaria transmission rates and help manage insecticide resistance. Details are published October 2 in the open-access journal *PLoS Computational Biology*.

Using data from laboratory and field studies, the model estimates the impact of different vector control interventions on the mosquito life cycle and the average numbers of [mosquitoes](#) that survive to transmit malaria. The results indicate that in order to successfully control [malaria transmission](#), single intervention strategies must be widely used across the community, whether the strategy involves fungal biopesticides or ITNs. If used in combination, the model shows that the interventions can interact to produce greater-than-expected reductions in malaria transmission rates

This outcome is achieved because the presence of ITNs can increase mosquito exposure to biopesticide-sprayed surfaces. Efficient combinations of interventions may allow each to be used at lower levels, and slow the development of resistance in the mosquito population. The results suggest that combining fungal biopesticides and ITNs may be an efficient and effective strategy for malaria vector control.

Malaria is a major contributor to the global disease burden, and disproportionately affects low income countries with climates suitable for transmission. Mosquito control relies heavily on chemical insecticides, but growing problems of insecticide resistance have led to increased interest in novel methods, including biocontrol. The Global Strategy for Integrated Vector Management, developed by the World Health Organisation, encourages the use of multiple [vector control](#) technologies in combination. This research has used computer modelling to identify ways in which interventions can be combined to maximise the impact on malaria transmission, given the resources available.

More information: Hancock PA (2009) Combining Fungal Biopesticides and Insecticide-Treated Bednets to Enhance Malaria Control. PLoS Comput Biol 5(10): e1000525. [doi:10.1371/journal.pcbi.1000525](https://doi.org/10.1371/journal.pcbi.1000525)

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