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Insecticide resistance monitoring and evaluation in disease transmitting mosquitoes

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Abstract:

The emergence of mosquito species resistant to insecticides widely used in malaria and dengue control has the potential to impact severely on the control of these disease vectors. A limited number of resistance mechanisms, including modification of the insecticides' target site, or changes in rates of metabolism involving esterases, glutathione S-transferases or monooxygenases operate in all insects. The potential for resistance to develop in vectors has been apparent since the 1950's, but the scale of the problem has been poorly documented. Few new public health insecticides have been developed for control of disease vectors for the past three decades and without good stewardship these insecticides will cease to be effective for vector control. This may have a dramatic effect in disease endemic countries, as few affordable alternative insecticides can rapidly be made available for vector control. Here we review our ability to optimally measure and manage insecticide resistance in field populations of insects, which is crucial to the long term sustainability of insecticide-based disease control campaigns.

Keywords:

insecticide resistance, monitoring and evaluation, decision support systems

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