

## **Insecticide resistance in Mexican malaria vectors and strategies for its management**

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### **Abstract**

Several malaria foci still persist in Mexico despite the success of malaria control in the rest of the country. This could be affected by a number of factors including insecticide resistance. A survey to diagnose the status of resistance in Mexican malaria vectors shows particular scenarios for each focus. Although Mexican malaria control programme relies primarily on other measures than IRS, it is important to explore the feasibility of adopting a resistance management programme in case it would be required. This knowledge would also be very useful for other countries where malaria control depends mostly in chemical vector control.

During six years, different combinations of IRS (indoor residual spray) for malaria vector control had been implemented in eight groups of three villages each, in Southern Mexico: DDT alone, pyrethroid (PYR) alone, annual rotation of unrelated insecticides (organophosphorus, [OP], PYR, carbamate [CAR], PYR, OP, PYR) and mosaic treatments (OP and Pyr). Under rotation or mosaic treatment, DDT resistance did not revert significantly, as already observed in other countries such as Sri Lanka. Under continuous use of pyrethroid, pyrethroid resistance gradually increased during the first four years then remained stable (around 20 to 30 % survival at diagnostic concentration) for the two subsequent years. In the rotation as well as mosaic schemes, pyrethroid and OP resistance initially developed at low level and remained stable (about 20% survival with pyrethroids and 10 % with OP). No significant carbamate resistance was observed in the rotation scheme. These results suggest that rotation or mosaic could be implemented in order to prevent the development of insecticide resistance or to extend useful life span of insecticides, considering local vector conditions and particular factors that could affect resistance development (i. e. genetic, ecological, operational).