Insecticide Resistance Management (IRM) and Integrated Vector Management (IVM)

Insecticide Resistance Management (IRM)

Mosquitoes are extremely adaptable with mutations in the organism causing rapid genetic variations. Combined with the survival advantage that insecticide resistance will incur in the face of strong selection pressure, resistant phenotypes within a population can appear and proliferate quickly.

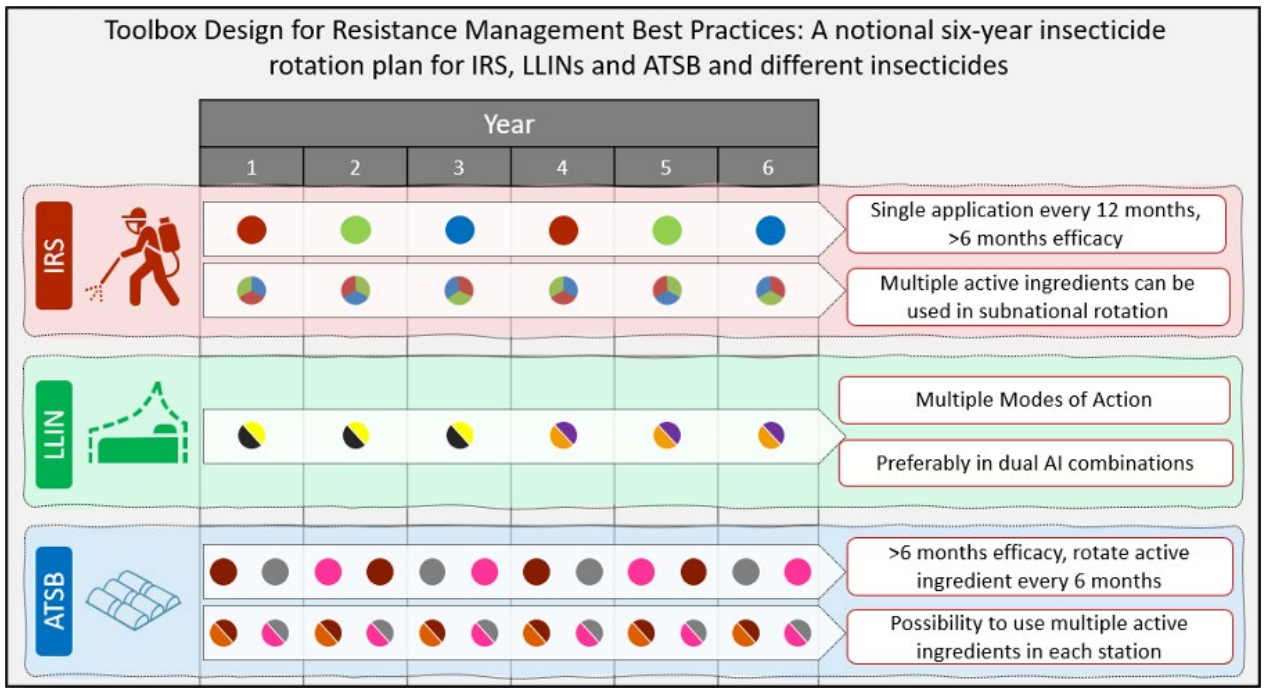
Managing insecticide resistance is complex, in part because resistance takes a variety of forms, therefore local strategies must be tailored to the type of resistance present. The two main mechanisms—metabolic resistance and target-site resistance—include multiple forms, which are of varying importance for different classes of insecticide.

A further complication is 'cross-resistance' between insecticides that have the same Mode of Action (MoA) for killing mosquitoes. For example, vectors that are resistant to pyrethroids will probably also be resistant to DDT. Cross-resistance restricts the choice of alternative insecticide available for resistance management.

Resistance can be delayed by regularly changing insecticides and developing strategies which rotate or mix different insecticides with different MoA. Guidance from the World Health Organization (WHO) is represented in the Global Plan for Insecticide Resistance Management in Malaria Vectors (GPRIM) 2012, and is based on widely accepted principles of IRM; to limit exposure to individual classes of chemistry and ensure products are used at a fully effective dose.

IVCC's objective is to ensure that new partner products are efficacious against insecticide resistant mosquitoes and are designed, and used, to stay effective through elimination to eradication.

Toolbox Design Principles: IRM



Integrated Vector Management (IVM)

IVM is a rational decision-making process to optimise the use of resources for vector control. The aim of the IVM approach is to contribute to the achievement of the global targets set for vector-borne disease control, by making vector control more efficient, cost effective, ecologically sound and sustainable.

IVM strategies are geographically tailored by definition and depend on the availability and quality of product economic data, local vector knowledge and evidence. Therefore, vector surveillance information, as well as data on the cost effectiveness of the interventions and their underlying parameters, are key for locally-tailored IVM decision-making. If malaria eradication efforts are to succeed in the face of rising insecticide resistance, the full potential of vector control must be realised through a re-invigorated vision for IVM; a vision based on addressing systemic challenges, enhancing innovation and driving cross-sector and cross-industry collaboration.