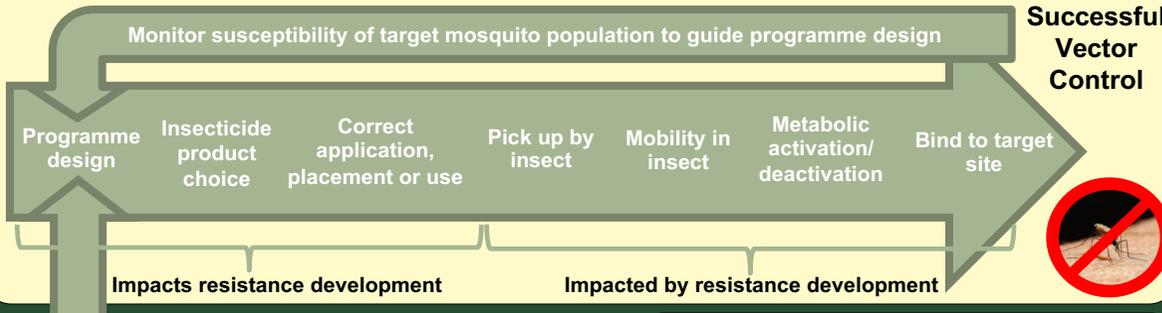


Insecticides have been extensively used since the 1940s to control the mosquito vectors of disease and have been a vital component in the fight against malaria. However, insecticide resistance has developed and is widespread in populations of the major mosquito vector species. As insecticide resistance continues to develop and spread, there is a real danger that these valuable tools will be lost.



Insecticide resistance impacts Vector Control programmes here

Path of a mosquito adulticide from decision to implement a programme to successful vector control



Plan Insecticide Resistance Management here

IRAC defines resistance as “the selection of a heritable characteristic in an insect population that results in the repeated failure of an insecticide product to provide the intended level of control when used as recommended.”

IRAC strongly promotes Insecticide Resistance Management, IRM, as an integral part of all insect control programmes.

The aim of an IRM programme is “to take actions that reduce an insect population to an acceptable level, in such a way as to maintain the long-term effectiveness of the control interventions employed”. Activities that select insects carrying genes conferring reduced susceptibility to a given insecticide MoA group, should therefore be minimised.

IRAC
Insecticide Resistance Action Committee
Mode of Action Classification

In the majority of cases, insecticide resistance develops against all members of a class of insecticide that share a common mode of action (MoA). It is therefore useful to talk about classes, or groups, of insecticide rather than individual insecticidal products. IRAC has worked extensively with industry and non-industry experts to classify all insecticides into a comprehensive MoA Classification Scheme. This groups all insecticides with a MoA, linked to a common target site, into numbered groups. The IRAC MoA classification is regularly updated and can be found at www.irc-online.org and is available as a poster, booklet and app.

Insecticide Resistance Management

- Plan: IRM should be considered an integral part of any vector control programme, and should be a prerequisite for programme funding
- Monitor: The susceptibility status of the target mosquito population should be monitored during the planning phase to guide choice of intervention. Monitoring should be continued to identify changes in susceptibility profile
- Rotation: Where possible, guided by susceptibility monitoring data, plan to rotate insecticides by MoA group, either temporally or spatially. In the absence of susceptibility data, the rotation of products between IRAC MoA classes will reduce selection pressure for resistance development. Include mosquito larvicides with alternative MoA where appropriate
- To reduce resistance selection pressure from sub-lethal doses:
 - Use WHO PQ listed products that conform to specification throughout programme cycle
 - Ensure all spray applicators and LN distributors are fully trained and follow product labels



Conclusion

Insecticide Resistance Management must be an integral part of all vector control programmes. Using insecticides in such a way that their effectiveness is maintained, is a stewardship responsibility of the commercial companies that market them. It is also a stewardship duty on those who design, fund and implement vector control programmes.

Further information see the IRAC publication: Prevention and management of insecticide resistance in vectors of public health importance www.irc-online.org

