



The Resistant Mosquito

Video Transcript

Mosquito control tools to reduce malaria

FREDROS: Congratulations! You have reached the end of this course. Thank you for your participation and comments – we really enjoyed your discussions! In this course, you explored insecticide resistance and the impact it can have on our ability to control mosquitoes and prevent malaria.

KEZIAH: At the end of this course, it has become clear why we need to continue working against insecticide resistance. Malaria reduction over the last 20 years has been very successful. If we are to maintain and build on these gains and want to meet our ultimate goal of eliminating malaria, we will need all our mosquito control tools working and in good condition. We will need to develop new ones, too.

KEZIAH: Currently, the use of insecticides to control the *Anopheles* mosquitoes is the most effective tool we have to prevent malaria. However, they need to be used carefully so that we can extract the most value from them, now and in the future.

FREDROS: One of the key themes on this journey has been the need to think holistically about mosquito vector control. Using insecticides and managing insecticide resistance always needs to happen in the context of an integrated vector management approach. All activities that reduce the number of Anopheline mosquitoes, or reduce the interaction of the mosquitoes and people, can help reduce malaria. Many may also help to reduce the selection pressure for insecticide resistance development.

KEZIAH: We have seen that we need to be proactive and perhaps think more in terms of 'insecticide susceptibility maintenance', rather than waiting until we need to 'manage' insecticide resistance. This may have some upfront costs and present challenges, but the human and financial costs of losing our ability to control the mosquitoes would be so much greater.

FREDROS: What does "being proactive" look like? It means monitoring the susceptibility status of the mosquito populations, rotating insecticide mode of action classes through time and space, and using mixtures of insecticide mode of action classes where appropriate. It also means taking other measures to minimise the mosquito population and separating them from human population. We need to look at the wider environment, to minimise mosquito numbers and their non-vector control exposure to insecticides. Agriculture, gardening, water, waste management, and so on, all have a part to play.



KEZIAH: We are reaching an exciting time in vector control, with a number of new insecticide-based interventions being developed. We need to plan now to have the insecticide resistance management programmes in place so that they can remain effective for as long as possible.

FREDROS: None of this is really new. The World Health Organization provides guidance on the best practice in vector control, and the global plan for insecticide resistance management in malaria vectors sets out the theory of insecticide resistance management. Use these resources to guide vector control programmes, but remember that insecticide resistance management is not an activity for somebody else. Everyone plays an important role, from those who design, manage and fund vector control programmes, to those who implement them on the ground and those who live in places like Nsuhya; from those who develop new insecticide-based interventions, to those who evaluate and model their effectiveness and impact.

KEZIAH: At the beginning of our journey, we set out our objectives: One, we would understand what insecticide resistance is, how it develops in a mosquito population, and what its impact is on our ability to control mosquitoes. And two, we would explore what we can do on a practical level to prevent or delay this, and to minimise its impact through applied insecticide resistance management.

FREDROS: We hope we have met these objectives, as they will help us on our journey to make malaria a disease of the past.