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Mathematics of an epidemiology-genetics model for assessing the role of insecticides resistance on malaria transmission dynamics.

The widespread use of indoors residual spraying (IRS) and insecticides-treated bednets (ITNs) has led to a dramatic reduction of malaria burden in endemic areas. Unfortunately, such usage has also resulted in the challenging problem associated with the evolution of insecticide resistance in the mosquito population in those areas. Thus, it is imperative to design malaria control strategies, based on using these (IRS- and ITNs-based) interventions, that reduce malaria burden while effectively managing insecticide resistance in the mosquito population. This talk is based on using a mathematical model, which couples malaria epidemiology with mosquito population genetics, to explore control scenarios. (Received September 09, 2019)