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Mathematical Assessment of the Role of Insecticide Resistance on Malaria 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 (with most of the gains attributed to the use of bednets). 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 (insecticides-based) interventions, that reduce malaria burden while effectively managing insecticide resistance in the mosquito population. This talk is based on using a new mathematical model for assessing the population-level impact of wide-scale use of currently-available bednets on the evolution of insecticide resistance and malaria burden in an endemic setting.