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# A MATHEMATICAL MODEL FOR MALARIA TRANSMISSION WITH ASYMPTOMATIC CARRIERS AND TWO AGE GROUPS IN THE HUMAN POPULATION

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A conceptual mathematical model of malaria transmission will be presented. Among the key epidemiological features of this model, two-age-classes (child and adult) and asymptomatic carriers have been included. The extra mortality of mosquitoes due to the use of long-lasting treated mosquito nets (LLINs) and Indoor Residual Spraying (IRS) has been included too. By taking advantage of the natural double time scale of the parasite and the human populations, it has been possible to provide interesting threshold results. In particular it has been shown that key parameters can be identified such that below a threshold level, built on these parameters, the epidemic tends to extinction, while above another threshold level it tends to a nontrivial endemic state, for which an interval estimate has been provided. Numerical simulations confirm the analytical results. Possible control strategies will be additionally discussed.

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