

Mathematical Modeling on Malaria Epidemics and Control

Namyong Lee¹

1) *Department of Mathematics, Minnesota State University, Mankato, 56001 MN, U.S.A.*

Corresponding Author : Namyong Lee, nlee@mnsu.edu

ABSTRACT

Malaria is caused by parasites transmitted by mosquitoes and it occurs in nearly 100 countries worldwide, exacting a huge toll on human health and imposing a heavy social and economic burden in developing countries, particularly in Sub-Saharan Africa and South Asia. In this paper, we introduce recent international efforts of combined interventions to control and elimination of the disease. Based on these international efforts, compartmental deterministic models are proposed to evaluate the effectiveness of these controls. Standard mathematical analysis, such as basic reproduction number estimation, evaluating the disease free equilibrium, and bifurcation analysis are presented along with computer simulations. We also address challenges and knowledge gaps in modeling malaria epidemics and control.

REFERENCES

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