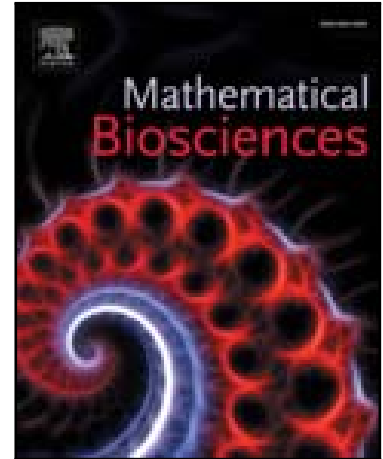


## Accepted Manuscript

Medical and entomological malarial interventions, a comparison and synergy of two control measures using a Ross/Macdonald model variant and openmalaria simulation

R.C. Elliott, D.L. Smith, D. Echodu

PII: S0025-5564(17)30341-3  
DOI: [10.1016/j.mbs.2018.04.005](https://doi.org/10.1016/j.mbs.2018.04.005)  
Reference: MBS 8067



To appear in: *Mathematical Biosciences*

Received date: 20 June 2017  
Revised date: 4 December 2017  
Accepted date: 10 April 2018

Please cite this article as: R.C. Elliott, D.L. Smith, D. Echodu, Medical and entomological malarial interventions, a comparison and synergy of two control measures using a Ross/Macdonald model variant and openmalaria simulation, *Mathematical Biosciences* (2018), doi: [10.1016/j.mbs.2018.04.005](https://doi.org/10.1016/j.mbs.2018.04.005)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Highlights**

- An adaptation of the classical Ross-Macdonald model for vector disease transmission to incorporate time-dependent medical and entomological control measures.
- Modeling both mass drug administration and indoor residual spraying campaigns, the synchronous deployment of both yields a synergy where the impact of a joint intervention exceeds that of isolated campaigns.
- Openmalaria simulations, separately run, indicate comparable intervention impacts to the Ross/Macdonald model variant.
- The vector reservoir of parasitemia is found to be labile, and this dictates the impacts of the medical and entomological interventions.
- A scaling-law level of analysis is performed that estimates the rebound of infections in a community after interventions expire, and not only do higher transmission environments bounce back to prevalent infections faster, communities with stronger interventions are shown to have a slower relapse to parasitemia.

Download English Version:

<https://daneshyari.com/en/article/8877036>

Download Persian Version:

<https://daneshyari.com/article/8877036>

[Daneshyari.com](https://daneshyari.com)