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**Jemal S Mohammed-Awel\*** (j MohammedAwel@valdosta.edu), **C. N. Ngonghala**, **S. Y. Del Valle** and **R. Zhao**. *Quantifying the impact of decay in bed-net efficacy on malaria transmission.*

Insecticide-treated nets (ITNs) are at the forefront of malaria control programs. The potential impact of ITNs on reducing malaria transmission is limited due to inconsistent or improper use, as well as decay in effectiveness. We develop a mathematical model for malaria spread that captures the decrease in ITN effectiveness. We perform uncertainty and sensitivity analyses to identify and rank parameters that play a critical role in malaria transmission. These analyses show that the basic reproduction number  $R_0$ , and the infectious human population are most sensitive to bed-net coverage and the biting rate of mosquitoes. We consider the case in which ITN efficacy is constant over time as well as the case in which ITN efficacy decays over time. (Received December 27, 2014)