1133-92-202 **Jemal Mohammed-Awel*** (jmohammedawel@valdosta.edu), 1500 North Patterson Street, Valdosta, GA 31698, and **Ruijun Zhao**, **Eric Numfor** and **Suzanne Lenhart**. *Management Strategies in a Malaria Model Combining Human and Transmission-Blocking Vaccines.*

We propose a new mathematical model studying control strategies of malaria transmission. The control is a combination of human and transmission-blocking vaccines and vector control (larvacide). When the disease induced death rate is large enough, we show the existence of a backward bifurcation analytically if vaccination control is not used, and numerically if vaccination is used. The basic reproduction number is a decreasing function of the vaccination controls as well as the vector control parameters, which means that any effort on these controls will reduce the burden of the disease. Numerical simulation suggests that the combination of the vaccinations and vector control may help to eradicate the disease. We investigate optimal strategies using the vaccinations and vector controls to gain qualitative understanding on how the combinations of these controls should be used to reduce disease prevalence in malaria endemic setting. Our results show that the combination of the two vaccination controls integrated with vector control has the highest impact on reducing the number of infected humans and mosquitoes. (Received July 25, 2017)