

1096-VG-2698

Kamal Kevin Barley* (kindleye@asu.edu), 2430 S. Mill Ave. Apt. 207, Tempe, AZ 85282.

Risk factors in the spread of Visceral Leishmaniasis in two highly endemic but ecologically different regions. Preliminary report.

Visceral Leishmaniasis (VL) has been on the rise in the two highest prevalent regions: India and Sudan. Similar hosts and parasite characteristics are observed in these two countries but variance in estimates of epidemiological quantities are different. WHO aims to eliminate the disease by 2020, however, various unknown risk factors and undetected high incidence of asymptomatic cases may pose a barrier in achieving the target for the two countries. A vector-host epidemic model, accounting for asymptomatic and treated individuals, is developed to compare and contrast the mechanisms that contribute to the level of risk posed for VL for the two nations. The analysis of the model is uniquely determined by the basic reproductive number, \mathcal{R}_0 , measuring the transmission potential of the Leishmania parasite. Various public health department reports and data sets, including data from the literature, were thoroughly reviewed to obtain estimates of demographical and epidemiological parameters related to the two populations. Using these estimates we conducted uncertainty and sensitivity analyses to assess the most influential risk factors that contribute to the high endemic levels of VL observed in Sudan and India. (Received September 18, 2013)