

1067-92-2264

Boloye Gomero* (bgomero@utk.edu), 104 Aconda Court, 1534 Cumberland Ave., Knoxville, TN 37996. *Sensitivity Analysis Of a Cholera Epidemic Model*. Preliminary report.

Cholera is a water-borne acute diarrheal disease caused by infection of the human intestines by the bacterium *Vibrio cholerae*. The disease can be transmitted either directly by human-to-human contact (fecal-oral) or indirectly via environment-to-human contact (food and water-borne). Cause of death is mainly dehydration and in severe cases, without treatment, death may occur within hours of infection. Preventive measures include improved sanitation and water supply and more recently, oral vaccines.

Our preliminary study uses optimal control theory, parameter sensitivity analysis and numerical simulations to investigate the disease dynamics, thereby, providing a frame work for designing cost-effective control strategies.

Sensitivity Analysis is used to estimate the degree of confidence in our parameter estimates. The goal is to identify parameter values that are most influential in controlling disease dynamics. A Latin Hypercube Sampling (LHS) scheme is implemented and the LHS procedure assumes that the sampling executed for each parameter is independent.

The collaborators on this work include Peng Zhong, Dr. Renee Fister, Dr. Holly Gaff, Dr. Elsa Schaefer, and Dr. Suzanne Lenhart. (Received September 22, 2010)