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SEMINÁR ÚI SAV,
ktorý sa bude konať vo štvrtok 7.11. 2019 o 10.00 hod
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Program:

Peter James OLUMUYIWA

Department of Mathematics, University of Ilorin, Kwara State, Nigeria

OPTIMAL CONTROL ANALYSIS OF TYPHOID FEVER MODEL

Abstract

Typhoid fever is a serious bacterial infection caused by *Salmonella typhi*. Typhoid is usually acquired by ingestion of water or food contaminated with urine or faeces of infected carriers and is therefore widespread in areas with poor sanitation. In less developed countries, refugee camps and crowded areas with a high population density, typhoid fever outbreaks occur most often. We present a deterministic model on the transmission dynamics of typhoid fever disease. We incorporate some control variables such as educational campaign and vaccination to control the dynamics of transmission of the disease. We formulate a control problem and we derive the conditions for optimal control of the disease using Pontryagin's Maximum Principle and it was shown that an optimal control exists for our proposed model. The optimality system is solved numerically; the corresponding uncertain problem is solved by proposing new techniques. Numerical simulations are carried out to illustrate the analytical results. The numerical simulation of the model shows that a possible optimal control strategies become more effective in the control and containment of typhoid when vaccination and educational campaign are combined optimally would reduce the spread of the disease.

Keywords: Mathematical Model, Typhoid Fever, Optimal Control

Tešíme sa na stretnutie s Vami pri šálke kávy alebo čaju.

Ing. Ivana Budinská, PhD.
riaditeľka ÚI SAV