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Original Research Article

TUBERCULOSIS MODEL, A CASE STUDY OF TIGANIA WEST, KENYA

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Abstracts

Tuberculosis (TB) is a bacterial disease caused by mycobacterium tuberculosis. Many mathematical models for TB have been developed but not specifically for Kenya. This study develops a deterministic model based on Susceptible–Exposed–Active–Treated compartments classes. The model analyses the stability of the disease free equilibrium by analyzing the basic (R0) and control (RC) reproduction number and the endemic equilibrium point (EEP) which shows that the model is stable when RC< 1 and there exist an EEP when RC is less than one. Sensitivity analysis of the model was investigated using the partial derivatives of (RC) with respect to treatment which shows that high rate of treatment reduces the control reproduction number so is the best intervention method in Kenya.

Keywords :

Basic reproduction number; control reproduction number; disease free equilibrium (DFE); endemic equilibrium point (EEP); sensitivity analysis of model.