Global stability of equilibrium points of typhoid fever model with protection

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Abstract

A non-linear Mathematical model of typhoid fever disease incorporating protection is hereby considered to study the global stability of equilibrium points. To study the global stability of the disease free equilibrium point and endemic equilibrium point, the method by Castillo- Chavez and a suitable Lyapunov function are used respectively. The disease free equilibrium point was found not to be globally asymptotically stable while the endemic equilibrium point is globally asymptotically stable. This implies that the disease transmission can be kept quiet low or manageable with minimal deaths in the presence of protection.