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*Equilibria Analysis for a Two-Population Epidemic Model with One Population Being a Reservoir for Infection.*

We consider a system of non-linear differential equations describing the spread of an epidemic between two populations. The model assumes one population spreads infection among itself and acts as a reservoir of infection for the second population. We explore the conditions under which the epidemic is endemic in both populations and discuss the global asymptotic stability of this endemic equilibrium using a Lyapunov function and the results of some limit theorems. We will present the results of numerical simulations and explore Monkeypox as an example of a disease that can be modeled in this way. (Received September 25, 2017)