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Stationary Distribution and Extinction in a Stochastic Model of Multidrug-Resistant Tuberculosis.

Communication Info

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Abstract

In this study, we investigate a stochastic multidrug-resistant tuberculosis (MDR-TB) transmission model governed by a system of stochastic differential equations. We establish the well-posedness of the model by proving the existence and uniqueness of a global positive solution. By constructing an appropriate stochastic Lyapunov function, we further demonstrate the existence of a stationary distribution for the positive solutions. Moreover, sufficient conditions are derived to ensure disease extinction with probability one. Finally, several numerical examples and simulations are presented to illustrate and support the theoretical findings.

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