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A tuberculosis model with migration

A tuberculosis (TB) model with migrant workers is proposed and investigated. The basic reproduction number $\mathcal{R}_0$ is defined. TB disease always dies out and the disease-free equilibrium is globally asymptotically attractive if $\mathcal{R}_0 < 1$; while TB disease uniformly persists in the population and there is at least one endemic equilibrium if $\mathcal{R}_0 > 1$. Furthermore, if the immigration rates of migrant workers from villages to towns or cities and infectious migrant workers from towns or cities to villages are very small, there exists exactly one global attractive endemic equilibrium if $\mathcal{R}_0 > 1$. Numerical simulations indicate that there is only one global attractive endemic equilibrium if $\mathcal{R}_0 > 1$ and the spread of TB may be reduced if effective actions are taken.