Mathematical Modeling of Tuberculosis Transmission Dynamic with Vaccination

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**Abstract.** The study aims to establish and investigate a Tuberculosis (TB) transmission model using two vaccination strategies (to newborns and adults). This model divided the human population into five classes: susceptible (S), vaccinated (V), high-risk (E) and low-risk (L) latent, and infectious (I). Analysis of the mathematical model is discussed by finding the existence and analyzing the stability of the model equilibrium based on the Basic Reproduction Number $\left(R\_{0}\right)$. Furthermore, we determine the sensitivity analysis of the proportion of vaccine and other parameters that affect the transmission of TB. As a result, vaccination to adults more effective than newborns.