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Threshold dynamics for an HIV model melding pharmacokinetics

In this talk, I will introduce an HIV viral dynamical model melded pharmacokinetics. We considered one-compartmental models with two kinds of drug delivery routes, intravenous and extravascular with multiple dosages, and two drug elimination rates, first order and Michaelis-Menten rates. We defined explicitly the basic reproductive number for the viral dynamical model melded with pharmacokinetics. We considered an optimality problem to minimize the basic reproductive number when the average plasma drug concentration is a constant. The findings suggest that the existence of optimal drug dosage and the drug administration interval to minimize the basic reproductive number could help design the optimal drug administration regimen.