Mathematical investigation of treatment interruptions and drug resistance in HIV treatment

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Aim: To investigate the impact of antiretroviral treatment (ART) interruptions on the outcomes of ART outcomes.

Methods: We extend existing mathematical model for the interactions between HIV and the immune system by introducing an explicit rate mutation to HIV drug resistant strain that depends on treatment interruptions often referred to as drug holidays.

Results: A relationship between the period of drug holidays and the emergence of drug resistance strains is derived in the case of cyclic treatment interruptions. When interruptions are not cyclic we perform model simulations of various scenarios of interruptions such as weekend interruptions as well as interruptions during festive seasons.