

Abstract Submitted
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Modeling HIV Cure¹ ALAN PERELSON, Los Alamos National Laboratory, JESSICA CONWAY, Pennsylvania State University, YOUFANG CAO, Los Alamos National Laboratory — A large effort is being made to find a means to cure HIV infection. I will present a dynamical model of post-treatment control (PTC) or functional cure of HIV-infection. Some patients treated with suppressive antiviral therapy have been taken off of therapy and then spontaneously control HIV infection such that the amount of virus in the circulation is maintained undetectable by clinical assays for years. The model explains PTC occurring in some patients by having a parameter regime in which the model exhibits bistability, with both a low and high steady state viral load being stable. The model makes a number of predictions about how to attain the low PTC steady state. Bistability in this model depends upon the immune response becoming exhausted when over stimulated. I will also present a generalization of the model in which immunotherapy can be used to reverse immune exhaustion and compare model predictions with experiments in SIV infected macaques given immunotherapy and then taken off of antiretroviral therapy. Lastly, if time permits, I will discuss one of the hurdles to true HIV eradication, latently infected cells, and present clinical trial data and a new model addressing pharmacological means of flushing out the latent reservoir.

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