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Alison L Hill*, alhill@fas.harvard.edu, and **Jeffrey M Gerold, Daniel IS Rosenbloom** and **Martin A Nowak**. *Modeling the dynamics of HIV latency and rebound*. Preliminary report.

HIV infection can be treated, but not cured, with antiretroviral drugs. Long-lived latent virus persists despite years of treatment, meaning drugs must be taken daily, for life. If treatment is stopped, viral loads rapidly rebound to high levels. Research is underway to find new therapies that can permanently control the infection, and therefore improve the prospects for eradicating HIV worldwide. These therapies aim to either clear latent virus from the body, or, to boost the immune system's ability to control the infection. Currently, the only way to assess the efficacy of these investigational therapies is to stop antiretroviral drugs and to observe if, when, and how viral rebound occurs. Here I will discuss our work developing mathematical models to characterize the kinetics of viral rebound and the effect that various interventions have on these dynamics. This works shows how viral dynamics models can be used to help understand the mechanisms of action of new drugs and virus-host interactions. I will demonstrate how modeling can shed light on aspects of viral pathogenesis that are poorly understood and suggest which quantities are most important to measure experimentally in order to narrow uncertainty in predictions of drug effects. (Received September 13, 2016)