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Multistage models in HIV infection and treatment.

HIV infection and replication involves multiple intracellular processes. Different classes of antiretroviral drugs target different stages. Some studies showed that patients receiving the integrase inhibitor raltegravir based therapy were faster to achieve undetectable viral load than other therapy and that treatment intensification with raltegravir led to a lower viral load and an increase in 2-LTR, a marker for ongoing viral replication. In this talk, using multistage models we will provide a quantitative and systematic comparison of the effect of different drug classes on HIV decay dynamics and particularly explain the viral load decline in HIV patients treated with raltegravir-based regimens. We will also evaluate the influence of raltegravir intensification on viral load and 2-LTR dynamics in HIV patients on suppressive antiretroviral therapy. (Received July 26, 2017)