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Naveen K. Vaidya* (nvaidya2@uwo.ca), Dept of Applied Maths, The Univeristy of Western Ontario, 1151 Richmond St. N., London, Ontario N6A 5B7, Canada. *Simple Undergraduate Mathematics to Understand Complex HIV-1 Latent Infection Dynamics.*

Human immunodeficiency virus 1 (HIV-1) infection persists for a lifetime despite successful antiviral therapy. Establishment of latently infected cells (cells in resting state with integrated HIV-1 DNA) during early HIV-1 infection is conceptually the most challenging obstacle to viral eradication. A burning question of whether early treatment can reduce such latently infected cells still remains unanswered. In this talk I will demonstrate how simple undergraduate mathematics can help understand such complex dynamics of HIV-1 latent infection. Our model has excellent agreement with experimental data from 27 HIV-1 infected individuals. Our analysis shows that latently infected cells are largely generated before the initiation of therapy during early infection, and that the density of latently infected cells often decays during initial antiviral therapy. These results suggest that the latent infection can be limited by early ART during acute HIV-1 infection. (Received September 20, 2011)