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Modeling the Impact of an Imperfect Vaccine and ART in Curtailing HIV Spread

Since its emergence in the 1980s, the human immunodeficiency syndrome (HIV) continues to inflict major public health and socio-economic burdens globally. Currently, 34–46 million people live with HIV and over 20 million have so far died of the disease. Although the use of anti-retroviral therapy (ART) has been quite effective in slowing HIV spread in some nations, it is generally believed that the global control of HIV would require a vaccine. This talk aims at using mathematical modelling to assess the potential impact of using an imperfect anti-HIV vaccine and ART in combatting HIV. Deterministic models, which incorporate many of the essential biological features of HIV (such as staged-progression and differential infectivity) and anticipated vaccine characteristics (*e.g.*, "take", "degree", "duration" and offering some therapeutic benefits) as well as the ART-induced evolution and transmission of drug-resistant HIV strain, would be presented and analyzed to determine thresholds conditions for effective control of HIV within a community.