Title: Effectiveness of UNAIDS targets and HIV vaccination across 127 countries

Presenter: Dr. Meagan C. Fitzpatrick

Abstract:

The HIV pandemic continues to impose enormous morbidity, mortality, and economic burdens across the globe. Simultaneously, innovations in antiretroviral therapy, diagnostic approaches, and vaccine development are providing novel tools for treatment-as-prevention and prophylaxis. We developed a mathematical model to evaluate the added benefit of an HIV vaccine in the context of goals to increase rates of diagnosis, treatment, and viral suppression in 127 countries. Under status quo interventions, we predict a median of 49 million [first and third quartiles 44M, 58M] incident cases globally from 2015 to 2035. Achieving the Joint United Nations Program on HIV/AIDS 95–95–95 target was estimated to avert 25 million [20M, 33M] of these new infections, and an additional 6.3 million [4.8M, 8.7M] reduction was projected with the 2020 introduction of a 50%-efficacy vaccine gradually scaled up to 70% coverage. This added benefit of prevention through vaccination motivates imminent and ongoing clinical trials of viable candidates to realize the goal of HIV control.

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