

Annex 5B. Ecological Studies Examining the Effectiveness of ART on HIV Incidence

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Exposure: trends in population-level infectiousness					Outcome: trends in HIV transmission		
Study	Study location	Assessment	Measure	Trend direction	Assessment	Measure	Trend direction
Castel and others 2011	Washington, DC	Population in clinical care	Annual mean and total CVL; portion with undetectable VL	↓↑	Sentinel surveillance	Annual number of newly diagnosed cases	→
Das and others 2010	San Francisco	Population in clinical care	Annual mean and total CVL	↓	Sentinel surveillance	Annual number of newly reported HIV diagnoses; annual incidence rate estimated from surveillance data using STARHS (trend not statistically significant)	↓ ↓
Fang and others 2004	Taiwan, China	Time period	Time period (pre-versus post-ART period)	↓	Sentinel surveillance	Surveillance data used to calculate average annual HIV transmission rate (new cases/prevalent cases)	↓
Katz and others 2002	San Francisco	Population in clinical care	Annual prevalence of ART use in HIV-infected MSM identified in HIV/AIDS registry	↑	Convenience sample of MSM	STARHS (estimated incidence) using data from a VCT and an STI clinic	→ ↑
Law and others 2011	Australia (national)	Population in clinical care	Annual portion of treated patients with undetectable VL	↑	No direct assessment	Reference to previous publication describing HIV incidence during the same study period	↓
Montaner and others 2006	International	Estimated population	Coverage with antiretroviral therapy	↑	Surveillance data	Ratio of new infections per 100 people living with HIV/AIDS	↓

		living with HIV					
Montaner and others 2010	British Columbia, Canada	Population in clinical care	Annual number of HIV patients receiving highly active ART; annual mean CVL	↑↓	Sentinel surveillance	New HIV-positive tests per 100 population	↓
Porco and others 2004	San Francisco	Probability sample of MSM	Predicted infectivity per contact pre- and post-ART	↓	Probability sample of MSM	Annual testing in a cohort of HIV-negative MSM	↓
Wood and others 2009	Vancouver, Canada	Convenience sample of IDUs	Biannual median CVL	↓	Convenience sample of IDUs	Annual testing in a cohort of HIV-negative IDUs	↓

Source: Adapted from Smith and others 2012.

Note: ↑ = upward trend; ↓ = downward trend; → = stable rate. For studies using two exposure or outcome measures, two arrows are shown corresponding to the measures listed first and second. ART = antiretroviral treatment; HIV = human immunodeficiency virus; CVL = community viral load; VL = viral load; STI = sexually transmitted infection; STARHS = serologic testing algorithm for recent HIV seroconversion; MSM = men who have sex with men; VCT = voluntary counseling and testing; IDU = intravenous drug user.

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