

Importance of Viral Suppression to Reduce HIV Transmission: Recent Evidence

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Viral suppression to reduce transmission. ¿Which one of the following is false?

- a) Expert consensus of Swiss physicians states sexual transmission of HIV does not occur in the patient with an undetectable viral load and no STI**
- b) The Swiss report recommends sperm washing for HIV- women desiring pregnancy by their HIV+ partners, even if the viral load is undetectable**
- c) Longitudinal studies in Africa and Spain provide evidence to support the Swiss consensus statement.**
- d) The CDC responded to the Swiss consensus statement urging HIV+ persons to use condoms consistently and correctly**
- e) I do not know, I'm coming to learn.**

Sexual Transmission of HIV depends on

- The infectiousness of the index case (HIV+ partner)
 - Plasma viral load (amount of virus in the blood)
 - Genital viral load (amount of virus in genital secretions)
- The susceptibility of the uninfected (HIV-) partner
 - Presence of STIs or other genital inflammation

Genital viral load and Plasma Viral load

- the concentration of HIV in blood can be directly (but imperfectly) correlated with HIV in semen and genital secretions
- phenotypic analysis of HIV in semen compared with blood suggests that the increased level of HIV-RNA caused from STIs result from local replication

Swiss Expert Consensus Statement of 2008

An HIV-infected person on anti-retroviral therapy with completely suppressed viremia is not sexually infectious, i.e., cannot transmit HIV through sexual contact if

- The person adheres to ARV
- The viral load has been suppressed (<40 copies/cc) for at least six months
- There are no other sexually transmitted infections

Swiss Expert Opinion

- For discordant couples, adherence is paramount, as well as fidelity, to avoid STIs
- Interactions between contraceptives and anti-retrovirals have to be considered for women
- For HIV- women desiring pregnancy with an HIV+ person, sperm washing is not indicated when ARV treatment is effective

Swiss Expert Opinion

- After a few days or weeks of discontinuation of therapy, plasma viral load rises rapidly, therefore transmission may occur
- Patients with urethritis (or another STI) may have a slight increase in sperm viral load even if the patient is on treatment

Swiss Expert Opinion

Medical and biologic data available today do not permit declaring that HIV infection during effective antiretroviral therapy is impossible, because the non-occurrence of an improbable event cannot be proven.

US CDC Immediately came out with statement

The Centers for Disease Control and Prevention (CDC) underscores its recommendation that people living with HIV who are sexually active use condoms consistently and correctly with all sex partners.

Supporting Evidence for the Swiss Consensus Statement

- Madrid longitudinal study
- Rakai, Uganda study of sero-discordant couples

Madrid Study

- Longitudinal study of 393 couples from 1991-2003 (pre- post HAART)
- None of the HIV + persons on HAART transmitted HIV to their partner, compared with 8.7% of those on HAART.

Madrid Study (Castilla et al 2005): Multiple Logistic Regression Analysis of HIV Prevalence among the Steady Heterosexual Partners of HIV-Diagnosed Index Cases

	Prevalence OR	95% CI	P
Coital acts without condom in past 6 months			
No	1		
Yes	2.66	1.00-7.05	0.049
Index case CD4 ⁺ cells/ μ L			
≥ 350	1		
<350	2.68	1.13-6.35	0.025
Enrollment period			
Pre-HAART (1991-1995)	1		
Early HAART (1996-1998)	0.55	0.19-1.61	0.276
Late HAART (1999-2003)	0.14	0.03-0.66	0.012

Rakai Study

- 415 couples in which one partner was HIV-1 + and one was initially HIV-1–negative
- Followed prospectively for up to 30 months.
- The incidence of HIV-1 infection per 100 person-years among the initially seronegative partners was examined in relation to behavioral and biologic variables.

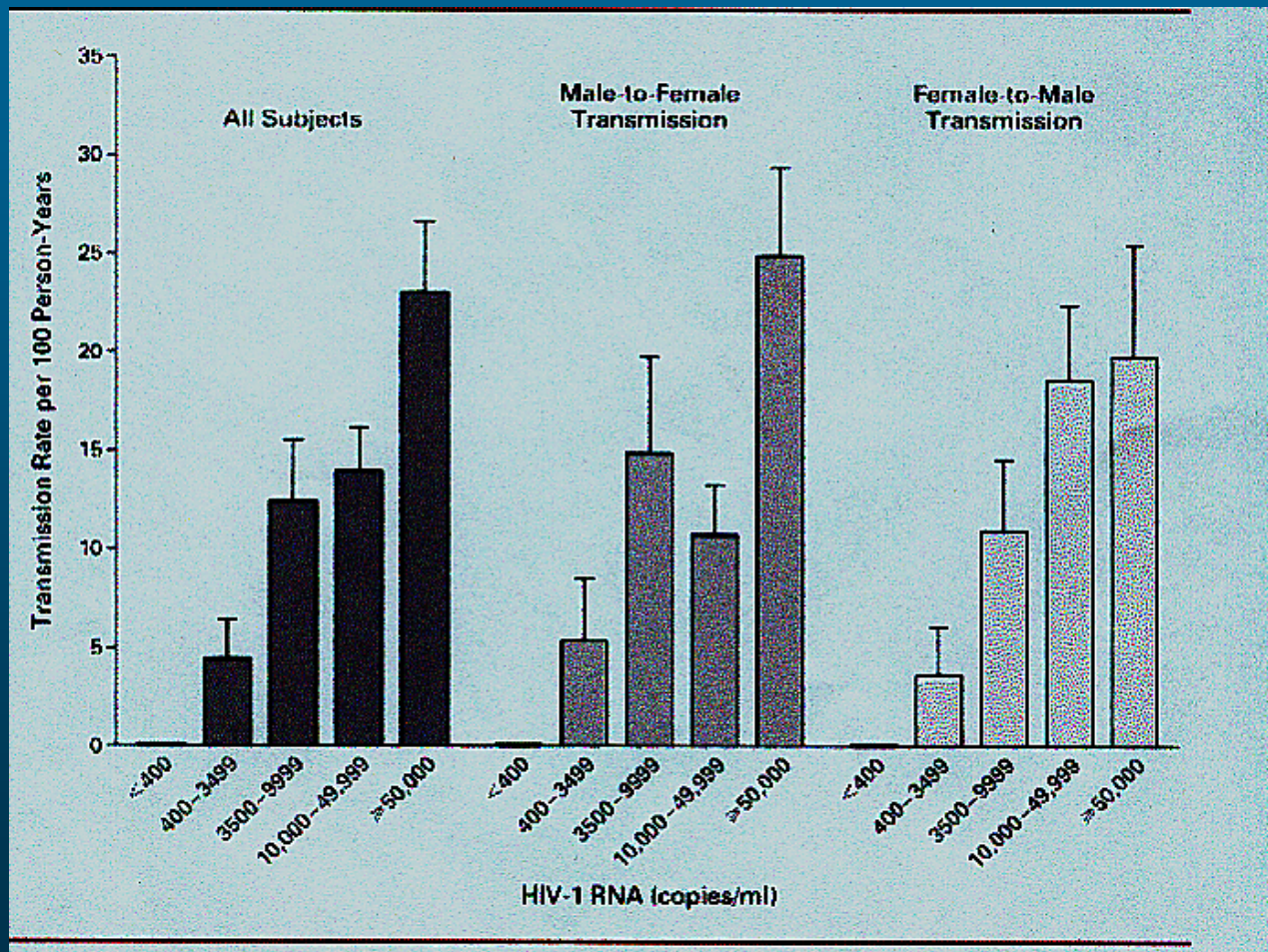
Relative Risk of Heterosexual Transmission: Rakai Study

Quinn et al 2000

	Transmission /couple	Average sex/ month	Adjusted rate (95%CI)
HIV-1 RNA			
<1700	1 of 43	10.4	1.0
1700- 12,499	11 of 45	9.4	16.1 (3.1-295.7)
12,500- 38,499	11 of 42	8.0	19.9 (3.4-328.6)
>38,500	15 of 44	8.0	27.7 (5.4-506.8)
GUD			
yes	4 of 19	7.6	2.58 (1.03-5.7)
no	34 of 155	9.2	1.0

Heterosexual Transmission and Plasma Viral Load

Quinn et al. 2000



Swiss Consensus Statement

Is based on studies of heterosexual partners in a long term monogamous relationship, therefore is no risk of the introduction of new STIs

Swiss Consensus Statement

- Is this data valid for MSM? Is anal intercourse comparable to vaginal intercourse?
- Will this statement spur an increase in unprotected sex among persons with HIV, particularly MSM, who are at high risk of STIs?
- What about sub-clinical reactivation of genital herpes in HIV+ persons?? Could this lead to increased transmission?

Swiss Consensus Statement

- Is reassuring for long term committed couples, who might worry about occasional slips or accidents
- Is especially reassuring for HIV- women desiring pregnancy from their HIV+ partner
- Is troubling when one speculates about increased risky behaviors, and potential transmission of other STIs, which might result in some circles

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- c) Longitudinal studies in Africa and Spain provide evidence to support the Swiss consensus statement.**
- d) The CDC responded to the Swiss consensus statement urging HIV+ persons to use condoms consistently and correctly**
- e) I'm sorry, I did not learn.**