

TREATMENT AS PREVENTION: IS TREATMENT PREVENTION?



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LEARNING OBJECTIVES

At the conclusion of this interactive session, participants should be able to:

- Apply new insights regarding HIV transmission in order to develop better prevention strategies in the clinical setting
- Improve counseling skills for HIV prevention among their patients.

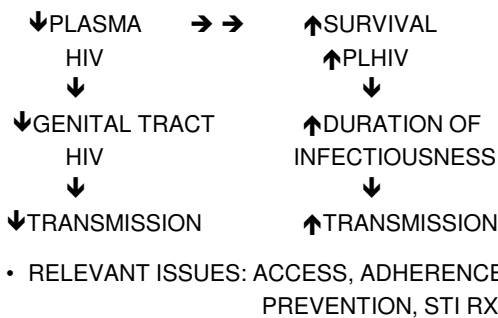
WHY ART FOR PREVENTION?

- HIV is spreading rapidly, more than 2.5 million new infections expected in the next year!
- Behavioral interventions have not resulted in long term changes in most settings
- Vaccines and Microbicides are years away
- ART is available now!
- HOWEVER, ART is relatively expensive, needs to be used repetitively, may result in toxicities, and can select for resistance, and may result in behavioral disinhibition.

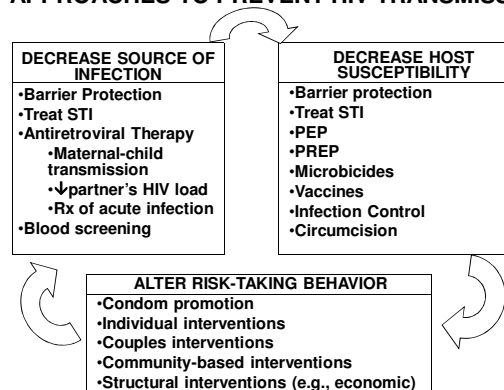
HIV TRANSMISSION

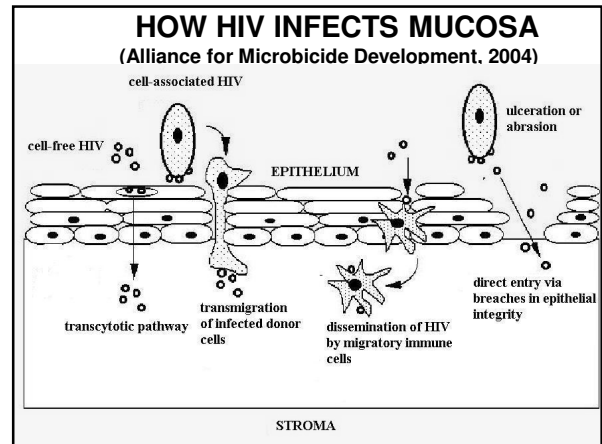
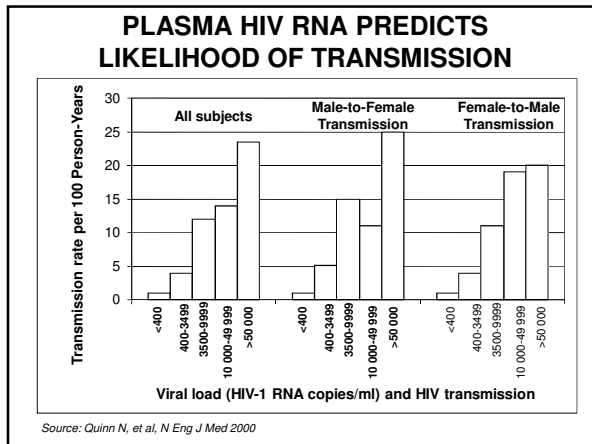
- SIGNIFICANT, LOW PROBABILITY EVENT (<1/100 AVERAGE)
MULTIPLE CO-FACTORS ARE INVOLVED
↑ PLASMA VIRAL LOAD → ↑ TRANSMISSION
CAN WIDER HAART ACCESS ↓ THE SPREAD OF NEW INFECTIONS?
- SEXUALLY TRANSMITTED INFECTIONS (STI) ↑ HIV TRANSMISSION AND ACQUISITION:
CAN STI CONTROL ↓ HIV SPREAD?
- BLOOD AND GENITAL HIV MAY CHANGE IN PARALLEL, BUT LOCAL FACTORS, E.G. STI, HAART CONCENTRATIONS MAY ALTER HIV IN DIFFERENT COMPARTMENTS
- BIOLOGICAL INTERVENTIONS MAY BE INFLUENCED BY BEHAVIORAL ISSUES

HOW HAART COULD ALTER HIV TRANSMISSION



APPROACHES TO PREVENT HIV TRANSMISSION





HIV Transmission Efficiency is Related to Viral Burden and Other STDs

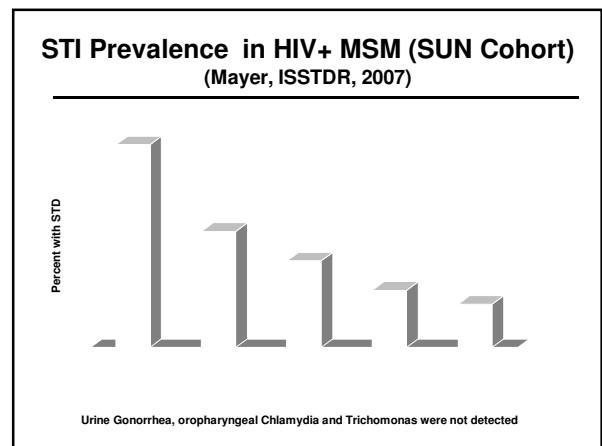
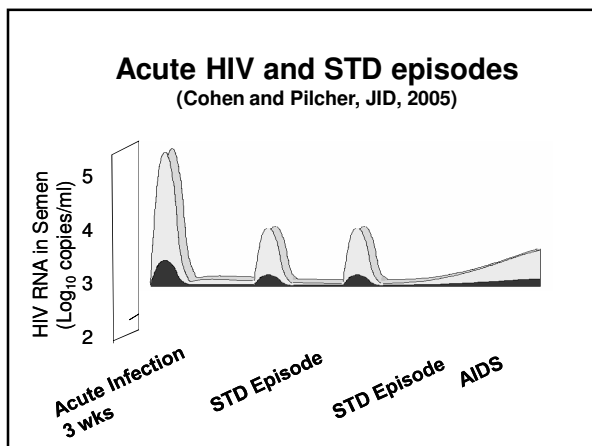
HIV plasma RNA in the HIV+ partner (copies/ml)	Probability of HIV infection in the HIV- partner per 10 000 contacts	
	HSV+	HSV-
<1700	10	0.4
1700-12,499	23	5
12,500-38,499	18	2
≥38,500	36	7

Source: Wawer M et al, Lancet 1999

T Lymphocytes and Macrophages, but not Motile Spermatozoa, are a Significant Source of HIV in Semen

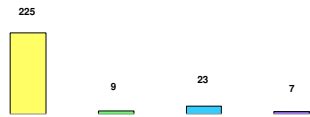
Alison J. Quayle, Chong Xu, Kenneth H. Mayer, Deborah J. Anderson
Journal of Infectious Diseases 176:960-968, 1997.

T lymphocytes and macrophages are principal sources of HIV-1 in semen.



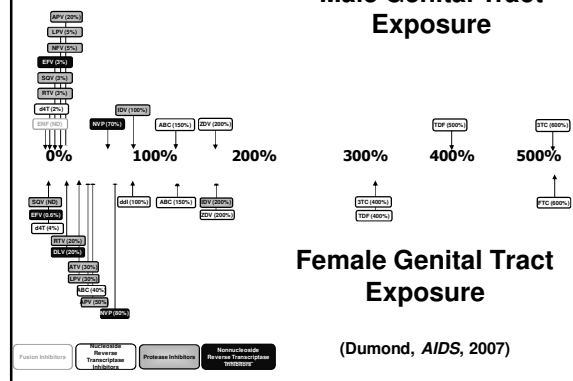
Persistent HIV RNA Shedding in Semen Despite Virologic Suppression

- Longitudinal studies on semen and blood HIV RNA post HAART¹
 - 25 men initiating therapy and undetectable by week 16
 - 12/25 (48%) with isolated HIV shedding
 - 4/25 (16%) with high level viral shedding (>5,000 copies/mL)
 - Semen isolates infectious but no drug resistant mutations
 - 4/13 (31%) men with HIV in semen despite prolonged viral suppression (median 126 mos)
- 264 pair of semen/blood samples from 145 HIV + men (2002-08)²
 - 6% of patient on HAART had detectable HIV RNA in semen



1. Sheth P, et al. 16th CROI, Montreal, Canada; February 8-11, 2009. Abst. 50.
 2. Marcelin A, et al. 16th CROI, Montreal, Canada; February 8-11, 2009. Abst. 51.

Male Genital Tract Exposure



Treatment as Prevention?

- HIV ↓ in several countries where treatment and prevention have been integrated, e.g. Brazil and Taiwan (Cohen, HIV Prevention: A Comprehensive Approach, 2008)
- Counter: Resistant HIV transmission, up to 15-30% of new infections (Little, JAMA, 2002)
- HPTN 052: RCT OF HAART TO ASSESS EFFECT ON TRANSMISSION
- 1750 HIV discordant couples: India, Brazil, Thailand, Malawi, Zimbabwe, SA
- Early vs. later ART, CD4 >350
- Monthly monitoring, couples counseling

Treatment as Prevention: African Studies

- Study to evaluate effect of ART on HIV transmission among HIV serodiscordant couples (N=2,993)
- ART only if clinically indicated
- Negative partner tested q3 months
- Sexual risk assessed by
 - Self report
 - Sperm on vaginal smear
 - Pregnancy
 - Combined variable using any of above

Sullivan P, et al. 16th CROI, Montreal, Canada; February 8-11, 2009. Abst. 526L.B.

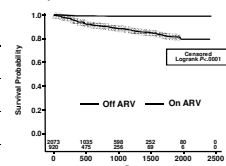
Treatment as Prevention: Results

2,993 couples were followed for a median of 512 days

ARV Status	CY Observation	No. Linked Infections	Infection Rate (C-Y)	Infection Rate Ratio (95% CI)
Not on ARV	5,062	171	3.4/100	---
On ARV	547	4	0.7/100	0.21 (0.06, 0.59)
On ARV - conservative*	547	6	1.0/100	0.32 (0.14, 0.73)

*Includes 2 partners who seroconverted in the same 3-month interval when the HIV-infected partner initiated ARVs

HIV-free Survival of HIV-negative partners, by ARV status of HIV+ Partner



- Sexual risk behaviors lower in those on ART (19% vs 25%, $P < 0.05$)
- Both ART and change in behavior independently reduced HIV transmission

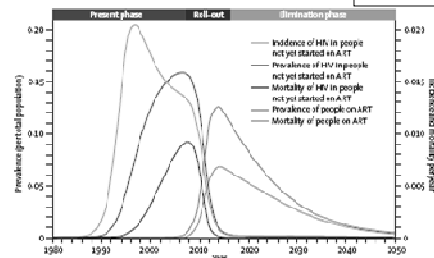
Sullivan P, et al. 16th CROI, Montreal, Canada; February 8-11, 2009. Abst. 526L.B.

Test and Treat?

Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model

Roubon M, Granich, Charles F, Galka, Christopher D, Dye, Kevin M, De Cock, Brian G, Williams

Lancet 2009; 373:48-57



Acute Infections and HIV Prevention

Rakai study: 40% of new transmissions were from acutely infected pts (Wawer, JID, 2005)

Quebec study: almost 1/2 new infections were from recently infected pts (Brenner, JID, 2007)

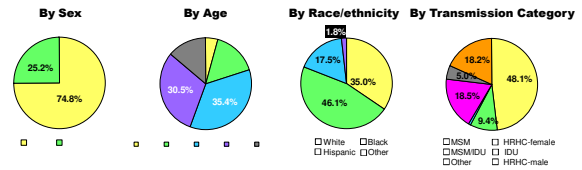
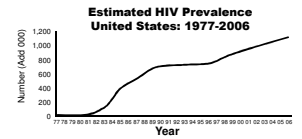
Using discordant HIV rapid tests results and RNA pooling, almost 2% of STD clinic pts in Malawi were identified with acute HIV infection (Pilcher, NEJM, 2005)

Could the identification of "hot spots" of newly infected pts present opportunities for early ART and behavioral interventions to slow HIV spread?

CDC: Estimate Prevalence of HIV Infection in US (2006)

Estimated HIV prevalence: 1,106,400 (95% CI 1,056,400 - 1,156,400)

- Prevalence ↑ in partly due to ↑ survival



Campanelli M, et al. 16th CROI, Montreal, Canada, February 8-11, 2009. Abst. 1036.

MSM= men who have sex with men; IDU=Injection Drug Use; HRHC= High risk heterosexual contacts. Defined as heterosexual contact with a person known to have, or to be at high risk for HIV infection.

Can hard-to-reach populations be more readily engaged? HPTN 061 & HPTN 064



BROTHERS: Community-Based, Multi-component HIV Prevention Intervention for Black MSM



ISIS HIV Seroincidence Study in Women



HPTN Feasibility Studies

BROTHERS (061)

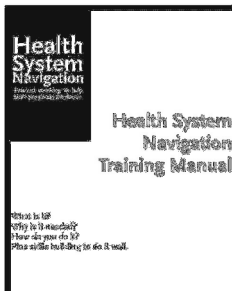
- Feasibility of ...
 - recruitment of Black MSM
 - recruitment of their sexual/social networks
 - HIV testing of index cases and network members
- Impact of peer navigation for prevention and care

ISIS (064)

- Accurate estimate of HIV incidence in US women at highest risk
- Feasibility of ...
 - follow-up of cohort of highest risk women
 - US prevention study with HIV seroconversion as the primary outcome



HIV System Navigation (HSN): An Emerging Model to Improve HIV Care Access



- Near Peers
- Structured training as per HRSA evaluation
- Finding at-risk persons for testing
- Engagement in testing, bridging to care, adherence to care, retention in care



MANHUNT.net

Are you PREPARED? HIV-Negative Volunteers Needed

Project PREPare
(HIV-Negative Volunteers Needed)

We are recruiting for a new study to test whether HIV-negative men who have sex with men can safely take an HIV drug. If so, further studies may test it as an HIV prevention strategy.

Call the Fenway Institute at Fenway Community Health at 617-927-6450 or visit www.fenwayhealth.org/prep


Participants will receive confidential HIV counseling and testing, and \$50 per study visit.

When: Later Today
Where: Ask Me
Ethnicity: Ask Me
Status: Ask Me

99 | Ask Me | Ask Me | Ask Me | Ask Me

Click any photo to enlarge

FENWAY COMMUNITY HEALTH



Can one Pill a day
PREVENT HIV?

HIV-Negative Gay/Bi Men Needed to Participate in Research. Project PrEPare 2. This study will test if a daily medication can prevent HIV-infection in HIV-negative men.

Be: HIV-negative, 18+, and sexually active.

Interested? Please call Fenway Community Health.

Fenway

7 Haviland St. Boston, MA 02115 | 617.927.6450 or visit the website at www.fenwayhealth.org/prep2

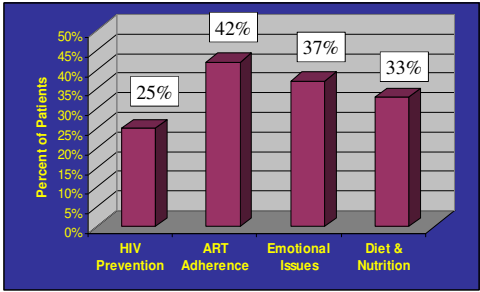
Is PrEP being used already?

- ART is available now, could some be diverted?
- Two MSM studies, one in SF (Liu, 2007) and one in Boston (Mimiaga, 2009) found that less than 1% have used PrEP.
- But close to 20% heard of PrEP
- Context matters: interest in using PrEP was as high as 79% if it was found to be effective, safe, cheap, with minimal side effects.

Biopsychosocial Context of Treatment Adherence


- Early life events (e.g. CSA) lead to depression, PTSD, and ↓ self-efficacy
- Depressed pts and those with ↓ self-efficacy are less adherent
- Depression may be associated with substance use, which may ↓ adherence, may ↑ HIV risk taking.
- Successful adherence interventions need to address these complex interactions (Safren, Health Psychology, 2009)

Counseling Received At That Day's Visit (Morin, JAIDS, 2005)



Topic	Percent of Patients
HIV Prevention	25%
ART Adherence	42%
Emotional Issues	37%
Diet & Nutrition	33%

ACP



The health care system surrounding sexual minorities is an area in which little research and few studies have been conducted, and in which practical knowledge and guidance has been hard to find.


Introducing The Fenway Guide to Lesbian, Gay, Bisexual, and Transgender Health: Written by leading clinicians in the field of LGBT health and in conjunction with the world renowned Fenway Community Clinic, this book of a kind comprehensive resource helps healthcare professionals gain a better understanding of the health issues pertinent to the LGBT patient and community.

Areas of Interest:

- Understanding the developmental discourse of the LGBT patient
- The process of coming out and health formation
- Providing a LGBT patient with proper health promotion and disease prevention
- Treatment of sexual expression
- The basics of transgender and intersex health
- Demographic and epidemiological information
- LGBT professional and legal issues
- Standards of care development (SOC) and the clinical challenge

Designed to address the needs of diverse clinicians, this book provides medical professionals with guidance, practical guidelines, and discussion of clinical issues relevant to the LGBT population. The Fenway Guide to Lesbian, Gay, Bisexual, and Transgender Health is an invaluable reference for healthcare professionals seeking further knowledge and guidance on sexual minority health care!

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FENWAY GUIDE TO LESBIAN, GAY, BISEXUAL AND TRANSGENDER HEALTH

Harvey Makadon, MD
Kenneth H. Mayer, MD
Jennifer Peltier, MD
Hilary Goldhammer

ACP Fenway
Product # 3308100

Can Wider HAART Access Slow the Epidemic?

- Biologically plausible
- Some promising examples
- Getting enough people tested and into care is the first challenge
- Ultimate proof will necessitate strong input from behavioral scientists, so that testing and care programs address all factors that lead to non-adherence (e.g. depression), minimize risk compensation, and prevent/treat concomitant STDs.

