Time to Act: Responding to the HIV Pandemic Among MSM

Top2Btm

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Outline

- The MSM pandemic
  - Global Epidemiology
  - Biological, network level, and structural risks
- Other drivers: stigma and discrimination
- Re-thinking Prevention
- Responses for MSM

Photo UNAIDS / P. Virot

The Pandemic of HIV in MSM

Systematic Review of HIV among MSM in Low and Middle Income Countries, 2007

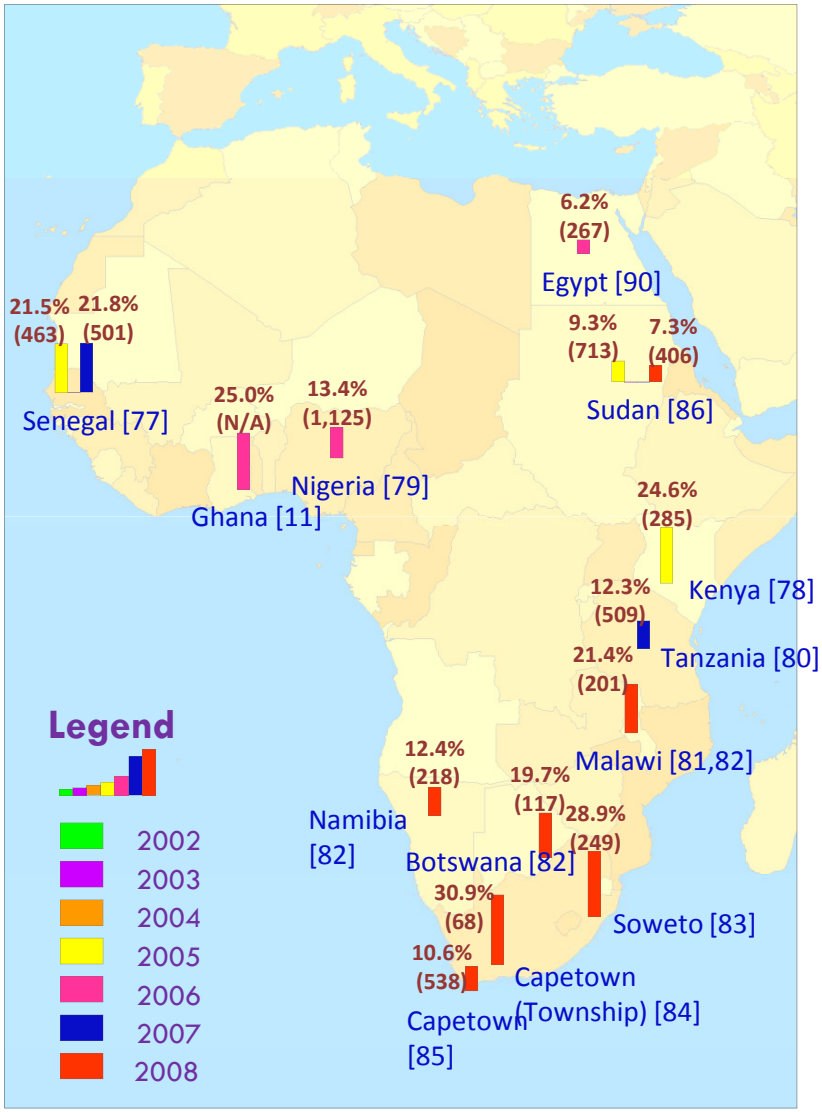
	Number of Countries	Odds Ratios	95% Confidence Interval
Region			
Americas	15	33.3	32.3-34.2
Asia	7	18.7	17.7-19.7
Eastern Europe	12	1.3	1.06-1.6
Africa	4	3.8	3.3-4.3
Prevalence Level			
Very Low Prevalence Countries	23	58.4	56.3-60.6
Low Prevalence	8	14.1	13.9-14.9
Medium/High Prevalence	7	9.6	9.0-10.2

Baral S, Sifakis F, Cleghorn F, Beyrer C. Elevated risk for HIV infection among men who have sex with men in low- and middle-income countries 2000-2006: Results of a meta-analysis. PLoS Med 2007 Dec; 4(12):e339.

HIV among MSM in Africa, and among reproductive age adults. (Beyrer, et, al, World Bank, in Press 2011.)

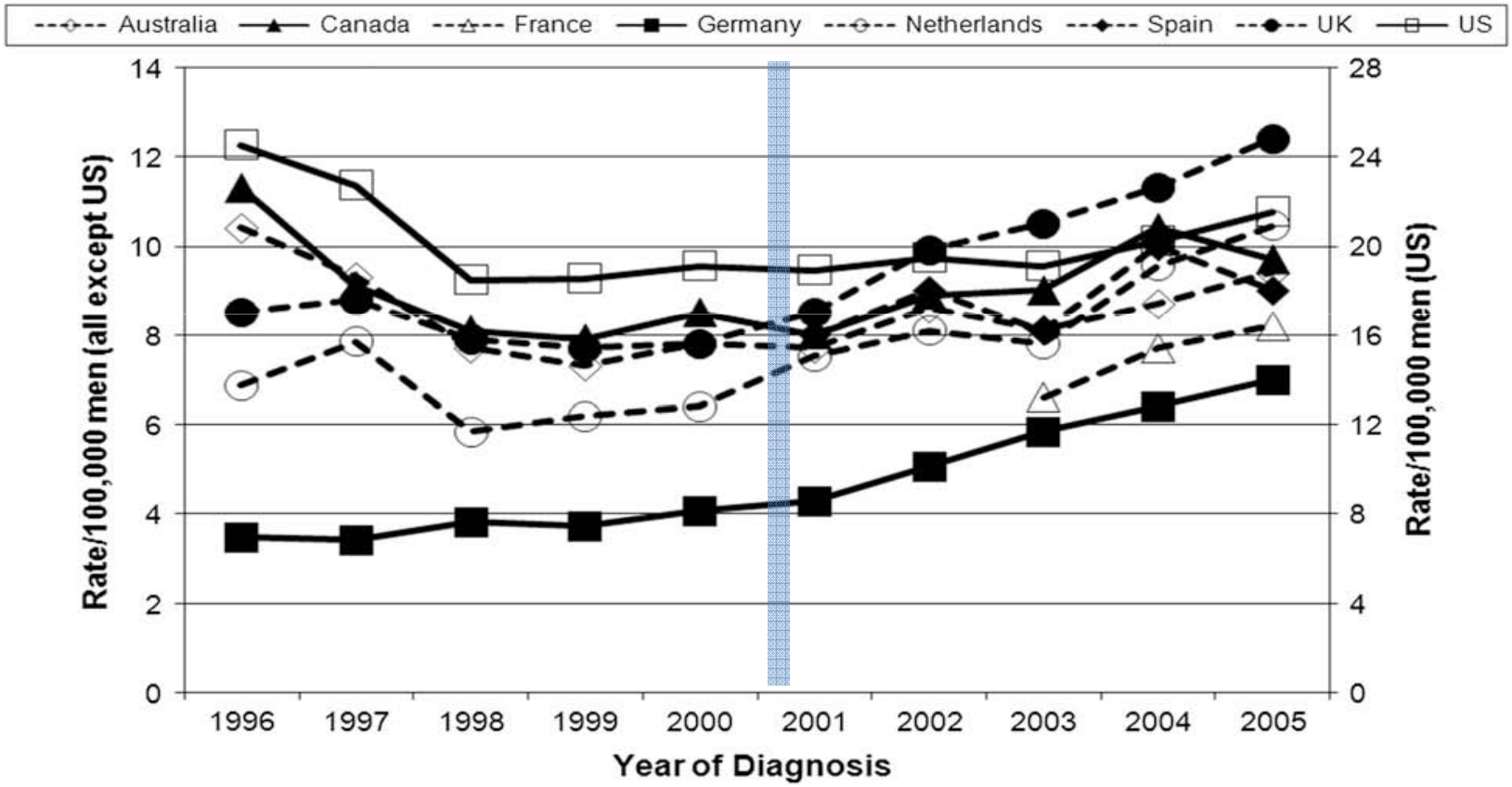
Country	Aggregate HIV Prevalence among MSM		Population Prevalence Rate (15+)	HIV prevalence among MSM vs Gen Pop
Namibia	**12.4%**	(8.1-16.8)	13.32%	0.9
Botswana	**19.7%**	(12.5-26.9)	21.56%	0.9
South Africa	**15.3%**	(12.4-18.3)	15.89%	1.0
Zambia	**32.9%**	(29.3-36.6)	15.72%	2.1
Kenya	**15.2%**	(13.3-17.2)	7.49%	2.0
Tanzania	**12.4%**	(9.5-15.2)	5.88%	2.1
Malawi	**21.4%**	(15.7-27.1)	11.46%	1.9
Nigeria	**13.5%**	(12.0-15.)	2.88%	4.7
Sudan	**8.8%**	(7.1-10.4)	1.26%	7.0

HIV Prevalence Data - Africa



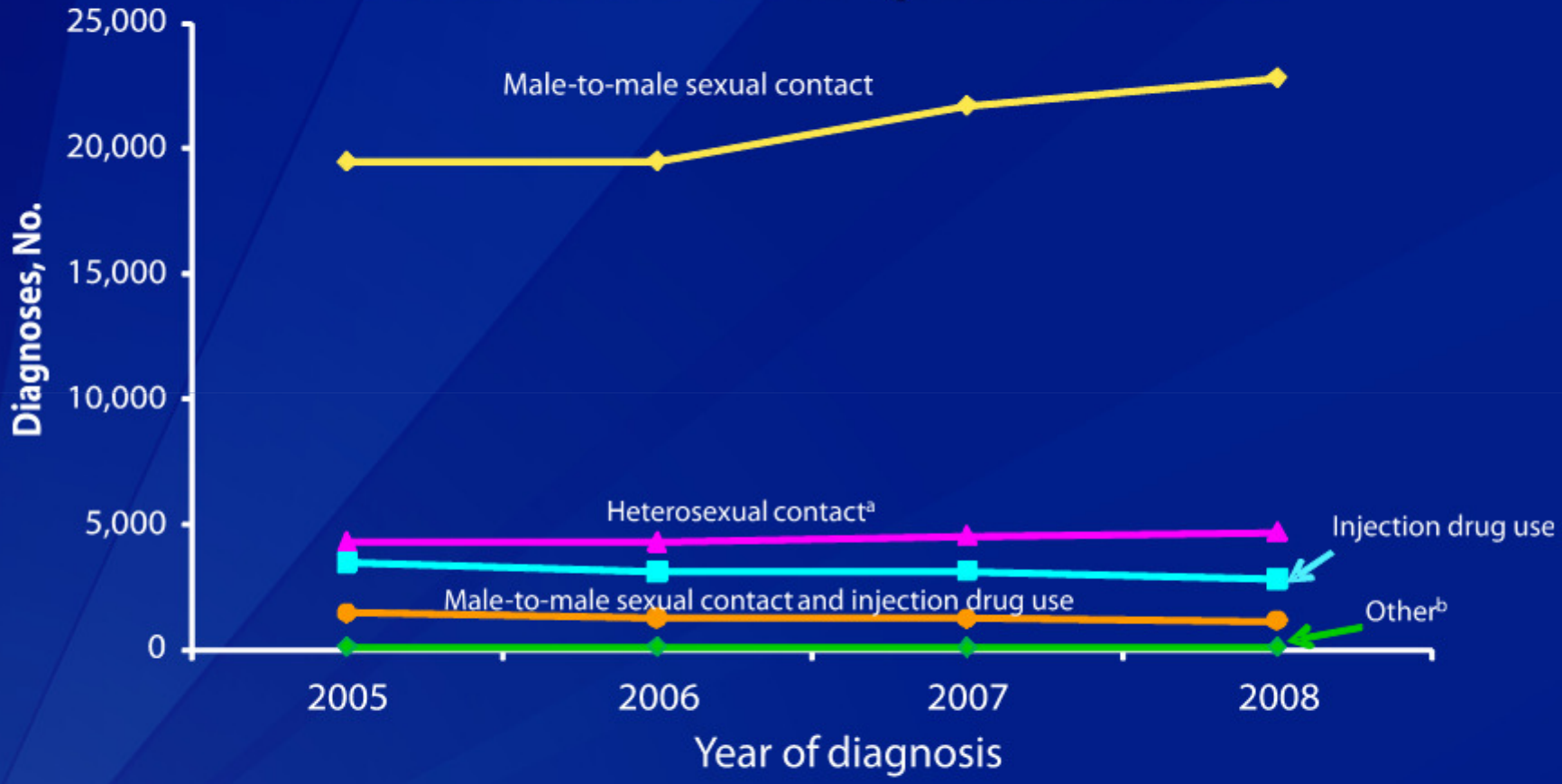
Source: van Griensven, Baral, et al. The Lancet, 2009. The Global Epidemic of HIV Infection among Men who have Sex with Men.

HIV among MSM in High Income Countries



Source: Sullivan, et al, 2009. Reemergence of the HIV Epidemic Among Men Who Have Sex With Men in North America, Western Europe, and Australia, 1996–2005

Diagnoses of HIV Infection among Adult and Adolescent Males, by Transmission Category, 2005–2008— 37 States and 5 U.S. Dependent Areas

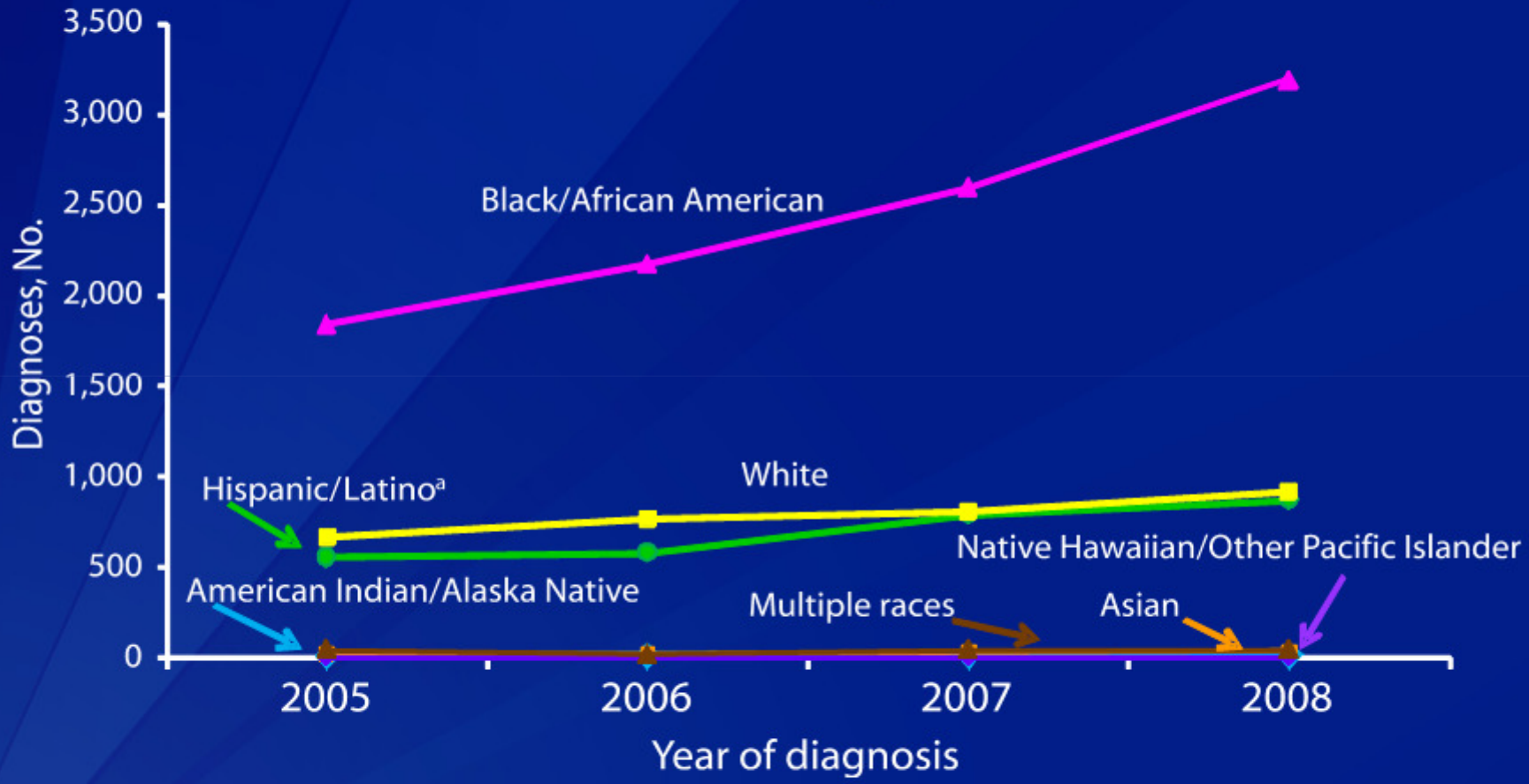


Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Data from 37 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting since at least January 2005. All displayed data have been estimated. Estimated numbers resulted from statistical adjustment that accounted for reporting delays and missing risk-factor information, but not for incomplete reporting.

[a] Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

[b] Includes hemophilia, blood transfusion, perinatal exposure, and risk-factor not reported or identified.

Diagnoses of HIV Infection among Men Who Have Sex with Men Aged 13–24, by Race/Ethnicity, 2005–2008— 37 States and 5 U.S. Dependent Areas



Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Data from 37 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting since at least January 2005. All displayed data have been estimated. Estimated numbers resulted from statistical adjustment that accounted for reporting delays and missing risk-factor information, but not for incomplete reporting. Data exclude men who reported sexual contact with other men *and* injection drug use.

[a] Hispanics/Latinos can be of any race.

Why?

Individual level risks for MSM

- Unprotected anal intercourse (⇧ risk with receptive UAI)
- High frequency of male partners (>3 sexual contacts/ week)
- High number of lifetime male partners (>10)
- Injection drug use
- Sex with women associated with ***lower risks*** in many MSM populations
- Non-injection drug use
- Methamphetamines

Mediated through increased sexual exposure

Beyrer, C. *STD, 2007*

Biological Risks

Baggaley, et al, 2010 systematic review and meta-analysis of HIV risks in anal sex: 4 studies found

1.4% per act probability of transmission anal sex (95% CI, 0.2-2.5)

40.4% per-partner probability of transmission (95% CI 6.0-74.9)

No difference per act prob. for MSM or heterosexual anal sex

1.4% per act prob. ***18 times higher*** than for penile-vaginal sex

Only men reporting exclusive insertive anal sex had lower per partner risks, still 21.7% (95% CI 0.2-43.3)

Modeling Network Level Risks

Goodreau & Golden 2007 (STI;83:458-462)

Biological and demographic causes of high HIV and std prevalence in MSM

MSM and heterosexual networks differ by biologically determined sex role segregation among heterosexual individuals but not MSM, and by anal/vaginal transmission probabilities.

Results:

The US heterosexual population would only experience an epidemic comparable to MSM if the mean partner number was increased several fold over that seen for either group.

For MSM to end the HIV epidemic, they would need to develop rates of unprotected sex lower than those currently exhibited by heterosexual individuals in the US.

Molecular surveillance: City of London

Episodic transmission of HIV revealed by molecular phylodynamics

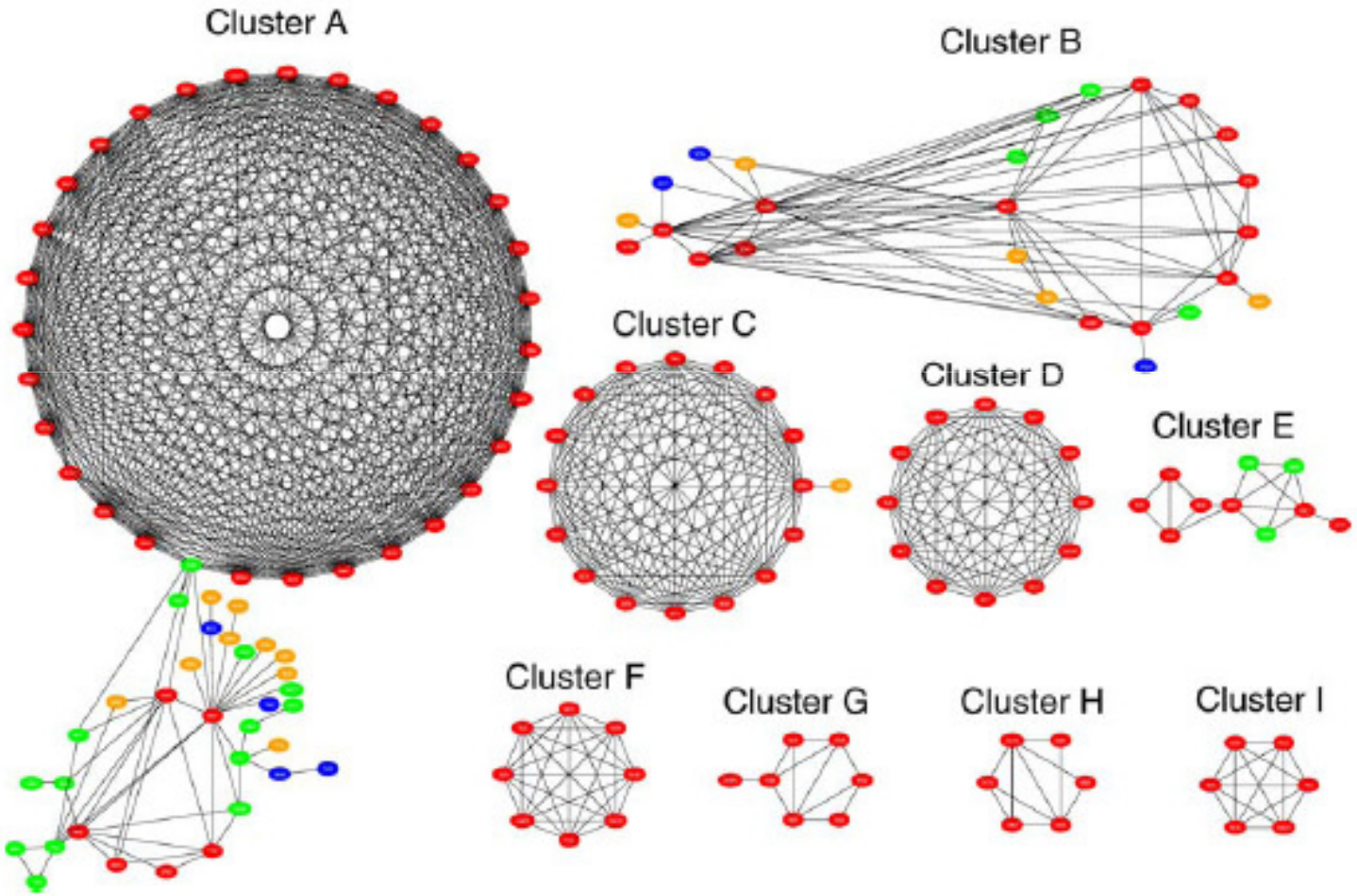


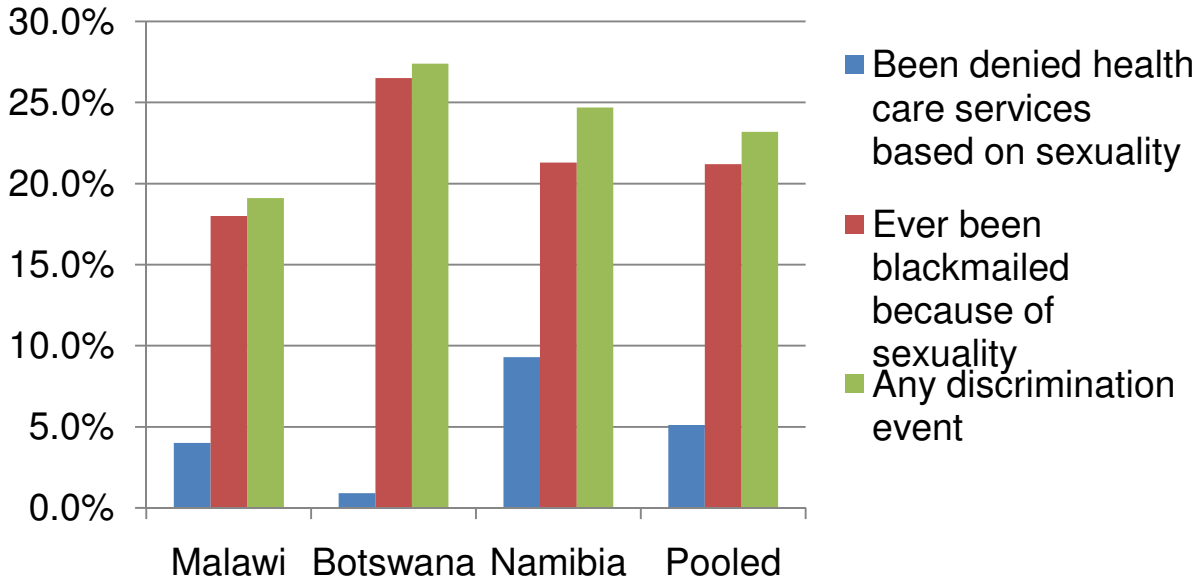
Figure 2. HIV Transmission Clusters Defined by Genetic Distance

Lewis, PLOS Medicine, 2008

What are the non-biologic drivers?

Structural risks for HIV among MSM

Prevalence of human rights concerns for MSM in Malawi, Namibia, Botswana (self reports)



Variable	Malawi	Botswana	Namibia	Pooled
	% (N)			
Been denied health services based on sexuality	4.0 (8)	0.9 (1)	8.3 (18)	5.1 (27)
Ever been blackmailed because of sexuality	18.0 (36)	26.5 (31)	21.3 (46)	21.2 (113)
Any discrimination event	19.1 (38)	27.4 (32)	24.7 (53)	23.2 (123)

Fay H, Baral S, Trapence G, Motimedi F, Umar E, et al. Stigma, Health Care Access, and HIV Knowledge Among Men Who Have Sex With Men in Malawi, Namibia, and Botswana. AIDS and Behavior, Dec 2010: 1-10.

Univariate analysis of the associations between fear and experienced discrimination with sexual health and use of services among MSM in Malawi, Botswana, and Namibia.

Variable	Fear of Seeking Health Care OR (95% CI) P=	Denied Health Care Services OR (95% CI) P=	Blackmailed OR (95% CI) P=
Diagnosed with an STI	**2.4 (1.4-4.3)** <.05	**6.9 (3.0-15.6)** <.001	1.5 (0.8-2.7)
Treated for an STI	**2.8 (1.7-4.9)** <.001	**7.3 (3.3-16.2)** <.001	1.5 (0.8-2.6)
Received recommendation for an HIV test	1.9 (1.2-3.0) <.05	2.2 (0.98-4.8)	**1.8 (1.1-2.8)** <.05
Ever tested for HIV	1.1 (0.7-1.7)	1.6 (0.7-3.7)	1.0 (0.7-1.6)
Self-Reported Diagnosis of HIV or AIDS	2.6 (1.1-6.5) <.05	3.3 (0.9-12.1)	**2.7 (1.1-6.6)** <.05
Self-Reported Treatment for HIV	**3.7 (1.6-8.6)** <.05	**46.1 (17.3-122.8)** <.001	**5.4 (2.2-13.2)** <.001
HIV positive	1.7 (0.9-3.2)	1.2 (0.4-3.6)	0.9 (0.5-1.6)
Any interaction with health care	**2.6 (1.6-3.9)** <.001	**6.4 (2.5-16.1)** <.001	**2.1 (1.4-3.2)** <.05

data from three countries are pooled

Fay H, Baral S, Trapence G, Motimedi F, Umar E, Iipinge S, Dausab F, Wirtz A, Beyrer. Stigma, Health Care Access, and HIV Knowledge Among Men Who Have Sex With Men in Malawi, Namibia, and Botswana. AIDS and Behavior, 2010: 1-10.

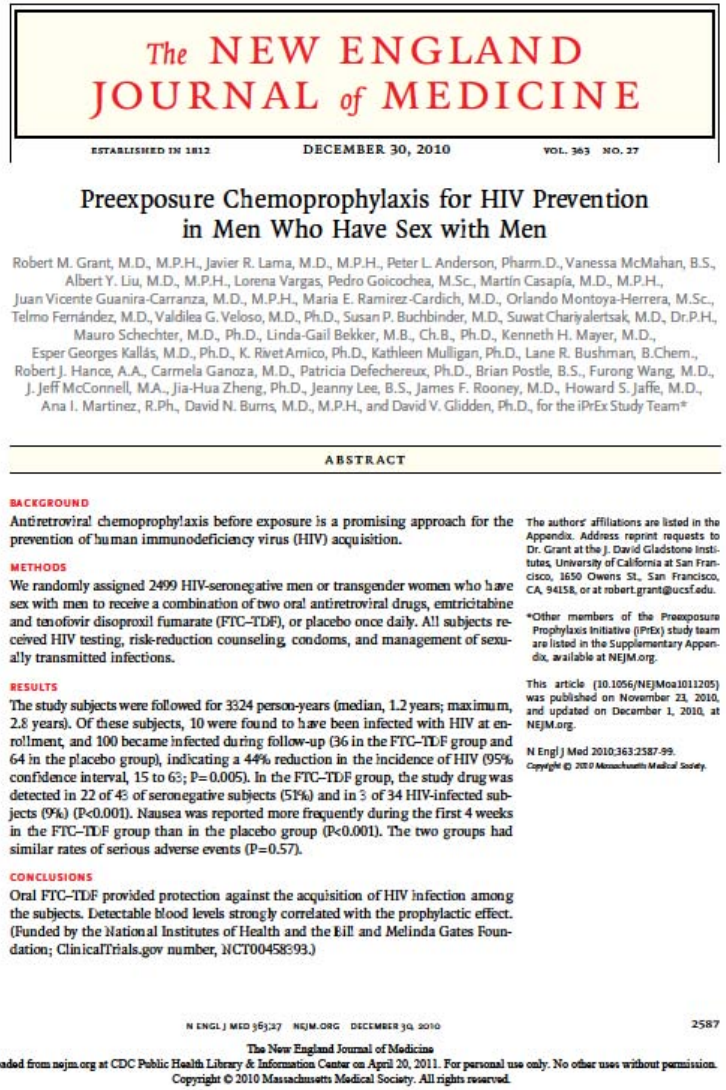
Interventions

fit to men’s lives, risks, networks, contexts

Completed Efficacy Trials of Interventions for Prevention of Sexual Transmission of HIV, 2011

Intervention	Completed	Efficacious
Behavioral	8	0
Barriers	1	0
Male Circumcision	3	3
STI Treatment	6	1
HSV-2 Suppression	3	0
Pre Exposure Prophylaxis	3	1
Microbicides	12	1
HIV Vaccines	4	1
ARV as Prevention	1	1
Total	41	8

IPrEx: Oral daily Truvada for HIV Prevention in MSM and TGW



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Preexposure Chemoprophylaxis for HIV Prevention in Men Who Have Sex with Men

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ABSTRACT

BACKGROUND

Antiretroviral chemoprophylaxis before exposure is a promising approach for the prevention of human immunodeficiency virus (HIV) acquisition.

METHODS

We randomly assigned 2499 HIV-seronegative men or transgender women who have sex with men to receive a combination of two oral antiretroviral drugs, emtricitabine and tenofovir disoproxil fumarate (FTC–TDF), or placebo once daily. All subjects received HIV testing, risk-reduction counseling, condoms, and management of sexually transmitted infections.

RESULTS

The study subjects were followed for 3324 person-years (median, 1.2 years; maximum, 2.8 years). Of these subjects, 10 were found to have been infected with HIV at enrollment, and 100 became infected during follow-up (36 in the FTC–TDF group and 64 in the placebo group), indicating a 44% reduction in the incidence of HIV (95% confidence interval, 15 to 63; P=0.005). In the FTC–TDF group, the study drug was detected in 22 of 43 of seronegative subjects (51%) and in 3 of 34 HIV-infected subjects (9%) (P<0.001). Nausea was reported more frequently during the first 4 weeks in the FTC–TDF group than in the placebo group (P<0.001). The two groups had similar rates of serious adverse events (P=0.57).

CONCLUSIONS

Oral FTC–TDF provided protection against the acquisition of HIV infection among the subjects. Detectable blood levels strongly correlated with the prophylactic effect. (Funded by the National Institutes of Health and the Bill and Melinda Gates Foundation; ClinicalTrials.gov number, NCT00458393.)

The authors' affiliations are listed in the Appendix. Address reprint requests to Dr. Grant at the J. David Gladstone Institutes, University of California at San Francisco, 1650 Owens St., San Francisco, CA, 94158, or at robert.grant@ucsf.edu.

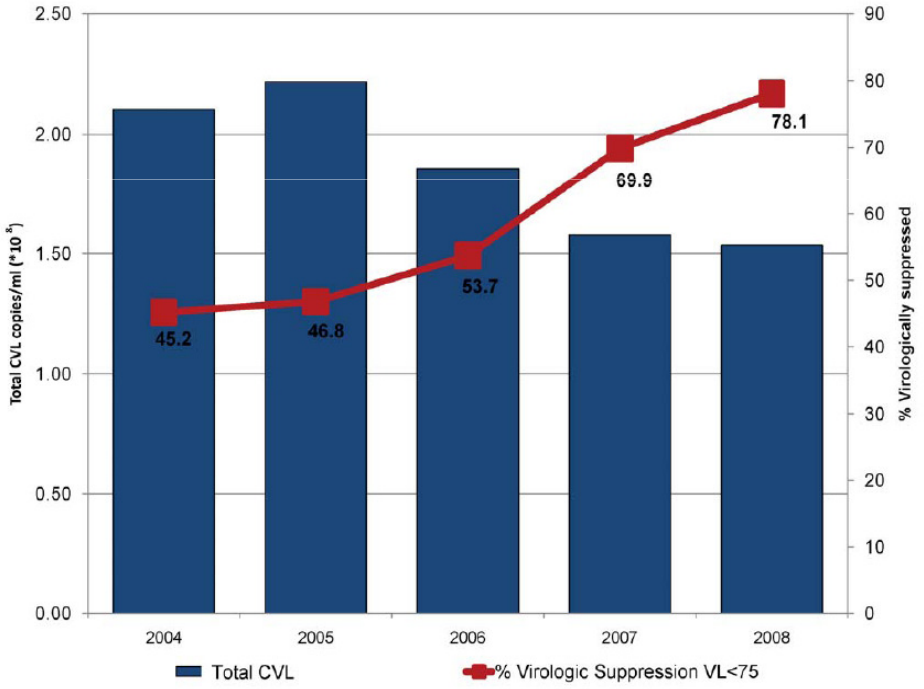
*Other members of the Preexposure Prophylaxis Initiative (iPrEx) study team are listed in the Supplementary Appendix, available at NEJM.org.

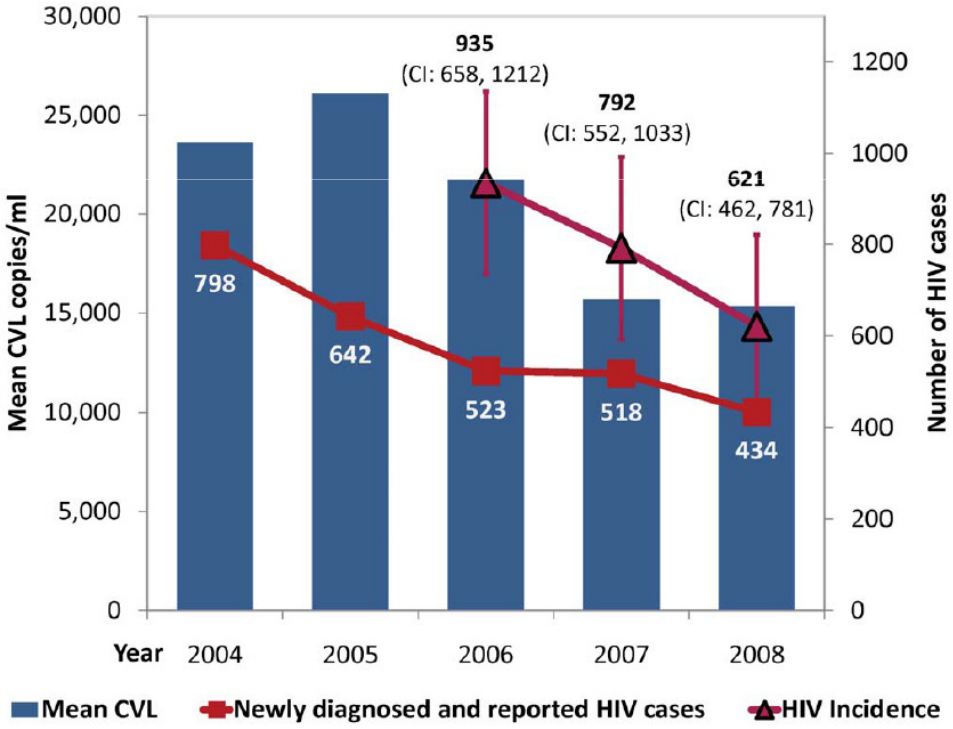
This article (10.1056/NEJMoa1011205) was published on November 23, 2010, and updated on December 1, 2010, at NEJM.org.

N Engl J Med 2010;363:2587-99.

- Double-blind randomized controlled trial of daily Truvada (tenofovir + emtricitabine) or placebo
- 2499 HIV-uninfected MSM and TGW at 11 sites in 6 countries
- Only MSM efficacy trial
- 3324 person years follow-up
- 44% efficacy (95% CI 15-63; p=.005)
- Adherence ("dose") response relationship

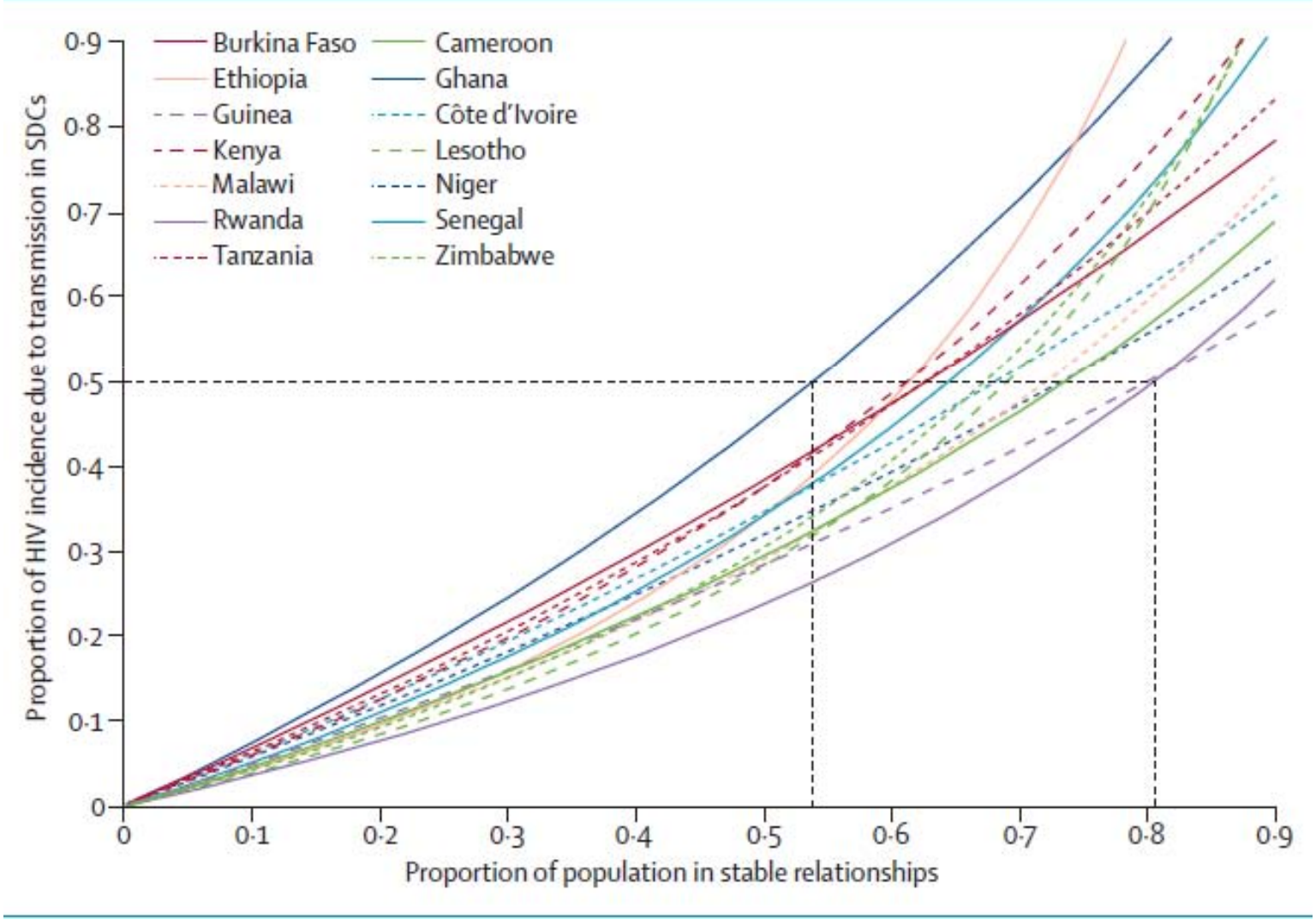
Total & Mean Viral Load, % Suppression, and New HIV infections San Francisco





Courtesy Dr. Moupali Das, SFDPH

Contribution by Discordant Couples to the HIV epidemic



Courtesy Dr. Wafaa El-Sadr

Maybe relevant to reduce biological risks in anal sex?

- Caprisa 001 1% Tenofovir gel showed 37% efficacy with vaginal use in RSA women

  Rectal formulations under study

- HPTN 052: ARV treatment at 350 CD4 showed a 96% efficacy in reducing HIV transmission in heterosexual discordant couples: under-powered for male couples

Prevention across levels for MSM

- Individual
  - VCT, condoms, STI care, BCC, **PrEP**
- Couple
  - Couples VCT, **ARV for + partner in discordant cs**
- Network
  - Test and treat, community viral load, raising CD4 levels (treat all +s as in SF)
- Structural levels
  - Decriminalization, human rights, health care worker sensitization

Discussion and Conclusions

- Oral PreP is the first biomedical intervention with specific efficacy for MSM, so likely to be part of any combination
- Combination approaches need to be developed and tested for MSM taking into account intervention level
- Rectal microbicides are a promising potential component
- Combination packages will be population targeted and context sensitive

Archbishop Emeritus Desmond Tutu
WP, March 12, 2010

Hate has no place in the house of God. No one should be excluded from our love, our compassion or our concern because of race or gender, faith or ethnicity — or because of their sexual orientation. Nor should anyone be excluded from health care on any of these grounds…

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Greg Millett MPH

First International March against Stigma, Discrimination and Homophobia, Mexico City, August, 2008