




“Bending the Curve” of the HIV Epidemic: The Science Base

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 October 14, 2014

Current Status of the Global HIV/AIDS Pandemic

- 78 million total HIV infections
- 39 million total AIDS deaths
- 35 million people living with HIV
- 1.5 million AIDS deaths in 2013
- 2.1 million new HIV infections in 2013

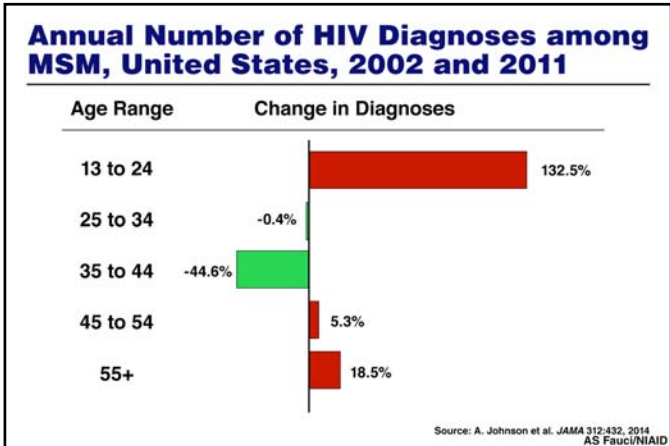
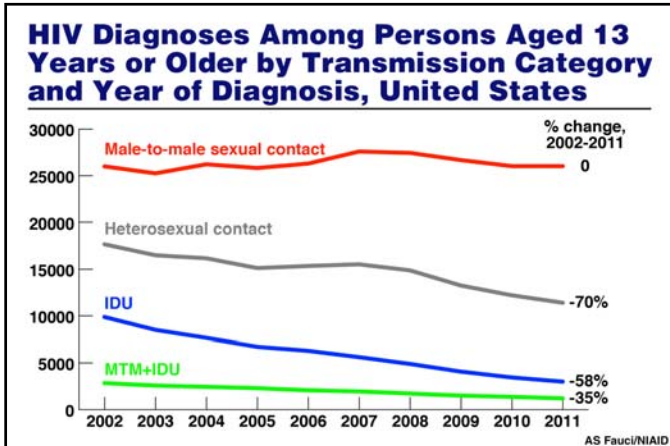
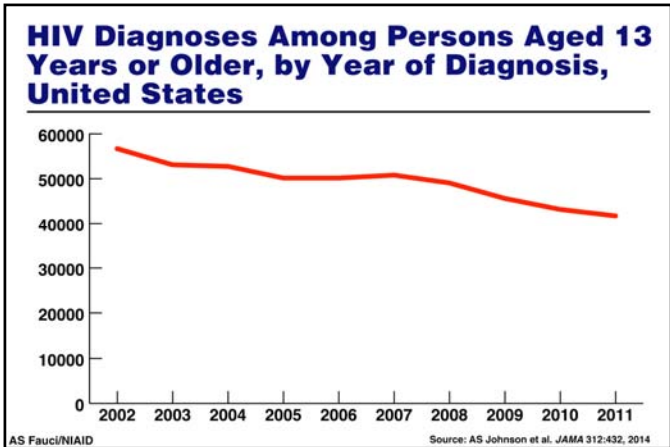


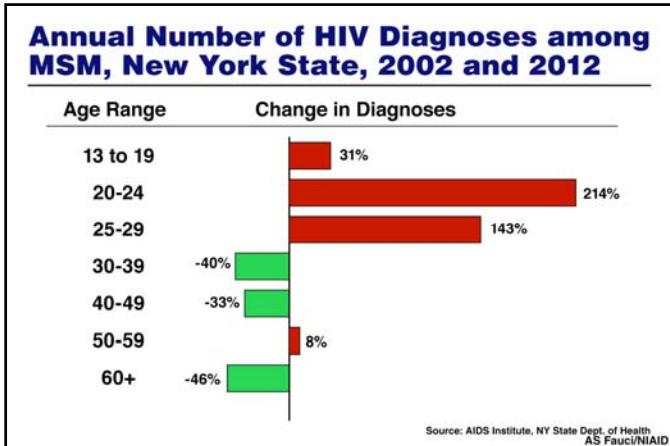
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HIV in the United States

- 1.1 million people living with HIV infection, of whom 18% are unaware of their infection
- 636,000 people have died of AIDS
- Approximately 50,000 new infections/yr. for past two decades
- MSM, Blacks/African Americans face the most severe burden of HIV
- Youths aged 13-24 years account for >25% of new infections

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Andrew M. Cuomo – Governor
June 29, 2014

Governor Cuomo Announces Plan to End the AIDS Epidemic in New York State


- “Bending the curve” -- 3-point plan
- Goal: reduce new HIV infections to 750 by 2020, down from ~3,000 in 2012

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Bending the Curve: 3-Point New York Program

- Identifying persons with HIV who remain undiagnosed and linking them to health care
- Retaining persons diagnosed with HIV in health care and getting them on anti-HIV therapy to maximize HIV virus suppression so they remain healthy, and to prevent further transmission
- Providing access to Pre-Exposure Prophylaxis (PrEP) for high-risk persons to keep them HIV negative

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April 24, 2012 Volume 26, No. 7

HIV Transmission Rates from Persons Living with HIV who are Aware and Unaware of Their Infection

HI Hall, DR Holtgrave & C Maulsby

- In the United States, an estimated 49% of transmissions were from the 20% of persons living with HIV unaware of their infection

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Established in 1927 by the American College of Physicians
30 April 2013

Screening for HIV: U.S. Preventive Services Task Force Recommendation Statement


U.S. Preventive Services Task Force

Recommendation (Grade A):

- Test all persons aged 15–65 years for HIV infection at least once, regardless of their risk; also test younger adolescents and older adults with increased risk.
- Persons with increased risk should be tested more frequently.

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FDA-Approved Antiretroviral Drugs

NRTI <ul style="list-style-type: none"> ■ Zidovudine ■ Didanosine ■ Zalcitabine ■ Stavudine ■ Lamivudine ■ Abacavir ■ Tenofovir ■ Emtricitabine ■ 4 multi-drug combinations 		Fusion Inhibitor <ul style="list-style-type: none"> ■ Enfuvirtide
NNRTI <ul style="list-style-type: none"> ■ Nevirapine ■ Etravirine ■ Delavirdine ■ Rilpivirine ■ Efavirenz 		Entry Inhibitor <ul style="list-style-type: none"> ■ Maraviroc
Pharmokinetic Enhancers <ul style="list-style-type: none"> ■ Ritonavir ■ Cobicistat 	PI <ul style="list-style-type: none"> ■ Saquinavir ■ Ritonavir ■ Indinavir ■ Nelfinavir ■ Amprenavir ■ Lopinavir + Ritonavir ■ Atazanavir ■ Fosamprenavir ■ Tiplranavir ■ Darunavir 	Integrase Inhibitors <ul style="list-style-type: none"> ■ Raltegravir ■ Elvitegravir ■ Dolutegravir
		Multi-Class Combinations <ul style="list-style-type: none"> ■ Atripla ■ Complera ■ Stribild ■ Trumeq

Source: FDA, 2014
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Dramatic Benefits of Viral Suppression with Antiretroviral Therapy

- Health and longevity of HIV+ individuals
- Reduced infectivity of HIV+ individuals

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PLOS ONE | December 18, 2013

Closing the Gap: Increases in Life Expectancy among Treated HIV-Positive Individuals in the United States and Canada

H. Samji et al. for The North American AIDS Cohort Collaboration on Research and Design (NA-ACCORD) of IeDEA

- 22,937 individuals, 82,022 person-years
- A 20-year-old HIV-infected individual on ART in the U.S. or Canada is expected to live into their early 70s, a life expectancy approaching that of the general population

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The New England Journal of Medicine
Volume 368 August 11, 2013 Number 4

Prevention of HIV-1 Infection with Early Antiretroviral Therapy

HPTN 052 Study Team

- 1,763 HIV-serodiscordant couples in 9 countries
- 96% reduction in HIV transmission when ART started in HIV-infected partner at CD4 count of 350-550 compared to <250

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nam aidsmap

HIV & AIDS - sharing knowledge, changing lives

July 24, 2014

Could HIV Treatment Mean Safer Sex?

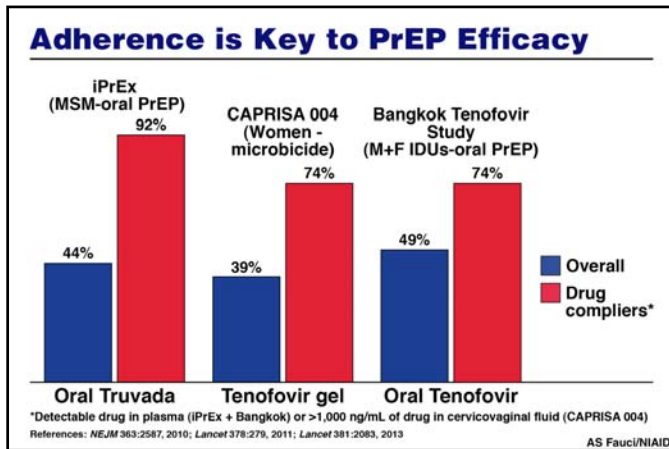
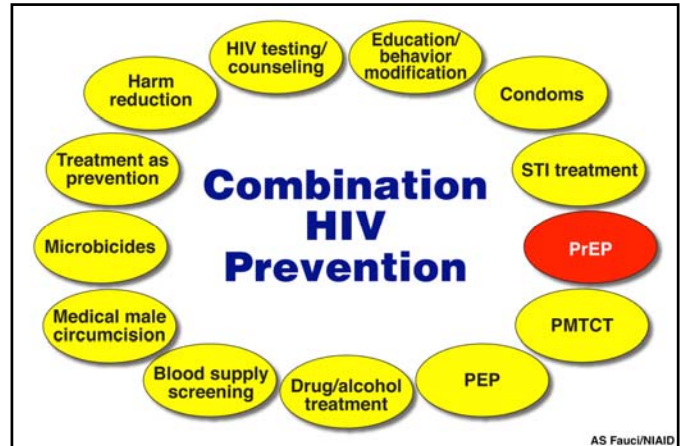
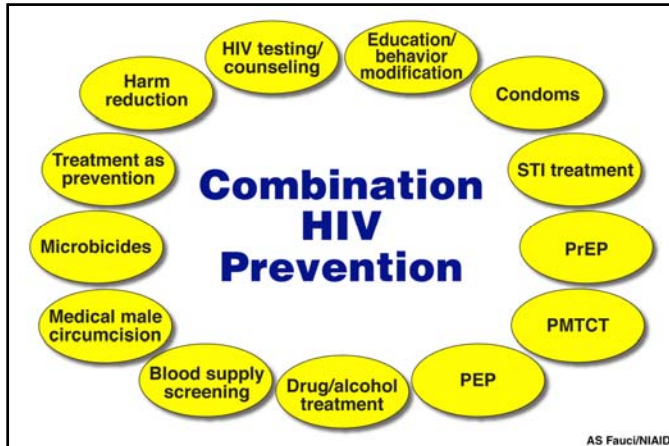
'Risk compensation' does not happen, study finds



C. Kennedy, Johns Hopkins University

- Increased condom use in meta-analysis of 27 studies of HIV+ people on ART
- "... 'treatment as prevention' may be true in more ways than one."

Source: AIDS 2014, abstract WEAC104
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FDA U.S. Food and Drug Administration
Protecting and Promoting Your Health

July 16, 2012 **FDA News Release**

FDA Approves First Drug for Reducing the Risk of Sexually Acquired HIV Infection

- Once-daily Truvada approved for use as PrEP to reduce the risk of sexually acquired HIV infection in adults at high risk
- For use with other HIV prevention methods

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No HIV Infections with High PrEP Adherence in Partners PrEP Substudy

PLOS MEDICINE September 10, 2013

Adherence to Antiretroviral Prophylaxis for HIV Prevention: A Substudy Cohort within a Clinical Trial of Serodiscordant Couples in East Africa
JE Haberer, DR Bangsberg et al.

- Very high adherence with active adherence monitoring, counseling
- 14 infections, all in placebo group
- PrEP efficacy = 100% (95% CI: 84-100%)

- 1,147 uninfected partners in HIV sero-discordant, heterosexual couples in Uganda

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iPrEx Open Label Extension (OLE) Study: Adherence Must be Good, not Necessarily Perfect

THE LANCET Infectious Diseases Volume 14 September 2014

Uptake of Pre-Exposure Prophylaxis, Sexual Practices, and HIV Incidence in Men and Transgender Women Who Have Sex With Men: A Cohort Study
RM Grant, DV Glidden et al. for the iPrEx Study Team

- Risk reduction 84% (95% CI: 21 to 99%) with 2-3 tablets/week
- Risk reduction 100% (95% CI: 86 to 100%) with ≥ 4 tablets/week

- 1,603 HIV-negative patients previously enrolled in 3 PrEP trials

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PrEP Use Not Associated with Sexual Risk Compensation in Follow-Up to Partners PrEP, iPrEX Studies

THE LANCET Infectious Diseases
Volume 13 Issue 12 December 2013

Sexual Behaviour of Heterosexual Men and Women Receiving Antiretroviral Pre-exposure Prophylaxis for HIV Prevention: a Longitudinal Analysis

KK Mugwanya et al. for the Partners PrEP Study Team

PLOS ONE A peer-reviewed, open access journal
December 18, 2013

No Evidence of Sexual Risk Compensation in the iPrEX Trial of Daily Oral HIV Preexposure Prophylaxis

JL Marcus, RM Grant et al.

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Long-Acting Integrase Inhibitor Protects Macaques from Intrarectal Simian/Human Immunodeficiency Virus

CD Andrews, DD Ho et al.

- Monthly injection of long-acting integrase inhibitor protected 100% of macaques from infection
- Single shot protected 5-10 weeks

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THE LANCET

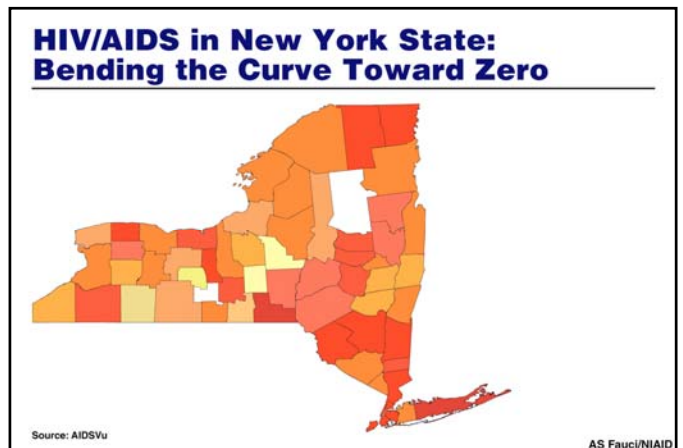
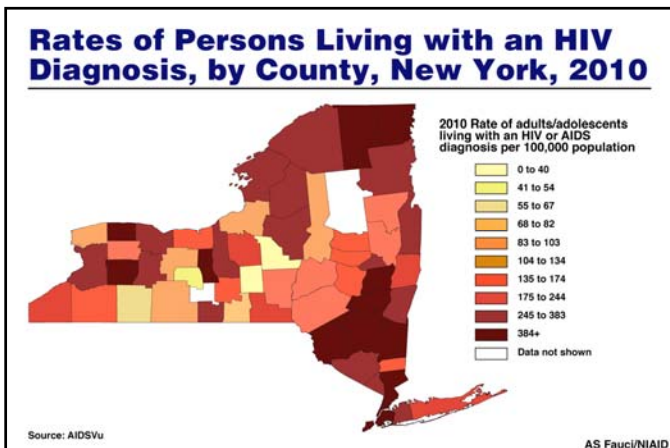
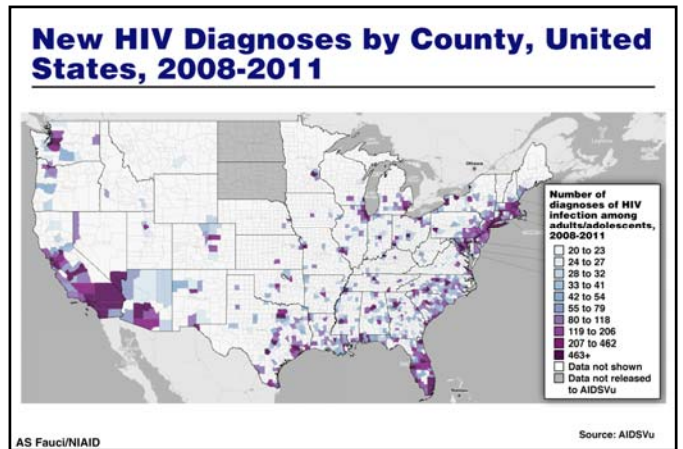
Available online April 14, 2014

Transformation of HIV from Pandemic to Low-Endemic Levels: a Public Health Approach to Combination Prevention

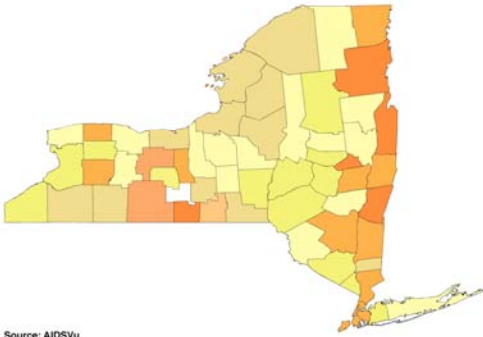
A Jones, P Plot, M Dybul et al.

- HIV risk is not uniformly distributed: countries often have microepidemics with very different levels of transmission and risk groups/behaviors
- HIV prevention efforts should focus on high-transmission geographies and populations -- "hot zones" -- and provide tailored packages of interventions

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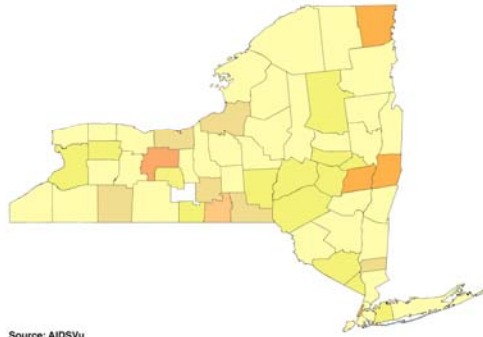
**HIV/AIDS in New York State:
Bending the Curve Toward Zero**



Source: AIDS Vu

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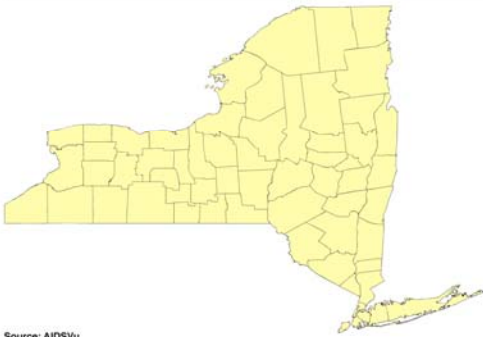
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