

# Treatment as Prevention

## The Key to an AIDS-Free Generation

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*Past-President, International AIDS Society*

**Summit to End HIV/AIDS in America**

**Las Vegas, Sat Sept 29<sup>th</sup> 2012**



BRITISH COLUMBIA  
CENTRE *for* EXCELLENCE  
*in* HIV/AIDS

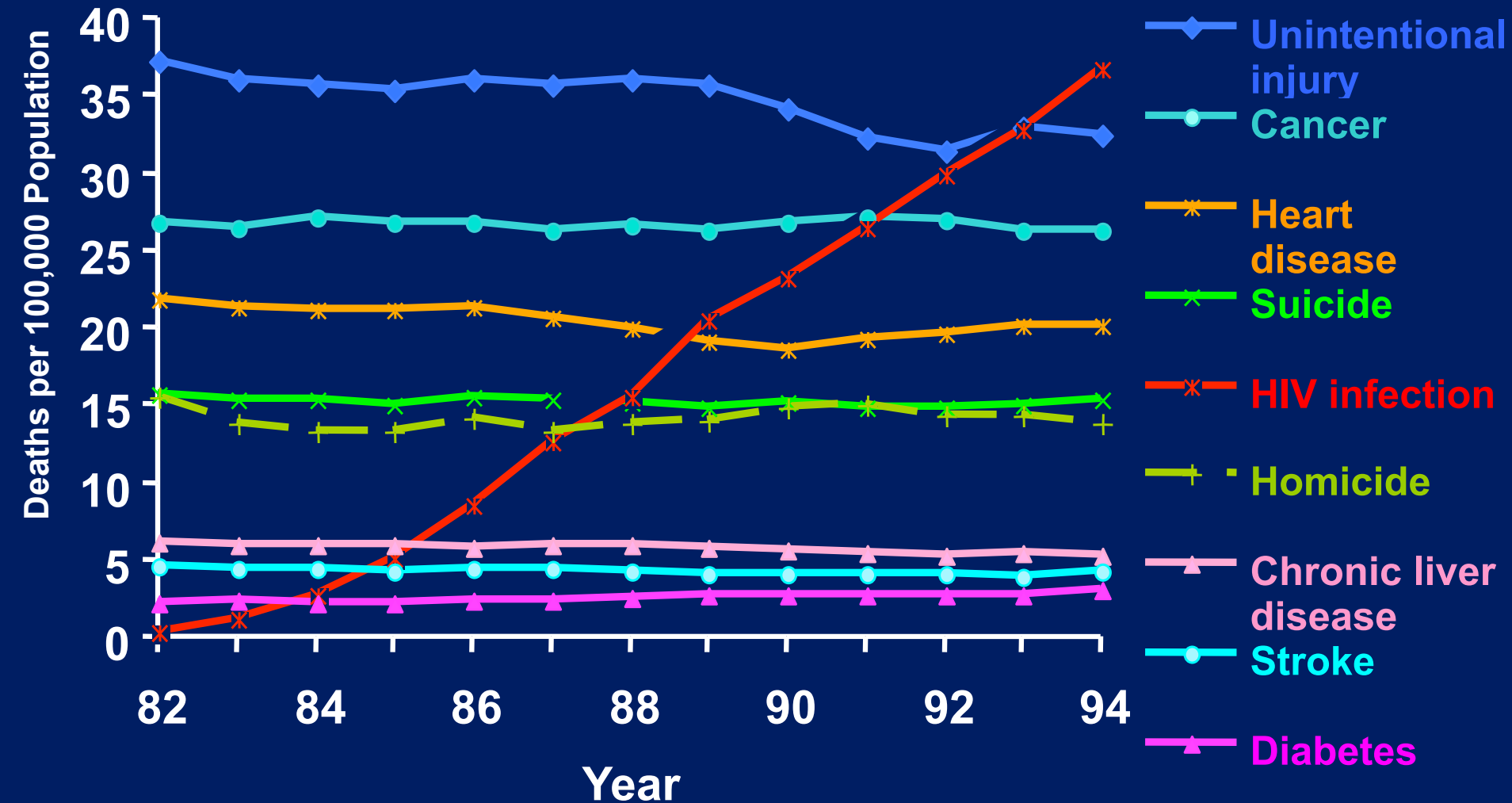


a place of mind  
THE UNIVERSITY OF BRITISH COLUMBIA

*Providence*  
HEALTH CARE  
How you want to be treated.

# USA - Trends in Annual Rates of Death

Ages 25 to 44

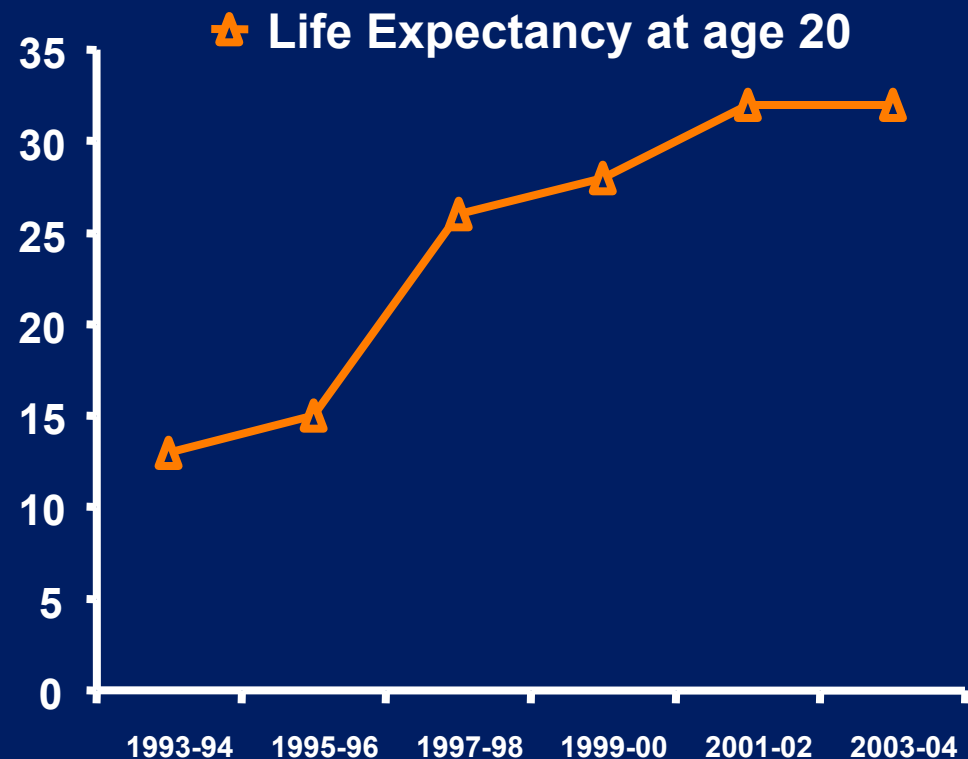
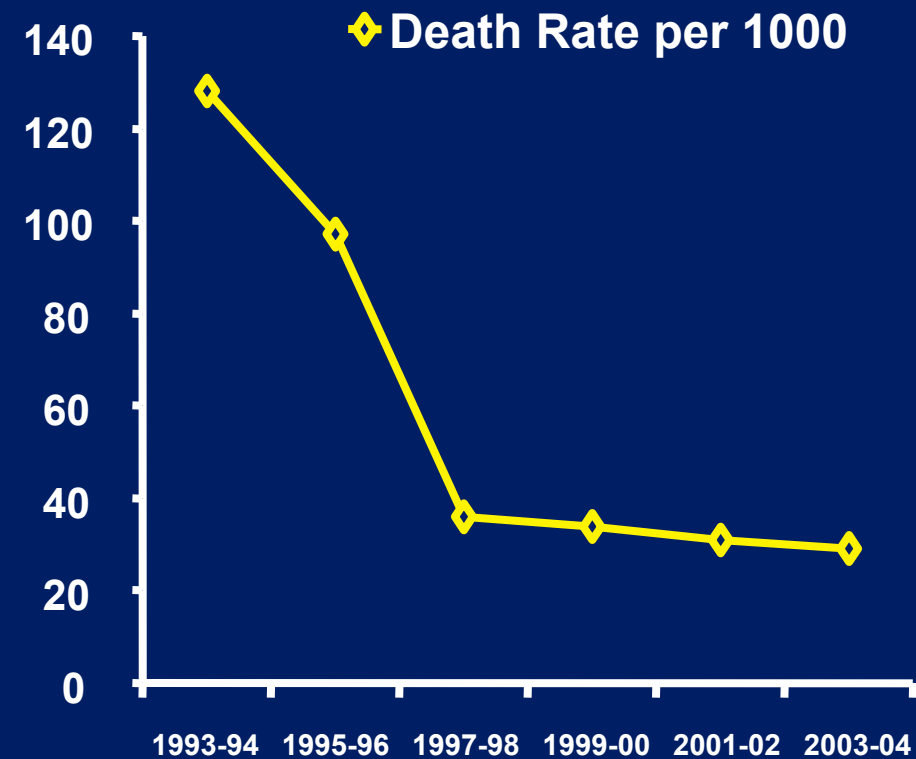


# *Vancouver 1996*

## *“One World One Hope”*

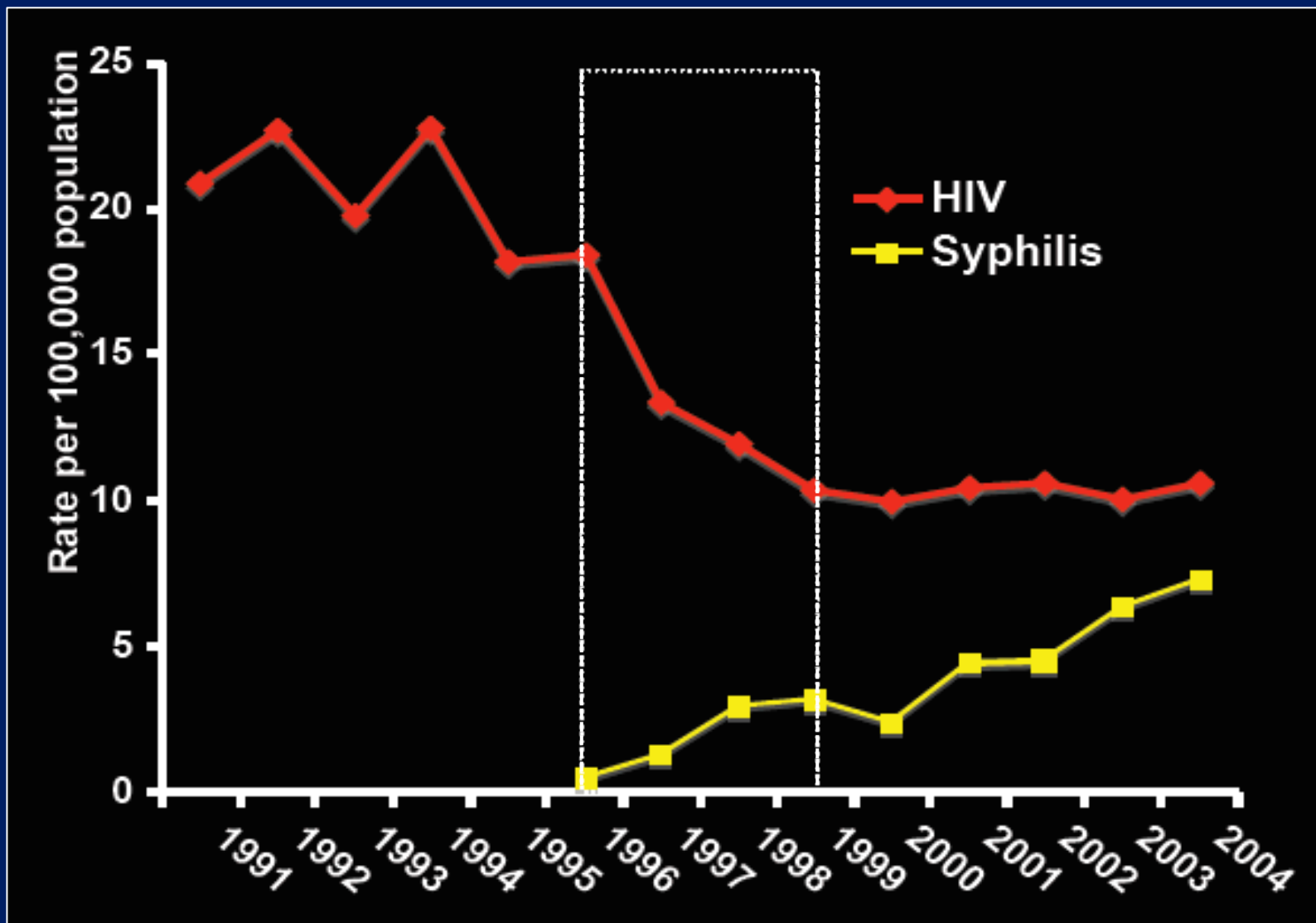


# Impact of HAART in BC-CfE

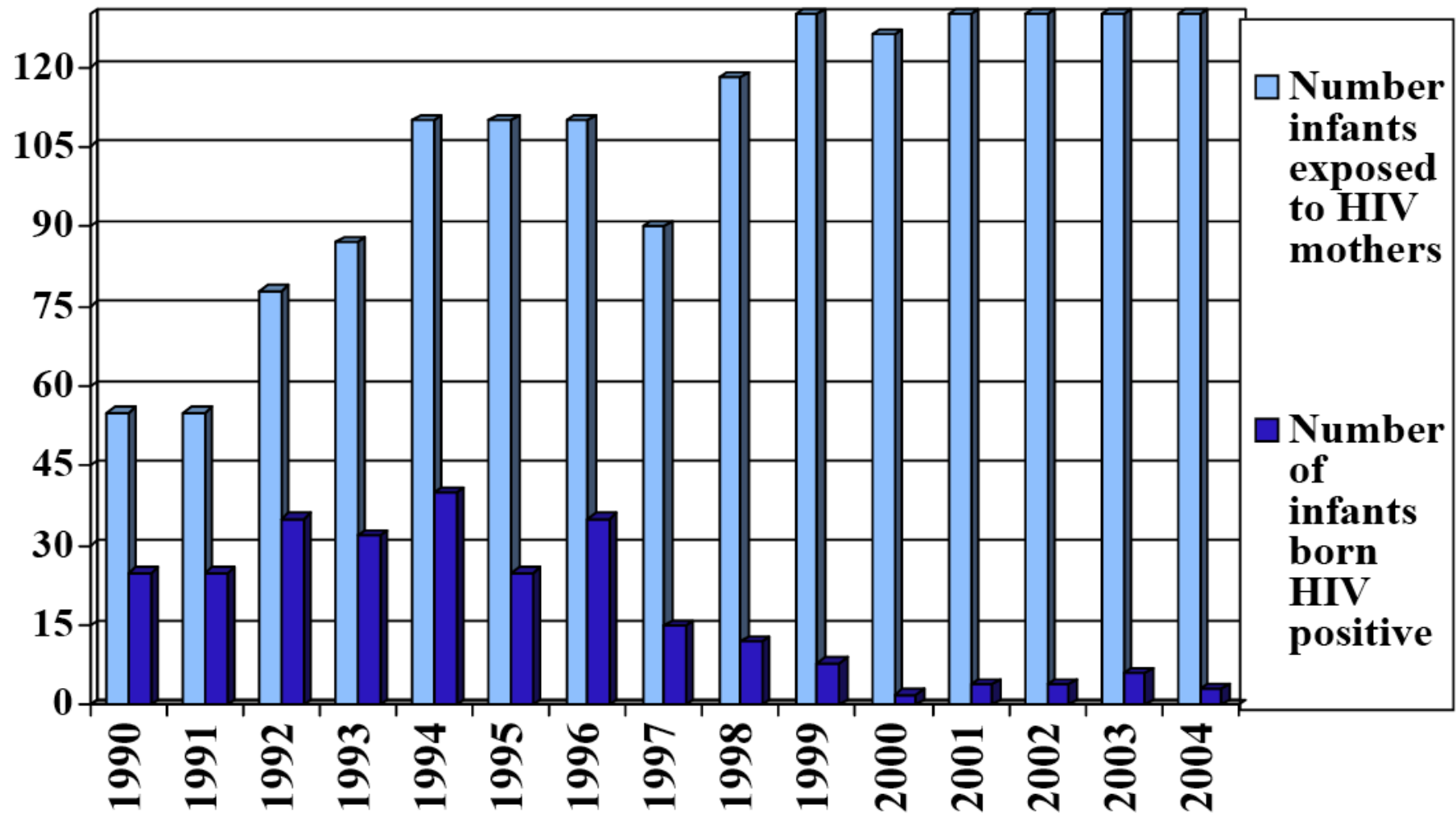


Modified from Hogg et al, Lancet. 2009

# New HIV and Syphilis in BC



# Canada: Infants Exposed to HIV and Born HIV Positive



# The case for expanding access to highly active antiretroviral therapy to curb the growth of the HIV epidemic

*Julio S G Montaner, Robert Hogg, Evan Wood, Thomas Kerr, Mark Tyndall, Adrian R Levy, P Richard Harrigan*

"The upshot of this widespread failure to recognize that AIDS is an exceptional crisis and threat is that the response to the pandemic is not made commensurate to the challenges—and so the epidemic escalates even while it erodes our capacities to check it."

*Dr Peter Piot, UNAIDS Executive Director<sup>1</sup>*



**International  
AIDS Society**

**Stronger Together**

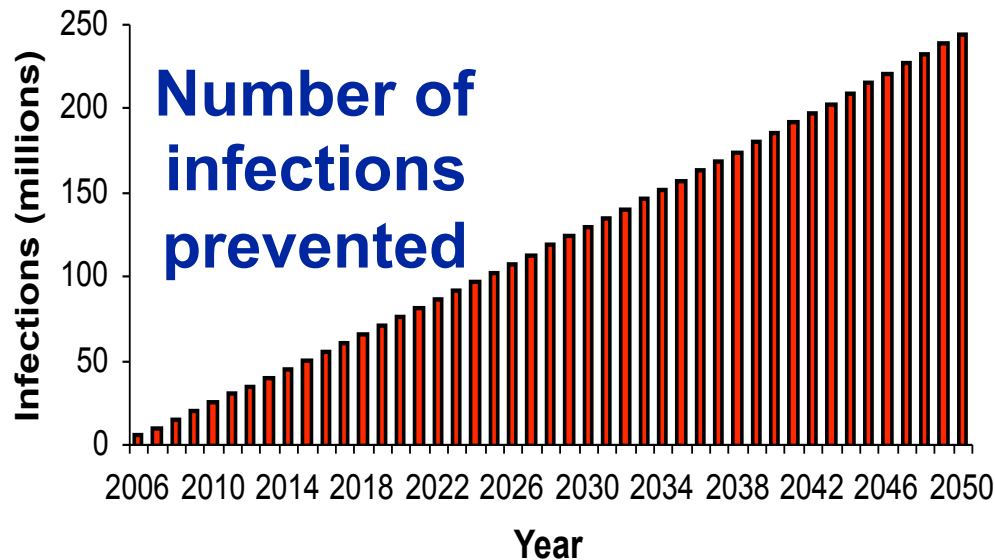
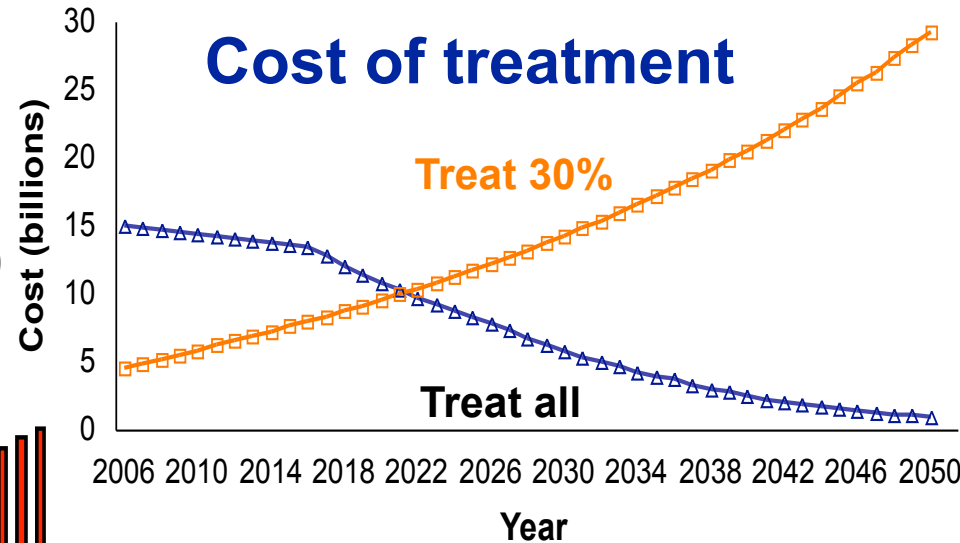
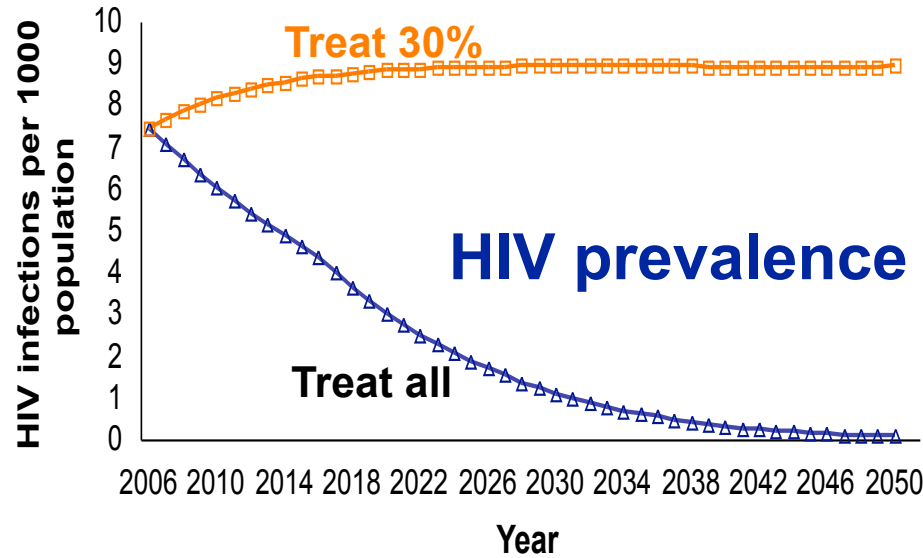


**AIDS 2006**

XVI International AIDS Conference

**Time to Deliver**

# Hypothetical Demographic Model





AUGUST 5, 2008

## Clinton Urges More AIDS Efforts

By MARILYN CHASE

MEXICO CITY -- Former U.S. President Bill Clinton, fresh from a tour of his foundation's projects in Africa, took the stage of the International AIDS Conference here to tell thousands that "we must do more."

"AIDS is a big dragon," Mr. Clinton said Monday, but unlike the mythical dragon slain by St. George, "this dragon must be slain by millions and millions of foot soldiers."



**Bill Clinton**

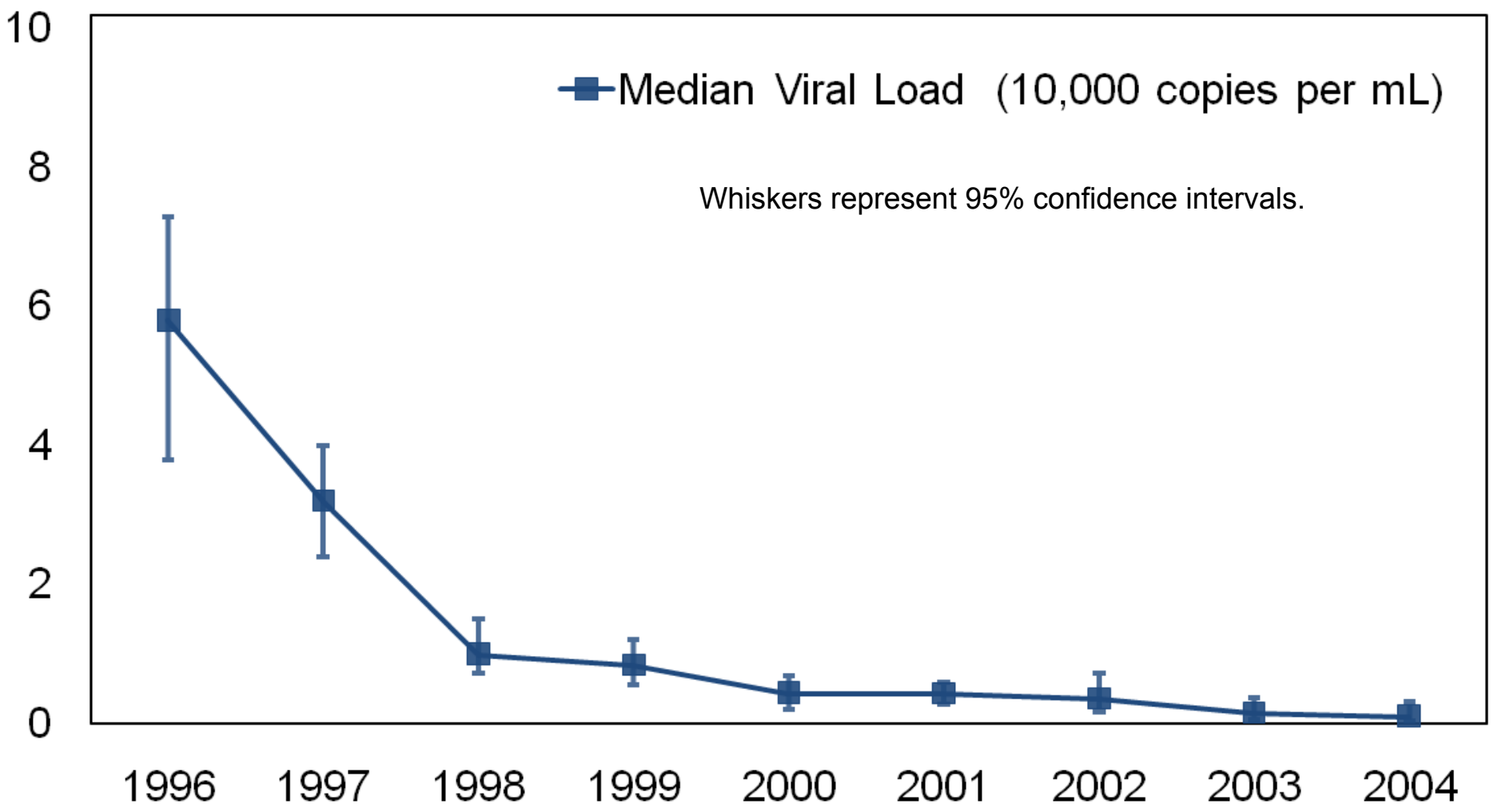
Until there is a vaccine, Mr. Clinton said, studies show that suppressing blood levels of HIV with potent antivirals can help block the disease's transmission. The Chair of AIDS Research at the University of British Columbia, Julio Montaner, who is the incoming president of the International AIDS Society that sponsors this conference, is a leading champion of using drugs as preventatives.

# **HAART Outcomes among Injection Drug Users**

**The Vancouver Experience**

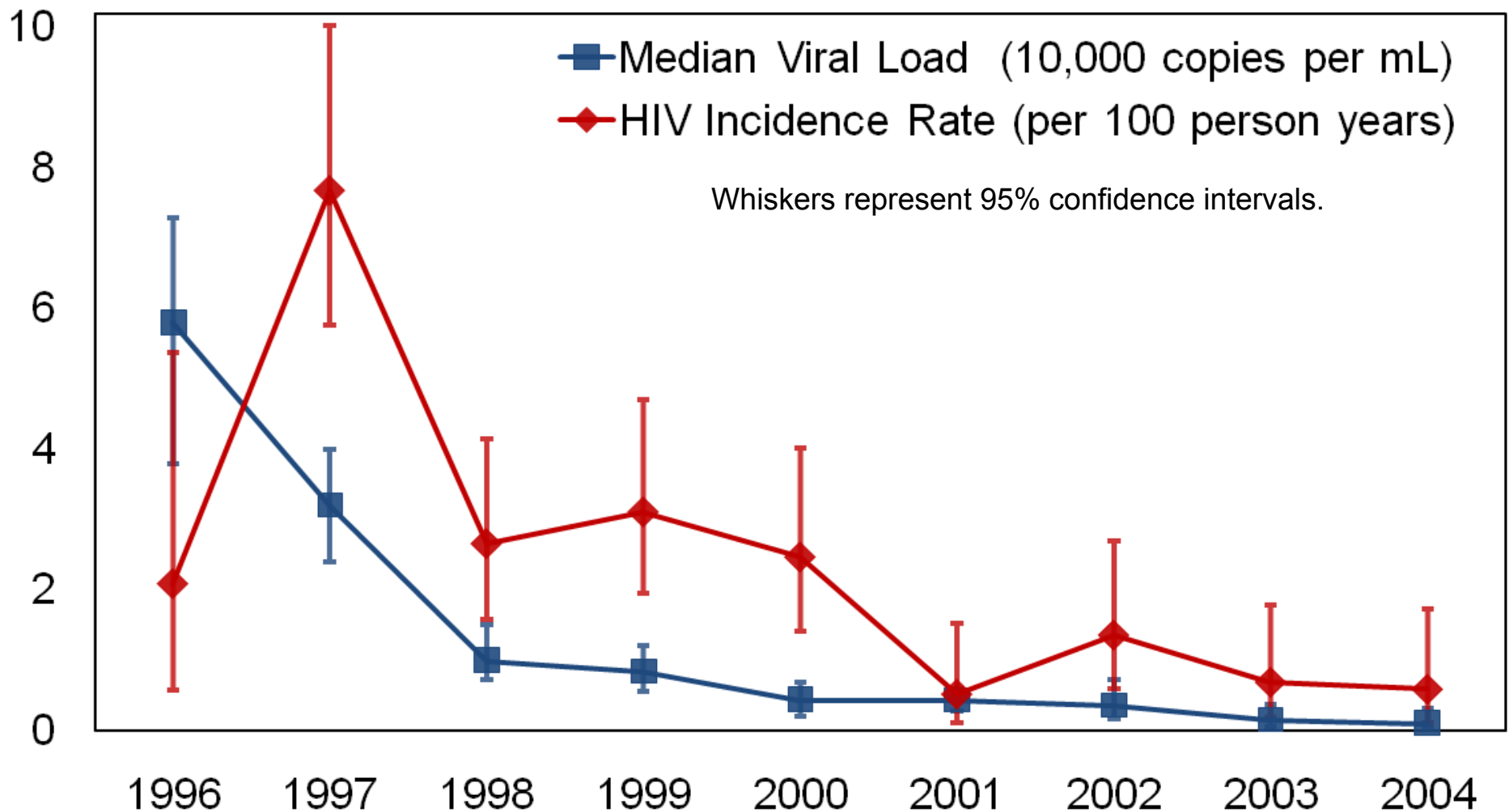
# Longitudinal community plasma HIV-1 RNA concentrations and incidence of HIV-1 among injecting drug users: prospective cohort study

BMJ | 16 MAY 2009 | VOLUME 338



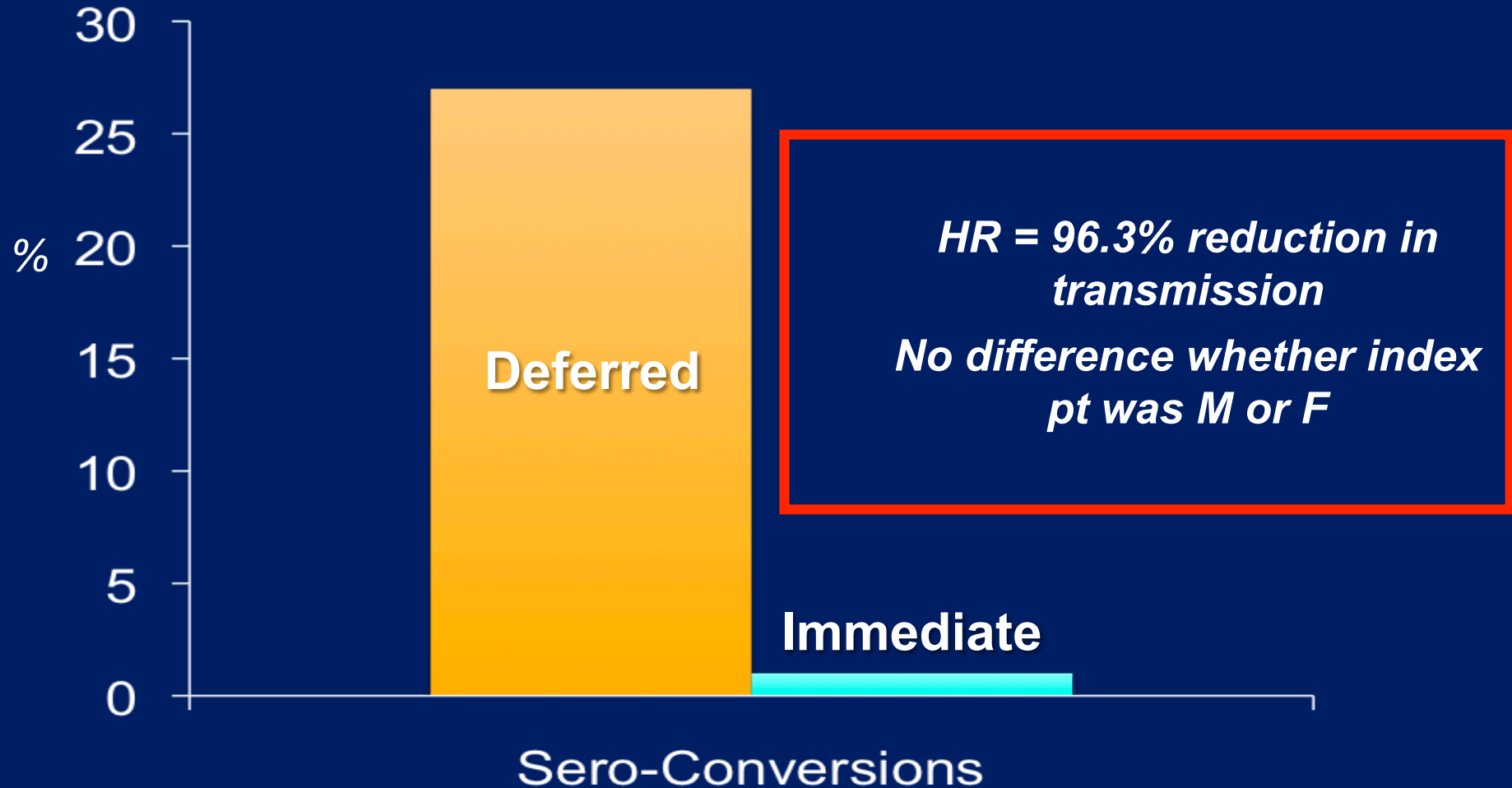
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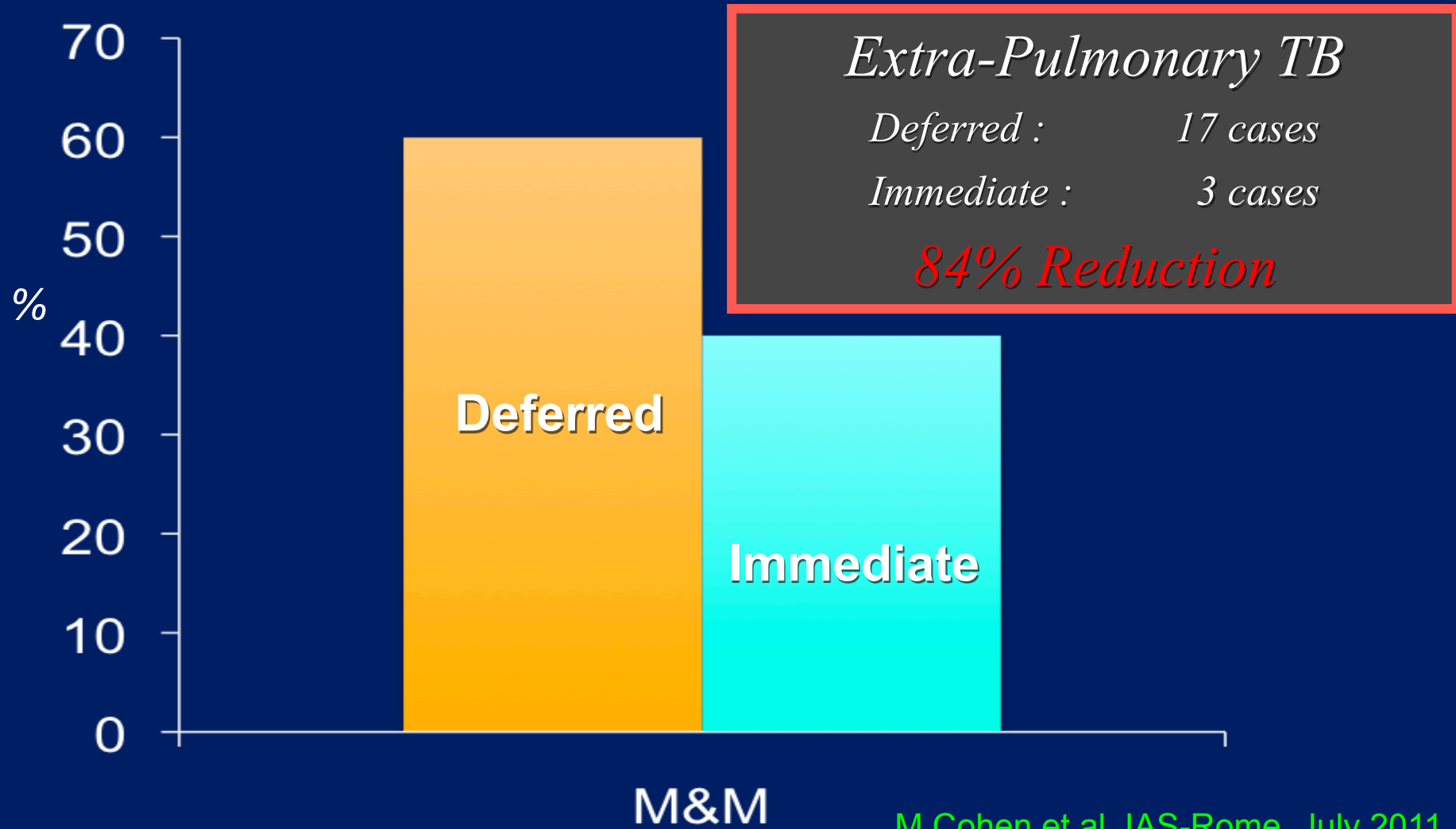


# **TasP in Serodiscordant Couples**

# HPTN 052: Immediate vs Delayed ART in Sero-discordant Couples



# HPTN 052: Immediate vs Delayed ART in Sero-discordant Couples



# Association of highly active antiretroviral therapy coverage, population viral load, and yearly new HIV diagnoses in British Columbia, Canada: a population-based study

*Julio S G Montaner, Viviane D Lima, Rolando Barrios, Benita Yip, Evan Wood, Thomas Kerr, Kate Shannon, P Richard Harrigan, Robert S Hogg, Patricia Daly, Perry Kendall*

## Increasing HAART Coverage within Evolving Medical Guidelines in the province of British Columbia

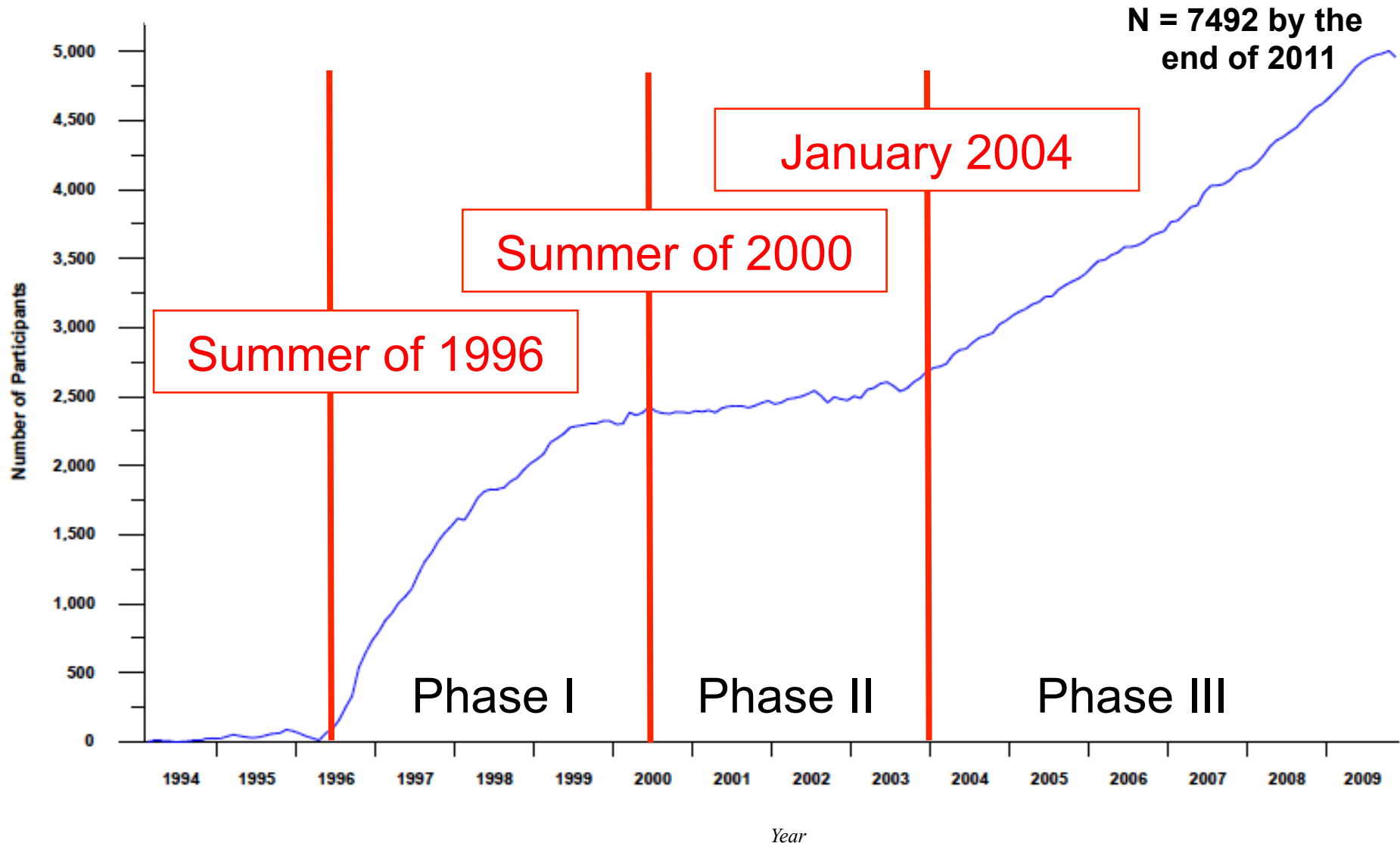
[www.thelancet.com](http://www.thelancet.com) Published online July 18, 2010 DOI:10.1016/S0140-6736(10)60936-1

**Funding** Ministry of Health Services and Ministry of Healthy Living and Sport, Province of British Columbia; US National Institute on Drug Abuse; US National Institutes of Health; Canadian Institutes of Health Research.





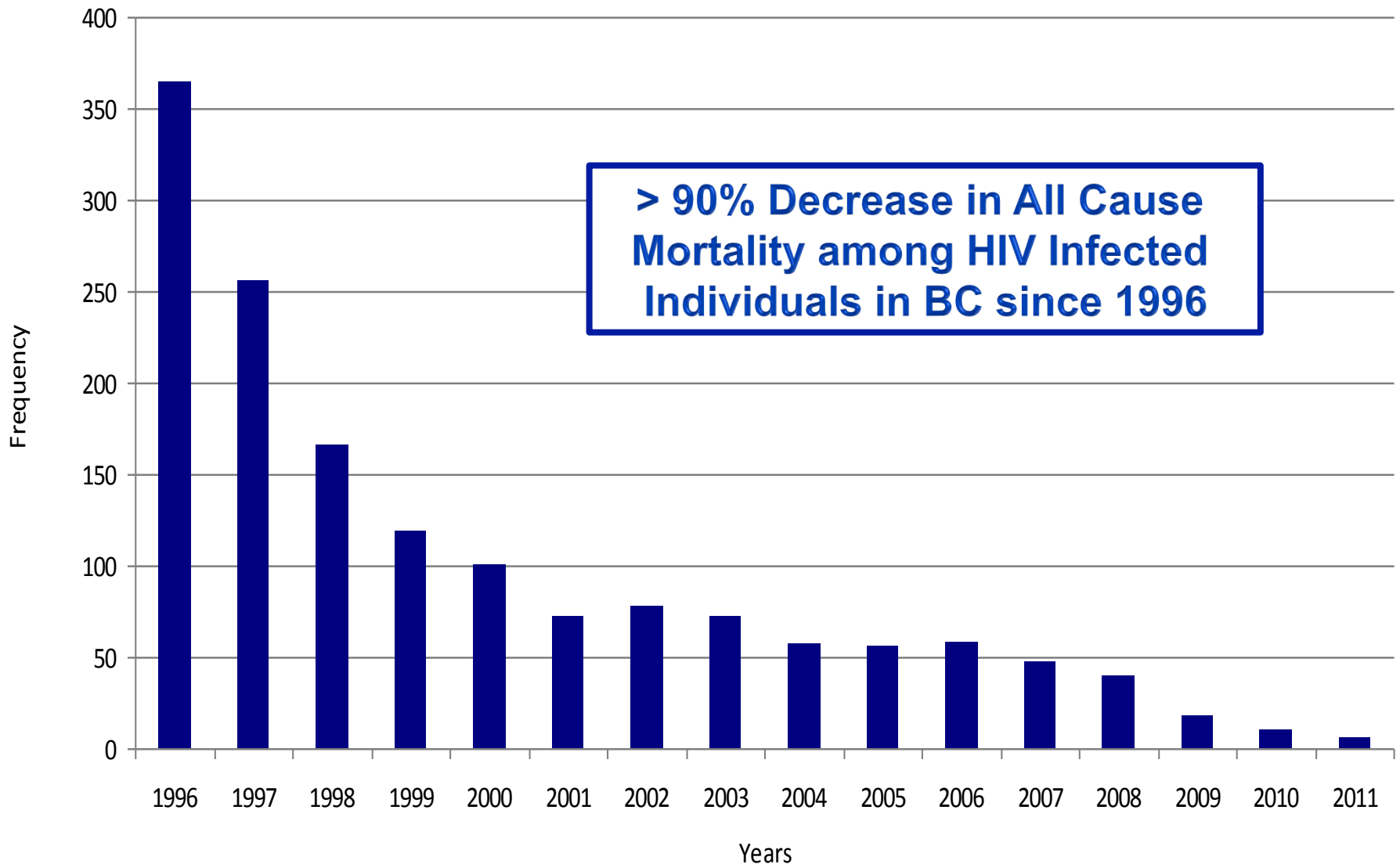
# Increasing HAART Coverage within Evolving Guidelines in BC



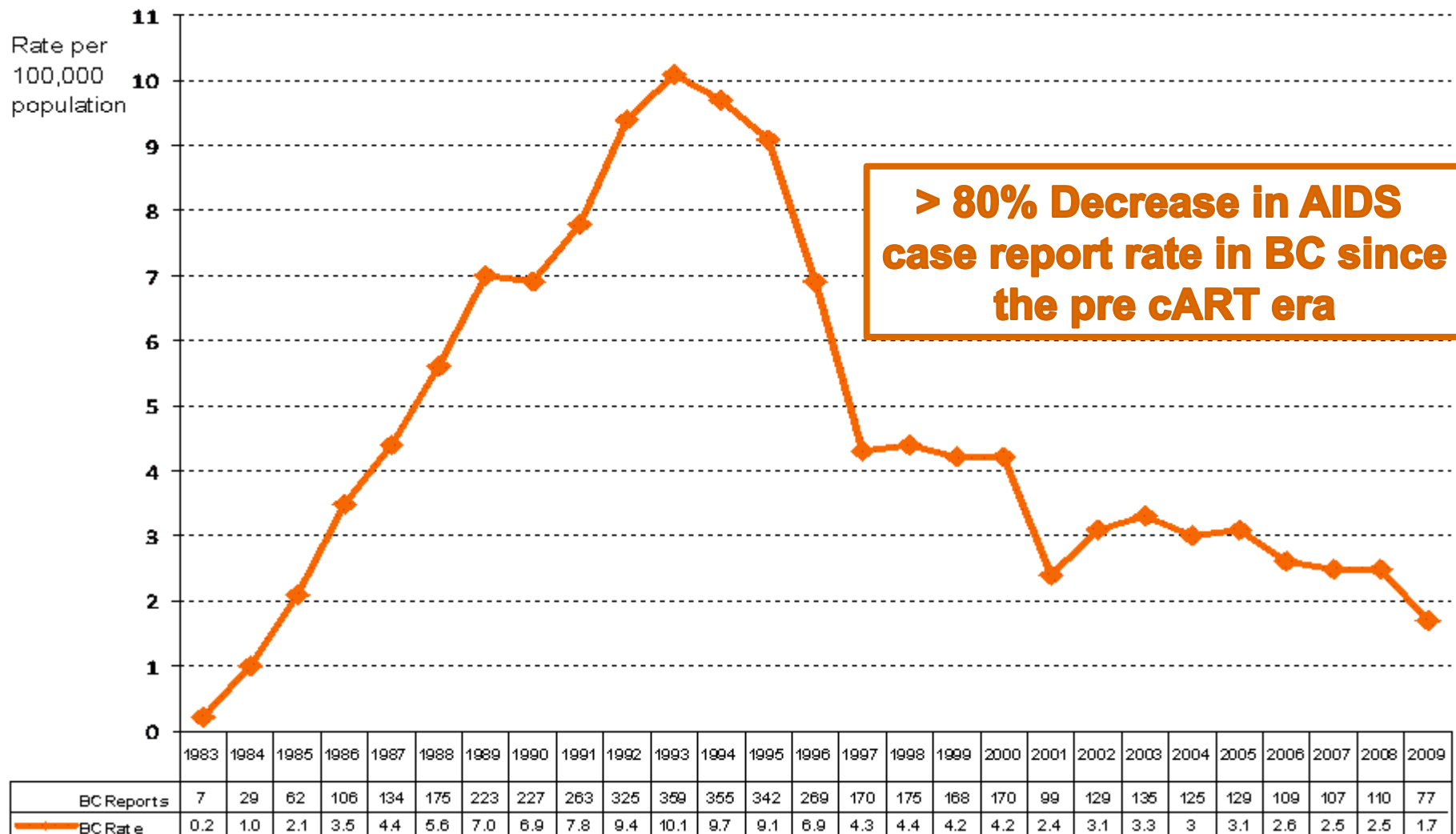
*Montaner et al, Lancet, 2010*



# BC: All Cause Mortality (#)

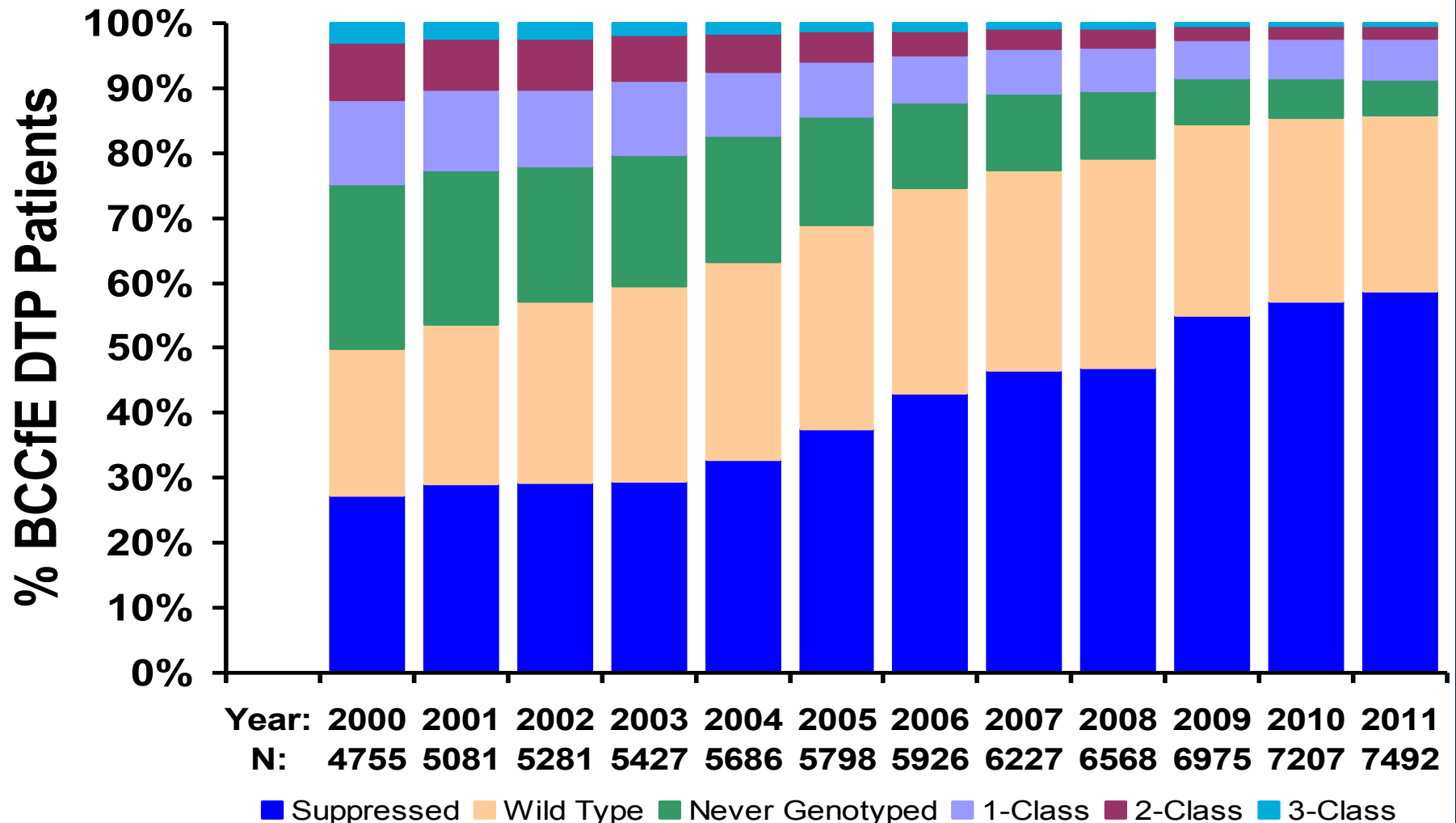


# AIDS case reports and rates in BC by historical trend, 1983 to 2009



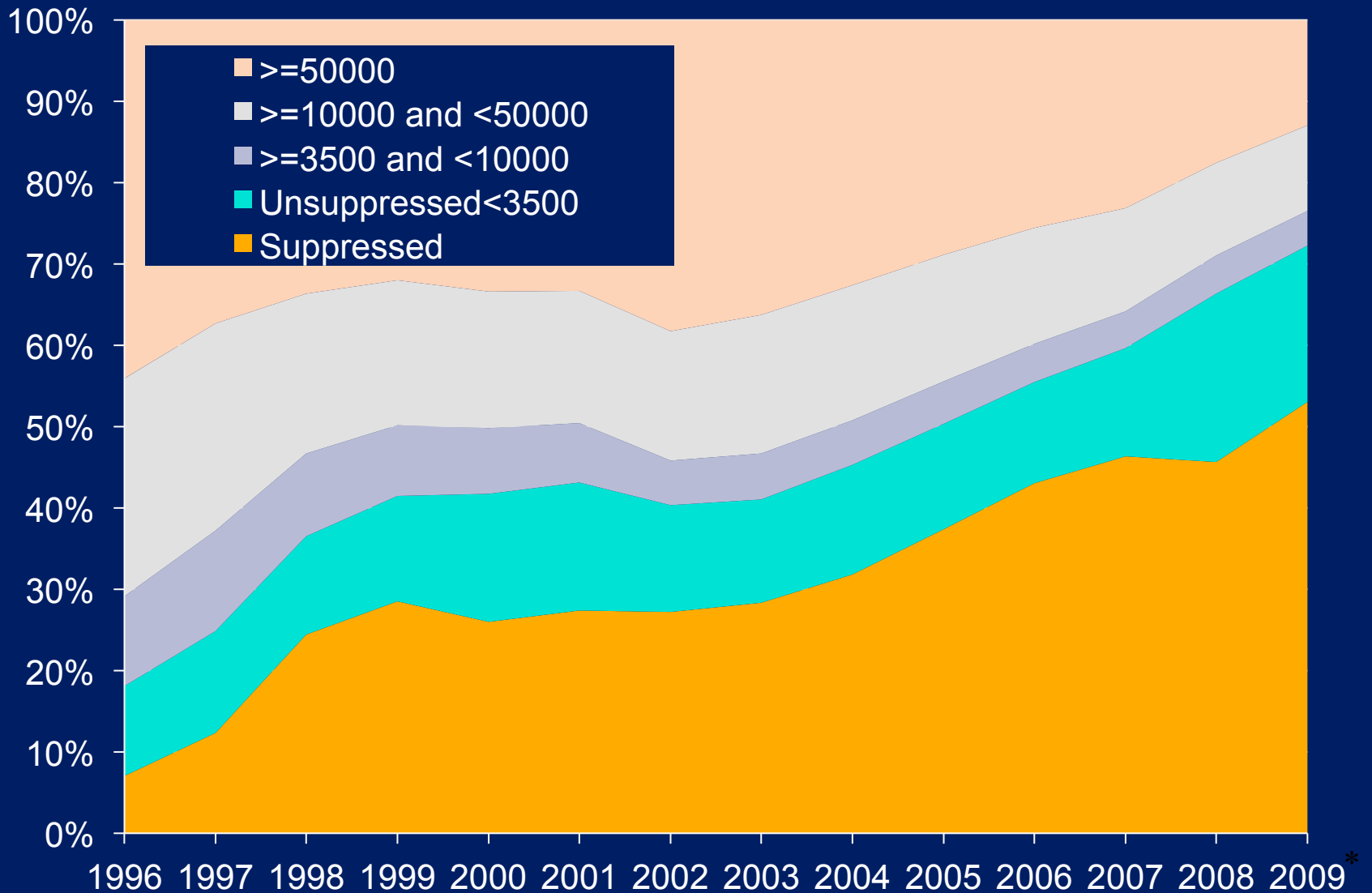


# Decreasing prevalence of HIV drug resistance among patients on HAART

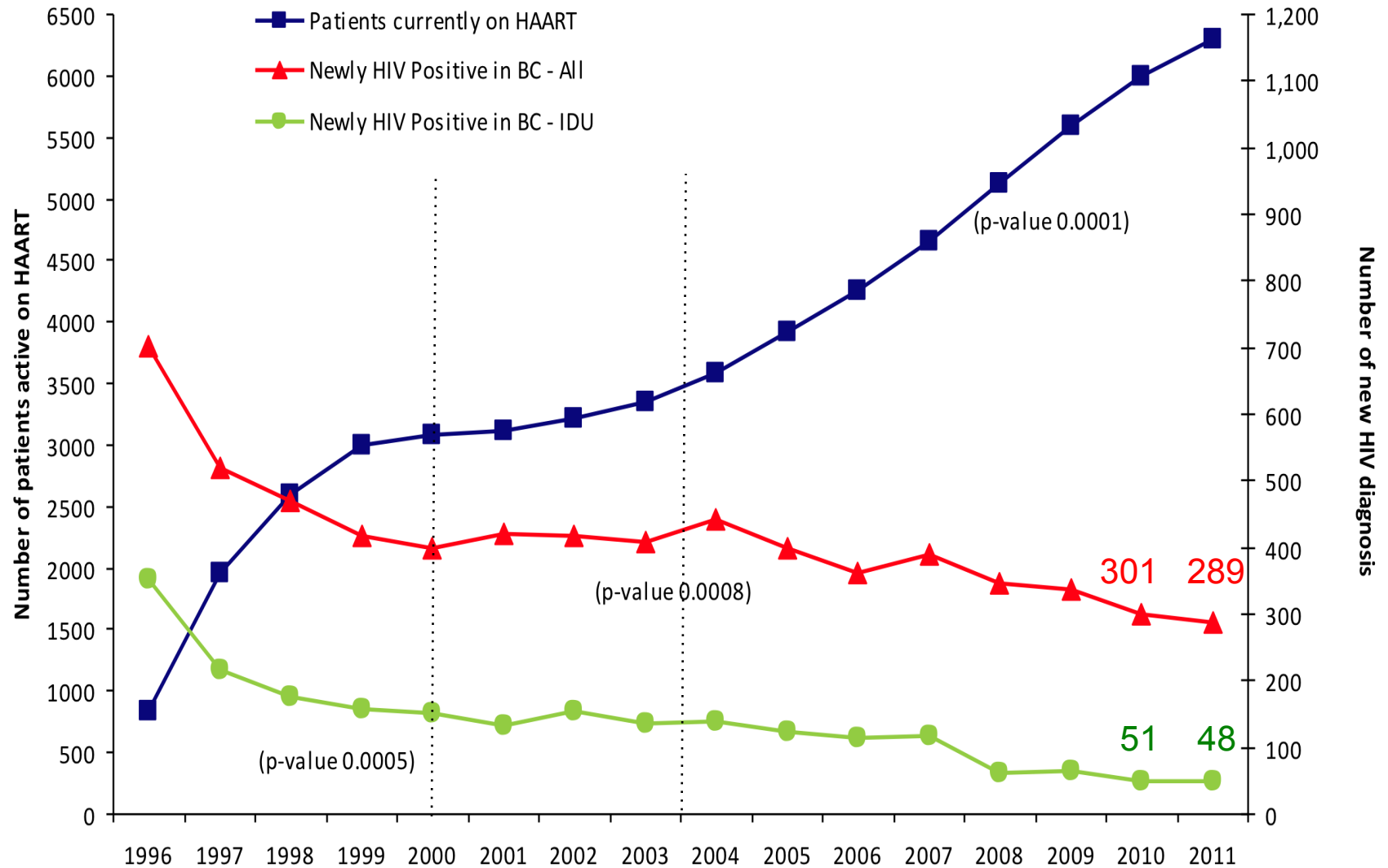




# Cascade of Care- HIV-RNA levels

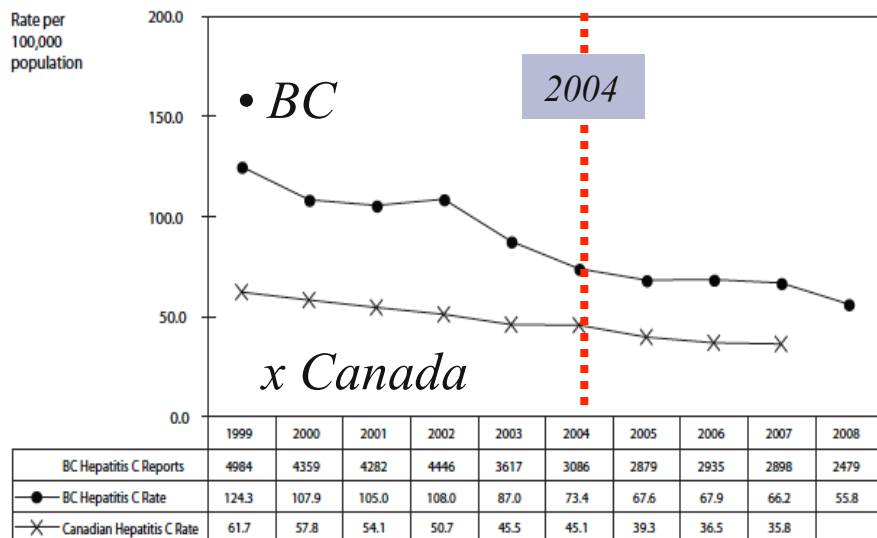


# Increasing HAART Coverage within Evolving Guidelines in BC - Impact on New Diagnoses

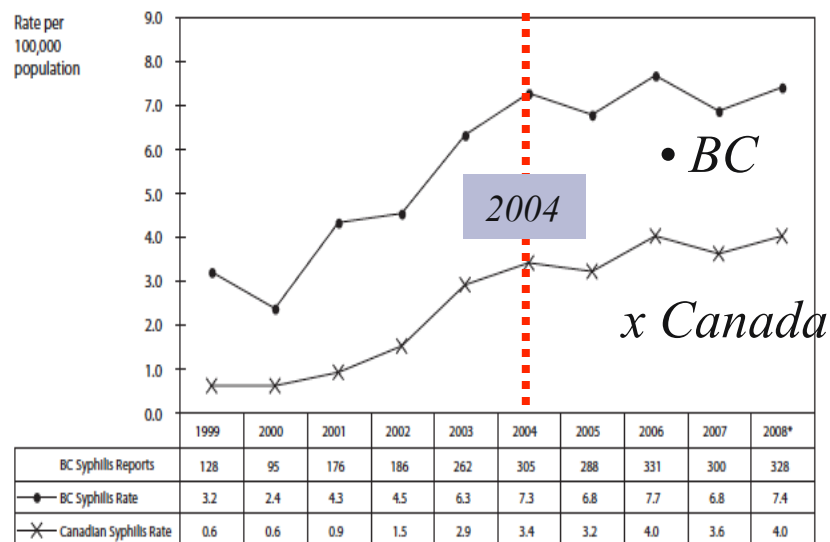


*Updated from Montaner et al, Lancet, 2010, presented at TasP-Workshop, Vancouver 2012*

## Hepatitis C, 1999-2008

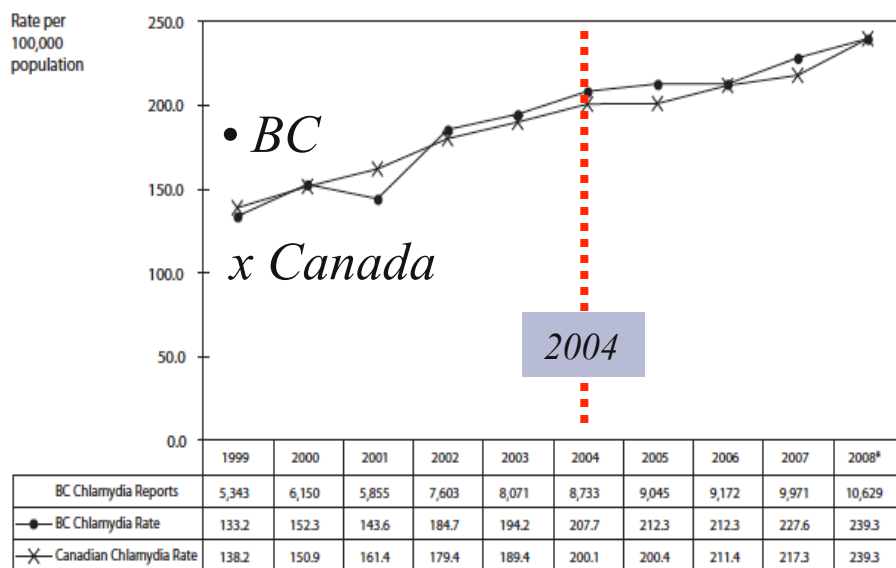


## Infectious Syphilis, 1999-2008



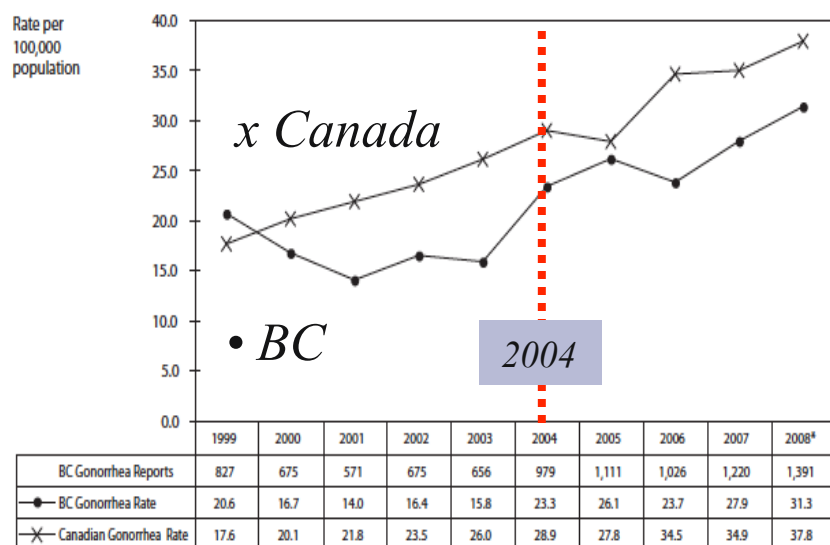
\*2008 Canadian rate is projected and is subject to change (Public Health Agency of Canada, 2009).

## Genital Chlamydia, 1999-2008



2008 Canadian rate is projected and is subject to change (Public Health Agency of Canada, 2009).

## Gonorrhea, 1999-2008

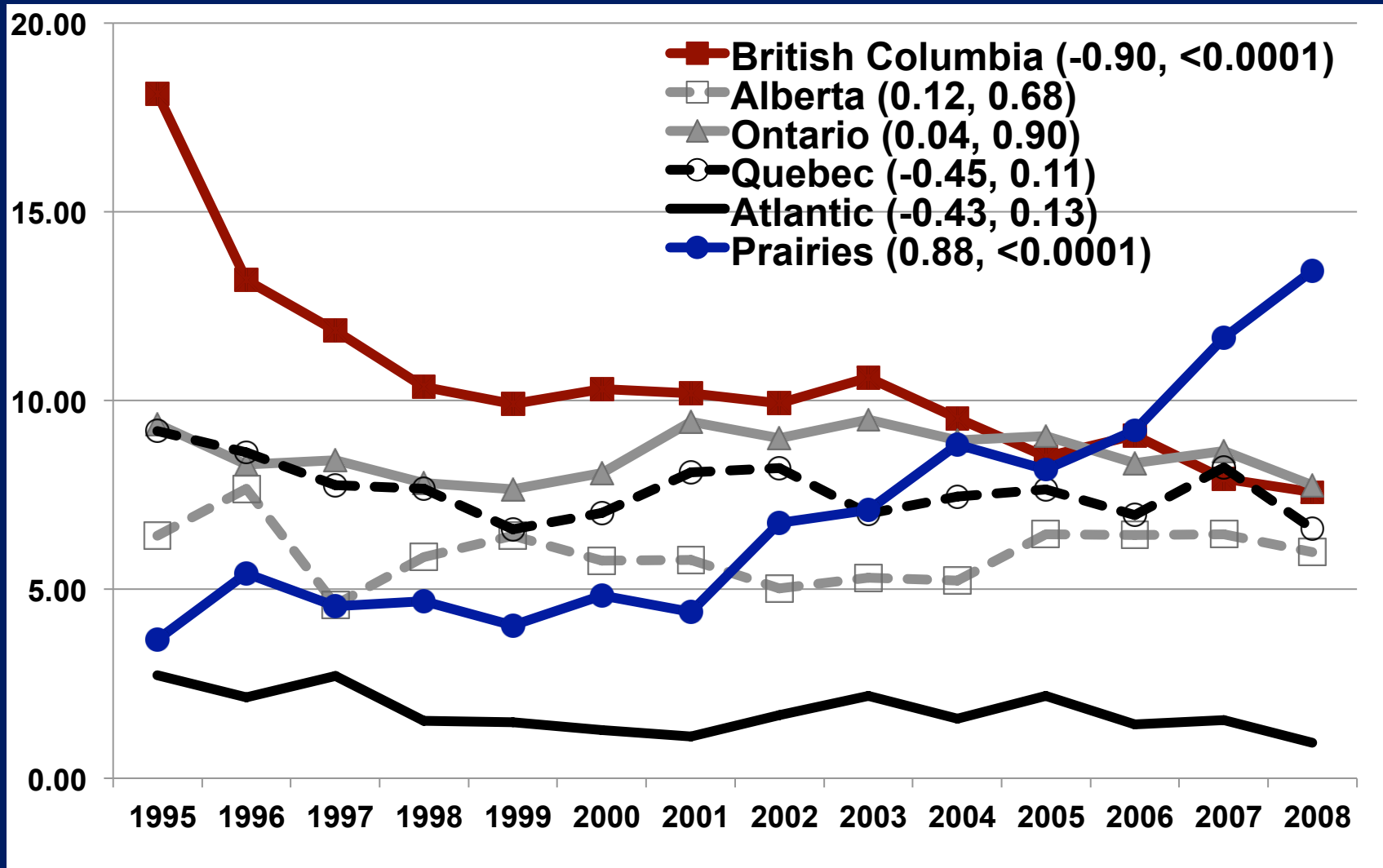


\*2008 Canadian rate is projected and is subject to change (Public Health Agency of Canada, 2009).



# HIV+ tests by region by year

(rate per 100,000 pop)

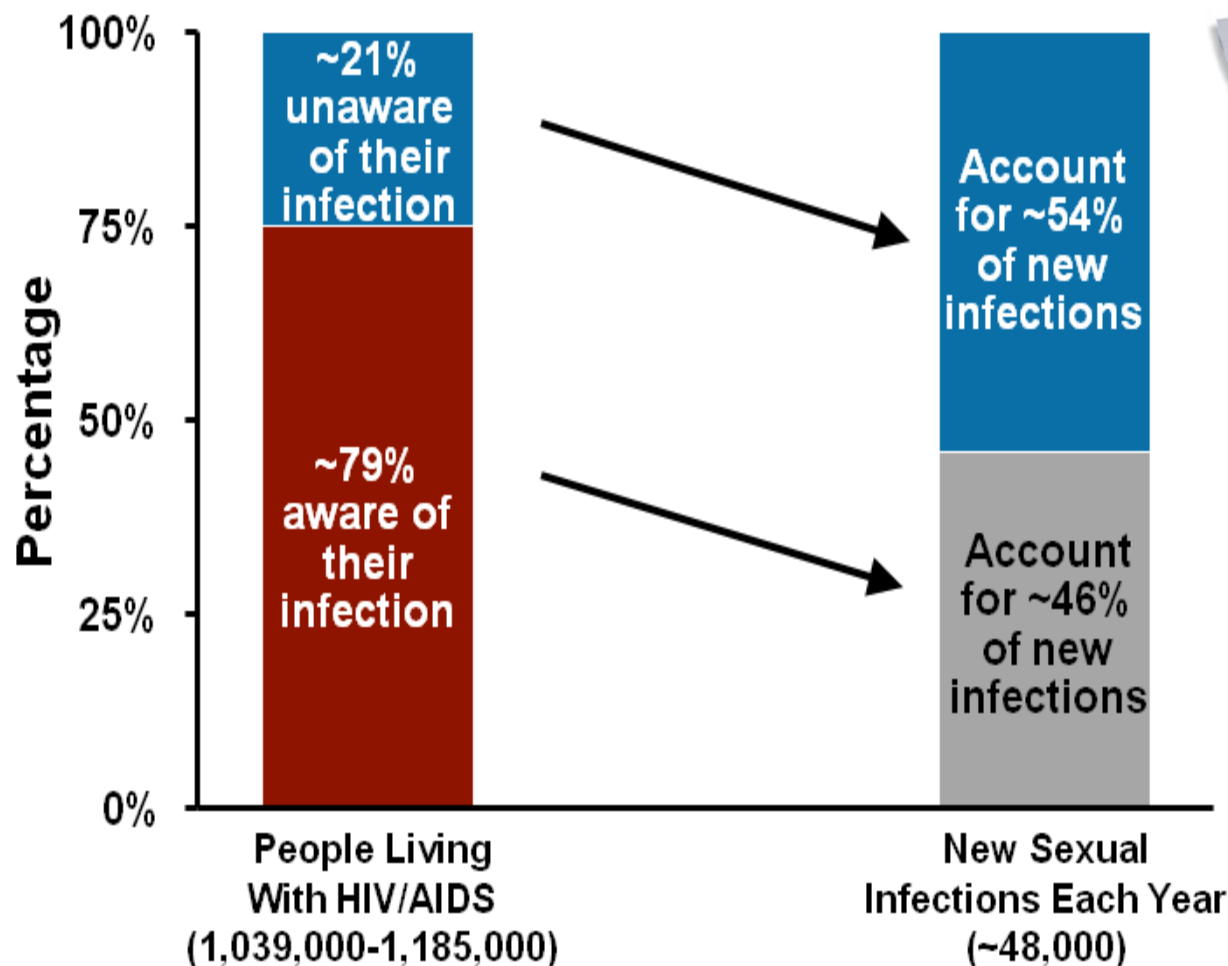






# HIV Testing

# Majority of HIV Transmissions From People Unaware of Their Infection



Marks G, et al. *AIDS*. 2006;20:1447-1450; Hall HI, et al. *JAMA*. 2008;300:520-529; Campsmith ML, et al. *J Acquir Immune Defic Syndr*. 2010;53:619-624; Prejean J, et al. *PLoS ONE*. 2011;6:e17502.



# Routine HIV testing - Acute Care

Site	# Admissions	# Offered	# Tested	Acceptance Rate	
SPH	2834	1324	1118	98%	
MSJ	1163	776	538	86%	
VGH	3726	1237	952	97%	
Total	7723	3337	2608	92%	
<i>Preliminary Results, Courtesy of Scott Harrison et al</i>		% Offered	% Tested	# Positives	Positivity Rate Per 1000
		47%	39%	10	~9/1000
		67%	46%	0	0/1000
		33%	26%	3	~3/1000
		43%	34%	13	~5/1000

# New Testing Guidelines

1. *Normalize HIV Testing*
2. *Ongoing High Risk: Every 3 months*
3. *Ongoing Low Risk: Every 12 months*
4. *High Risk Event: Every 3 month until seroconversion window has passed*



# HIV Treatment



# IAS-USA Guidelines: When to Start

CD4+ Cell Count	Recommendation
▪ < 350 cells/mm <sup>3</sup>	▪ Start ART (AI)
▪ 350-500 cells/mm <sup>3</sup>	▪ Start ART (AII)
▪ > 500 cells/mm <sup>3</sup>	▪ Start ART (BIII)

## Clinical Conditions Favoring Initiation of Therapy Regardless of CD4+ Cell Count

- History of AIDS-defining illness (AI)
- Pregnancy (AI)
- HIV-associated nephropathy (AII)
- HBV co-infection (AII)
- Patients at risk of transmitting HIV to sexual partners (AI, heterosexuals; AIII, others)
- HCV co-infection\* (BII)
- Patients > 50 years of age (BIII)

***Offer ART to all HIV infected patients unless patient is elite controller or has stable CD4+ count and low HIV-1 RNA in absence of ART.***

*Thompson MA, et al. JAMA. 2010;304;321-333.*

# DHHS, 2012: When to Start

ART recommended for all HIV-infected patients

*strength* of recommendation varies according to CD4+ cell count

CD4+ Cell Count	Recommendation
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## Clinical Conditions Favoring Initiation of Therapy Regardless of CD4+ Cell Count

- History of AIDS-defining illness (AI)
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- HCV co-infection\* (BII)
- Patients > 50 years of age (BIII)

*\*Including those with high CD4 count and/or with cirrhosis. If CD4 > 500/mm<sup>3</sup> may elect to defer ART until after HCV therapy*

• *Rating of Recommendations: A = Strong; B = Moderate; C = Optional*

• *Rating of Evidence: I = data from RCTs; II = data from well-designed nonrandomized trials or cohort studies with long-term clinical outcomes; III = expert opinion*



# WHO Guidance on couples HIV testing and counselling

## RECOMMENDATIONS

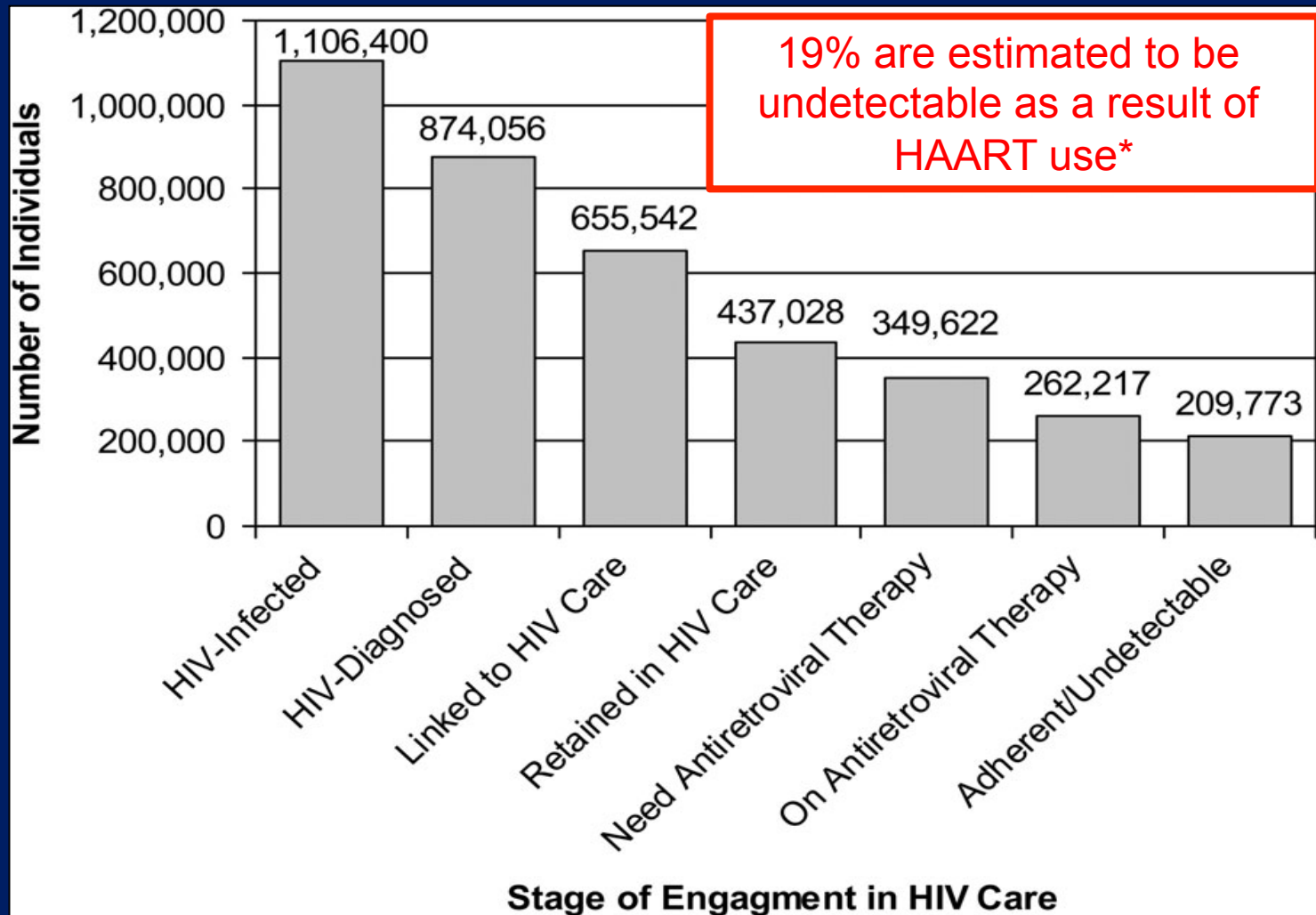
1. Couples and partners should be offered voluntary HIV testing and counselling with support for mutual disclosure. *Strong recommendation, low-quality evidence.*
2. Couples and partners in antenatal care settings should be offered voluntary HIV testing and counselling with support for mutual disclosure. *Strong recommendation, low-quality evidence.*
3. Couples and partner voluntary HIV testing and counselling with support for mutual disclosure should be offered to individuals with known HIV status and their partners. *Strong recommendation, low-quality evidence for all people with HIV in all epidemic settings / Conditional recommendation, low-quality evidence for HIV-negative people depending on country-specific HIV prevalence.*
4. People with HIV in serodiscordant couples and who are started on antiretroviral therapy (ART) for their own health should be advised that ART is also recommended to reduce HIV transmission to the uninfected partner. *Strong recommendation, high-quality evidence.*
5. HIV-positive partners with >350 CD4 cells/ $\mu$ L in serodiscordant couples should be offered ART to reduce HIV transmission to uninfected partners. *Strong recommendation, high-quality evidence.*

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*Strong recommendation, high quality evidence.*

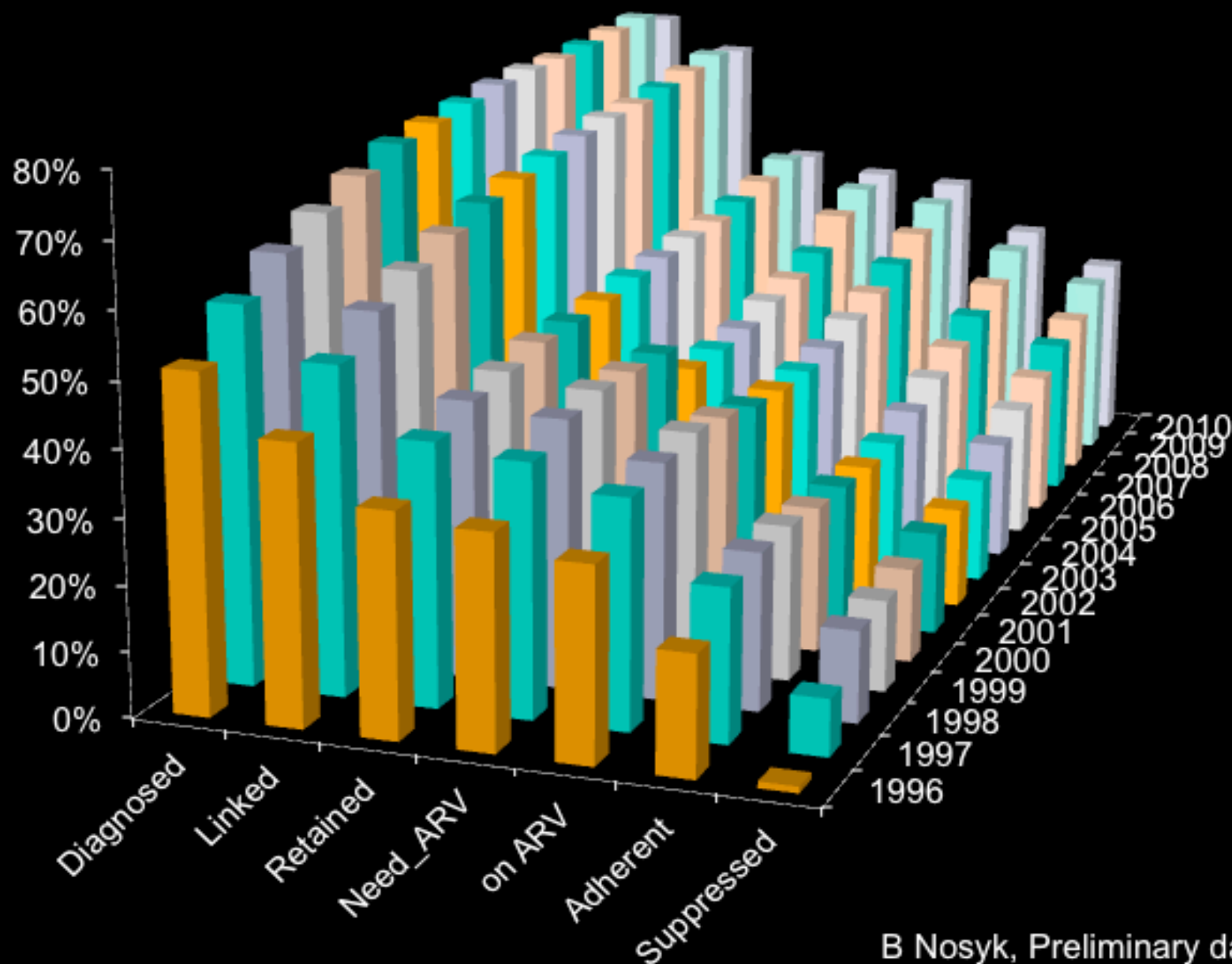


# Spectrum of Engagement in care - USA



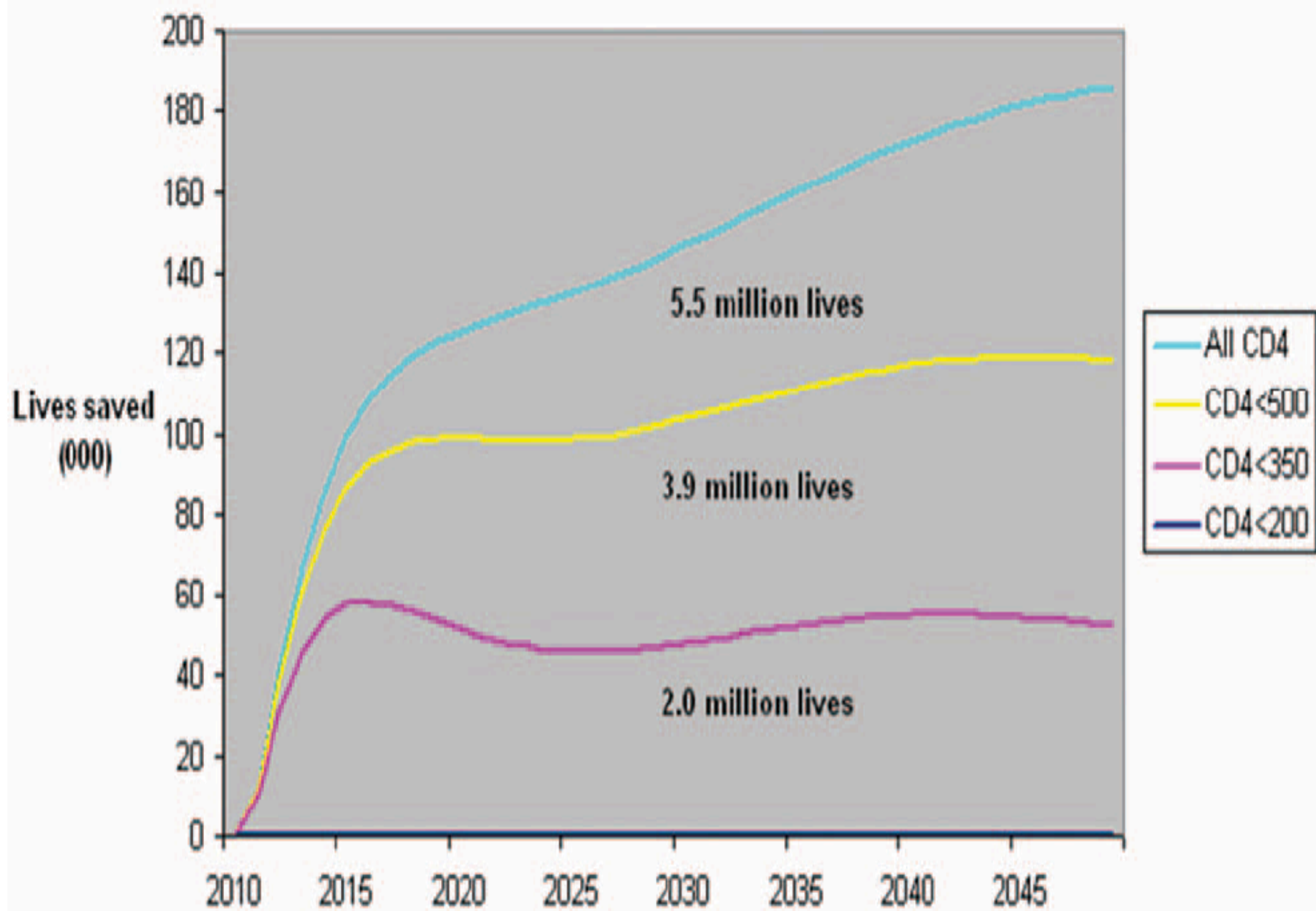
*\* More recently CDC-USA revised the estimate to 28%*

# Evolution of the Cascade of Care in BC



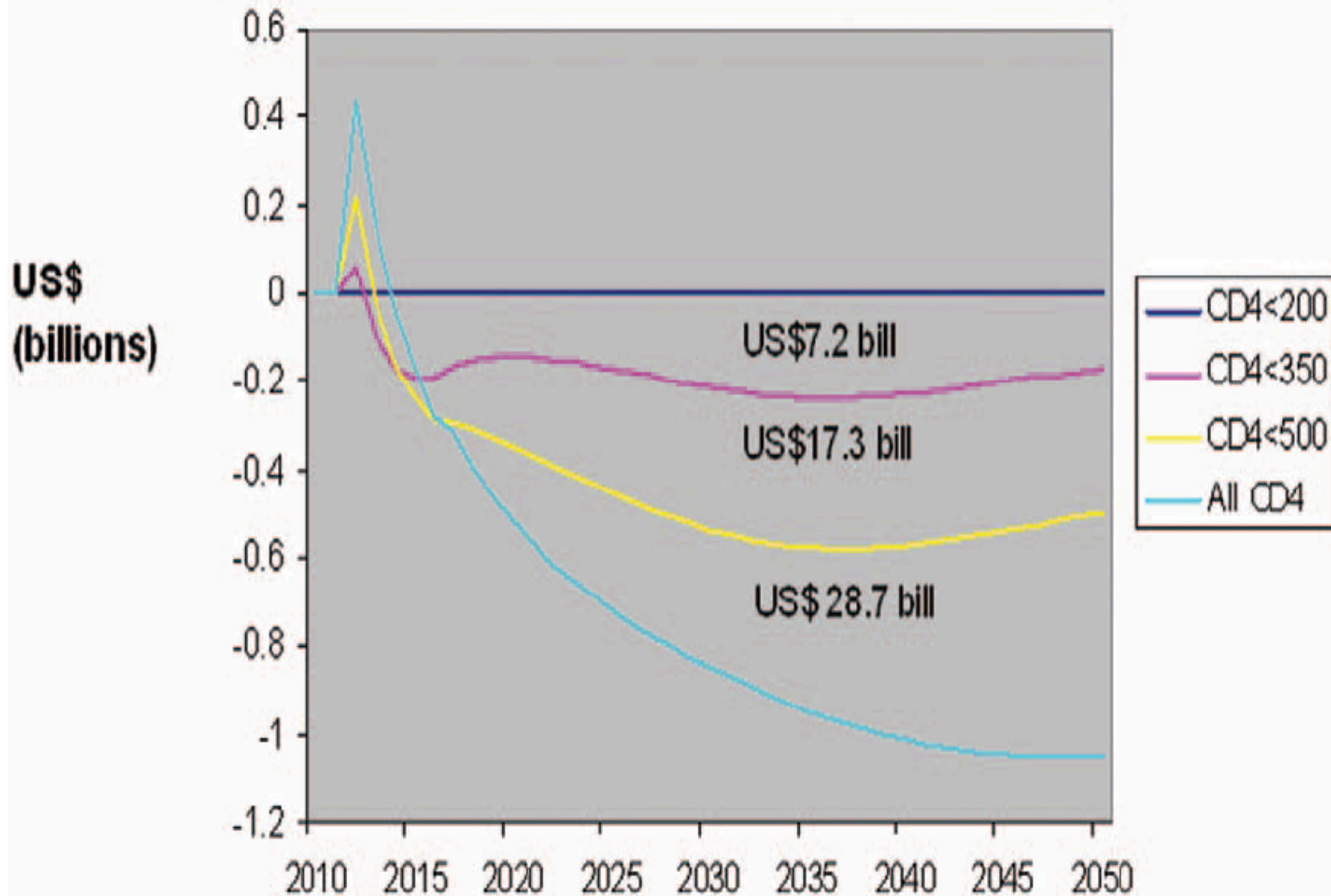
B Nosyk, Preliminary data, 2012

**Let's talk about \$\$\$**



**Lives saved by CD4 treatment threshold compared to current CD4<200 baseline.**

# Difference in costs by year compared to costs of CD4<200 current scenario



Annual cost by scenario compared to current prevention scenario baseline, 2010–2050.

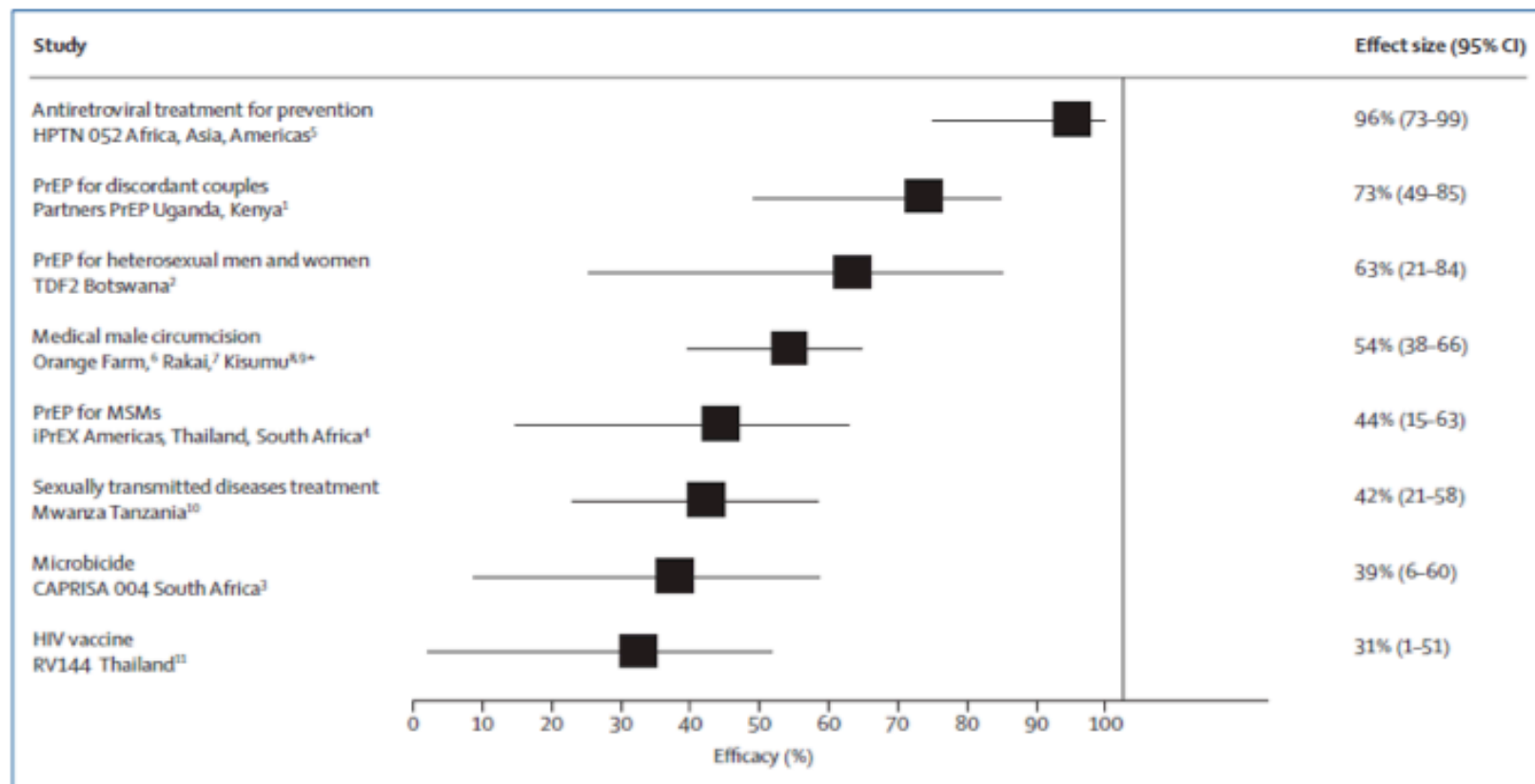
# ***HAART: Broad Societal Benefits of ART***

*For every 1000 patient-years of treatment:*

- ✓ *228 patient deaths averted*
- ✓ *449 children not orphaned*
- ✓ *61 sexual transmissions of HIV averted*
- ✓ *26 vertical (mother-to-child) infections averted*
- ✓ *9 TB cases averted among HIV patients*
- ✓ *2.2 life-years gained*



# Antiretroviral prophylaxis: a defining moment in HIV control



**Figure: HIV prevention technologies shown to be effective in reducing HIV incidence in randomised controlled trials<sup>1–11</sup>**

PrEP=Pre-exposure prophylaxis. \*Meta-analysis of circumcision trials.



# ZERO NEW INFECTIONS—TREATMENT FOR EVERYONE WHO NEEDS IT

## LETTER TO PARTNERS | 2010

Michel Sidibé  
*Executive Director*  
**UNAIDS**

### **Treatment 2.0:**

**A new  
prevention-  
treatment  
paradigm in the  
global response  
to HIV/AIDS**

**UNGASS**

**New York - 9 June 2010**

**The role of**

antiretroviral treatment in stopping new infections and how it can be effectively used as part of combination HIV prevention approaches must be further explored, as shown by Dr Julio Montaner, President of the International AIDS Society.



# TasP → An AIDS-Free Generation

*“An AIDS-free generation would be one of the greatest gifts the United States could give to our collective future.”*



*Secretary of State Hillary Clinton  
Nov 8, 2011*



*Few could have imagined that we'd be talking about the real possibility of an AIDS-free generation. But that's what we're talking about...make no mistake, we are going to win this fight.*

*President Obama, December 1, 2011*

*PS: By the end of 2013, PEPFAR will directly support more than 6 M people on HAART– 2M more than previously targeted.*



*"To cut new infections in half, we'll have to heed Julio Montaner's years of pleas to implement Treatment as Prevention and implement combination prevention programs. We can save a lot of lives if all this is done..."*

*President Clinton, Washington AIDS Conference, 2012*