

Treatment as Prevention

HAART Expansion - A Powerful Strategy to Reduce AIDS Morbidity and Mortality and HIV Incidence

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Gary S. Teiter Andrew Kaplan Memorial Lecture

IAPAC Treatment Adherence Conference



**British Columbia
Centre for Excellence
in HIV/AIDS**



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 Director¹



**International
AIDS Society**

Stronger Together



HAART Can Reduce HIV Transmission

HAART stops HIV replication



HIV levels fall to undetectable in blood
as well as in sexual fluids



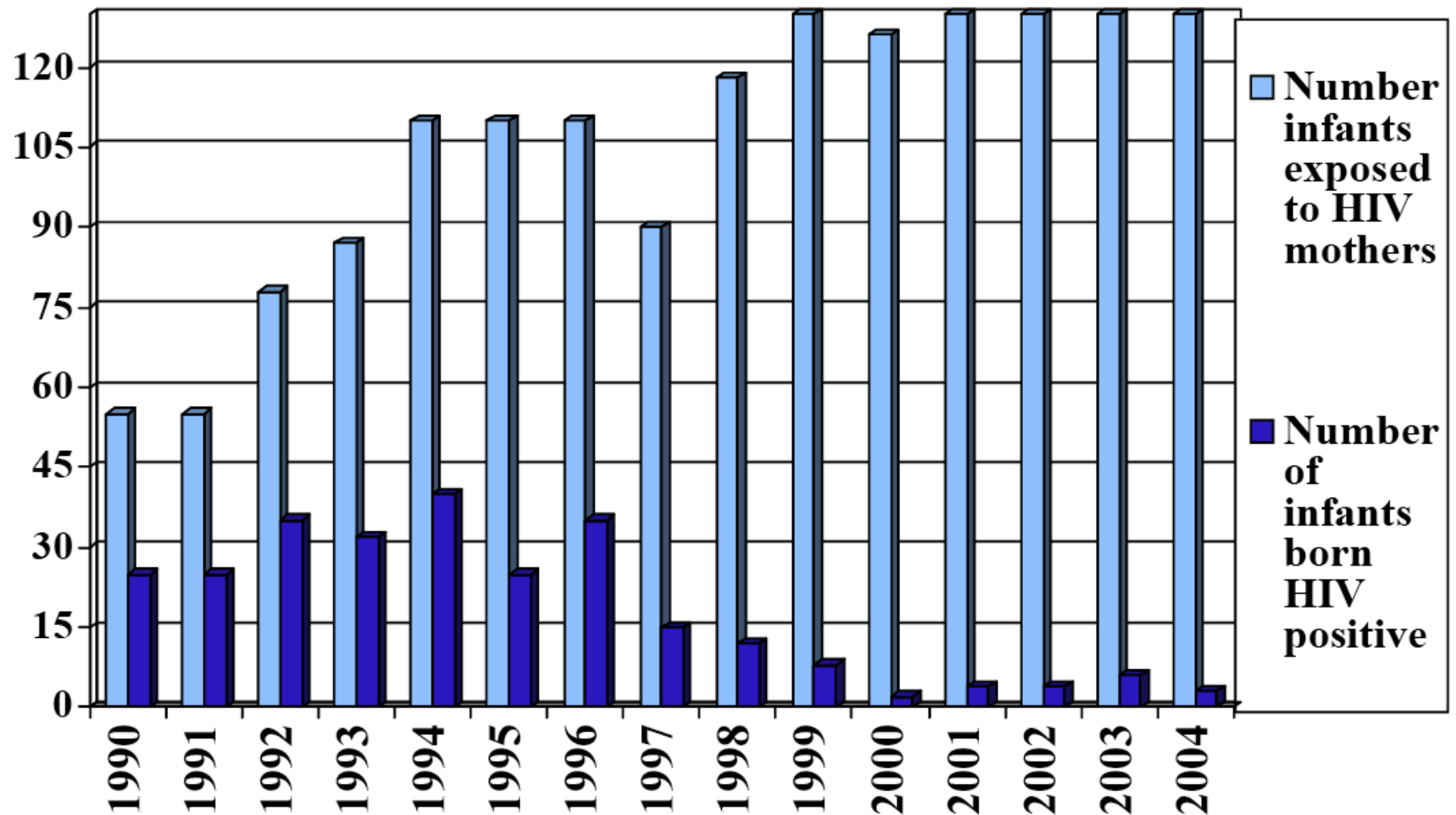
Sharp reduction in HIV transmission

Prevention Strategies

- Education
- Change in behaviour
- Harm reduction
- New strategies/technology
- Vaccines

**Existing strategies have failed
to contain the global HIV pandemic**

Canada: Infants Exposed to HIV and Born HIV Positive



B&MGF: Heterosexual HIV Transmission Dramatically Decreased by HAART

- 3408 heterosexual HIV discordant couples from 7 African countries
- 349 (10%) HIV partners started therapy
- Followed for up to 24 months
- 92% reduction in HIV transmission

	Transmissions	Person-Years	HIV Sero-Incidence
Post ART	1*	256	0.4 (95% CI 0.09-2.18)
No ART	102	4851	2.2 (95% CI 1.84-2.70)

The single transmission occurred in the partner of a man on HAART for only 18 days prior to partner's first HIV+ test (HIV- 90 days earlier)

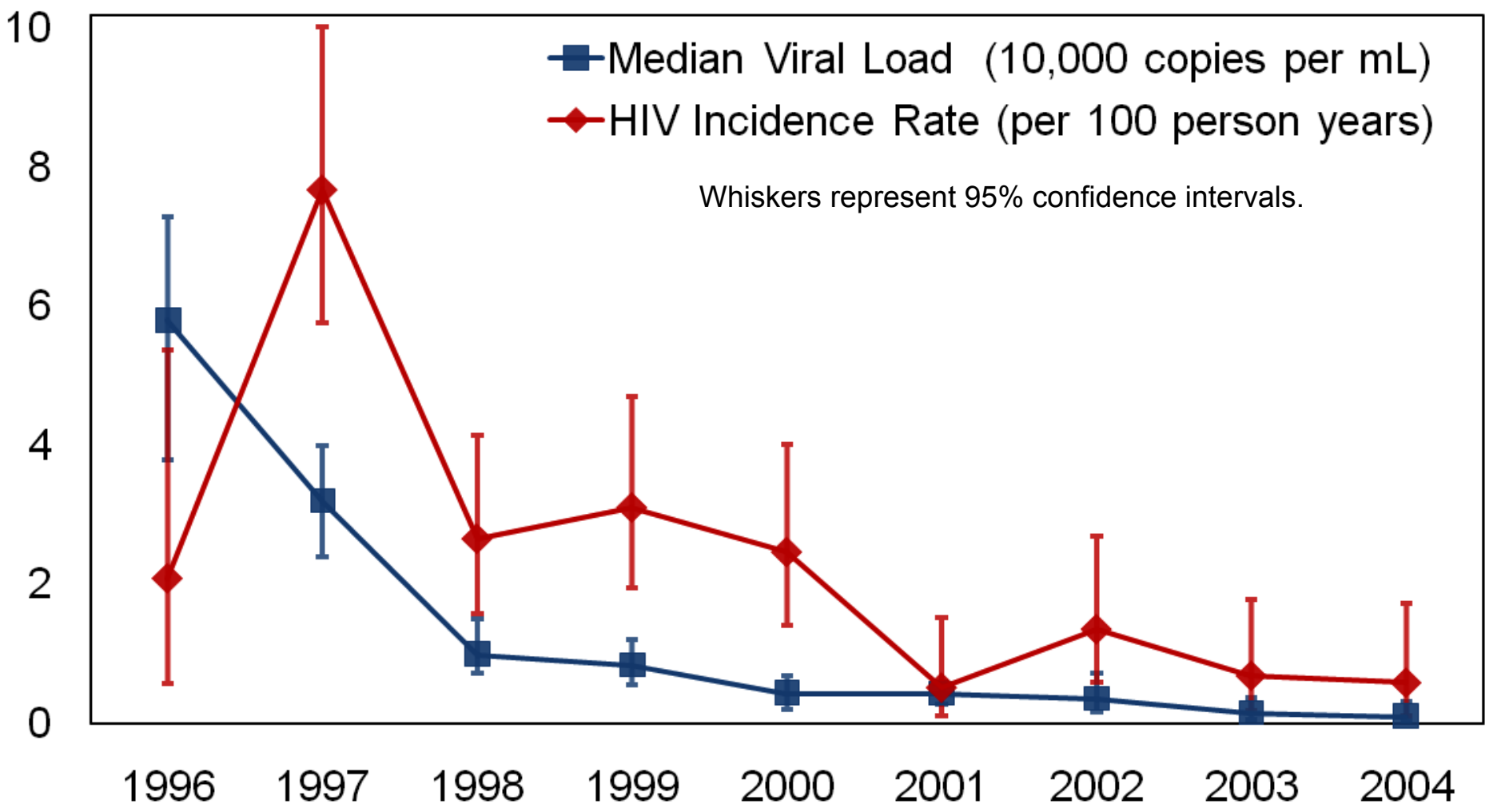
Longitudinal community plasma HIV-1 RNA concentrations and incidence of HIV-1 among injecting drug users: prospective cohort study

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Evan Wood,¹ Thomas Kerr,¹ Brandon D L Marshall,² Kathy Li,¹ Ruth Zhang,¹ Robert S Hogg,¹
P Richard Harrigan,¹ Julio S G Montaner,³

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

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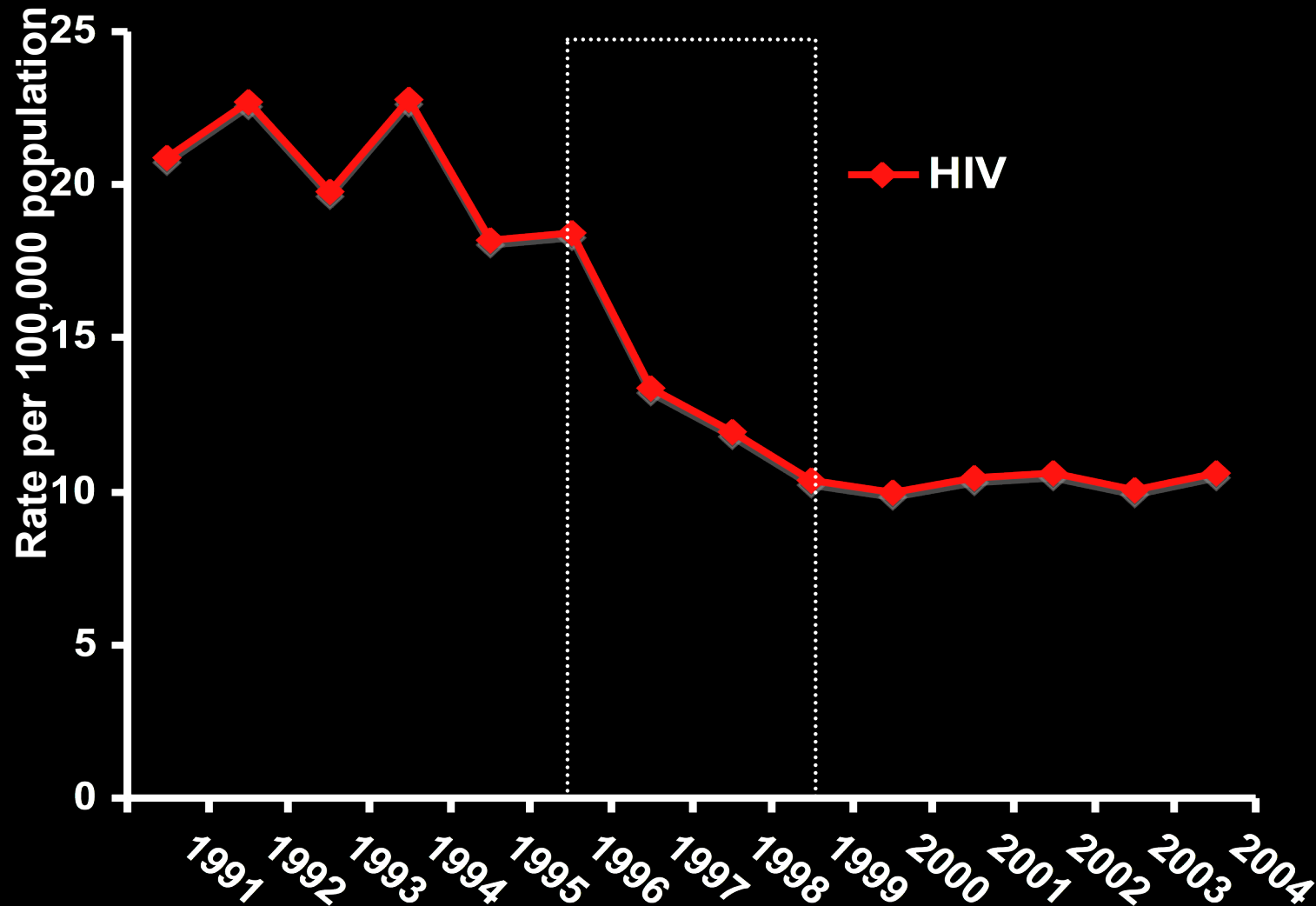
Cox proportional hazards regression of time to HIV infection among 1429 HIV negative injecting drug users followed from 1 May 1996 to 30 June 2007

Characteristic	Relative hazard (95% CI)	P value
Plasma HIV RNA (per log ₁₀ increase)*	3.32 (1.82 to 6.08)	<0.001
Unsafe sex† (yes v no)‡	1.09 (0.77 to 1.54)	0.619
Used syringe sharing (yes v no)	1.45 (0.99 to 2.12)	0.058
Ethnicity (white v other)	0.65 (0.47 to 0.91)	0.011
Heroin injection (≥daily v <daily)‡	1.35 (0.97 to 1.90)	0.079
Cocaine injection (≥daily v <daily)‡	2.50 (1.76 to 3.54)	<0.001
Unstable housing (yes v no)§	1.41 (1.00 to 1.98)	0.049

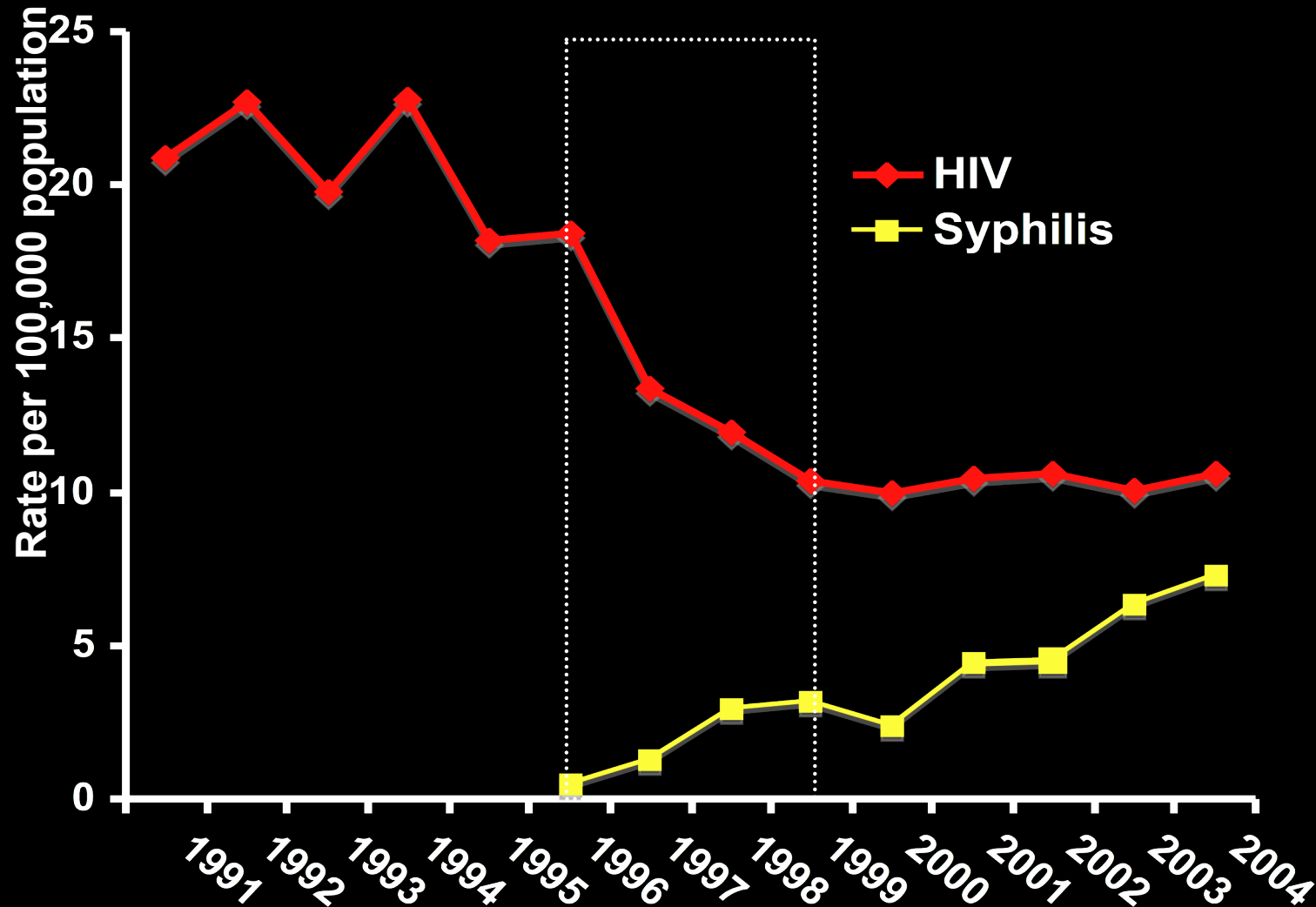
Wood et al, BMJ,
May 16, 2009

(Mantel test for trend across all 11 years $P<0.001$). Among those receiving antiretroviral drugs, we found that the number using at least three antiretroviral drugs (versus fewer than three drugs) in their antiretroviral regimen increased during the study period from 8.4% in 1996 to 98.8% in 2007 (Mantel test for trend across all 11 years $P<0.001$).

New HIV and Syphilis in BC



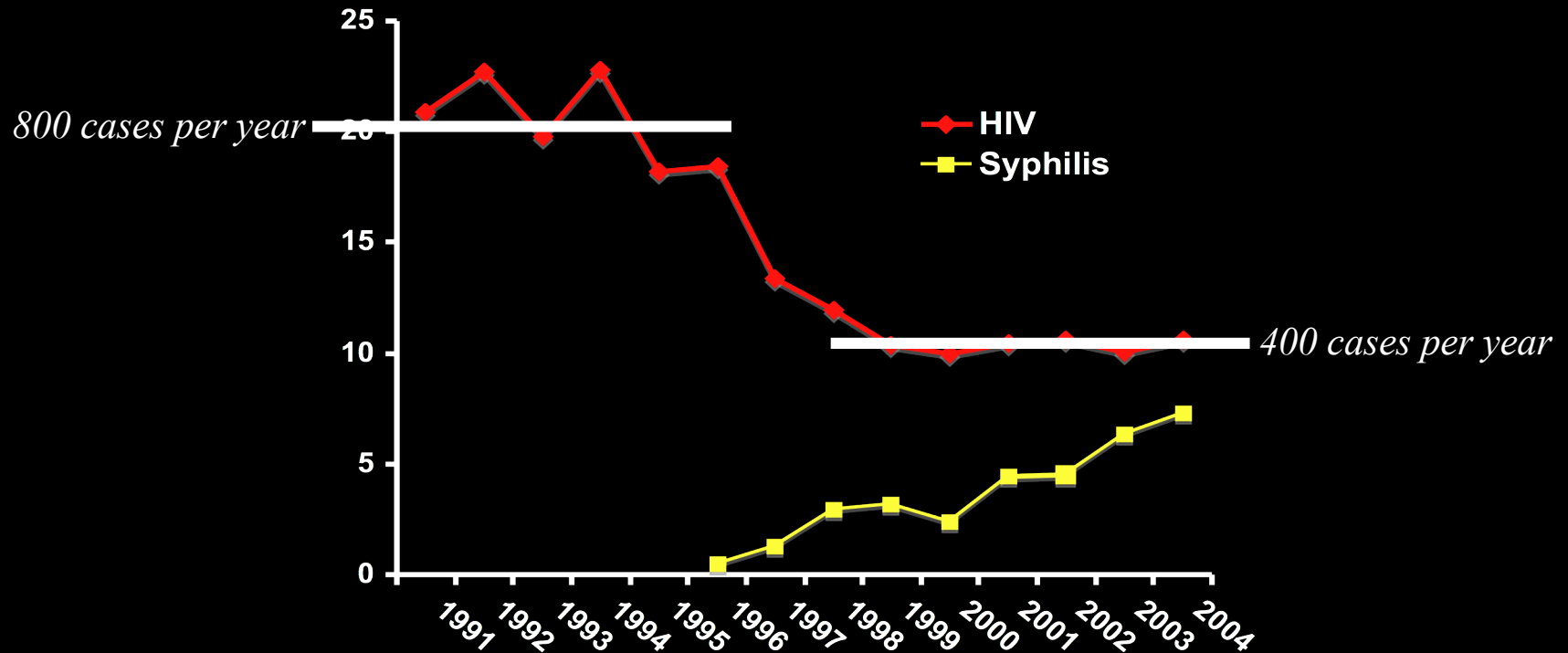
New HIV and Syphilis in BC



Cost-Effectiveness of HAART

BC-DTP

“HIV deficit” in BC in 2005: 400



Cost-Effectiveness of HAART BC-DTP

“HIV *deficit*” in BC in 2005: 400

Cost of Medical Management of 1 HIV infection over a
lifetime = \$250,000

Averted lifetime Rx cost up to U\$A 100M

A total of 3,963 pts were on HAART in BC in 2005

Total actual drug cost (using patented drugs) in 2005

U\$A 50M

Summary

HAART is widely regarded as a cost effective, life-saving strategy

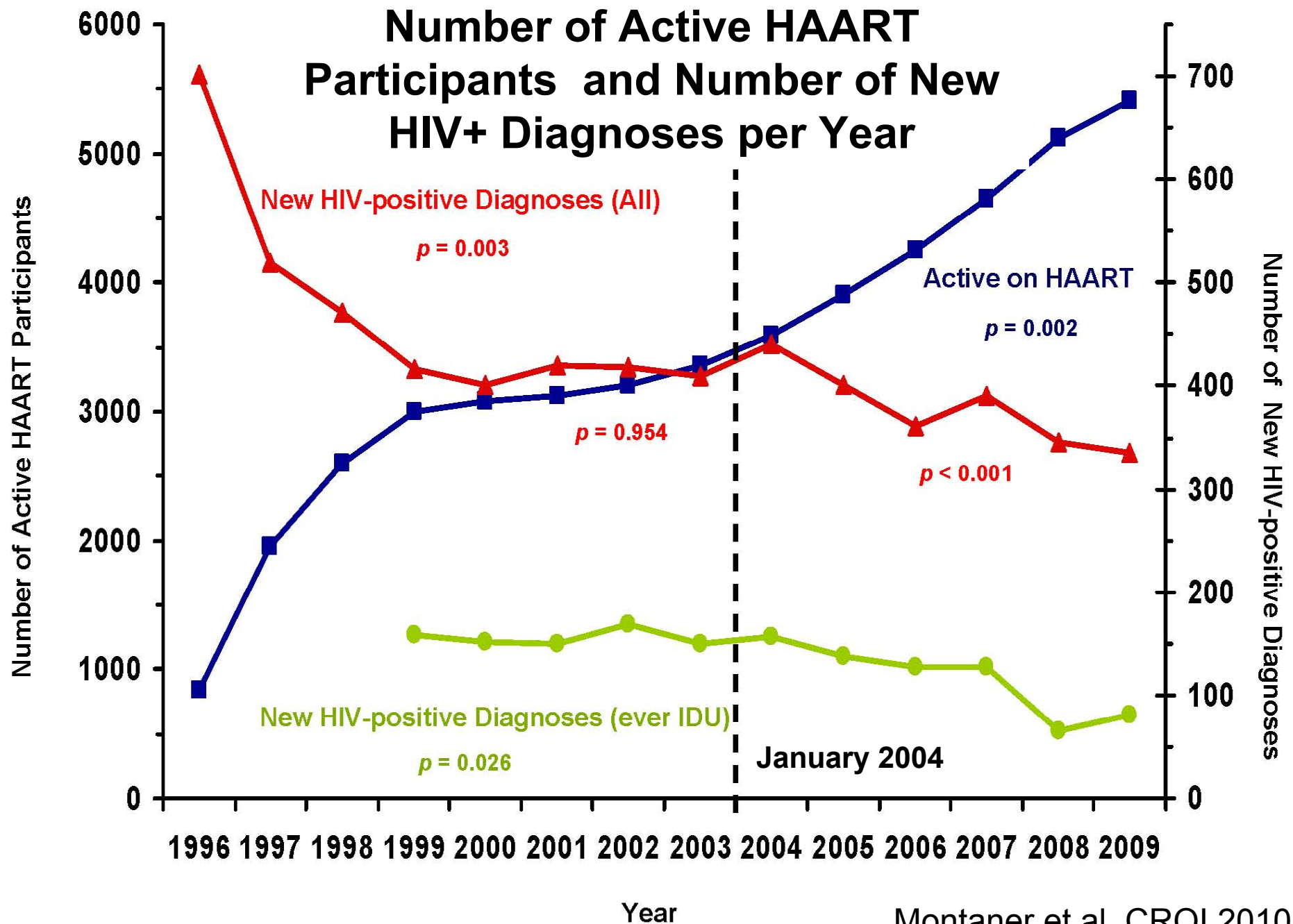
- ↓ Mortality of treated HIV/AIDS patients
- ↓ Morbidity of treated HIV/AIDS patients
- ↓ Health Resource utilization
- ↓ Vertical Transmission of HIV infection

Furthermore, when the impact of HAART on HIV transmission is considered, HAART expansion becomes a **cost-averting** strategy

The British Columbia Approach:

Increasing HAART Coverage *within*
Current Medical Guidelines

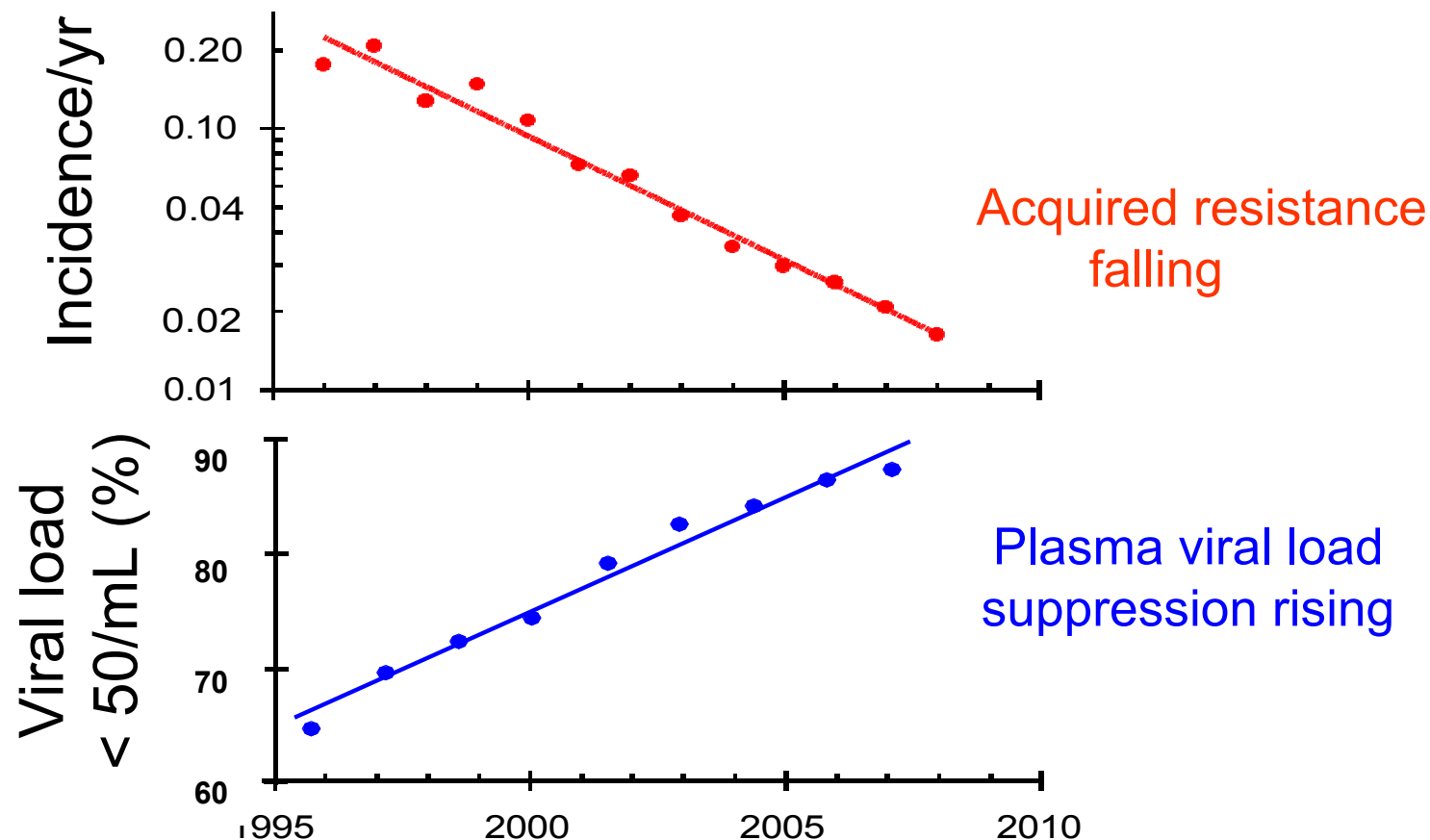
Preliminary Results



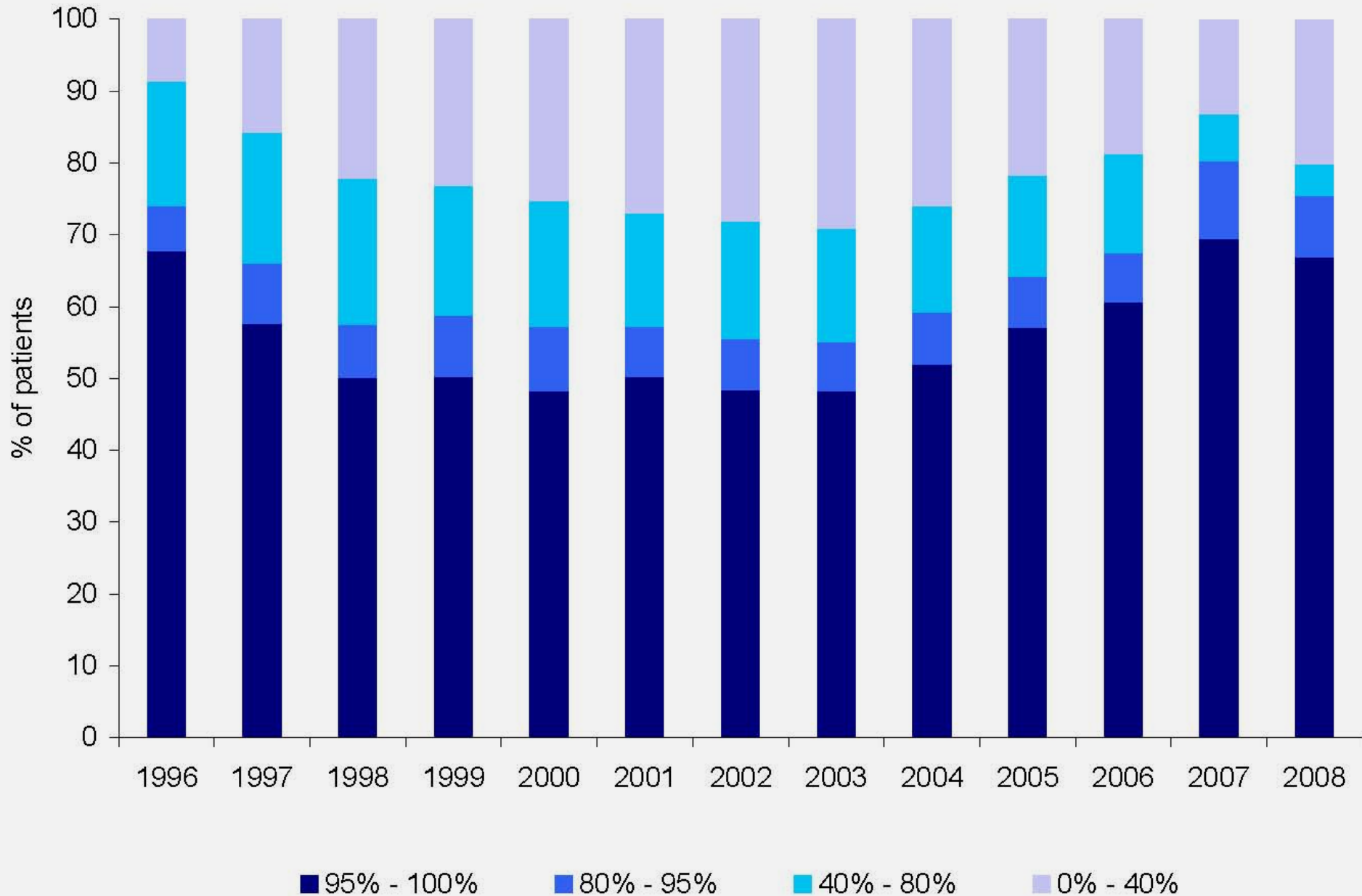
Improved Virological Outcomes in British Columbia Concomitant with Decreasing Incidence of HIV Type 1 Drug Resistance Detection

Vikram S. Gill,¹ Viviane D. Lima,^{1,2} Wen Zhang,¹ Brian Wynhoven,¹ Benita Yip,¹ Robert S. Hogg,^{1,3}
Julio S. G. Montaner,^{1,2} and P. Richard Harrigan^{1,2}

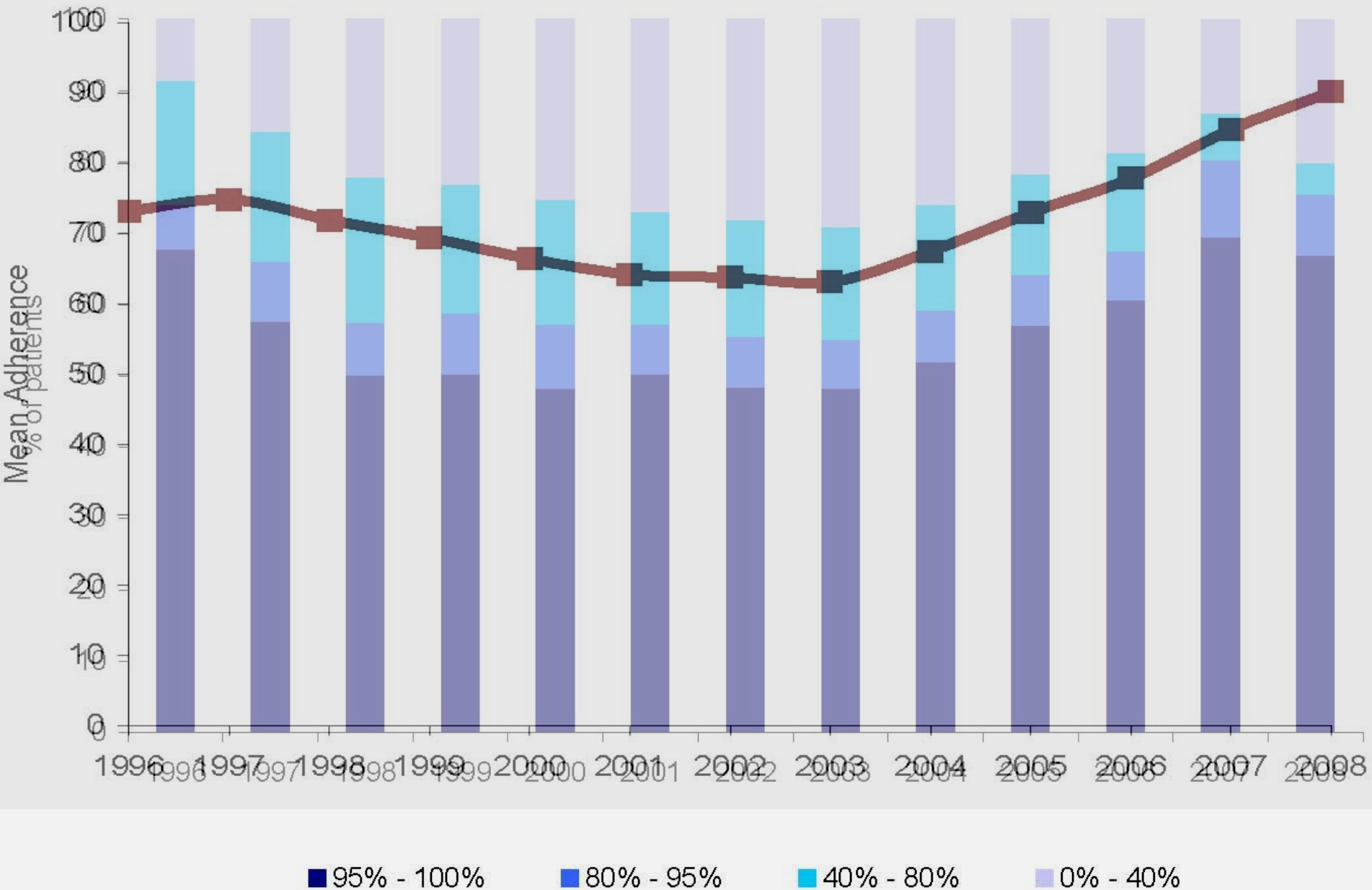
CID 2010;50 (1 January) • HIV/AIDS



Adherence - BC-CfE (Refill Compliance)



Adherence - BC-CfE (Refill Compliance)

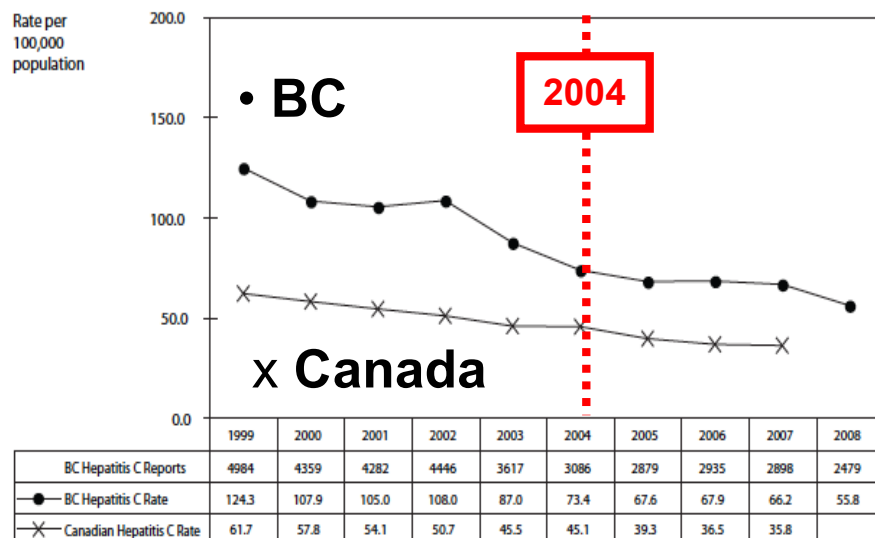


HIV testing in BC, 1985 to 2008

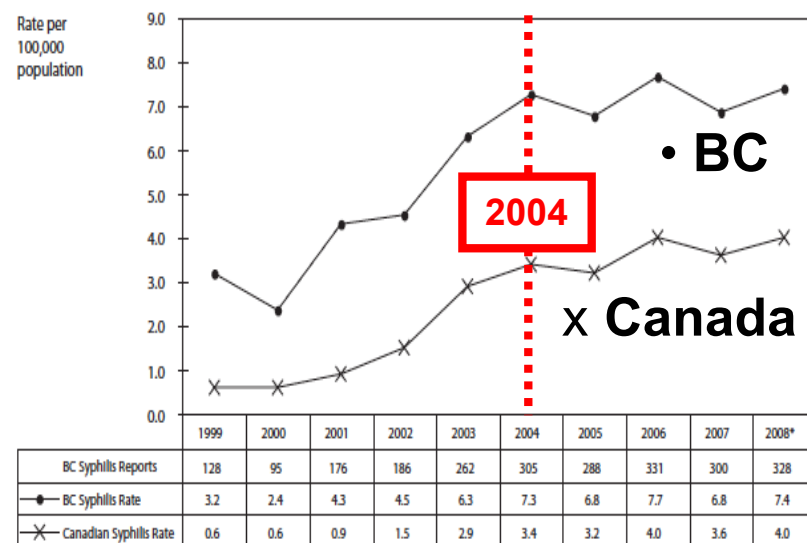
Year	# of HIV Tests
1994	104,229
1995	129,941
1996	137,980
1997	140,092
1998	137,352
1999	134,916
2000	135,104
2001	134,902
2002	145,449
2003	142,400
2004	153,635
2005	160,554
2006	172,058
2007	176,224
2008	182,151

Jan 2004

Hepatitis C, 1999-2008

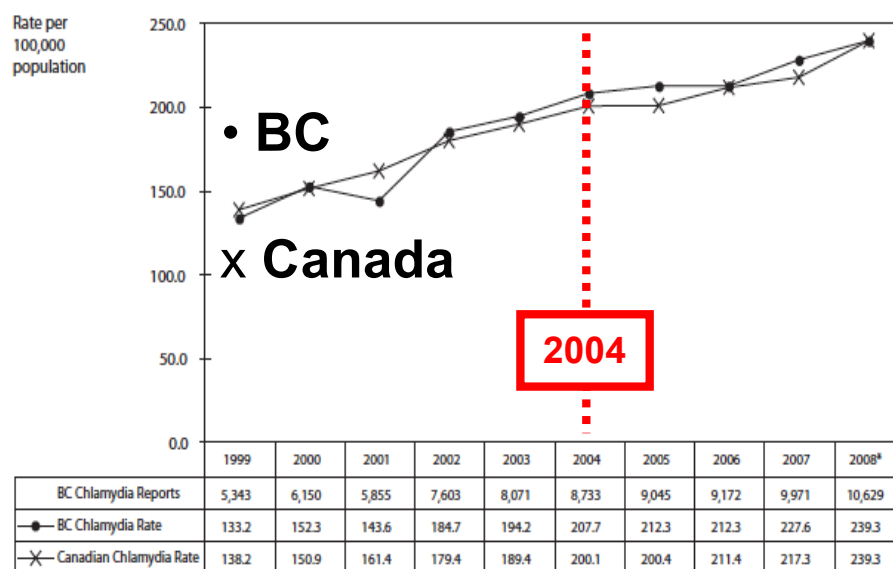


Infectious Syphilis, 1999-2008



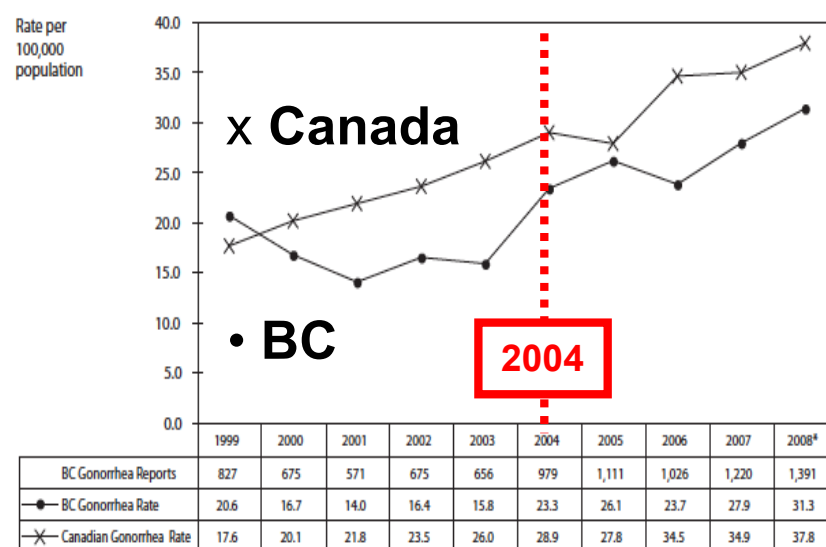
*2008 Canadian rate is projected and is subject to change (Public Health Agency of Canada, 2009).

Genital Chlamydia, 1999-2008

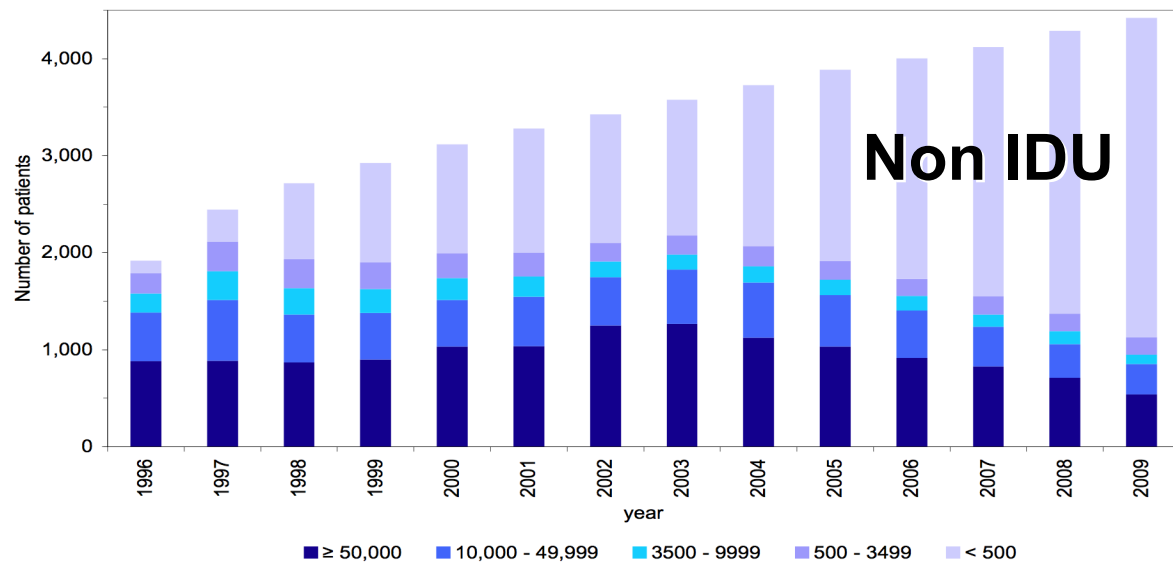


2008 Canadian rate is projected and is subject to change (Public Health Agency of Canada, 2009).

Gonorrhea, 1999-2008

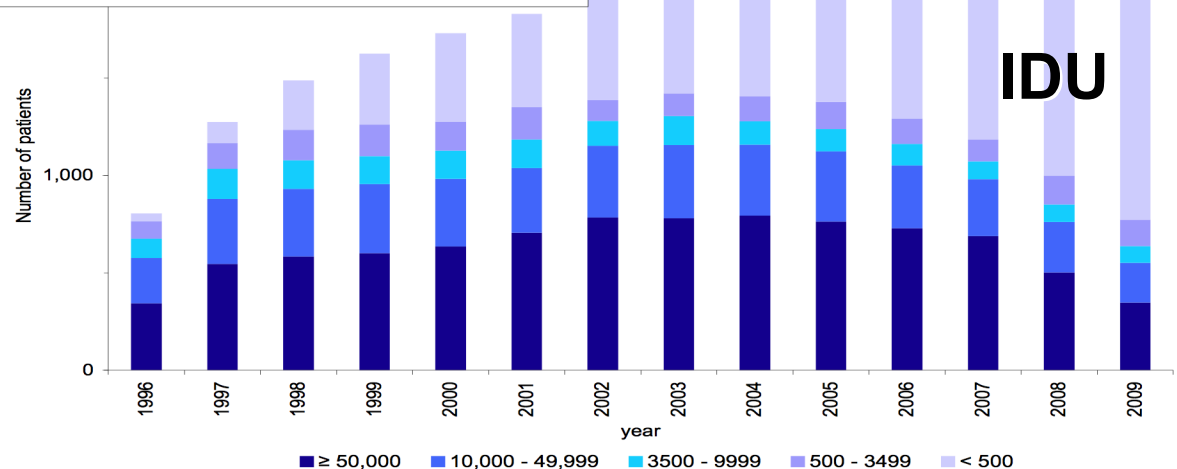


*2008 Canadian rate is projected and is subject to change (Public Health Agency of Canada, 2009).



**Highest
HIV-1- Plasma
Viral load per
Year**

**Ever on Treatment
&
Censoring at the time of
Death or Move**

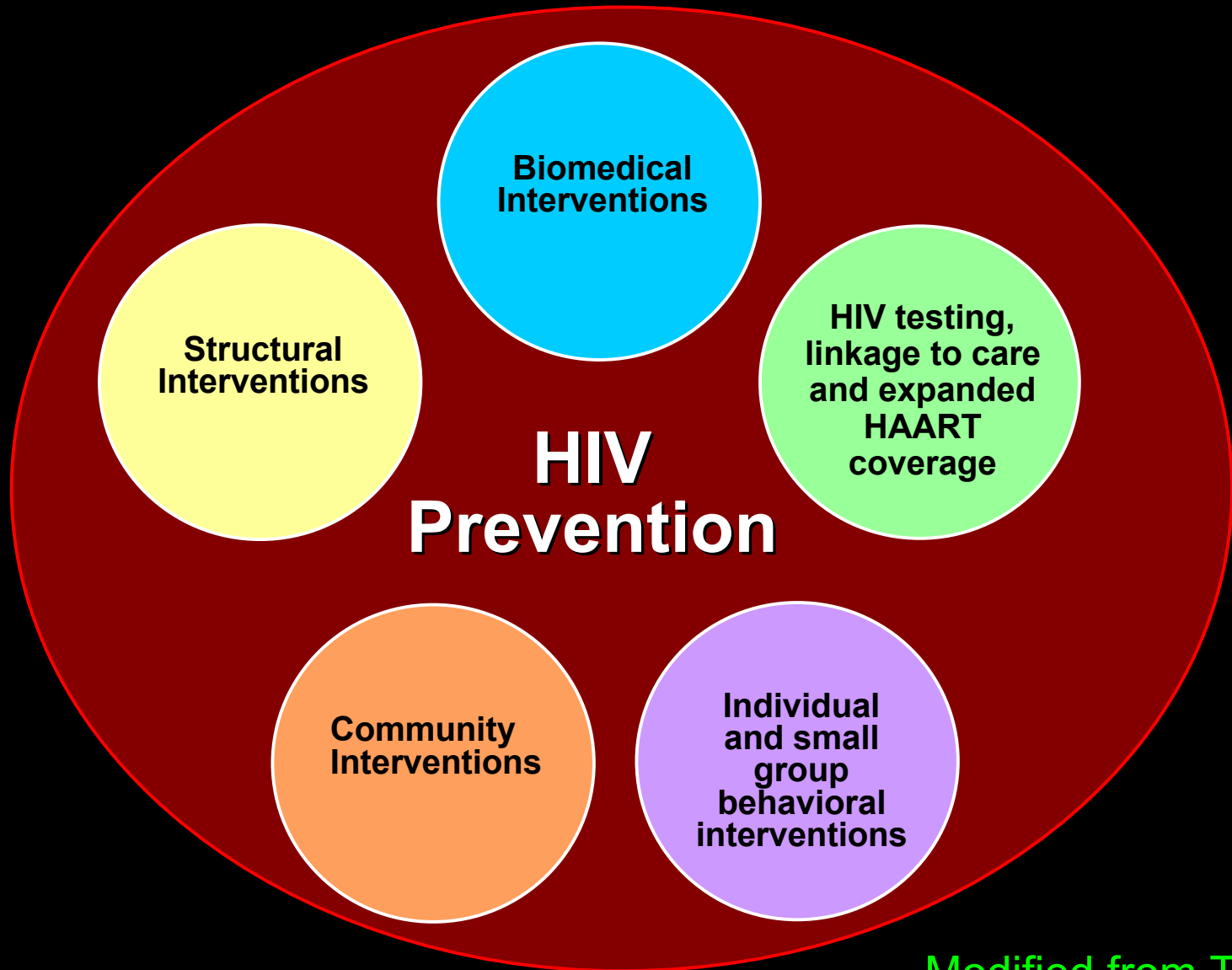


The proportion of HIV infected IDUs engaged in care in BC with plasma viral load >1500 c/mL, as a surrogate for “high” community HIV-1-viral load, decreased from ~50% in 2000-04 to ~20% in 2009 ($p < 0.001$)

HAART Expansion to Reduce AIDS Morbidity & Mortality, and HIV Incidence

- HAART has a substantial added preventive value
 - ✦ The magnitude of this effect is not yet fully characterized, and may well vary in different settings
- Seek and Treat among those who have a medical indication for HAART cannot wait for the above to be resolved
 - ✦ Many lives will be saved and much insight will be gained from closely monitoring a more “aggressive” roll out of HAART within Rx Guidelines
- Seek and Treat outside the range where treatment is medically indicated remains a research question
 - ✦ However, Rx Guidelines leave few outside the “treatment envelope”
- TAP should serve to re-energize Universal Access

Combination prevention



Modified from T. Coates

ZERO NEW INFECTIONS—TREATMENT FOR EVERYONE WHO NEEDS IT

LETTER TO PARTNERS | 2010

Michel Sidibé
Executive Director
UNAIDS



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.



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Thank You

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