

# Expansion of HAART coverage is associated with sustained decreases in HIV/AIDS morbidity, mortality and HIV transmission - The "HIV Treatment as Prevention" (TasP) experience in a Canadian setting

J. Montaner<sup>1\*</sup>, V. Lima<sup>1</sup>, P.R. Harrigan<sup>1</sup>, L. Lourenco<sup>1</sup>, B. Yip<sup>1</sup>, B. Nosyk<sup>1</sup>, E. Wood<sup>1</sup>, T. Kerr<sup>1</sup>, K. Shannon<sup>1</sup>, D. Moore<sup>1</sup>, R.S. Hogg<sup>1</sup>, R. Barrios<sup>1</sup>, Ignacio Rozada<sup>1</sup>, M. Gilbert<sup>2</sup>, M. Kraiden<sup>2</sup>, R. Gustafson<sup>3</sup>, P. Daly<sup>3</sup>, P. Kendall<sup>4</sup>

1. BC Centre for Excellence in HIV/AIDS, Providence Health Care, Vancouver, Canada, 2. Vancouver Coastal Health Authority, Vancouver, Canada, 3. BC Centre for Disease Control, Vancouver, Canada, 4. Ministry of Health, Victoria, Canada

Poster # TUPE203

\* Contact: jmontaner@cfenet.ubc.ca

## Background and Objectives

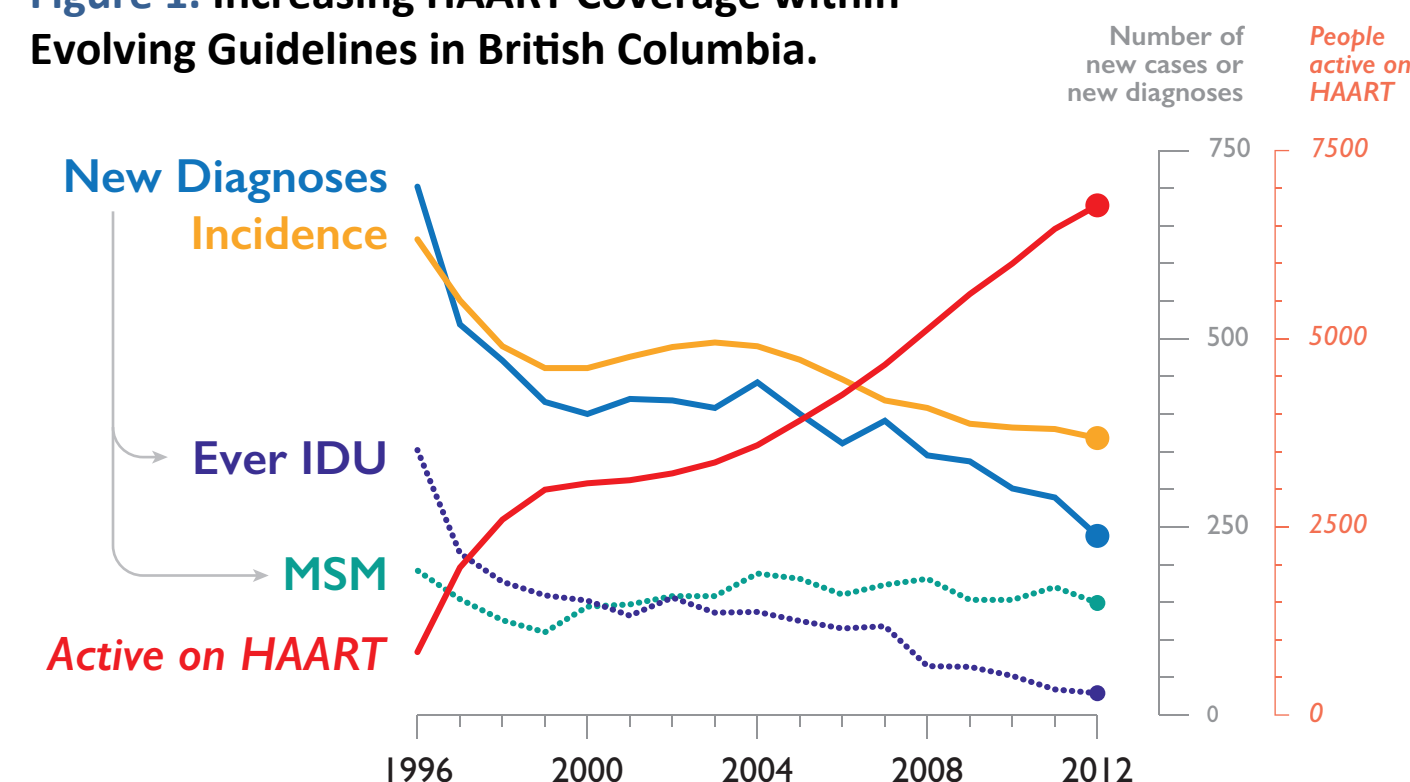
- There has been a renewed call for the global expansion of highly active antiretroviral therapy (HAART) under the framework of HIV treatment as prevention (TasP).
- We conducted a longitudinal ecological study to evaluate the population-level effectiveness and sustainability of HAART expansion in BC.
- We sought to characterize the association between HAART coverage, and the proportion of individuals virologically suppressed with the number of new AIDS diagnoses, and all-cause mortality among HIV-infected British Columbia (BC) residents, as well as the number of new HIV diagnoses and estimated HIV incident cases between 1996 and 2012.

## Methods

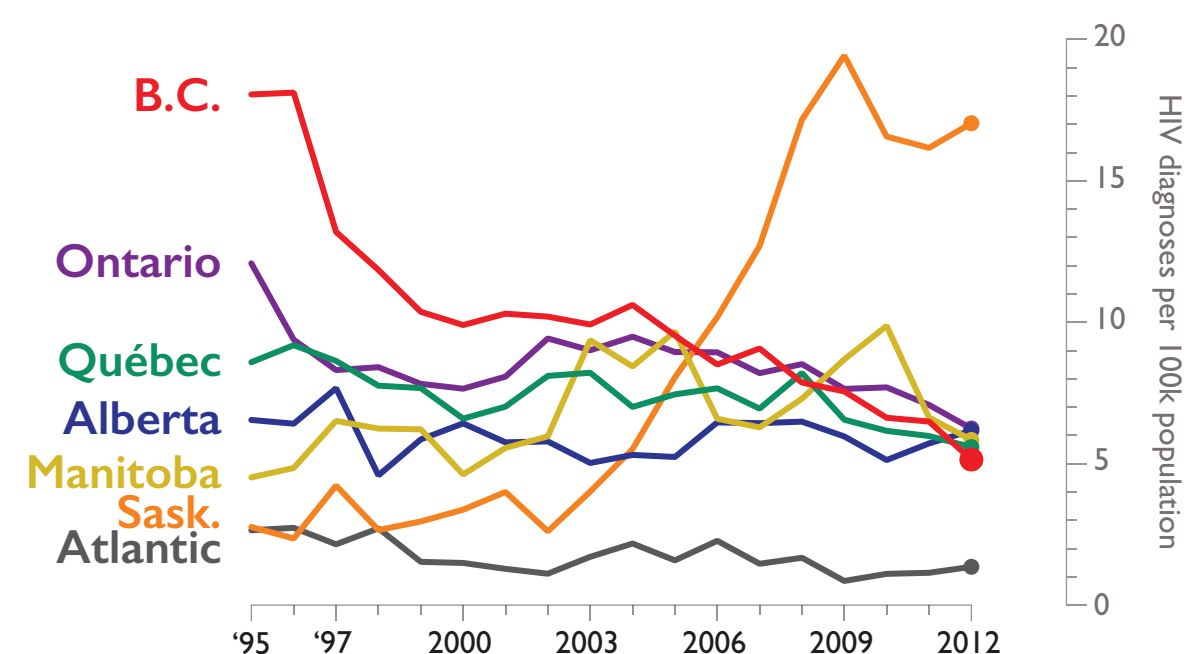
- We used longitudinal data from different sources including viral load, CD4s, drug resistance, HAART use and adherence, HIV diagnoses, AIDS incidence, and HIV mortality.
- We fitted two Poisson regression models over the study period, to relate estimated HIV incidence and percentage of virologically suppressed individuals.

## Results

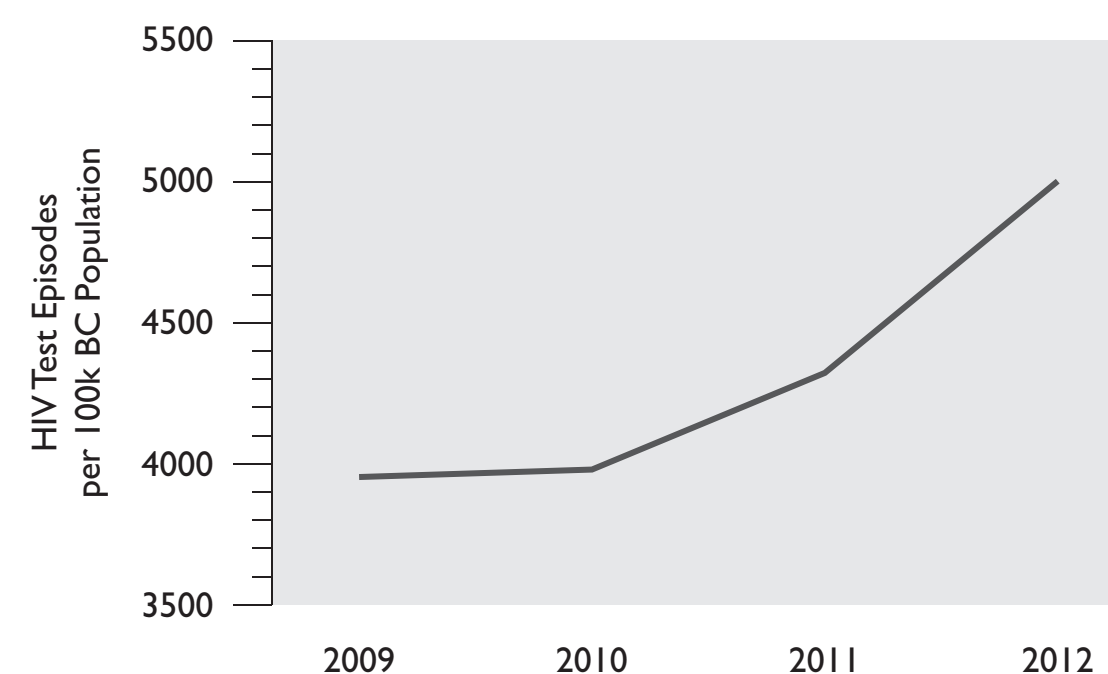
**Figure 1. Increasing HAART Coverage within Evolving Guidelines in British Columbia.**



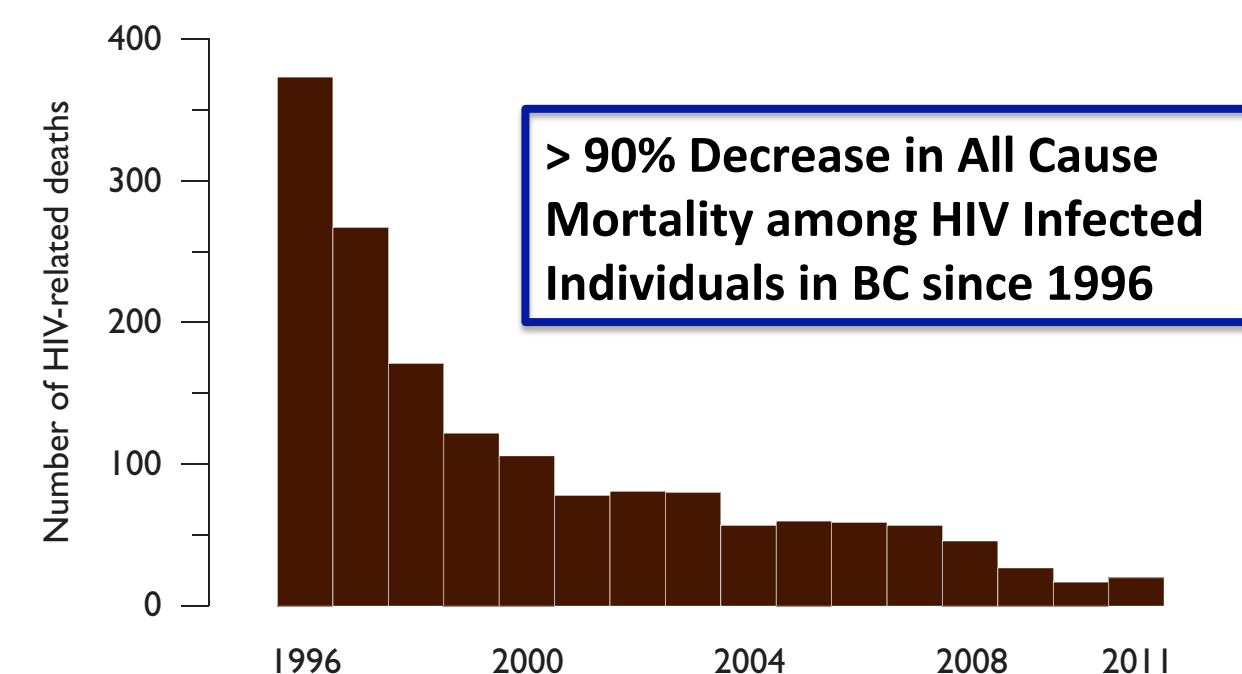
**Figure 2. Comparison of HIV Diagnoses Across Different Provinces in Canada.**



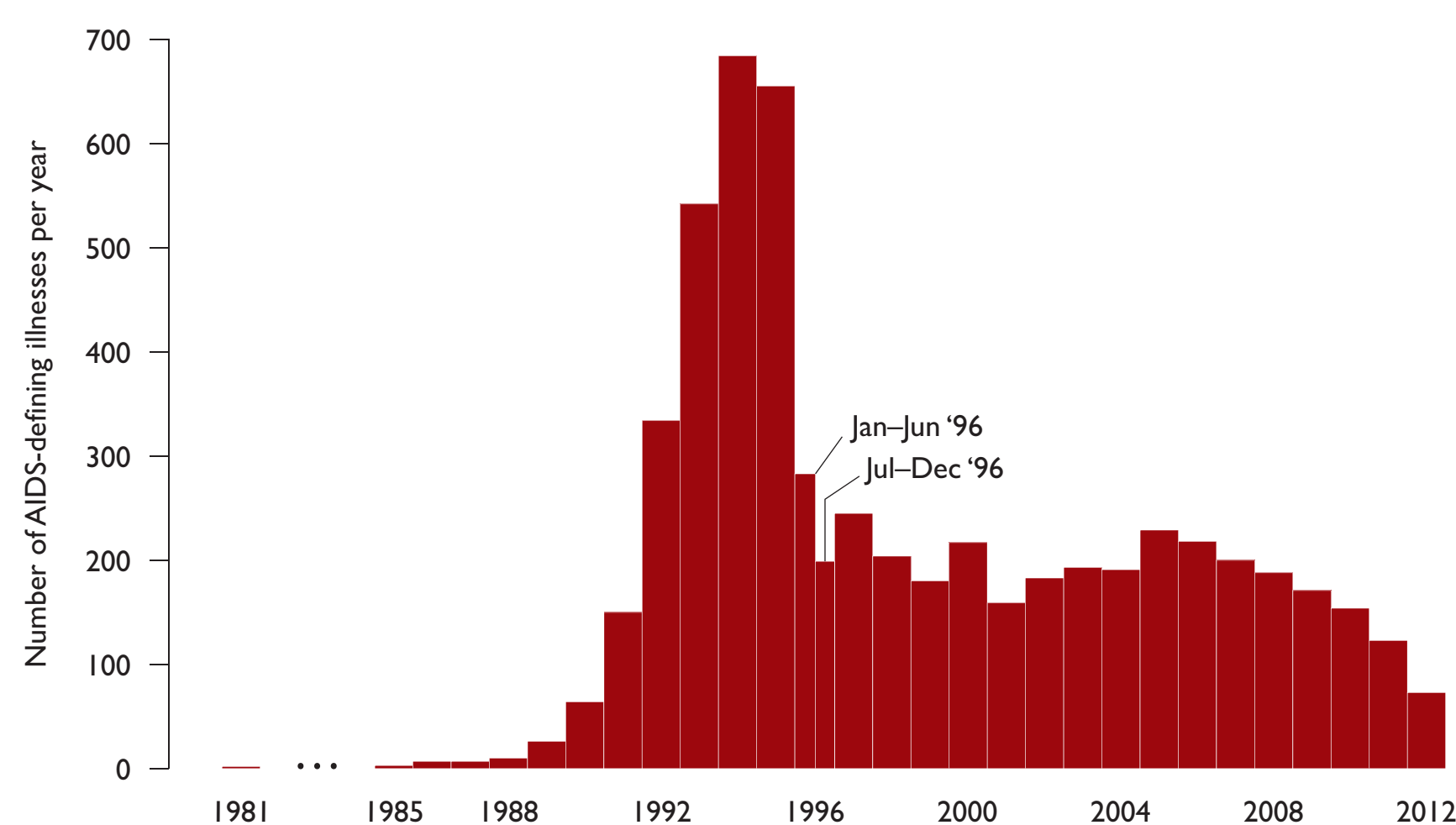
**Figure 3. HIV Testing Episodes in British Columbia.**



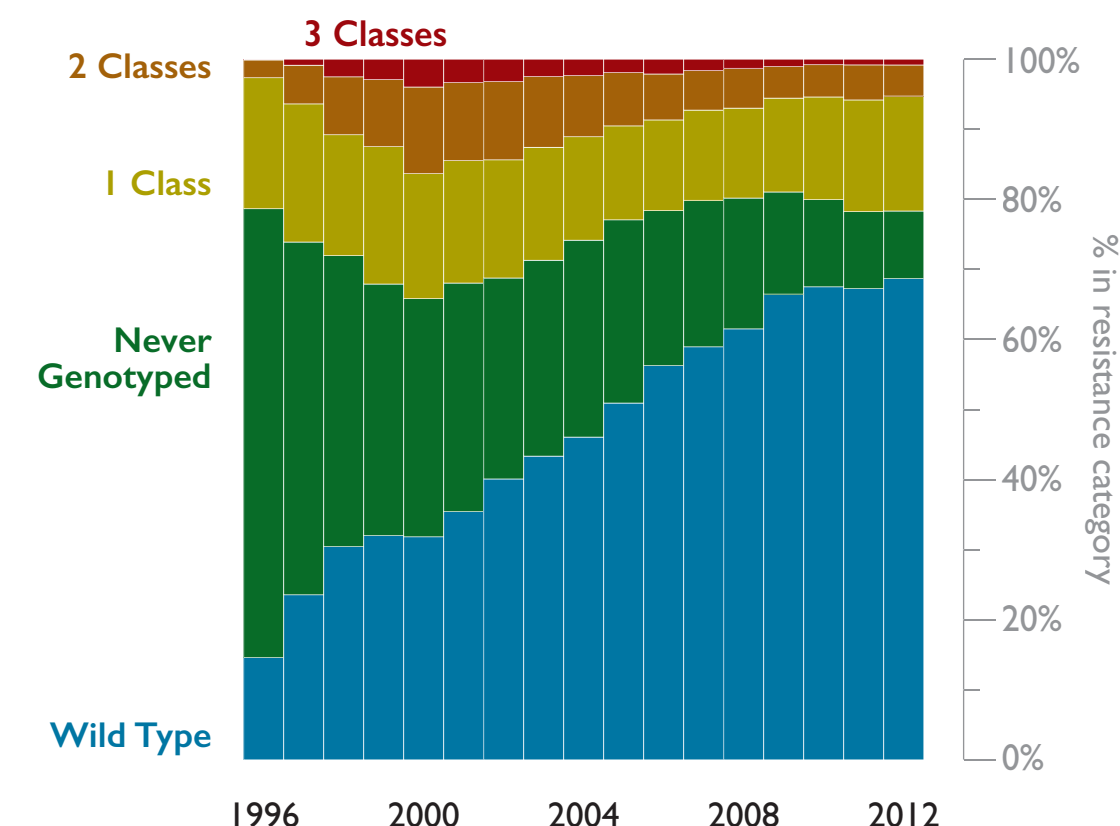
**Figure 4. All-Cause Mortality Cases in British Columbia**



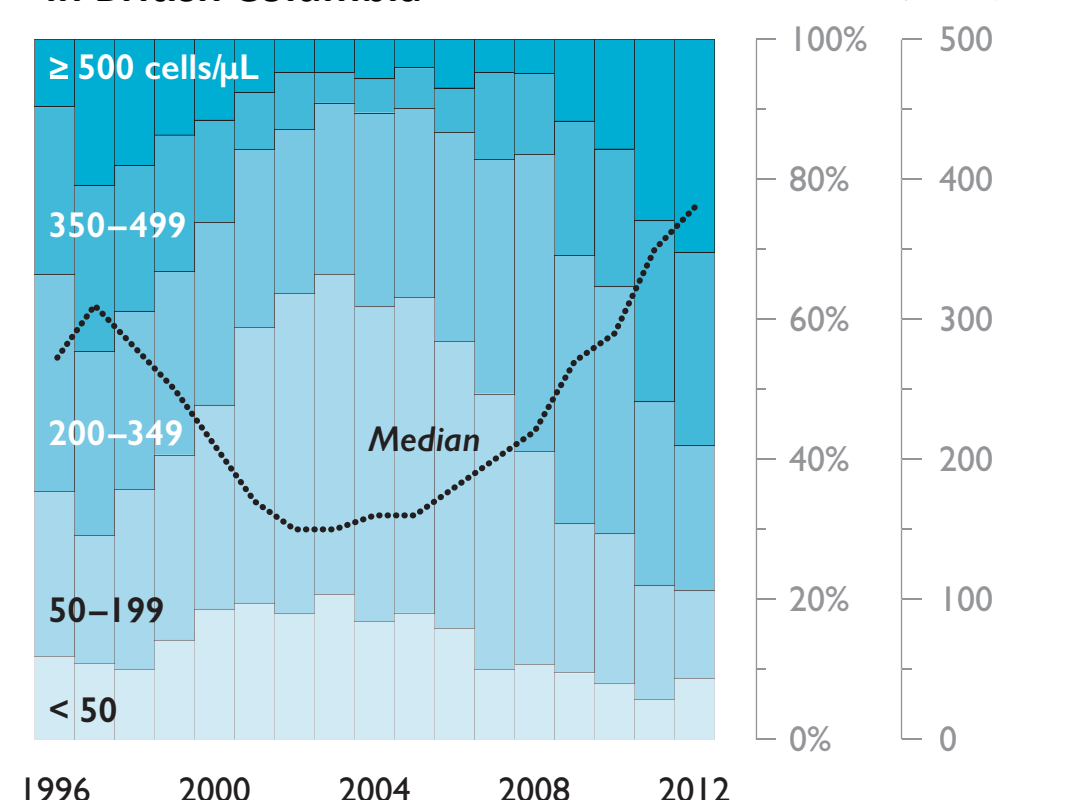
**Figure 5. AIDS New Cases in British Columbia**



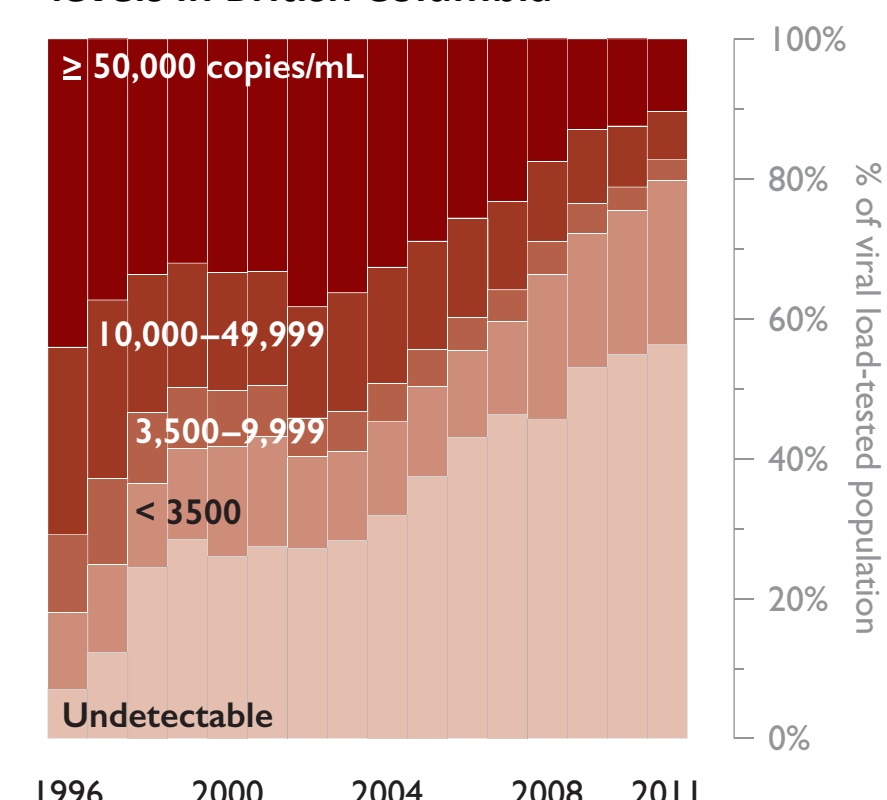
**Figure 6. HIV Drug Resistances in British Columbia**



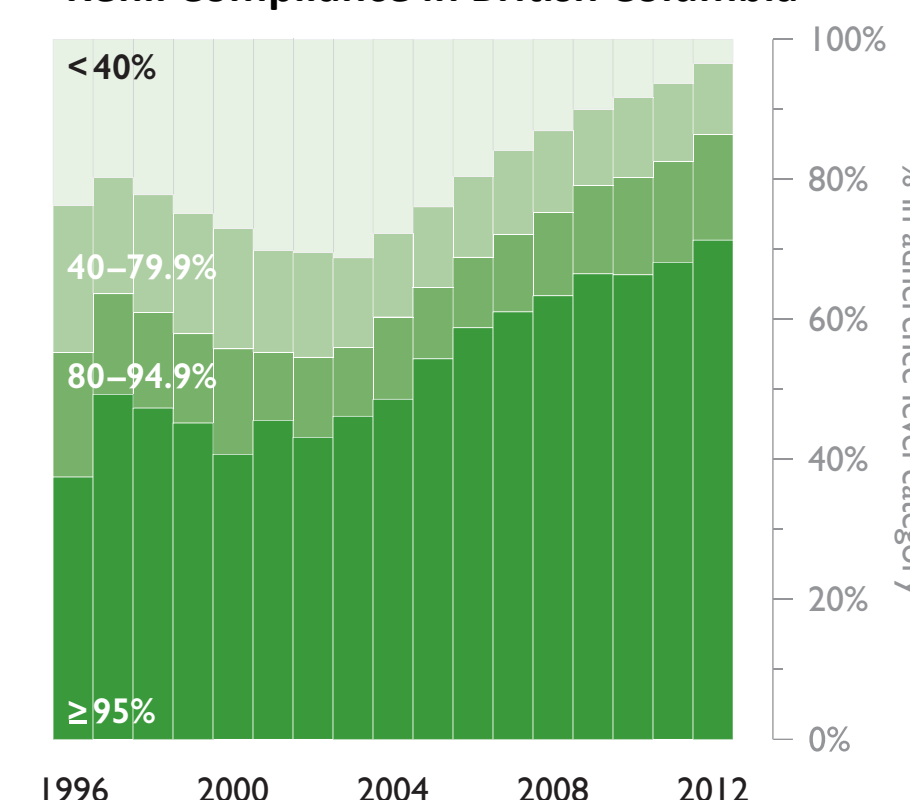
**Figure 7. Baseline CD4 count in British Columbia**



**Figure 8. Plasma HIV-RNA levels in British Columbia**



**Figure 9. Adherence to HAART by Refill Compliance in British Columbia**



The models showed that for each 100 individuals actively on HAART:

- The estimated incidence rate decreased by 1.20%;
- The estimated mortality rate decreased by 2.51%;
- The estimated AIDS rate decreased by 2.48%.

The models also showed that for each 1% increase in the number of individuals suppressed on HAART:

- The HIV incidence rate decreased by 1%;
- The estimated mortality rate decreased by 2.06%;
- The estimated AIDS rate decreased by 1.95%.

## Conclusions

- Our results show that HAART expansion between 1996 and 2012 in BC was associated with a sustained and profound population-level decrease in morbidity, mortality and HIV transmission.
- These results are consistent with the results in large expansion programs in South Africa (Tanser F. Science 2013; 339 (6122): 966).
- Our findings support the long-term effectiveness and sustainability of HIV TasP within an adequately resourced environment with no financial barriers to diagnosis, medical care or antiretroviral drugs.
- The 2013 Consolidated World Health Organization Antiretroviral Therapy Guidelines offer a unique opportunity to further evaluate TasP in other settings, particularly within generalized epidemics, and resource-limited setting, as advocated by UNAIDS.

## References

- Montaner JS et al. PLoS One 2014; 9(2):e87872
- Hogg RS et al. HIV Medicine 2013; 14(9): 581

