STOP HIV – TB: Special Populations, The Vancouver Experience

Rolando Barrios, MD
Assistant Director
BC Centre for Excellence in HIV/AIDS
Senior Medical Director
Vancouver Community Health Services, Vancouver Coastal Health
Adjunct Professor
School of Population and Public Health, UBC
Outline

• Overview of TB & HIV in British Columbia (BC) & Vancouver
• Vancouver: Treatment as Prevention
• Special Populations: IVU
• STOP HIV/AIDS – Pilot Project in BC
• Lessons and Challenges
British Columbia, Canadá

Canadá: 10 Provincias y 4 Territorios
~ 35 Millones de habitantes
Segundo país mas grande del mundo.

British Columbia:
Localizada en el Pacífico
~3.5 Millones de habitantes
Ciudades Principales:
Vancouver, Victoria, Prince George
Vancouver

Urban centre with Inner City challenges

Highest and lowest BC socio-economic status in one geographic area
HIV

Low prevalence epidemic

~15,000 infected with HIV in BC (1)
  26% are unaware of their HIV status (2)
~ 6,000 on ART (1)
~ 3,500 in need of ART not on ART (1)
~ 300 new HIV cases per year (3)

Micro epidemics

Inequities in outcomes

(1) Hogg RS. Drug Treatment Program, BCCFE
(2) Health Canada 2009
(3) HIV Surveillance, BCCDC. 2010
Vancouver’s Downtown Eastside

Population: 16,000
  Drug addiction
  Mental Health illness
  Violence

HIV Prevalence
  ~18% (1)
  Higher among aboriginals (28%) (2)

(1) CHASE final report, VCHA, May 2005
(2) Tyndall, Mark et al. “HIV seroprevalence among participants at a Supervised Injection Facility in Vancouver, Canada: implications for prevention, care and Treatment” Harm Reduction Journal 2006, 3:36
Inequities in outcomes

• Higher HIV-related mortality in:
  – Aboriginal populations
  – Vancouver’s Downtown Eastside
  – Prince George
HIV in Aboriginal People

Graph showing the prevalence of HIV in Aboriginal people over the years from 1980 to 2000. The graph includes two lines: one representing the high prevalence and the other representing the low prevalence. The prevalence increases over time.
HIV-related Mortality in BC

Eric Druyts, et al. BC-CfE, CAHR, 2009
### Tuberculosis incidence rates in sub-Vancouver areas, 2005 - 2008

<table>
<thead>
<tr>
<th></th>
<th>City Centre</th>
<th>Downtown Eastside</th>
<th>North East</th>
<th>Westside</th>
<th>Midtown</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>15.8</td>
<td>30.9</td>
<td>25.2</td>
<td>3.9</td>
<td>19.2</td>
<td>16.0</td>
</tr>
<tr>
<td>2006</td>
<td>9.0</td>
<td>46.3</td>
<td>27.9</td>
<td>7.0</td>
<td>21.4</td>
<td>14.4</td>
</tr>
<tr>
<td>2007</td>
<td>3.5</td>
<td>39.5</td>
<td>13.7</td>
<td>7.7</td>
<td>15.3</td>
<td>19.6</td>
</tr>
<tr>
<td>2008</td>
<td>8.6</td>
<td>29.4</td>
<td>25.1</td>
<td>2.3</td>
<td>15.3</td>
<td>10.5</td>
</tr>
<tr>
<td>All Four Years</td>
<td>9.1</td>
<td>36.4</td>
<td>23.0</td>
<td>5.2</td>
<td>17.8</td>
<td>15.1</td>
</tr>
</tbody>
</table>

NB: Map colours do not correspond with graph below.
HIV status of TB cases in BC

The percentage of TB patients tested for HIV infection has steadily increased from 42% (2005) to 62% (2008).

TB status of HIV cases in BC

The percentage of HIV patients tested for TB varies from site to site from 40 – 80%.
Vancouver?
Vancouver 1996
“One World One Hope”

% Progression to AIDS in 3 yrs

Plasma HIV RNA (thousand copies/mL)

CD4+ cells/µL
- > 750
- 501-750
- 351-500
- 201-350
- < 200


Montaner et al JAMA, March 25th 1998

Triple Therapy: AZT + NVP
AZT + ddl

HIV-1 RNA Difference From Baseline, log Copies/mL

Duration of Treatment, wk

Gulick et al; JAMA, July 1, 1998

Dual Therapy Regimens

Triple Therapy: AZT+3TC+IDV

Study Weeks

Plasma Viral Load, a strong Predictor of outcome in HIV Infected Individuals

High Plasma Viral Load: Poor Prognosis
Low Plasma Viral Load: Good Prognosis

Montaner et al JAMA, March 25th 1998

Triple Therapy: AZT + ddl + NVP

AZT + ddI + NVP

Study Weeks

Montaner et al JAMA, March 25th 1998

Triple Therapy: AZT + NVP
AZT + ddl

HIV-1 RNA Difference From Baseline, log Copies/mL

Duration of Treatment, wk

Gulick et al; JAMA, July 1, 1998

Dual Therapy Regimens

Triple Therapy: AZT+3TC+IDV

Study Weeks

Montaner et al JAMA, March 25th 1998

Triple Therapy: AZT + NVP
AZT + ddl

HIV-1 RNA Difference From Baseline, log Copies/mL

Duration of Treatment, wk

Gulick et al; JAMA, July 1, 1998

Dual Therapy Regimens

Triple Therapy: AZT+3TC+IDV

Study Weeks
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

International AIDS Society
Stronger Together

AIDS 2006
XVI International AIDS Conference
Time to Deliver
The case for expanding access to highly active antiretroviral therapy to curb the growth of the HIV epidemic

ART stops HIV replication

↓

HIV load falls to undetectable levels in plasma as well as in sexual fluids

↓

Sharp reduction in HIV transmission
Expanding HAART Coverage in BC within the evolving IAS-USA Therapeutic Guidelines
Figure 1: Number of active HAART participants and number of new HIV diagnoses per year in British Columbia, Canada, 1996–2009

p values are for trend and were obtained from the generalised additive model. Injecting drug user (IDU) refers to individuals who have ever injected illicit drugs. HAART=highly active antiretroviral therapy. BC=British Columbia. NA=not available.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number at risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Active on HAART</td>
</tr>
<tr>
<td>1996</td>
<td>837</td>
</tr>
<tr>
<td>1997</td>
<td>1960</td>
</tr>
<tr>
<td>1998</td>
<td>2597</td>
</tr>
<tr>
<td>1999</td>
<td>2994</td>
</tr>
<tr>
<td>2000</td>
<td>3079</td>
</tr>
<tr>
<td>2001</td>
<td>3120</td>
</tr>
<tr>
<td>2002</td>
<td>3211</td>
</tr>
<tr>
<td>2003</td>
<td>3356</td>
</tr>
<tr>
<td>2004</td>
<td>3585</td>
</tr>
<tr>
<td>2005</td>
<td>3913</td>
</tr>
<tr>
<td>2006</td>
<td>4255</td>
</tr>
<tr>
<td>2007</td>
<td>4654</td>
</tr>
<tr>
<td>2008</td>
<td>5123</td>
</tr>
<tr>
<td>2009</td>
<td>5413</td>
</tr>
</tbody>
</table>
Figure 1: Number of active HAART participants and number of new HIV diagnoses per year in British Columbia, Canada, 1996–2009. p values are for trend and were obtained from the generalised additive model. Injecting drug user (IDU) refers to individuals who have ever injected illicit drugs. HAART = highly active antiretroviral therapy. BC = British Columbia. NA = not available.
Figure 1: Number of active HAART participants and number of new HIV diagnoses per year in British Columbia, Canada, 1996–2009

p values are for trend and were obtained from the generalised additive model. Injecting drug user (IDU) refers to individuals who have ever injected illicit drugs. HAART=highly active antiretroviral therapy. BC=British Columbia. NA=not available.
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 Harrigan1,2

Acquired resistance falling

Plasma viral load suppression rising
Number of HIV tests per Year in BC

BC-CDC Report, 2009

Community Viral Load and New HIV Cases in SFco

n=12,512 unduplicated HIV-positive individuals.
HPTN 052 (www.hptn.org)

- HIV discordant couples (n=1750)
- India, Brazil, Thailand, Malawi, Zimbabwe
- BSL CD4 count 250 to 500/mm³
- Index Patient randomized to
  - HAART vs
  - SoC: HAART after 200/mm³ latter amended to 250/mm³

HPTN 052 (www.hptn.org)

- Seroconversions (genetically linked)
  - Deferred HAART: 27 cases (>1%)
  - Immediate HAART: 1 case (0.1%)
  - HR = 0.37 or 96.3% reduction in transmission
  - No diff whether index pt was M or F

- Overall Morbidity and Mortality
  - Deferred HAART: 60 cases
  - Immediate HAART: 40 cases

- Extra-Pulmonary TB
  - Deferred HAART: 17 cases
  - Immediate HAART: 3 cases

Impact of HAART on IDUs
Longitudinal community plasma HIV-1 RNA concentrations and incidence of HIV-1 among injecting drug users: prospective cohort study
HAART Reduces HIV incidence in IDUs

G Kirk, …, D Vlahov for the Alive Cohort, CROI 2011
Summary of findings from the evaluation of a pilot medically supervised safer injecting facility

Evan Wood, Mark W. Tyndall, Julio S. Montaner, Thomas Kerr

See related article page 1395

ABSTRACT

In many cities, infectious disease and overdose epidemics are occurring among illicit injection drug users (IDUs). To reduce these concerns, Vancouver opened a supervised safer injecting facility in September 2003. Within the facility, people inject pre-obtained illicit drugs under the supervision of medical staff. The program was granted a legal exemption by the Canadian government on the condition that a 3-year scientific evaluation of its impacts be conducted. Given the controversial nature of the program,14 stakeholders agreed that all findings from the evaluation, including this report, should be externally peer-reviewed and published in the medical literature before dissemination. In this review we report on the 3 years’ findings.

Program and evaluation methods

As described previously,13 the Vancouver safer injecting facility has 12 injection stalls where IDUs inject pre-obtained illicit drugs under the supervision of nurses. Nurses respond to overdoses and address other health needs (e.g., treating injection-site abscesses), and the facility has an addiction counselor and support staff who seek to meet the needs of IDUs or refer them to appropriate community resources (e.g., housing services, addiction treatment).13

Although the best strategy for evaluating the safer injecting facility would be to randomly assign IDUs to either full access or no access to the program, interventional study de-
Summary of Findings to Date

- **Reductions in public disorder**

- **Reductions in syringe sharing**
  (Kerr et al., The Lancet, 2005, Wood et al., American Journal of Infectious Diseases, 2005)

- **Successful management of over 1000 overdoses**
  (Kerr et al., IJDP, 2006, Kerr et al., IJDP, 2007)

- **Increased use of detox programs and addiction treatment**

- **Reductions in violence against women**
  (Fairbairn et al, 2008, Social Science and Medicine)

- **Increases in condom use**
Summary (cont...)

✓ Overdose deaths averted  

✗ No adverse changes in community drug use patterns  
(Kerr et al., British Medical Journal, 2006)

✗ No increases in initiation into injection drug use  
(Kerr et al., American Journal of Public Health, 2007)

✗ No increases in drug-related crime  
(Wood et al., Substance Abuse Treatment. Prevention, and Policy, 2006)

✓ Insite is cost-effective  
STOP HIV/AIDS: Seek and Treat for Optimal Prevention of HIV/AIDS
Seek and Treat
$48 Million
to Treat and Prevent HIV
Downtown Vancouver & Downtown Prince George
STOP HIV/AIDS

• Seek
  ▪ Unaware of their HIV Diagnosis
  ▪ Re-engagement of those “lost to care”

• Treat & Retain
  ▪ Ensure prompt linkage to care
  ▪ Ongoing Monitoring and Prompt initiation of HAART as per clinical guidelines
  ▪ Support to retain in care and optimize adherence

• Evaluate
  ▪ Outcomes
  ▪ Impact
ULTIMATE GOAL:

• Treat those who need treatment
  ▪ Reduce HIV-related morbidity and mortality
• Decrease HIV incidence
  ▪ Cost-averting
CONTINUUM OF HIV CARE

- Populations At risk
  - Identify case
    - Identify contacts
      - Diagnose Disease
        - Clinical Assessment
          - On going Clinical Monitoring
            - Initiation of HAART
              - Optimal HAART adherence
                - Sustained Viral suppression
                  - NO
                    - Morbidity Mortality
                      - NO
                        - Improved Outcomes
                          - YES
                            - Improved Outcomes

Barrios, Day, Hogg, Montaner - Unpublished
Model for Monitoring & Evaluating
STOP HIV/AIDS

Populations
- At risk
  - Identify contacts
  - Identify case

Case finding
- Contact tracing

Diagnose Disease
- Clinical Assessment
- Clinical Monitoring
- Initiation of HAART

Retention in care
- Optimal HAART adherence

Outcomes
- Improved population health status
  - Reduce HIV related Morbidity & Mortality
  - Sustained Viral suppression
  - Reduce HIV Incidence

Impact

Barrios, Day, Hogg, Montaner - Unpublished
Current initiatives: Testing

- Testing initiatives underway
  - Provider initiated testing
  - Targeted testing
  - Point of care testing
Current initiatives: Treatment

- Developing Standards of Care
- Scaling up harm reduction interventions
- HIV Quality Improvement initiative
- Training and education of primary care providers
Lessons learned

• Stop “planning the plan”
• Persistence
• Create awareness
• Target key government officials
  – Good for the individual
  – Good for the public
  – Good for the pocket
• Gain community/media support
Challenges

• Providers - main barrier for increasing HIV testing
• Significant paradigm shift
• Bureaucracy takes time – process oriented
• Harm reduction – Debate ideology vs Science
Thank you!

rbarrios@cfenet.ubc.ca