Towards the end of AIDS as a pandemic: the BC-CfE experience

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Disclosure

JM’s Treatment as Prevention (TasP) research, paid to his institution, has received support from the Public Health Agency of Canada, BC-Ministry of Health and US NIH (NIDA R01DA036307 and CTN 248).

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JM has served as an advisor to the Canadian federal and BC governments in the last year.
Learning Objectives

• to understand the individual level benefit of modern antiretroviral therapy

• to understand the societal level benefit of modern antiretroviral therapy

• to understand the economic impact of a comprehensive HIV Treatment as Prevention® (TasP®) Strategy

• to understand the strategic advantage of establishing a focused Centre for Excellence
USA – Trends in Annual Rates of Death

Men - Ages 25–44

Deaths per 100,000 population

Year


* Ages 25 to 44

USA – CDC, 1997
Vancouver 1996
“One World One Hope”

Impact of HAART in BC

- Life Expectancy at Age 20
- Deaths per 1000

Introduced HAART
New HIV and Syphilis in BC

Rate per 100,000 population

HIV

Syphilis

'91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04
The case for expanding access to highly active antiretroviral therapy to curb the growth of the HIV epidemic

Julio Montaner et al
Stephen Lewis, Former UN Special AIDS Ambassador

Nora Volkow, Director, National Institute on Drug Use, NIH

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

Increasing HAART Coverage in BC

- Pre-HAART
- HAART
- TasP

# of active participants on HAART in the HIV treatment programme 1994–2009

- Summer of 1996
- Summer of 2000
- January 2004

Modified from Montaner et al, PLOS One 2014
AIDS Incidence in BC

Pre-HAART  HAART  TasP

Modified from Montaner et al, PLOS One 2014
EDITORIAL

AIDS ward closing merits celebration

B.C. Centre for Excellence in HIV/AIDS
New HIV Diagnoses and HAART Use

Modified from Montaner et al, PLOS One, Feb 12th 2014
Vertical Transmission (VT)

➔ ART is **100% effective** at preventing VT

• Over the last 15 years, the widespread use of immediate ART, eliminated vertical transmission in BC
HIV new Diagnoses
British Columbia, 1996 - 2012

Most recent estimate: 250 new HIV diagnoses in 2017

New HIV Diagnoses (All)

New HIV Diagnoses (Ever IDU)

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Modified from Montaner et al, PLOS One, Feb 12th 2014
Impact of ART & HR on HIV incidence in B.C.

http://dx.doi.org/10.1016/S2352-3018(17)30045-0

Nosyk, Zang, Min, Krebs, Lima, … & Montaner. Lancet HIV, March 30th 2017
Expanding ART Saves Lives and Money
(e.g.: South Africa)

TasP: A wise investment strategy

A front-loaded investment in ART pays off through:

- reduced transmission
- delayed disease progression

HPTN 052: ART prevents Sexual Transmission

Immediate vs. Delayed ART in Sero-Discordant Couples

HR = 96.3% reduction in transmission
No difference whether index patient was Male or Female

HIV Transmission Risk by Sexual Behavior as reported by HIV-Partner

Rate of Couple Transmission (per 100 Couple-Years Follow-Up)

- **Heterosexual (Male)**
  - Vaginal sex with ejaculation (192 CYFU)

- **Heterosexual (Female)**
  - Vaginal sex (272 CYFU)

- **MSM**
  - Receptive anal sex:
    - With ejaculation (93 CYFU)
    - Without ejaculation (157 CYFU)
  - Insertive anal sex (262 CYFU)

Overall risk = Zero through condomless sex with a partner on ART (HIV RNA <200 copies/mL)

U=U (undetectable = uninfectious)

“Scientists never like to use the word “Never” of a possible risk. But I think in this case we can say that the risk of transmission from an HIV-positive person who takes treatment and has an undetectable viral load may be so low as to be unmeasurable, and that’s equivalent to saying they are uninfectious.”

Anthony Fauci, Director, NIAID
US - National Institutes of Health
AMBITIOUS TREATMENT TARGET

THE FINAL CHAPTER OF THE AIDS EPIDEMIC
An Ambitious Treatment Target to END* the AIDS Pandemic

90% diagnosed
90% on treatment
90% virally suppressed

THE FINAL CHAPTER OF THE AIDS EPIDEMIC

* Defined as decreasing overall disease burden (M&M&T) by 90% from global 2010 levels
Ending AIDS: Reducing global AIDS-related deaths and new HIV infections by 90% of 2010 levels

**AIDS Deaths**

- 2020 Goal
- Constant Coverage

**New HIV Infections**

- 2020 Goal
- Constant Coverage

Stover et al, GAP Report, UNAIDS, 2014
By 2030, end the epidemics of AIDS, tuberculosis, malaria & neglected tropical diseases. Combat hepatitis, water-borne diseases & other communicable diseases.
No. 64.781

From the Vatican, 5 June 2015

Dear Dr Montaner,

His Holiness Pope Francis thanks you for informing him of the forthcoming International Conference on HIV/AIDS in Vancouver. He sends prayerful greetings to all taking part, and expresses his esteem for their work and the dedication it requires.

His Holiness is grateful for the many advances made in the prevention and treatment of HIV/AIDS, particularly through Highly Active Antiretroviral Therapy, and the promotion of “Treatment through Prevention”. The lives that have been saved, both through the reduction in the number of new infections and the better health and longer lifespan of those already diagnosed, gives witness to the possibilities for beneficial outcomes when all sectors of society unite in common purpose. He hopes that further efforts may be made to make the fruits of research and medicine available to the world’s poorest people, especially orphaned children, upon whom this scourge often places the heaviest burden. He likewise prays that all advances in pharmacology, treatment and research will be matched by a firm commitment to promote the integral development of each person as a beloved child of God. Upon all of you, the Holy Father invokes abundant divine blessings of wisdom and peace.

With every good wish, I am

Yours sincerely,

[Signature]

Secretary of State
Treatment as Prevention

Targeted Disease Elimination™

Health Care Sustainability
Prevalence

Incidence

Health Care Sustainability

Infectious contagious diseases
- HIV
- Viral Hepatitis
- TB
- Others
Prevalence → Incidence → Health Care Sustainability

- Infectious contagious diseases
- Socially contagious diseases
The end of AIDS?

How 5 million lives have been saved, and a plague could now be defeated