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

Julio S. G. Montaner, OC, OBC, MD Executive Director and Physician-in-Chief BC Centre for Excellence in HIV/AIDS Vancouver, BC, Canada



#### **TRANSPLANT SUMMIT** 2019

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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.



How you want to be treated.





#### **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



How you want to be treated.





## **USA – Trends in Annual Rates of Death**



**US-CDC**, 1997



























## THE LANCET

Viewpoint

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

Julio Montaner et al

The Lancet; 2006, 368:531-536

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..."

> President Clinton, International AIDS Conference, Washington 2012





## Increasing HAART Coverage in BC



Modified from Montaner et al, PLOS One 2014







Modified from Montaner et al, PLOS One 2014

Vancouver Sun, May 31, 2014

## EDITORIAL AIDS ward closing merits celebration



How you want to be treated.



BRITISH COLUMBIA CENTRE for EXCELLENCE in HIV/AIDS

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## **New HIV Diagnoses and HAART Use**



#### Modified from Montaner et al, PLOS One, Feb 12<sup>th</sup> 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



#### Modified from Montaner et al, PLOS One, Feb 12<sup>th</sup> 2014





## Impact of ART & HR on HIV incidence in B.C.





Nosyk, Zang, Min, Krebs, Lima, ... & Montaner. Lancet HIV, March 30th 2017





## **Expanding ART Saves Lives and Money**



Granich et al, PLoS ONE 7(2):e30216, Feb 2012





## TasP: A wise investment strategy

#### A front-loaded investment in ART pays off through:

- reduced transmission
- delayed disease progression



#### Granich et al, PLoS One. 2012;7(2):e30216.

Nosyk et al, Lancet HIV. 2015;2:393-400.





## HPTN 052: ART prevents Sexual Transmission

Immediate vs. Delayed ART in Sero-Discordant Couples



#### Sero-Conversions

Cohen MS, et al. N Engl J Med. 2011





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



Rodger A, et al. 21<sup>st</sup> CROI. Boston, 2014. Abstract 153LB





## **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



diagnosed

on treatment

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



#### Stover et al, GAP Report, UNAIDS, 2014



Ensure healthy lives and promote well-being for all at all ages 3.3: By 2030, end the epidemics of AIDS, tuberculosis, malaria & neglected tropical diseases. Combat hepatitis, water-borne diseases & other communicable diseases SECRETARIAT OF STATE

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,

Pieto land. Part

Secretary of State











# **Treatment as Prevention Targeted Disease Elimination**<sup>™</sup> **Health Care Sustainability**













### The Economist

The trap for Turkey Wall Street's plumbing problem Lady Gaga, Mother Teresa and profits Brazil's boiling economy

## The end of AIDS?

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