



PAN-CARIBBEAN PARTNERSHIP



AGAINST HIV & AIDS

What the Science is Saying; HIV Treatment and its Public Health Role in addressing HIV

REGIONAL PARLIAMENTARIANS FORUM
KINGSTON, JAMAICA
30-31 MAY 2017

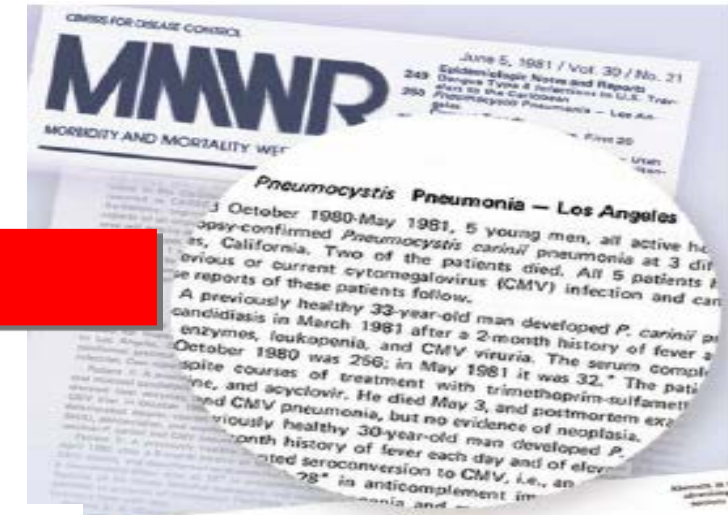
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This Presentation will look at:

1. The History and Basics of Antiretroviral therapy (ART)
2. HIV in the Caribbean
 - a) Epidemiology
3. Antiretroviral therapy's role in Prevention
 - a) “Treatment as Prevention”
4. Studies showing the Impact of ART in
 - a) Barbados
 - b) The OECS
5. Fast-Track; Ending the AIDS Epidemic by 2030

History of HIV and Antiretroviral Therapy (ART)

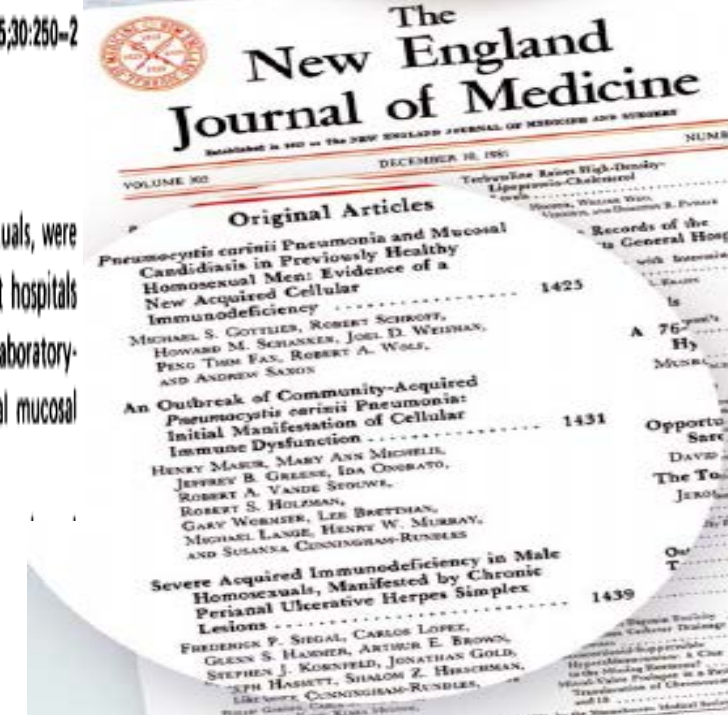
- **1981:** 5 cases of PCP in gay men from UCLA (MMWR)
- By the end of 1981, there was a cumulative total of 270 reported cases of severe immune deficiency among gay men, and 121 of those individuals had died.
- **1983:** Luc Montagnier and Françoise Barré-Sinoussi reported the discovery of a new virus (later called HIV) that is the cause of AIDS.
- **1985:** The first commercial blood test for HIV was licensed, allowing screening of the U.S. blood supply.
- **1987:** the first anti-HIV drug (AZT) was approved by the U.S. Food and Drug Administration.
- **1995:** The first potent combination of anti-HIV drugs became available.



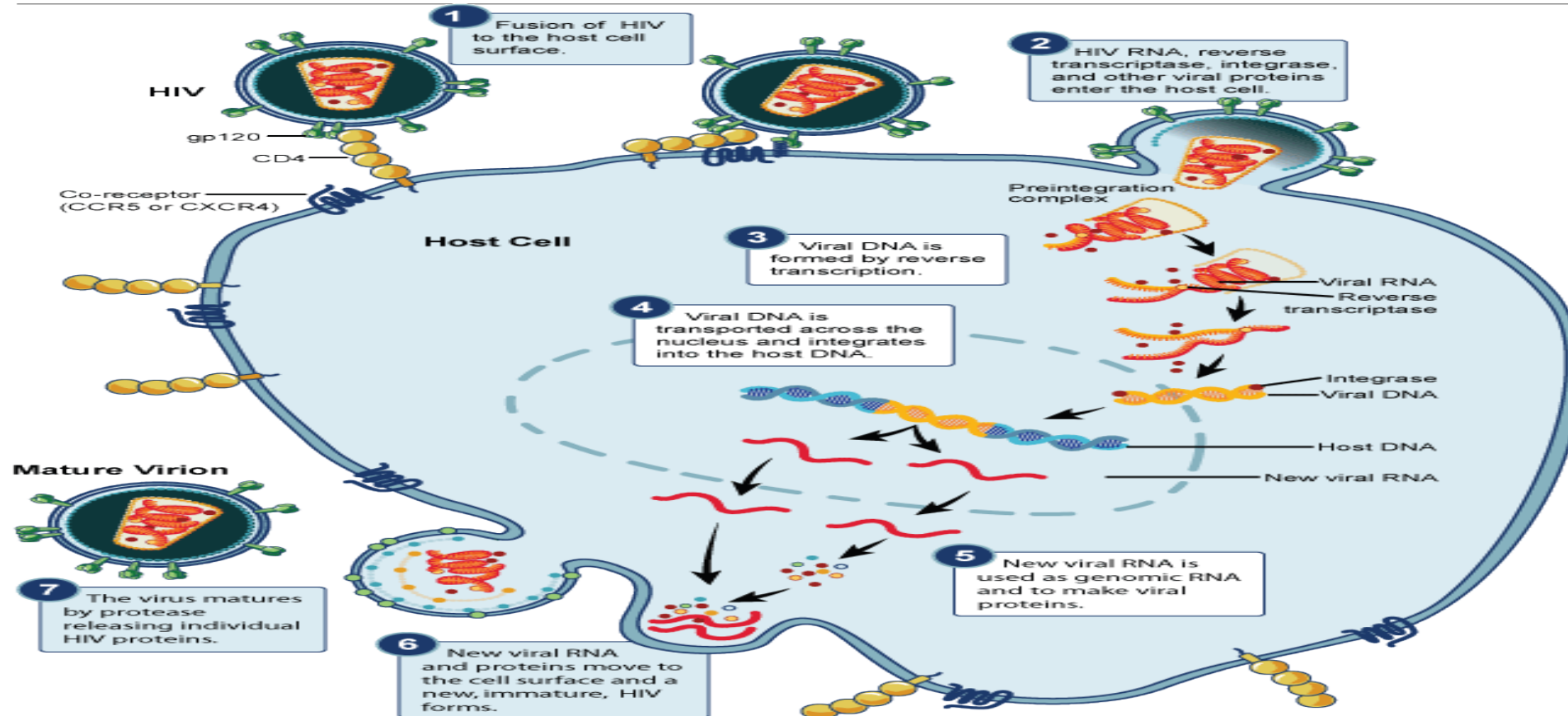
1981 June 5:30:250-2

Pneumocystis Pneumonia - Los Angeles

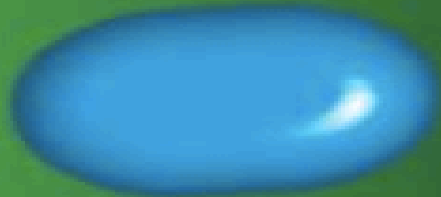
In the period October 1980-May 1981, 5 young men, all active homosexuals, were treated for biopsy-confirmed *Pneumocystis carinii* pneumonia at 3 different hospitals in Los Angeles, California. Two of the patients died. All 5 patients had laboratory-confirmed previous or current cytomegalovirus (CMV) infection and candidal mucosal infection. Case reports of these patients follow.



Life Cycle of HIV; Drug targets



Antiretroviral Therapy... What does it do?



Antiretroviral therapy (ART) is the daily use of a combination of HIV medicines to treat HIV.

ART saves lives, but does not cure HIV

Reduces the amount of HIV in the body

Protects the immune system

Prevents HIV from advancing to AIDS

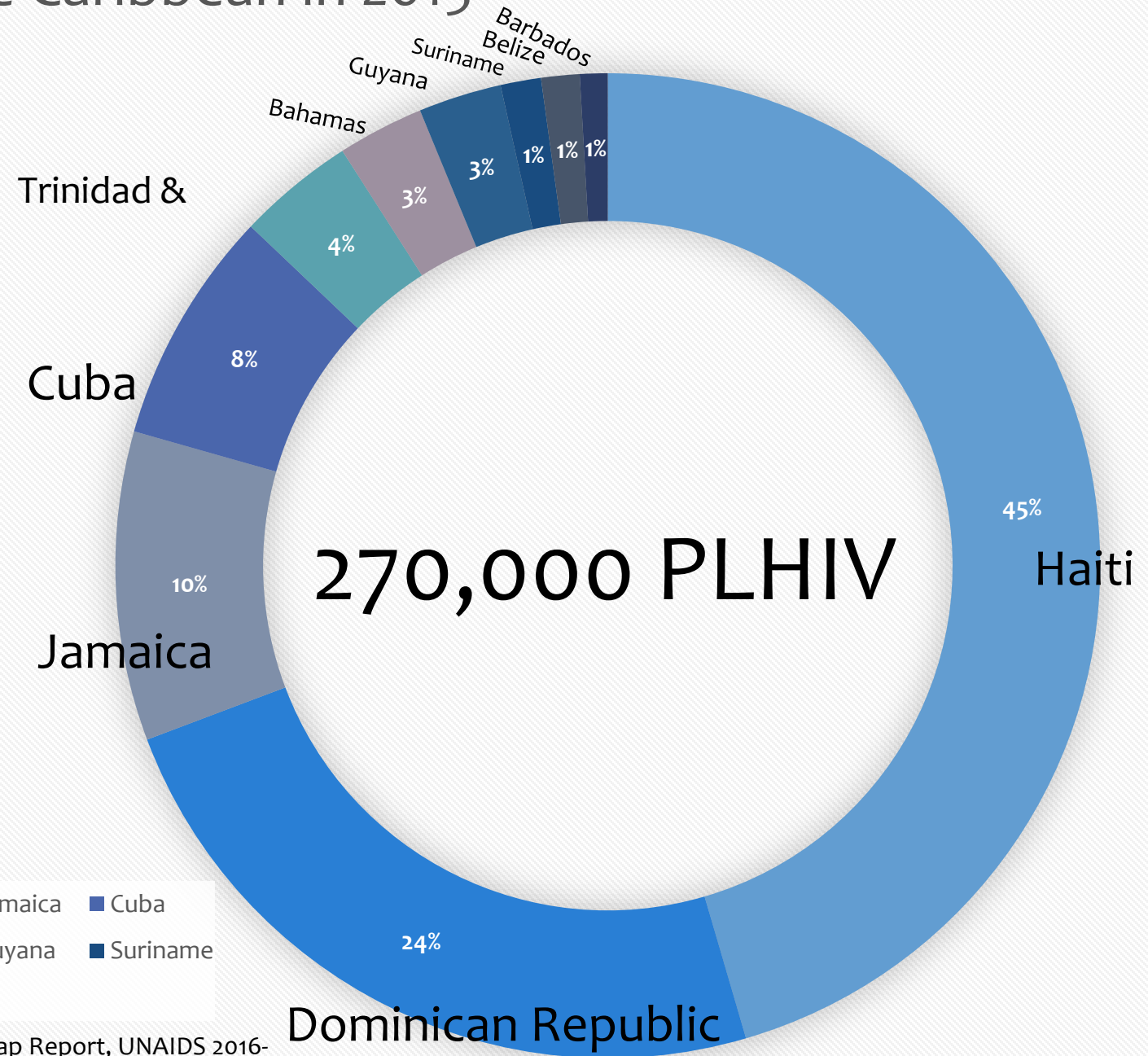
Reduces the risk of HIV transmission

AIDSinfo

For more information, visit: aidsinfo.nih.gov

HIV in the Caribbean

PLHIV in the Caribbean in 2015



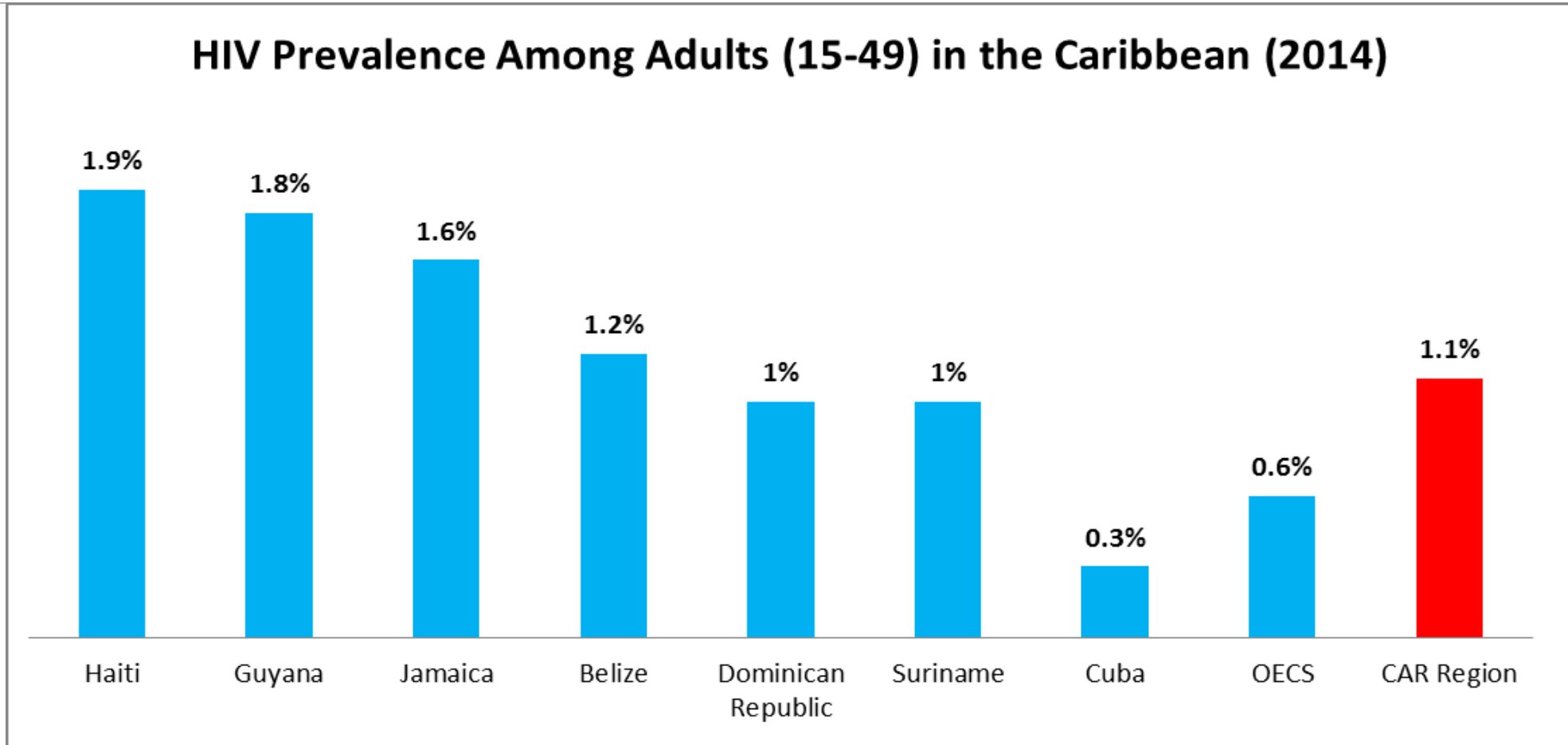
89% of PLHIV are in Haiti, Dominican Republic, Jamaica & Cuba.

A 17% reduction from 320,000 PLHIV in 2010 but that means that 50,000 people died during this period.

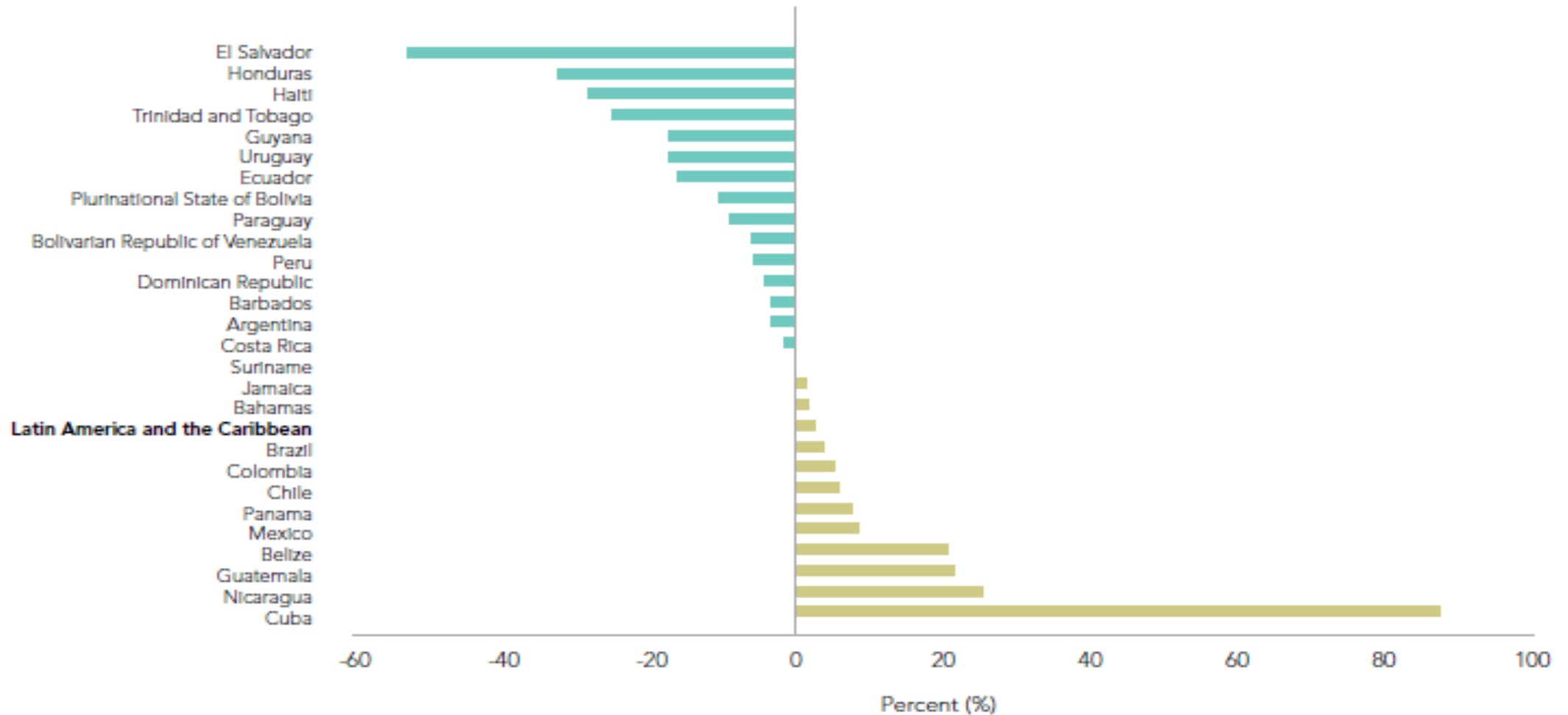
- Haiti
- Dom Rep
- Jamaica
- Cuba
- T&T
- Bahamas
- Guyana
- Suriname
- Belize
- Barbados

Reference: HIV Prevention Gap Report, UNAIDS 2016-annexes.

HIV prevalence Among Adults in the Caribbean (2014)



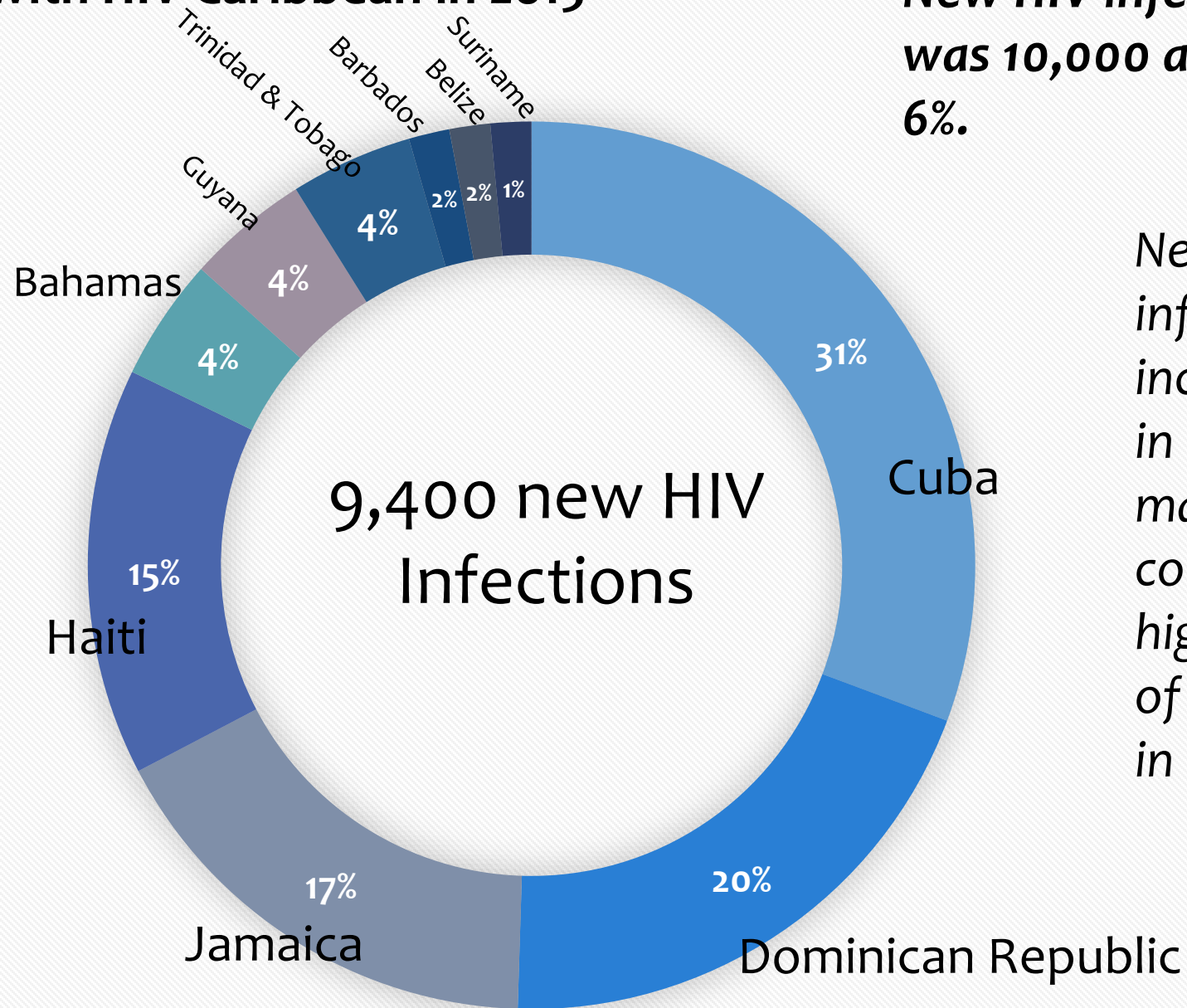
Percent change in new HIV infections among adults in LAC; 2010 to 2015



Source: UNAIDS 2016 estimates.

People newly infected with HIV Caribbean in 2015

New HIV infections in 2010 was 10,000 a reduction of 6%.

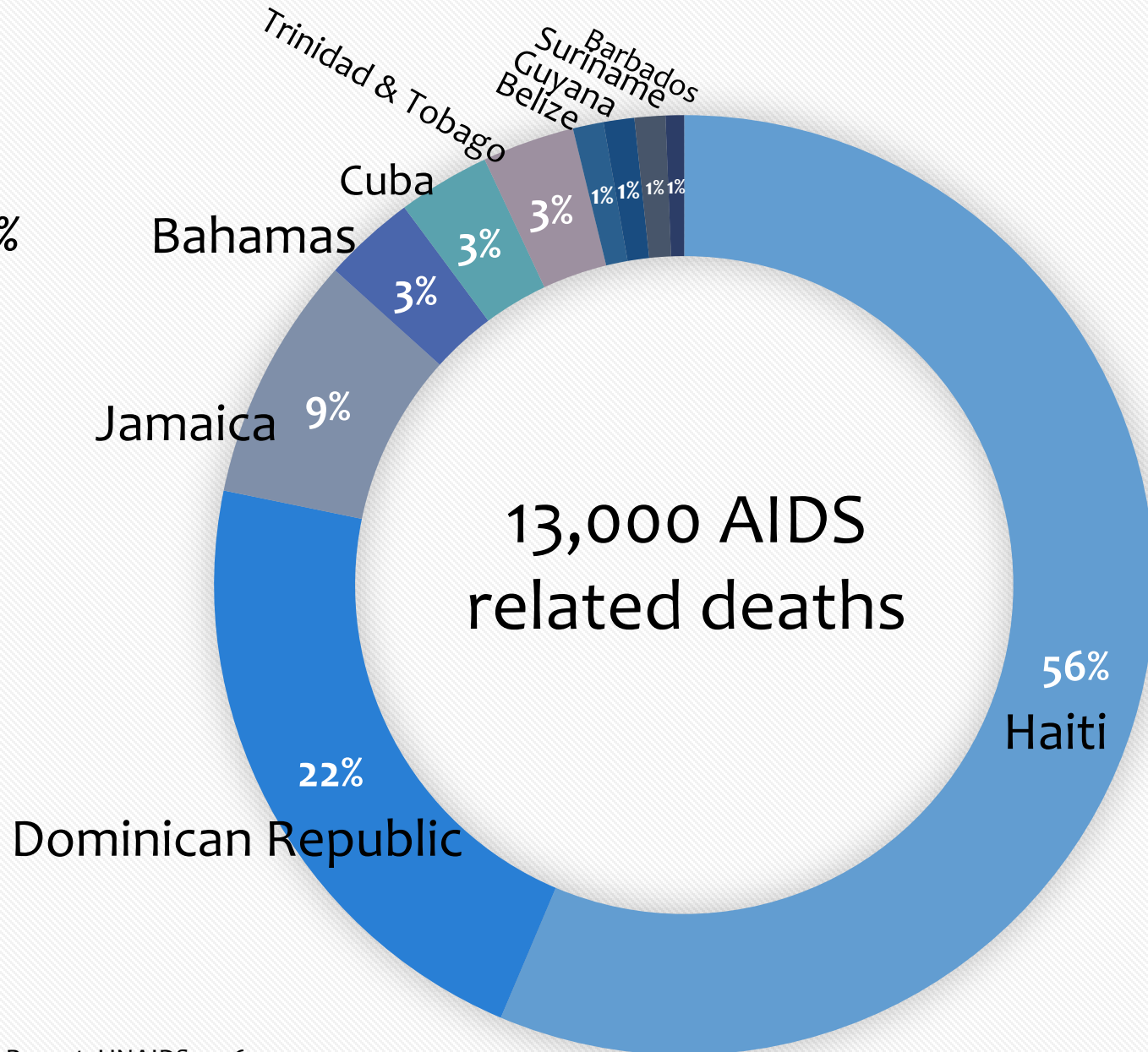


New HIV infections declined by 59% in Haiti from 2010.

New HIV infections increased by 82% in Cuba from 2010 making it the country with the highest number of new infections in the region.

Distribution of AIDS Related Deaths in the Caribbean in 2015

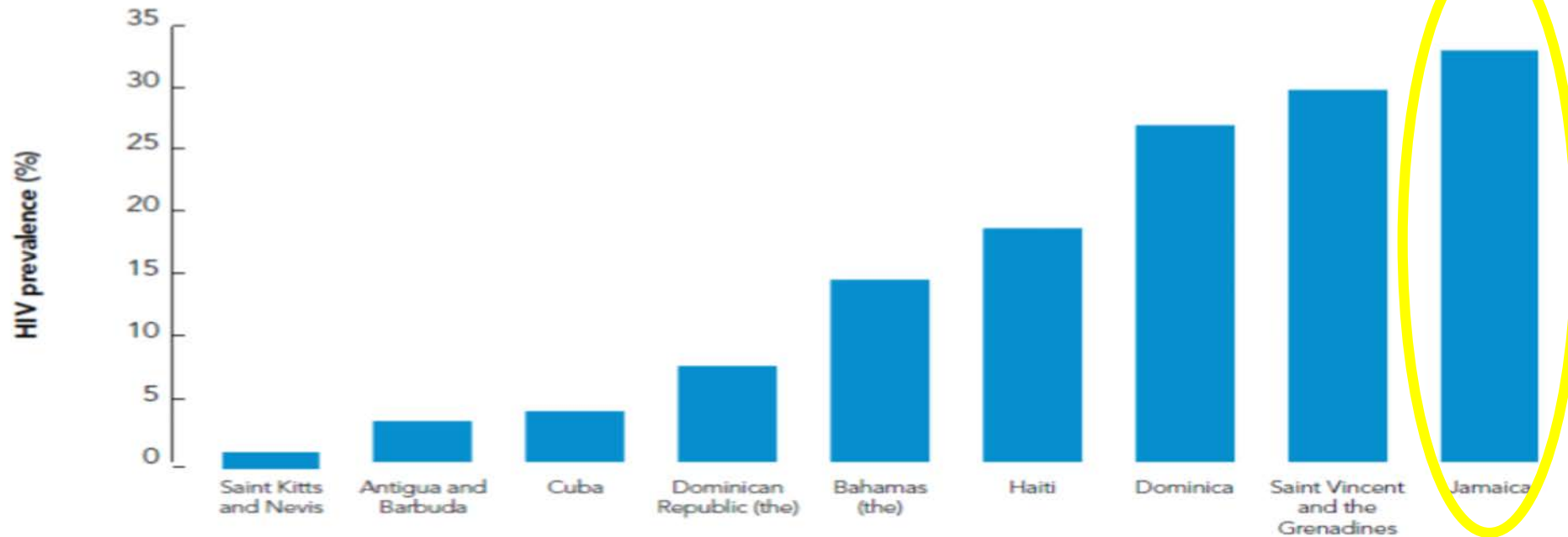
Number of AIDS related deaths decreased by 61% from 21,000 in 2010.



Haiti had the highest number of HIV related deaths in the region contributing to more than 50% of the number.

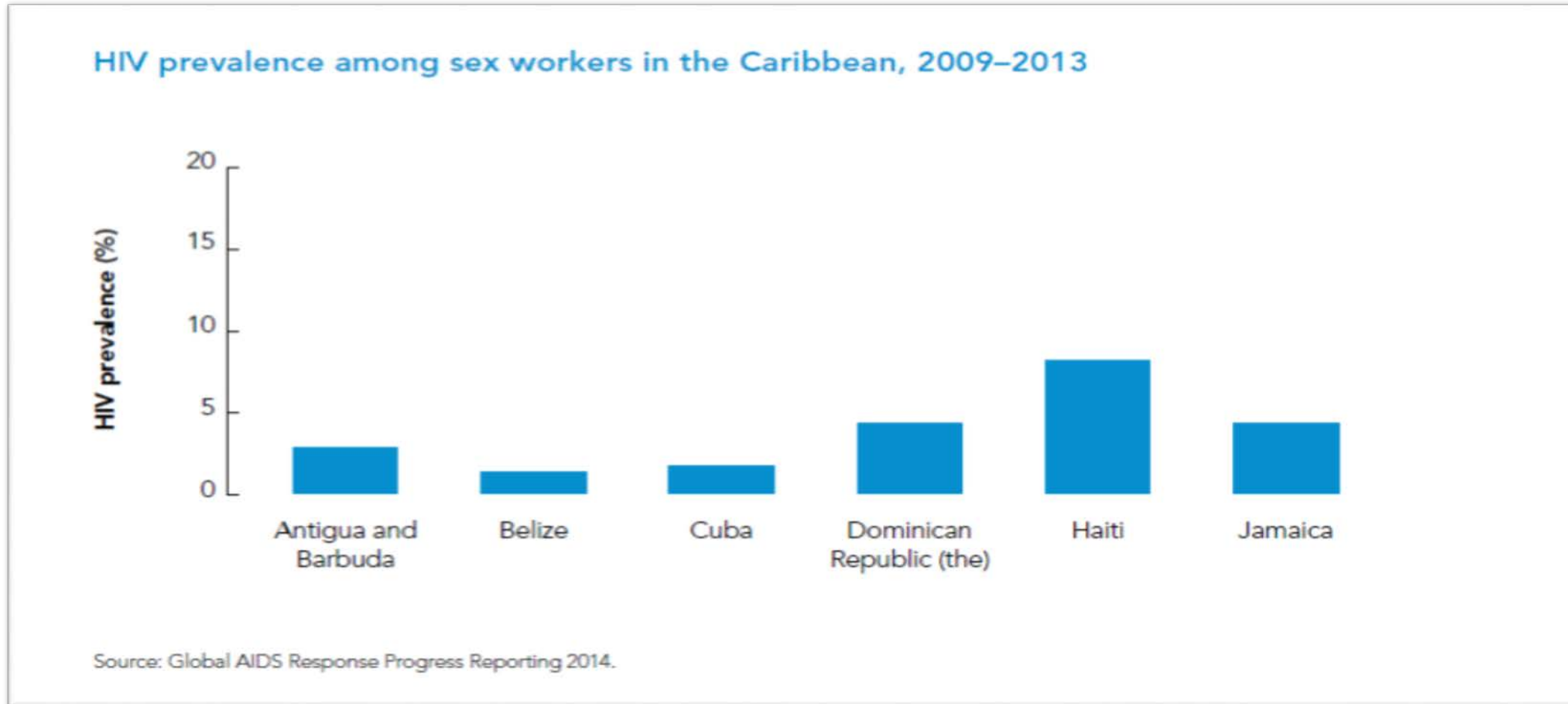
HIV among MSM in the Caribbean; 2009-2013

HIV prevalence among gay men and other men who have sex with men across the Caribbean, 2009–2013



Source: Global AIDS Response Progress Reporting 2014.

HIV among FSW in the Caribbean; 2009-2013



Preventing HIV transmission with ART

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

ART stops HIV replication



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



Sharp reduction in HIV transmission

HPTN 052: Antiretroviral therapy as Prevention

A randomized control trial across 9 countries

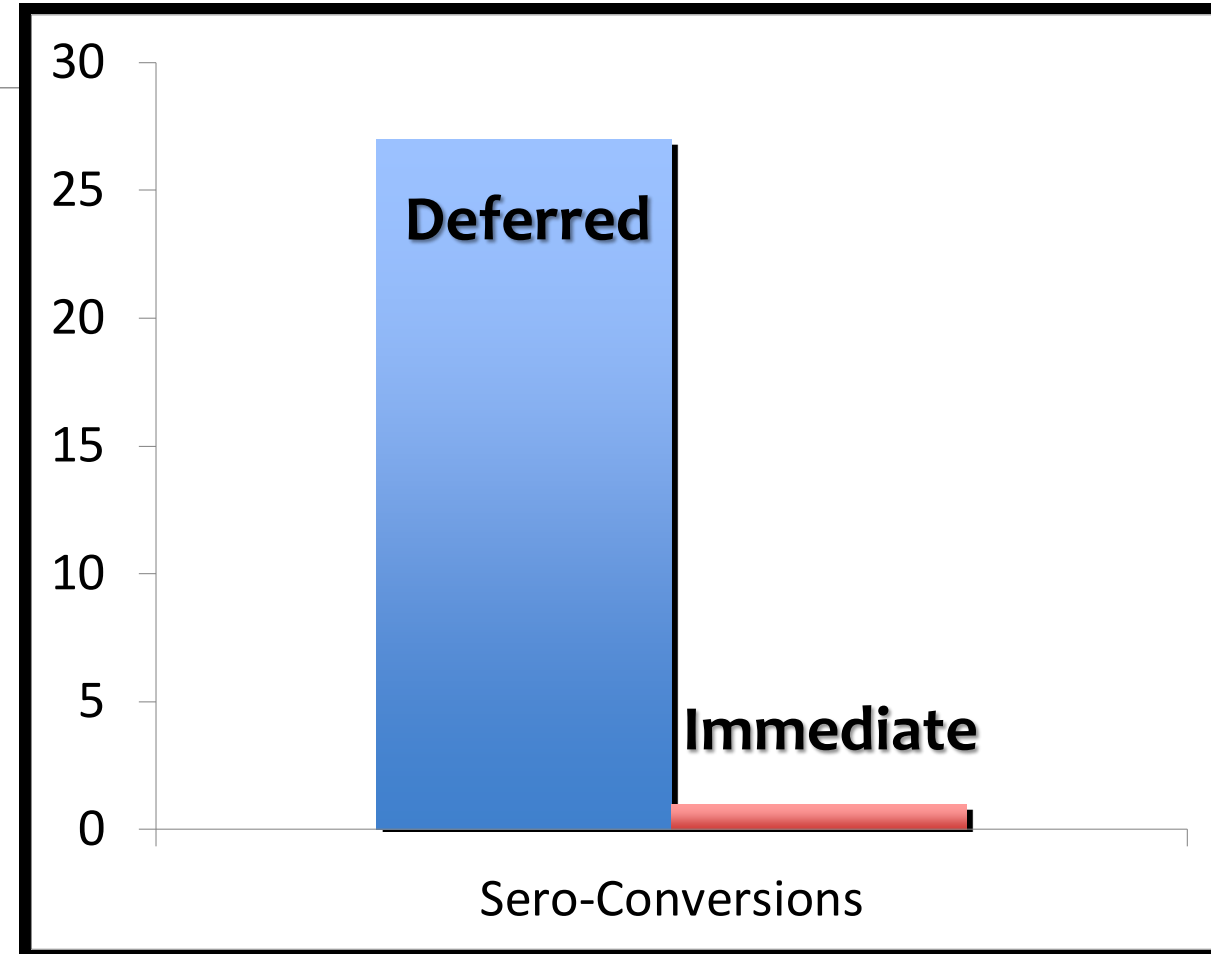
N = 1,763 HIV sero-discordant couples

Primary prevention end point was HIV transmission to HIV negative partner

Results: 28 linked HIV transmissions

- 27 in deferred ART arm
- 1 in immediate ART arm

96% reduction in HIV transmission ($p < 0.001$)



Treatment as Prevention (TasP)



Is TasP the proverbial silver bullet???



Treatment as Prevention in Barbados

Landis et al describe ten year VL trends and estimates VL suppression at a population level with improvement in VL suppression between 2002 to 2011, from 33.6% of clients achieving the 200 copies/mL threshold in 2002 to 70.3% in 2011 ($p < 0.001$)²

An estimated 26.2% VL suppression, at a population level at the end of 2010 comparable to that seen in the US;

- VL suppression = 28% in the US (MMWR 2011)

²Ten Year Trends in Community HIV Viral Load in Barbados: Implications for Treatment as Prevention Landis RC, Branch-Beckles SL, Crichlow S, Hambleton IR, Best A (2013) PLoS ONE 8(3): e58590.doi:10.1371/journal.pone.0058590

OPEN ACCESS Freely available online



Ten Year Trends in Community HIV Viral Load in Barbados: Implications for Treatment as Prevention

R. Clive Landis^{1*}, Songee Lynn Branch-Beckles^{1,2}, Shawna Crichlow², Ian R. Hambleton¹, Anton Best²

1 Chronic Disease Research Centre, The University of the West Indies, Bridgetown, Barbados, **2** Ladymade Reference Unit, MNIST Programme, Ministry of Health, Bridgetown, Barbados

Abstract

Background: Treatment as prevention is a paradigm in HIV medicine which describes the public health benefits of antiretroviral therapy (ART). It is based on research showing substantial reductions in the risk of HIV transmission in persons with optimally suppressed HIV-1 Viral Loads (VL). The present study describes ten year VL trends at the national HIV treatment unit and estimates VL suppression at a population level in Barbados, a Caribbean island with a population of 277,000, an estimated adult HIV prevalence of 1.2%, and served by a single treatment unit.

Methods: The national HIV treatment centre of the Barbados Ministry of Health has a client VL database extending back to inception of the clinic in 2002 ($n = 1,462$ clients, $n = 17,067$ VL measurements). Optimal VL suppression was defined at a threshold value of < 200 viral copies/mL.

Results: Analysis of VL trends showed a statistically significant improvement in VL suppression between 2002 to 2011, from 33.6% of clients achieving the 200 copies/mL threshold in 2002 to 70.3% in 2011 ($P < 0.001$). Taking into account the proportion of clients alive and in care and on ART, the known diagnosed HIV population in Barbados, and estimates of unknown HIV infections, this translates into an estimated 26.2% VL suppression at a population level at the end of 2010.

Conclusions: We have demonstrated a significant trend towards optimal VL suppression in clients utilizing the services of the national HIV treatment program in Barbados over a 10-year period. Estimates of VL suppression at a population level are similar to reports in developed countries that applied similar methodologies and this could suggest a public health benefit of ART in minimizing the risk of sexual transmission of HIV. Continued efforts are warranted to extend HIV testing to hidden populations in Barbados and linking infected persons to care earlier in their disease.

Citation: Landis RC, Branch-Beckles SL, Crichlow S, Hambleton IR, Best A (2013) Ten Year Trends in Community HIV Viral Load in Barbados: Implications for Treatment as Prevention. PLoS ONE 8(3): e58590. doi:10.1371/journal.pone.0058590

Editor: Omar Saad, Fundacion Hosped, Argentina

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Competing Interests: The authors have declared that no competing interests exist.

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Introduction

The Caribbean has the second highest prevalence of HIV in the world (5.9%) outside that of sub-Saharan Africa, with 200,000 persons estimated to be living with HIV [1]. HIV/AIDS remains the leading cause of death in the 25–44 age group in the Caribbean [2]. In Barbados the overall adult prevalence of HIV is estimated at 1.2% [3]. The transmission of HIV in the Caribbean centers largely around sex, primarily driven by unprotected heterosexual intercourse [24–6]. Despite high levels of HIV awareness and education in the Caribbean, levels of reported condom use remain inconsistent [6–8]. The ability to exercise condom use by females is impacted by entrenched gender stereotypes, cultural attitudes towards sex, asymmetric power distribution within relationships, sexual violence, and unequal access to resources [4,59–12]. Given such challenges, there is growing interest in biomedical prevention measures that can complement behavioral interventions to yield greater impact in HIV prevention.

Vertical transmission from mother to child and heterosexual transmission of HIV has been shown to be suppressed by ART in direct relation to suppression of viral load [13,14]. The concept of treatment as prevention has gained traction with observational studies, cohort studies, the “Swiss Statement” meta-analysis and a recent RCT demonstrating the near elimination of HIV transmission in persons receiving ART with a suppressed VL [15–21]. A threshold value for optimal VL suppression was proposed by the U.S. Centers for Disease Control and Prevention (CDC) at < 200 copies/mL [22]. Using this threshold value, the CDC estimated 28% of the HIV infected population in the USA had optimally suppressed VL [23]. A number of studies have calculated the predicted public health benefits accruing from suppressed community viral load [24–26], while the public health benefits of ART were cited in the shift of public health thinking in North America towards adopting “test and treat” (i.e. to treat HIV patients as soon as a seropositive result is confirmed, regardless of CD4 levels) [27].

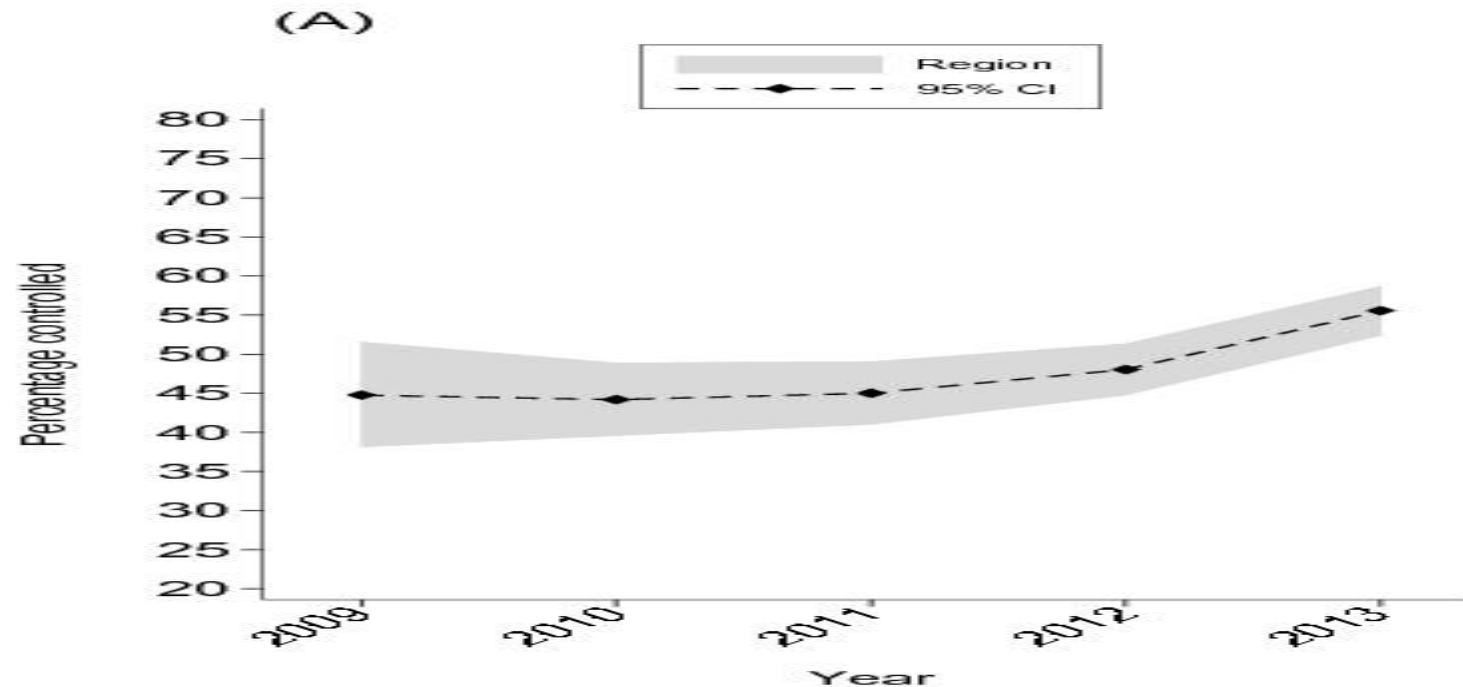
The Ladymade Reference Unit (LRU) is the national HIV treatment centre of Barbados established in 2002 as part of the

PLOS ONE | www.plosone.org

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March 2013 | Volume 8 | Issue 3 | e58590

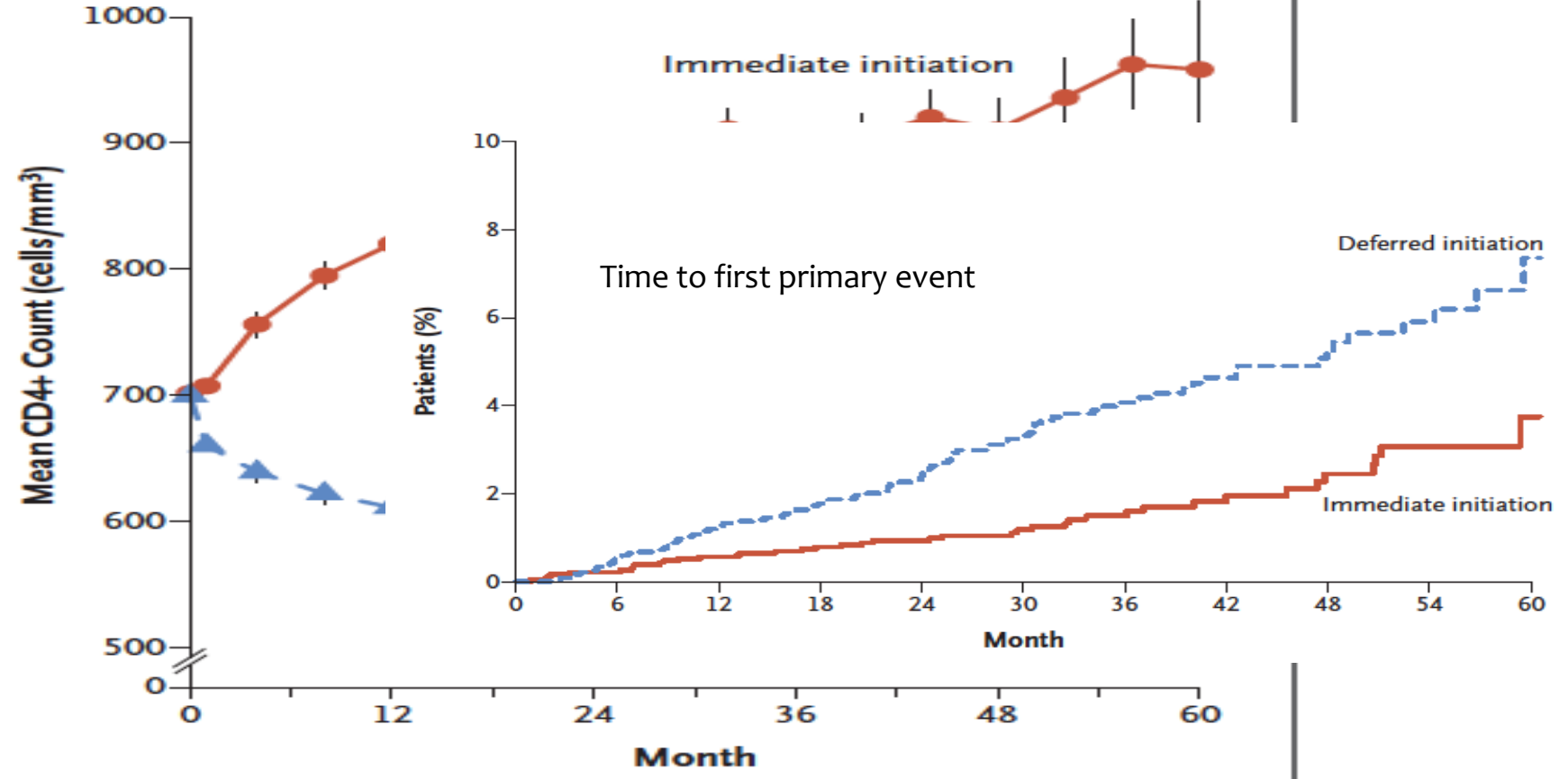
HIV VL suppression amongst PLHIV in the OECS; 2009-2013



Landis, R.C., Carmichael-Simmons, K., Hambleton, I.R., Best, A. "HIV viral load trends in six Eastern Caribbean countries utilizing a regional laboratory referral service: Implications for treatment as prevention." PLoS One 10 (2015) - E0125435.

START Trial Results 2015

B CD4+ Count



No. of Patients

Immediate initiation	2326	2205	1853	1075	574	157
Deferred initiation	2359	2190	1829	1077	549	162



The START Trial was the science behind “Treat All”

“We now have clear-cut proof that it is of significantly greater health benefit to an HIV-infected person to start antiretroviral therapy sooner rather than later,” said Anthony S. Fauci, Director of the US National Institute of Allergy and Infectious Disease (NIAID).

He added: **“Moreover, early therapy conveys a double benefit, not only improving the health of individuals but at the same time, by lowering their viral load, reducing the risk they will transmit HIV to others. These findings have global implications for the treatment of HIV.”**



Source: <https://www.nih.gov/news-events/news-releases/starting-antiretroviral-treatment-early-improves-outcomes-hiv-infected-individuals>

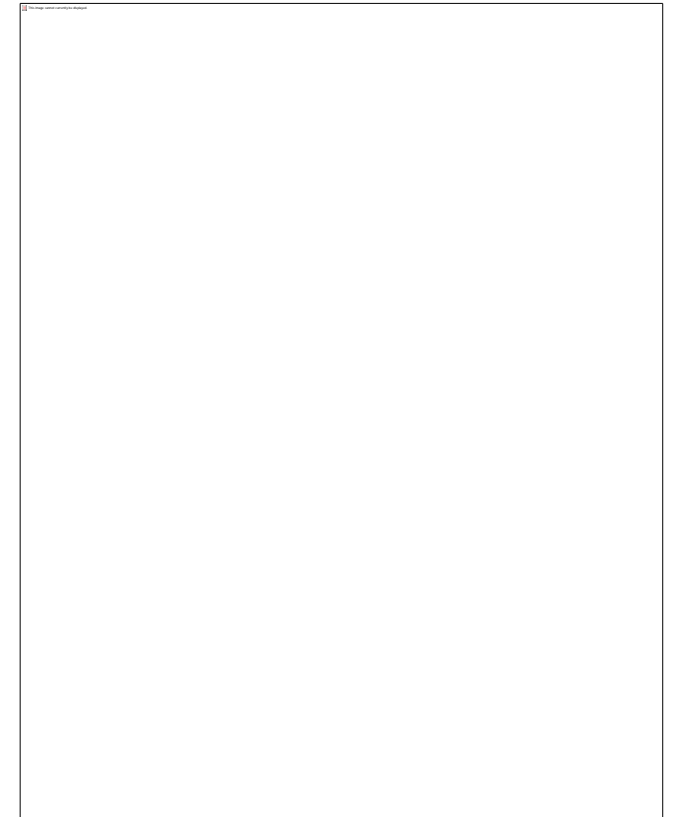
May 27, 2015

What about HIV Pre-Exposure Prophylaxis (PrEP)?

PrEP is the use of ART to prevent HIV infection

Efficacy of oral PrEP has been shown in 4 randomized control trials and is high when the drug is used as directed

As of September 2015, the WHO recommends PrEP as an additional prevention option.



Progress towards 90-90-90 in the Caribbean



diagnosed

By 2020, 90% of all people living with HIV will know their HIV status.



on treatment

By 2020, 90% of all people with diagnosed HIV infection will receive sustained ART.

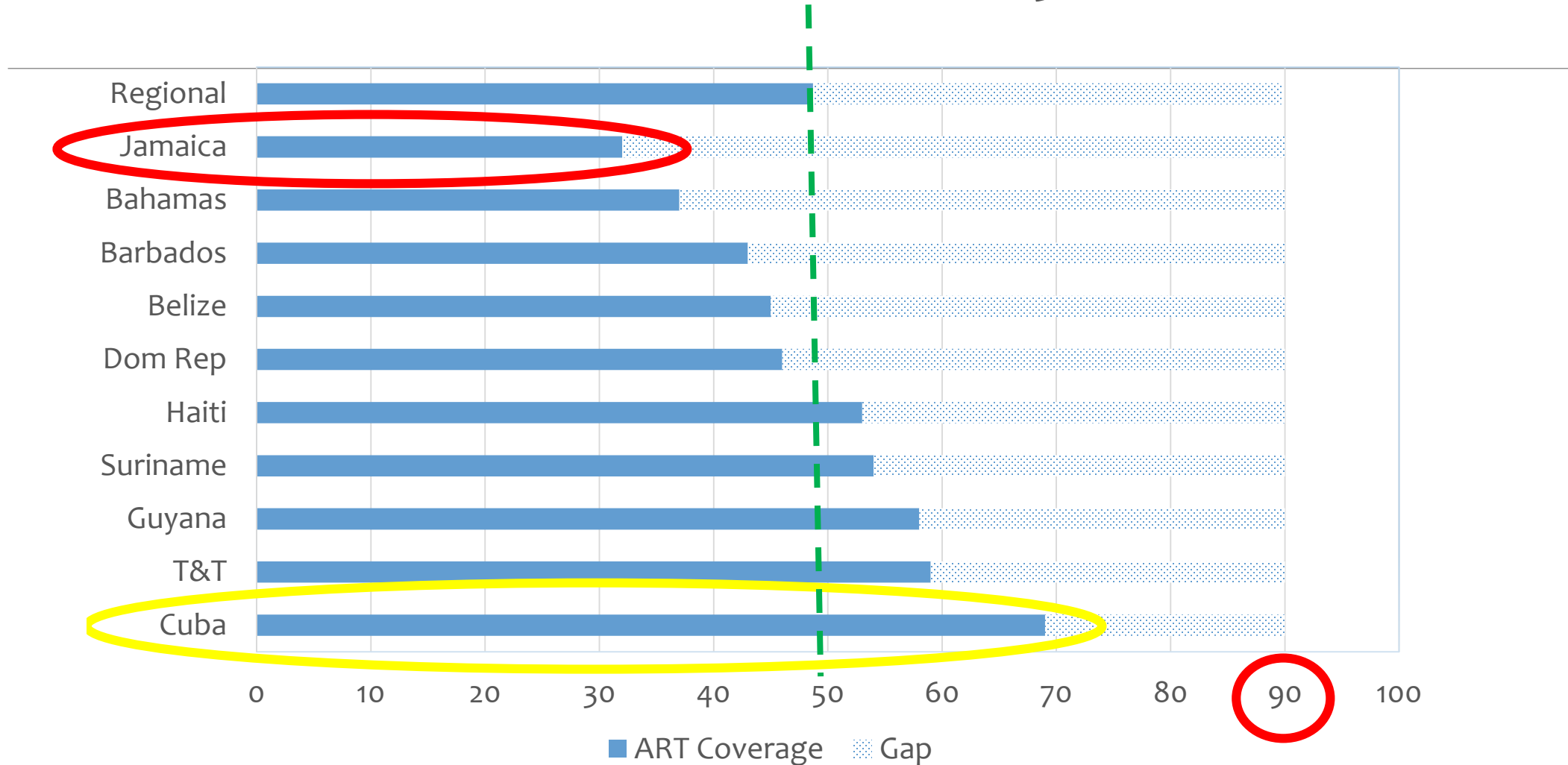


virally suppressed

By 2020, 90% of all people receiving antiretroviral therapy will have viral suppression.



ART Coverage in the Caribbean in 2015: Towards the second 90



HIV Prevention with Antiretroviral Drugs (since 2010)

HIV Prevention (before 2010)



Topical pre-exposure prophylaxis (microbicides) for women



Abdool Karim Q, Science 2010

Oral post-exposure prophylaxis

Oral/injectable pre-exposure prophylaxis



Grant R, NEJM 2010 (MSM)
Baeten J, NEJM 2012 (Couples)
Thigpen M, NEJM 2012 (Heterosexuals)
Choopanya K. Lancet 2013 (PWID)
McCormack S, Lancet 2015 (MSM)
Molina JM, CROI 2015 (MSM)

Treatment for prevention

Cohen M, NEJM 2011



HIV vaccine

Rerks-Ngarm S,
NEJM, 2009



Male circumcision

Auvert B, PloS Med 2005
Gray R, Lancet 2007
Bailey R, Lancet 2007



Treatment of STIs

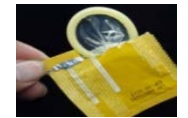
Grosskurth H, Lancet 2000



Female Condoms



Male Condoms



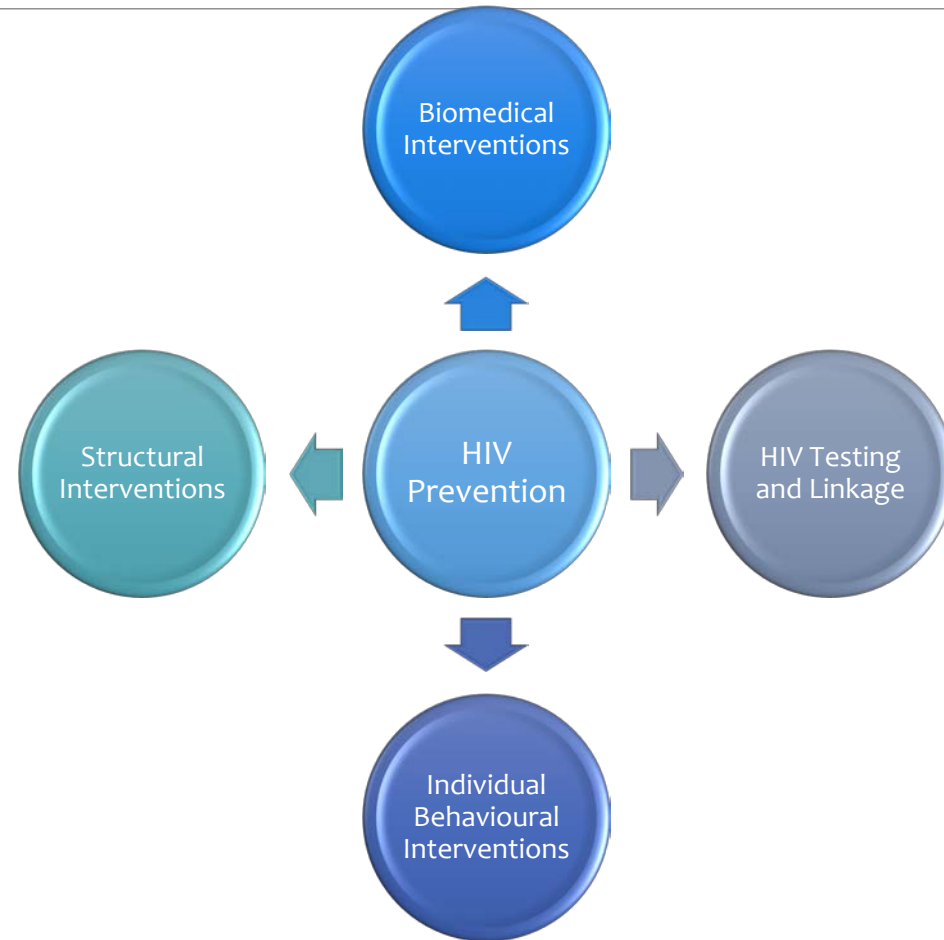
HIV Counselling & Testing

Coates T, 2000
**Abstinence
Be Faithful**

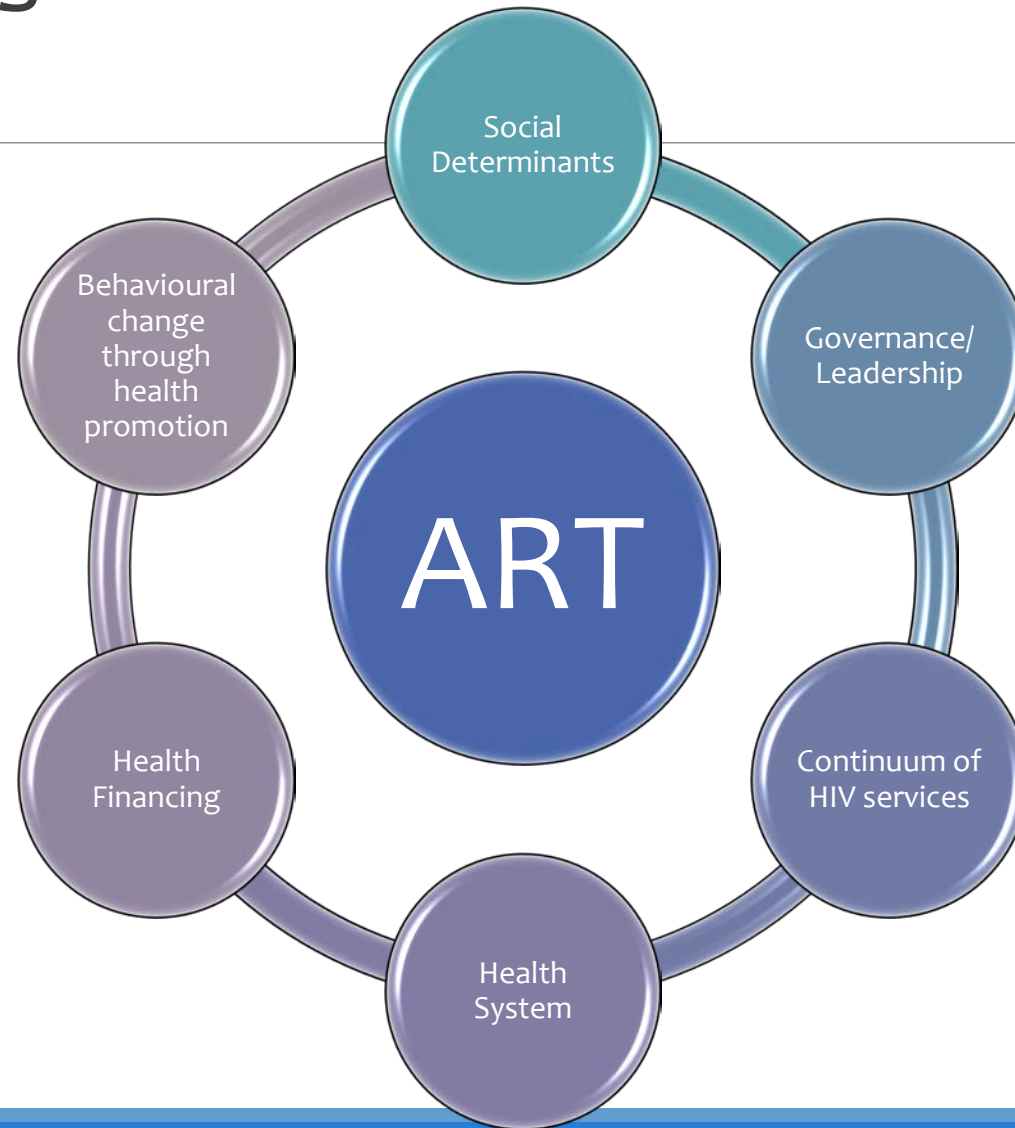


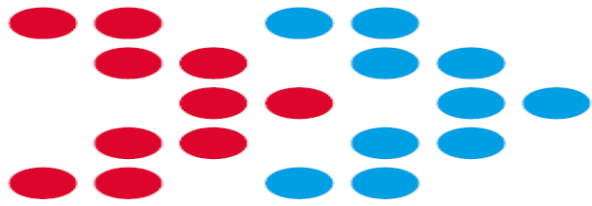
Behavioural Interventions

Combination HIV Prevention



The Centrality of ART in comprehensive National HIV responses





FAST-TRACK

ENDING THE AIDS EPIDEMIC BY **2030**

We have the vision and clearly articulated goals
But it will be challenging....

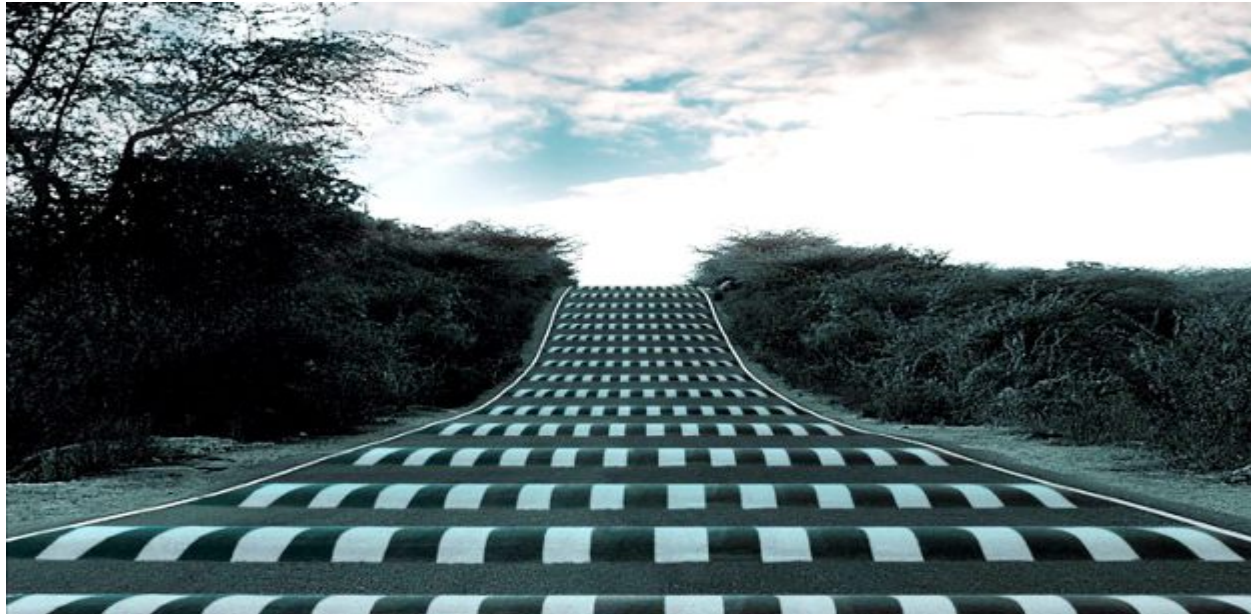


Image courtesy: Autorevolution (<https://www.autoevolution.com/news/one-third-of-the-french-speed-bumps-are-illegal-69213.html>)

Global HIV Targets and Strategies



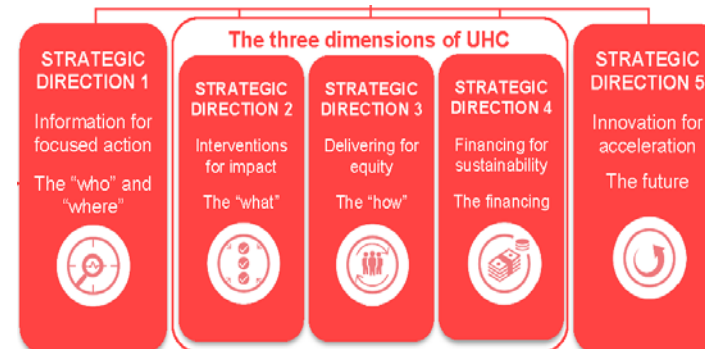
- **SDG 3: Ensure healthy lives and promote well-being for all at all ages**

- By 2030, *end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases*
- **90% of people diagnosed with HIV on ART by 2020 (95% by 2030)**

TARGETS

<p>By 2020</p> <p>90–90–90 HIV treatment</p> <p>500 000 New adult HIV infections</p> <p>ZERO Discrimination</p>	<p>By 2030</p> <p>95–95–95 HIV treatment</p> <p>200 000 New adult HIV infections</p> <p>ZERO Discrimination</p>
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WHO GHSS 2016-2021



Acknowledgements

- Prof Clive Landis, Deputy Principal, UWI, Cave Hill, Barbados
- Dr Eddy Beck, Senior Adviser, Strategic Information and Policy, UNAIDS RST LAC

Additional References

- Prevention GAP Report – UNAIDS, 2016



Thank you for your attention!

Questions?

Comments?

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