CHALLENGING ASSUMPTIONS ABOUT THE HIV PANDEMIC

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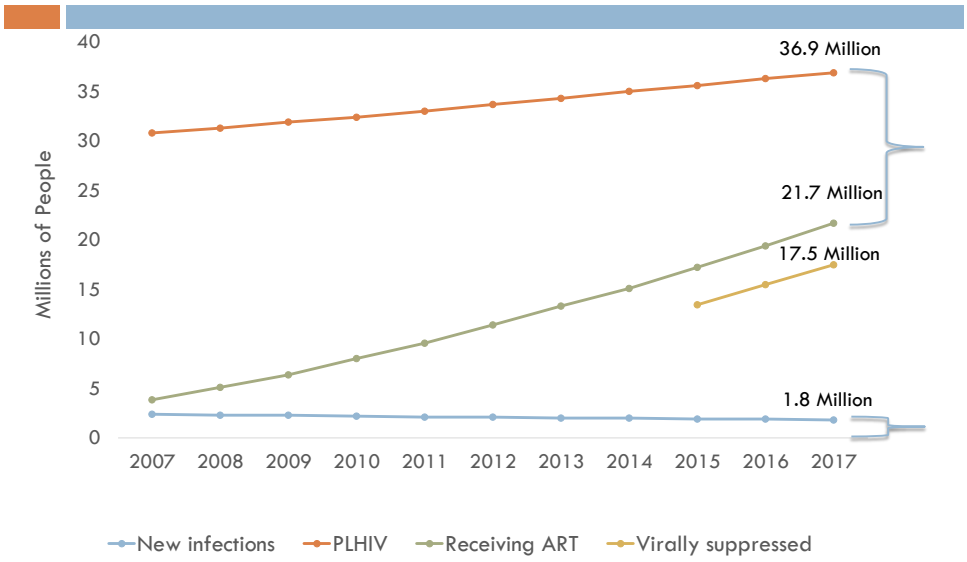
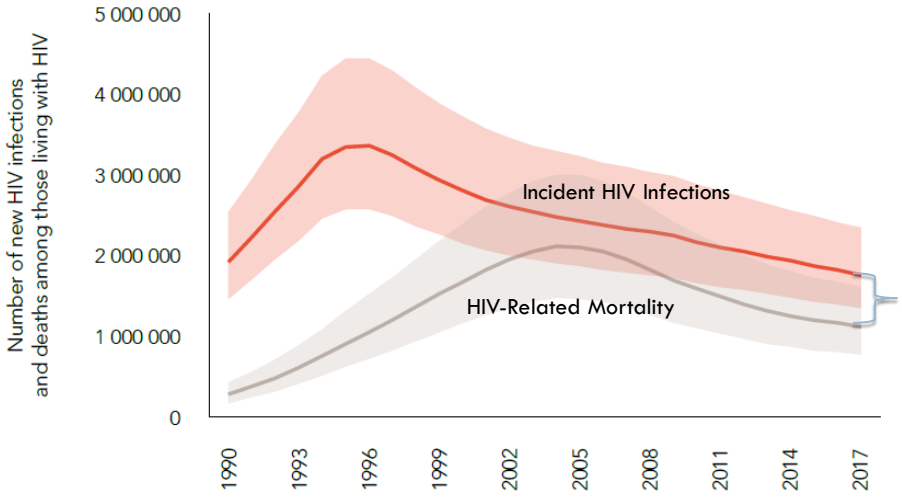
Outline

- HIV Pandemic in 2018
- Individual and Public Health Outcomes of Universal ART Coverage
- Delineating Distributions of HIV Risks in Generalized Epidemics
- Key Themes

HIV Pandemic in 2018



Source: UNAIDS, 2018



Challenges Ahead

- Incidence: Mortality Measure
- Estimated 800,000 new people requiring treatment in 2018

Source: UNAIDS, 2018

HIV Treatment in Serodiscordant Couples

- PARTNER Phase 1
  - 888 heterosexual couples in 14 European countries
    - Positive partner with UVL, couple with condomless sex
  - 0 linked transmissions after 36,000 condomless sex acts
- Opposites Attract
  - 343 gay couples contributed 591 couple years of follow up
  - 0 Linked transmissions after16,800 condomless sex acts
- PARTNER Phase 2
  - 783 gay couples contributed 1596 couple years of follow up
  - 0 linked transmissions after 77,000 condomless sex acts

No documented cases of transmission from a person with UVL

Source: Bavinton et al, *Lancet HIV, 2018, Rodger et al, JAMA 2016, Rodger et al IAS 2018*

Evidence Supporting Universal Coverage of ART

- **HPTN052:** Cohen, NEJM, 2016
- **TEMPRANO:** **TEMPRANO** study group, *NEJM 2015; 373:808-22*
- **START:** **INSIGHT START** study group, *NEJM 2015; 373:795-807*

- Research Objectives:
  - To compare the efficacy of immediate vs deferred ART in reducing HIV incidence (052/TEMPRANO) or severe morbidity (START) in adults

Hazard Ratio for the primary endpoints:

TEMPRANO	**0.56 (0.41-0.76)**
START	**0.43 (0.30-0.62)**
HPTN052 (Initial)	**0.04 (0.01-0.27)**

ANRS 12249: Universal Treatment Trial

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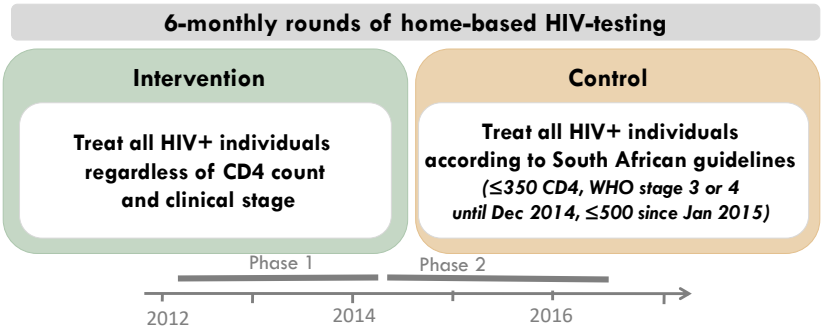
- **Objective:** To evaluate the effect of early ART, initated irrespective of CD4 count criteria, on HIV incidence in the general population in the same setting
- **Design:** Cluster-randomized trial *(Iwuji et al. Trials 2013; Orne-Gliemann et al. BMC Public Health 2015)*



Modified from: Dabis, et al, 2016 The impact of Universal Test and Treat on HIV incidence in a rural South African Population IAS 2016

ANRS 12249: Universal Treatment Trial

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	Intervention	Control
ART initiation within 3 months in TasP clinics among patients not on ART at first TasP clinic visit	91%	52%
Viral load <400 copies/ml among patients not on ART at first TasP clinic visit		
At month 6	93%	92%
At month 12	**95%**	**95%**
Estimated ART coverage* (as of 1st January 2016)	**45%**	**43%**
ART coverage improvement since baseline	**+14**	**+7**

** Estimated from TasP + Department of Health data*

Modified from: Dabis, et al, 2016 The impact of Universal Test and Treat on HIV incidence in a rural South African Population IAS 2016

ANRS 12249: HIV incidence comparison

	Number of HIV-positive DBS tests	Person-years	Incidence for 100 person-years	95% CI
Control	268	11,787	**2.27**	2.00-2.55
Intervention	227	10,646	**2.13**	1.85-2.41
TOTAL	495	22,434	2.21	2.01-2.40

Adjusted risk ratio*

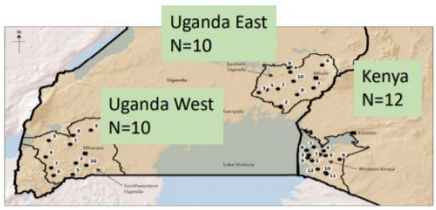
	aRR	95% CI	P-value
Intervention vs control	0.95	0.79-1.14	0.5821

** Estimated with Poisson regression, adjusted on sex, age, change in national ART guidelines, baseline cluster HIV prevalence and ART coverage*

Modified from: Dabis, et al, 2016 The impact of Universal Test and Treat on HIV incidence in a rural South African Population IAS 2016

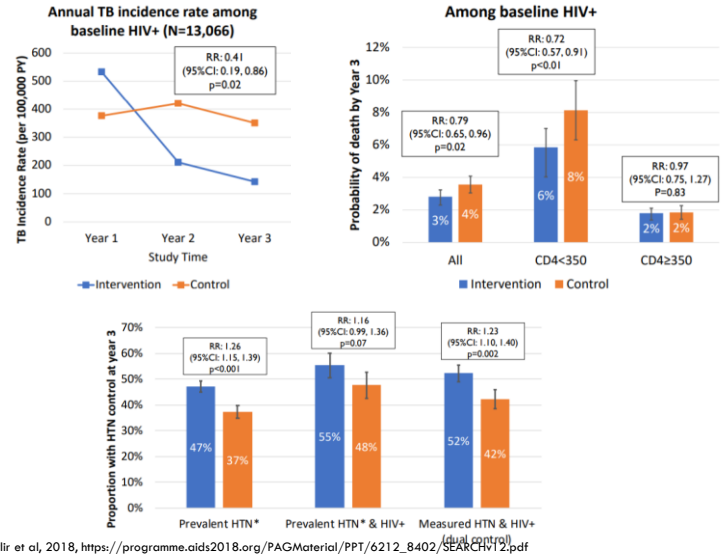
Project SEARCH (Sustainable East Africa Research In Community Health)

- Universal ART with a multi-disease "patient-centered" care model
  - Hypertension, Diabetes, TB, and HIV
- N=320,000
  - 32 Communities with ~10,000 Persons each in Uganda, and Kenya
  - Aged 15+



Modified from: Havlir et al, 2018, https://programme.aids2018.org/PAGMaterial/PPT/6212_8402/SEARCHv12.pdf

Project SEARCH Outcomes



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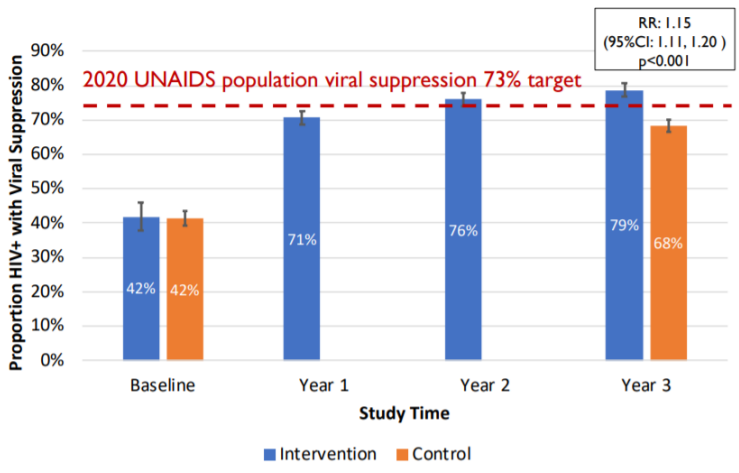
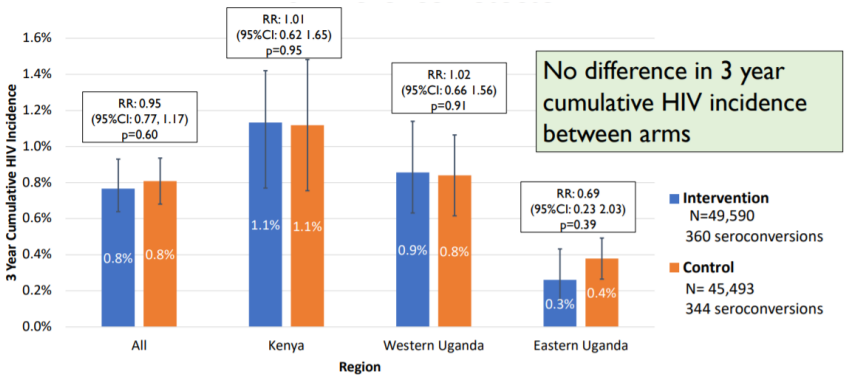
Project SEARCH Viral Suppression



Modified from: Havlir et al, 2018, https://programme.aids2018.org/PAGMaterial/PPT/6212_8402/SEARCHv12.pdf

Project SEARCH HIV Incidence Outcomes

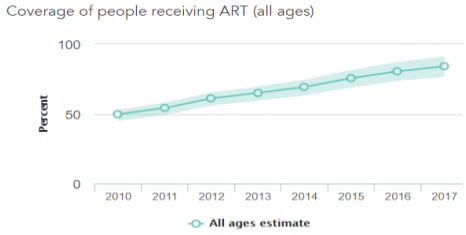


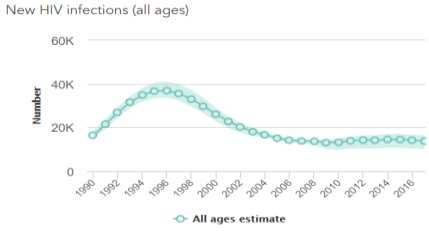
Modified from: Havlir et al, 2018, https://programme.aids2018.org/PAGMaterial/PPT/6212_8402/SEARCHv12.pdf

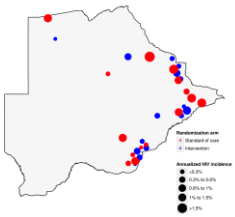
Lack of Incidence Outcomes

- Noted Challenges
  - In and Out Migration
  - Late Diagnoses
  - Suboptimal Retention
- Interventions were patient-centered but addressing
  - "general population" given "generalized epidemics"
    - Limited study of individual characteristics

HIV in Botswana, 2018







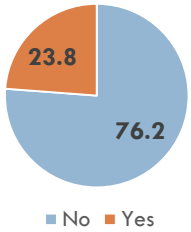
Range of HIV Incidence across Botswana, 2018

- 0.23% to 1.81%

Source: UNAIDS, 2018, http://www.unaids.org/en/regionscountries/countries/Botswana, Okello, 2018

Distributions of HIV Risks among Adolescent Girls and Young Women in Tanzania, 2016-2018

% AGYW reporting transactional sex (n=19,942)



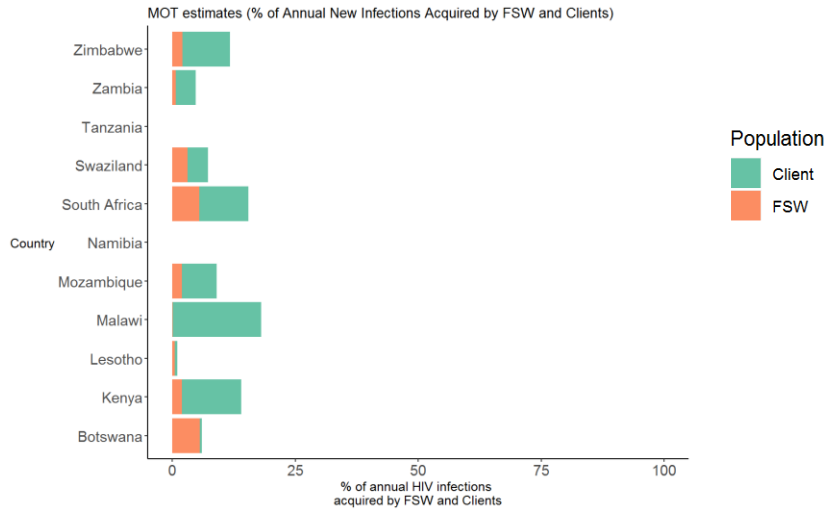
Adjusted odds of HIV

Characteristics	aOR	95% CI
Transactional sex		
No	Ref	
Yes	**1.80****	1.41-2.31
Age (Years)		
15-18	Ref	
19-24	**2.11****	1.52-2.95
Number of sexual partners		
0	Ref	
1-4	**5.75***	1.49-22.2
5 and above	**8.61***	2.04-36.2

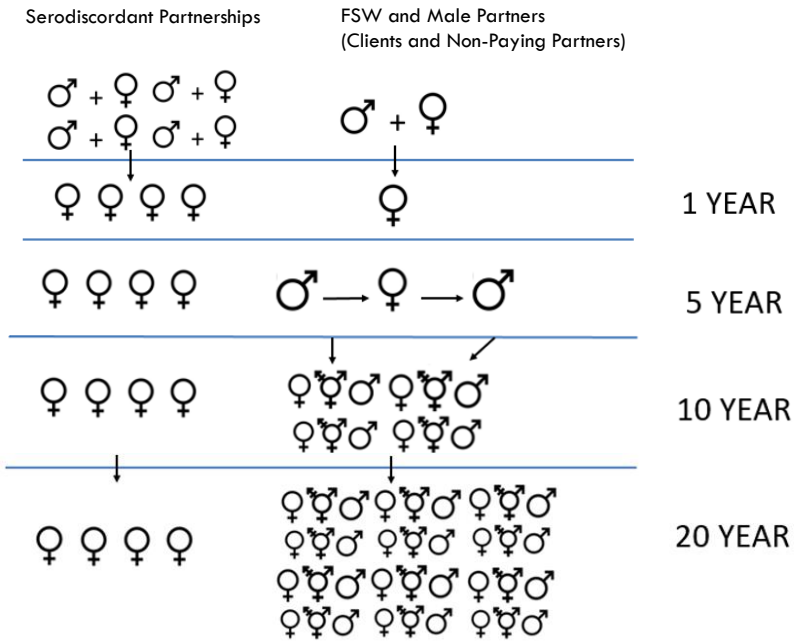
* p<0.05, at the .05 level, **p<0.001

Sources: Mbita, Casalini, Curran, Komba, 2018

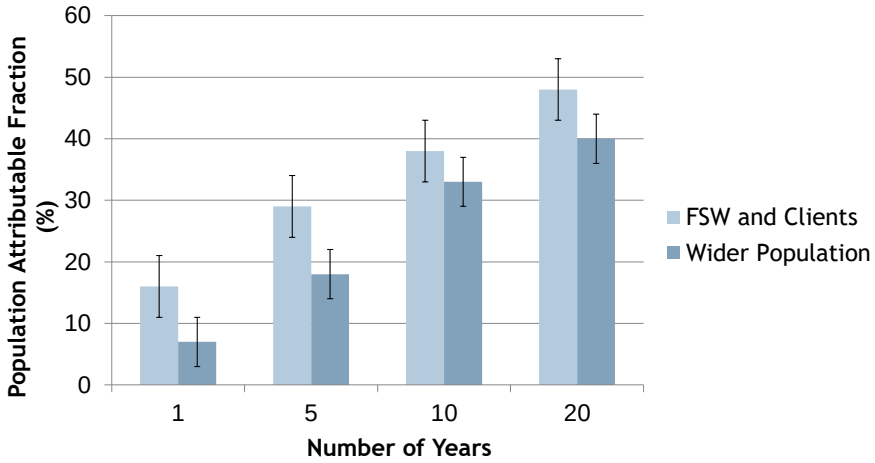
Estimates of Attributable Fraction to Sex Work in South and East Africa



Updated from Shubber, Mishra, Vesga, Boily, 2014



% Cumulative New Infections Attributable to Unsuppressed Viral load Among FSW Living with HIV

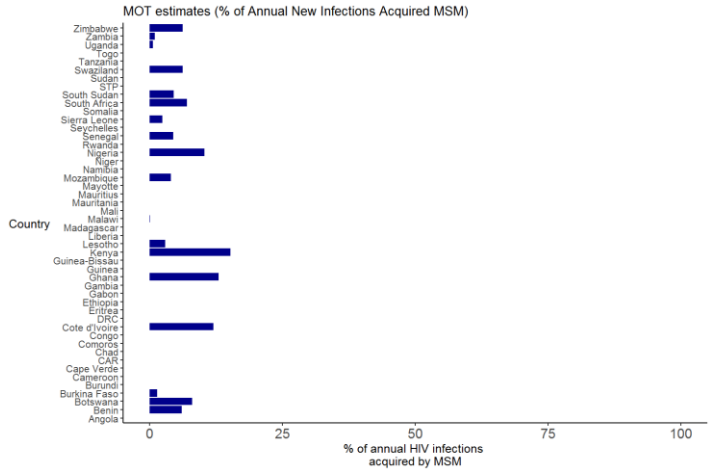


[1]Mishra et al 2017

N=190 model fits to Southern Africa epidemic and baseline cascade, wider population estimates exclude FSW and clients

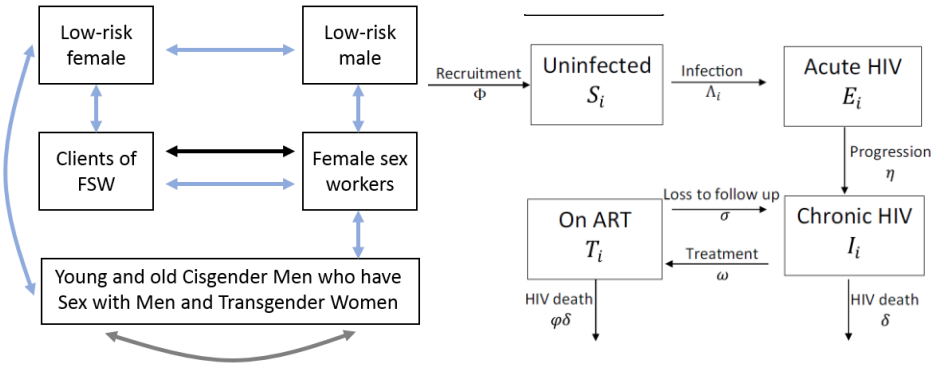
Source: Mishra et al 2017

Estimates of Attributable Fraction of HIV to Same-Sex Practices across Sub-Saharan Africa



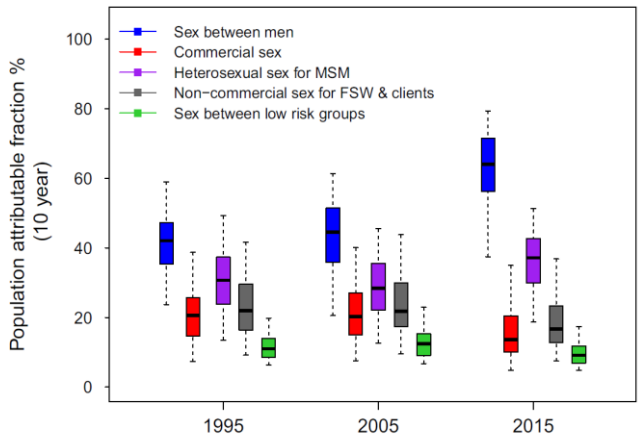
Updated from Shubber, Mishra, Vesga, Baily, 2014

Assessing Attributable Fraction among MSM in Senegal



Source: Vickerman, Diouf, Toure Kane, Mukandavire, Volz, Boily, et al 2018

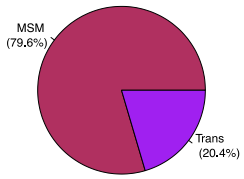
HIV Population Attributable Fraction In Senegal



Source: Vickerman, Diouf, Toure Kane, Mukandavire, Volz, Boily, et al JIAS, 2018

HIV of Trans Women vs CisMSM in Eight Countries Across Sub-Saharan Africa

Overall Proportion of Trans Women



HIV Test Results by Gender

	HIV -	HIV +
MSM	3089 (86%)	505 (14%)
Trans Women	691 (75%)	235 (25%)

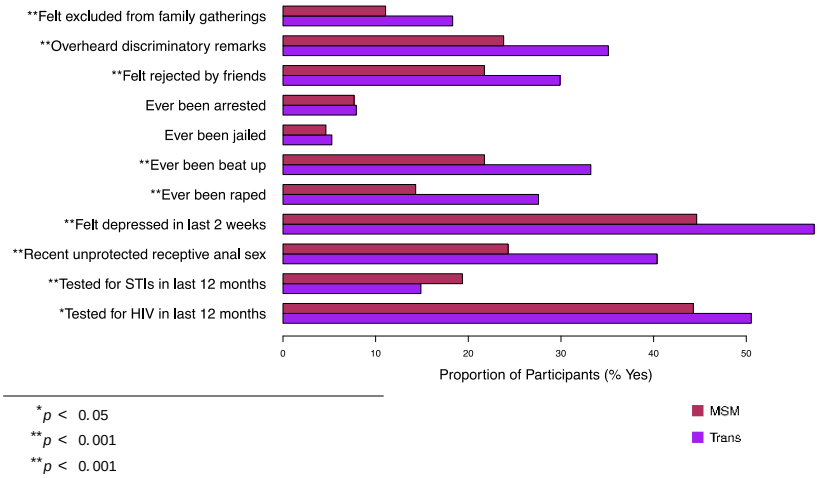
	OR	95% CI	P-value
Crude	1.81	(1.49-2.20)	1.33×10^{-9}
Adjusted*	1.60	(1.28-2.00)	3.17×10^{-5}

4586 participants

- 20.4% trans women, 79.6% MSM

Poteat, et al, PloS Medicine, 2017

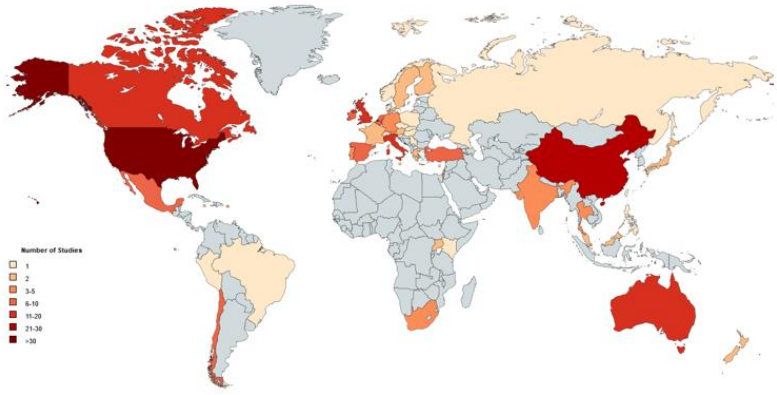
Differences in Discrimination by Gender



*$p < 0.05$
**$p < 0.001$
**$p < 0.001$

Poteat, et al, PloS Medicine, 2017

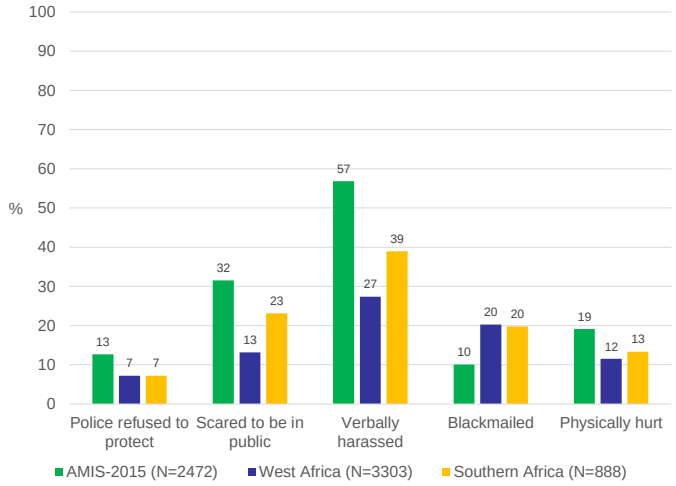
Where Stigma Data Are Available for Key Populations from 2000-2016



Geographic distribution of studies by country

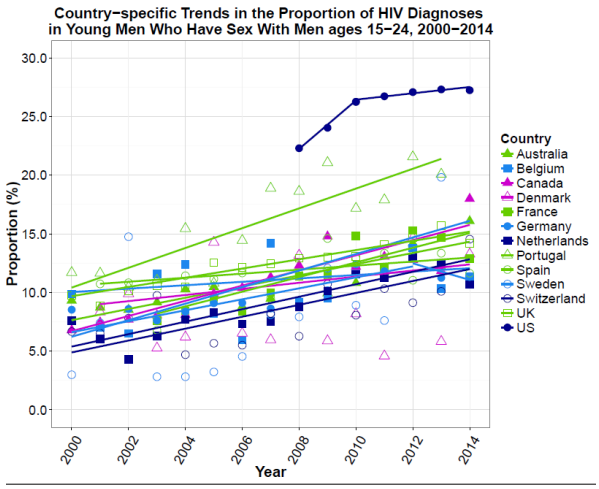
Source: Fitzgerald-Husek, Grosso, Van Wert, Ewing, Baral, Systematic Review of Stigma Metrics for Key Populations. PLoS One, 2018

Prevalence of Community Level Stigma Affecting Men who have Sex with Men across the US and Sub-Saharan Africa



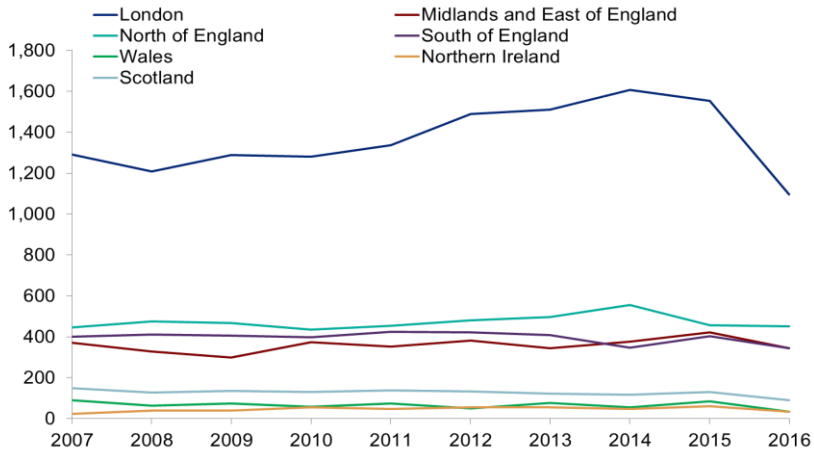
•Source: Stahlman, Sanchez, Sullivan, Baral, The Prevalence of Sexual Behavior Stigma Affecting Gay Men and Other Men Who Have Sex with Men Across Sub-Saharan Africa and in the United States, JMIR PH&S, 2016

Proportion of HIV Infections among Young MSM in High Income Settings, 2000-2014



Chapin-Bardales, Schmidt, Guy, et al Trends in HIV Diagnoses among Men Who Have Sex with Men in North America, Western Europe, and Australia, 2000-2014. Annals of Epidemiology, In Press (as of Sept 23, 2018)

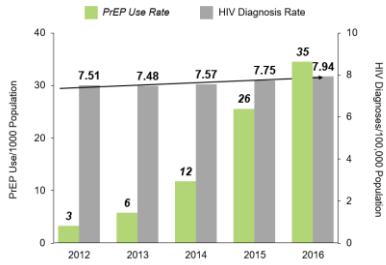
New HIV diagnosis among Gay & Bisexual Men in the United Kingdom



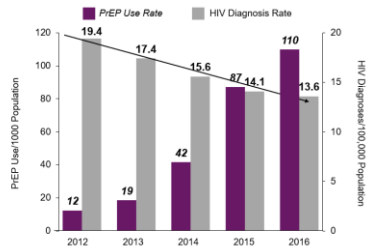
Delpech, V. HIV elimination in gay, bisexual and other men who have sex with men, London, IAS 2018

PrEP Use and HIV Diagnoses in US

Low PrEP Uptake States in US



High PrEP Uptake States in US

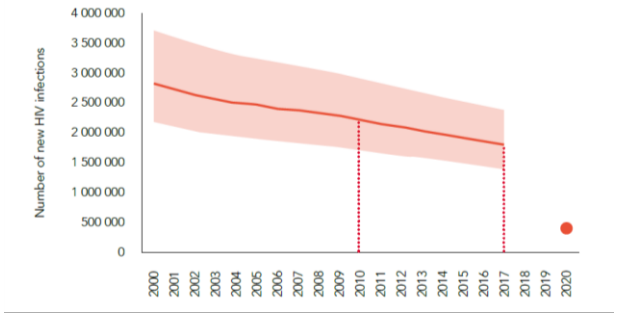


Challenges Ahead

- Lower PrEP uptake among younger gay men which may further concentrate remaining HIV infections in youth

Sullivan, P, The Impact of Pre-exposure Prophylaxis with FTC/TDF on HIV Diagnoses, 2012–2016, United States of LBPEC063, IAS 2018

HIV Pandemic Control Goal (2020)



It is **462** days, **15** hours, **56** minutes, **36** seconds

until Wednesday, 1 January 2020 (Sydney, New South Wales time)

September 24, 2018

Mike Pence will become the first vice president to speak at anti-LGBTI conference

Last year, Trump became the first sitting United States president to attend the anti-LGBTI Values Voter Summit

Chechnya opens world's first concentration camp for homosexuals since Hitler's in the 1930s.

CANADA August 22, 2018 2:12 pm Updated: August 24, 2018 1:48 pm

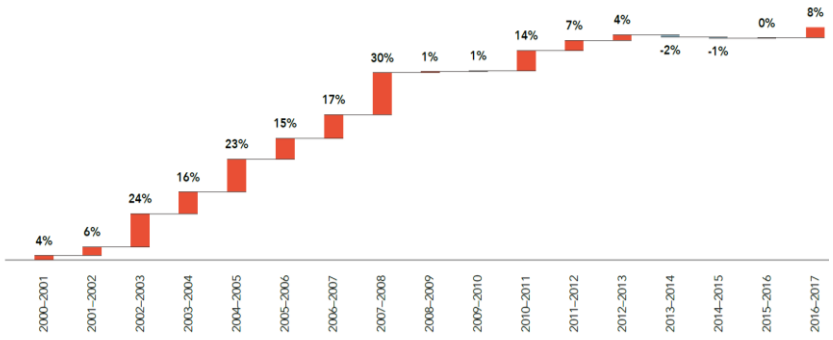
Doug Ford says Ontario teachers could face consequences for teaching repealed sex ed

By Staff The Canadian Press

Australian Marriage Forum

Think of the Child

Annualized Changes in HIV Pandemic Response Funding 2000-2017



- Challenges Ahead
  - Exogenous to Health Sector
  - Endogenous to Health Sector

Source: UNAIDS, 2018

Key Themes

- Universal treatment for HIV
  - Efficacious and Effective
    - Improving the quality and quantity of life for those living with HIV
    - In reducing HIV incidence ***only*** when we pay attention to the individual characteristics and needs of those that we are treating
- The world is more similar than it is different
  - No Evidence of Regional Differences
    - Why People Have Consensual Sex
    - Diversity of Sexual Orientations and Gender Identity
- To achieve more with less
  - Overcome preconceived notions of the epidemiology of HIV based on geography and social contexts

Acknowledgements

- The people across the world who participate in studies given significant risks and limited personal benefits
- The community groups that make great personal and professional sacrifices to serve the unmet health and advocacy needs of those most marginalized in the HIV response


With Thanks
actionaid
enda santé
IRESSEF
nswp
PEPFAR
jhpiego
Saving lives. Improving health. Transforming futures.
Ahri
BLITY
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FENWAY HEALTH
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MAKING AIDS HISTORY
St. Michael's
Inspired Care. Inspiring Science.
iRespond
FAMME
icaso
until we end aids
M·PACT
GLOBAL ACTION
HSRC
Human Sciences Research Council
DESMOND TUTU HIV FOUNDATION
APROSAM
Alliance
Côte d'Ivoire
METABIOTA
CNLS
HUMANITY FIRST CAMEROON
MeSH Consortium
Measurement & Surveillance of HIV Epidemics
WorldView
MISANTE
The Global Fund
NATIONAL HEALTH LABORATORY SERVICE
Horizons Femmes
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LINKAGES
Across the Continuum of HIV Services for Key Populations
NIH
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