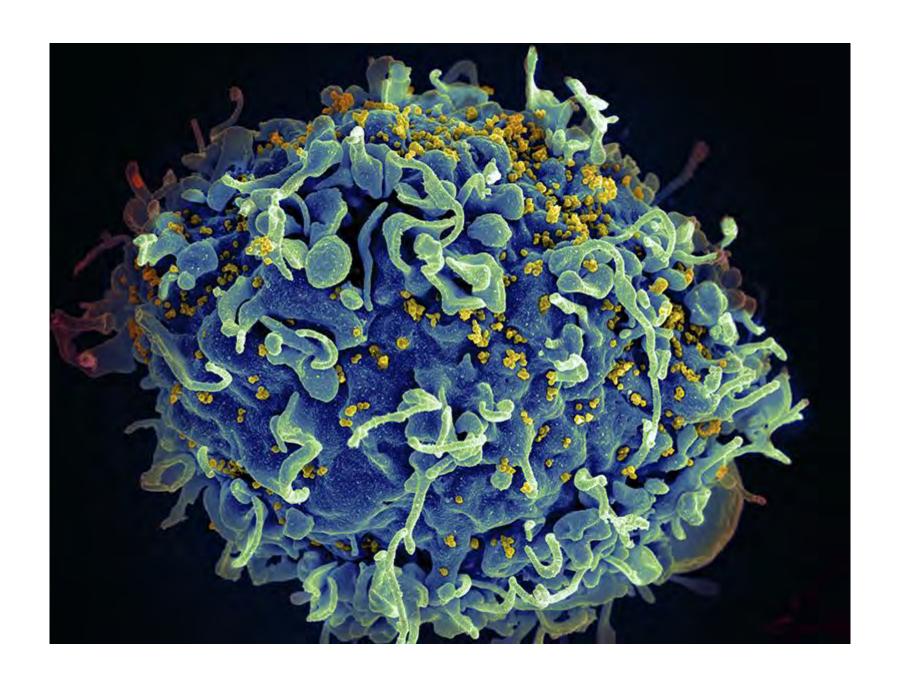
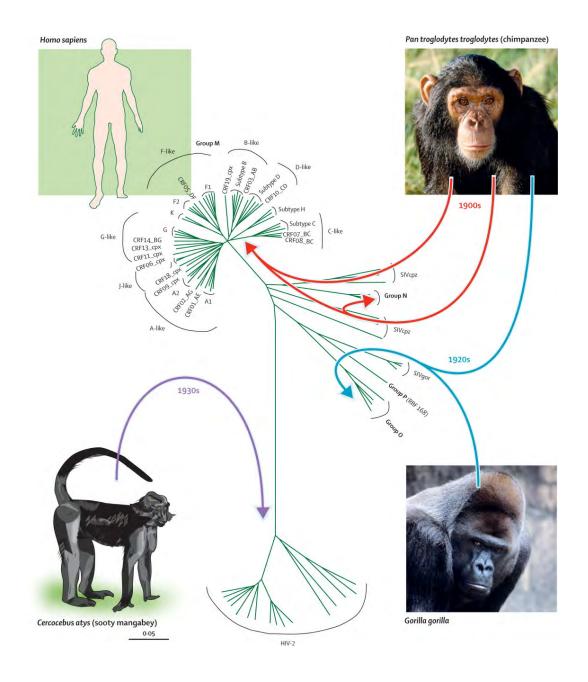
## HIV/AIDS

Madhukar Pai Director, Global Health Programs





HIV (yellow) infecting a human immune cell (blue).Credit: NIH/SPL



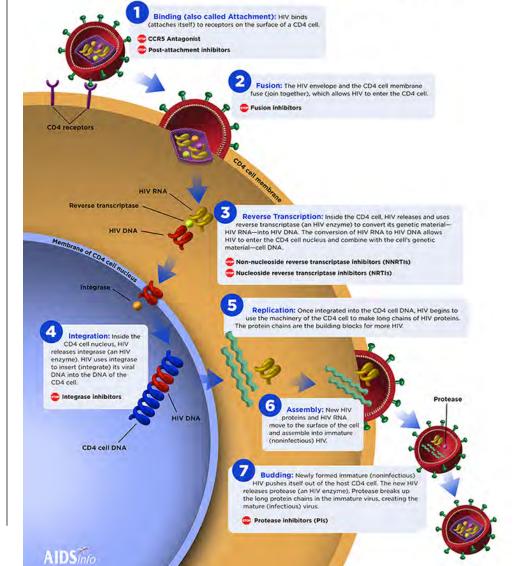
HIV jumped to humans from nonhuman primates

Likely in the early 1900s, in Africa

But HIV was clinically described only in the early 1980s

#### The HIV Life Cycle

HIV medicines in seven drug classes stop ( ) HIV at different stages in the HIV life cycle.

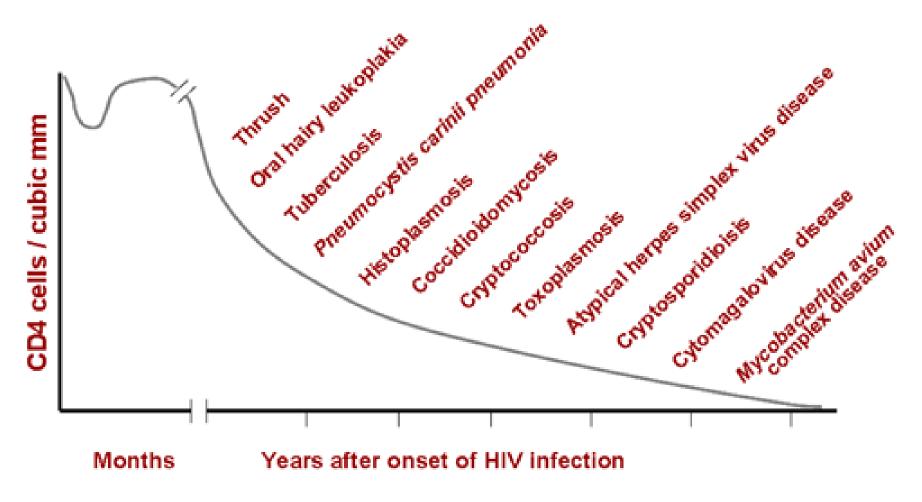


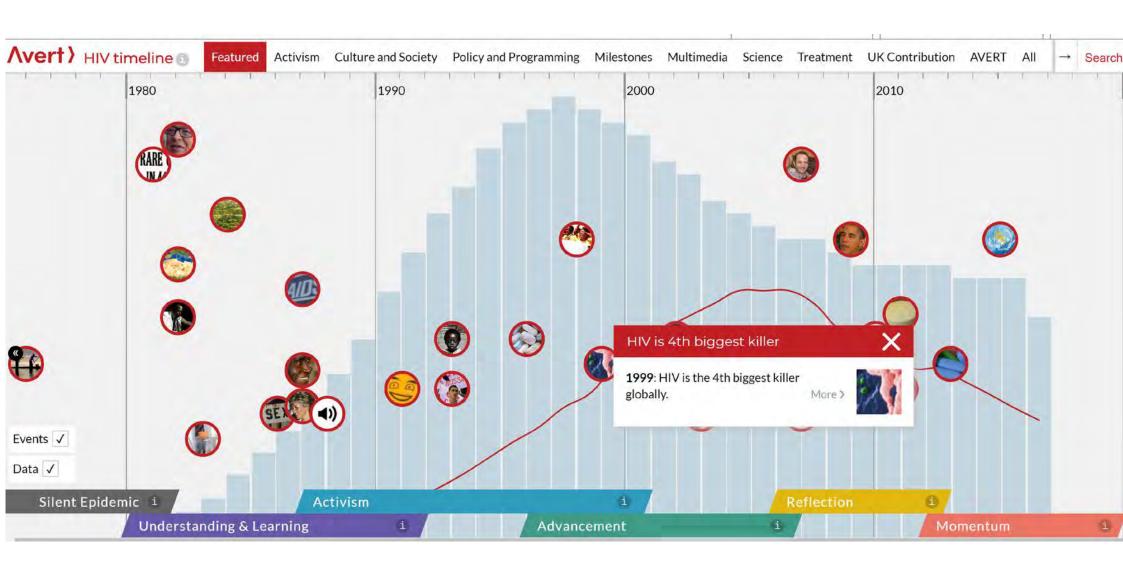
#### **Key Points**

- HIV gradually destroys the immune system by attacking and destroying a type of white blood cell called a CD4 cell. CD4 cells play a major role in protecting the body from infection.
- HIV uses the machinery of the CD4 cells to multiply and spread throughout the body. This
  process, which is carried out in seven steps or stages, is called the HIV life cycle. HIV
  medicines protect the immune system by blocking HIV at different stages of the HIV life
  cycle.
- Antiretroviral therapy (ART) is the use of HIV medicines to treat HIV infection. People on
  ART take a combination of HIV medicines from at least two different HIV drug classes every
  day. Because each class of drugs is designed to target a specific step in the HIV life cycle,
  ART is very effective at preventing HIV from multiplying.

https://aidsinfo.nih.gov/understanding-hiv-aids/fact-sheets/19/73/the-hiv-life-cycle

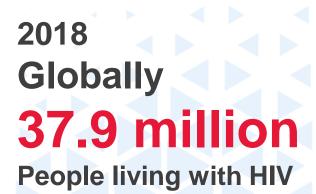
### Natural History of HIV-1 Infection





https://timeline.avert.org/

### Global HIV epidemic – people living with HIV





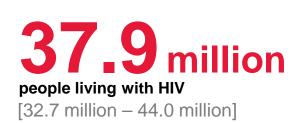


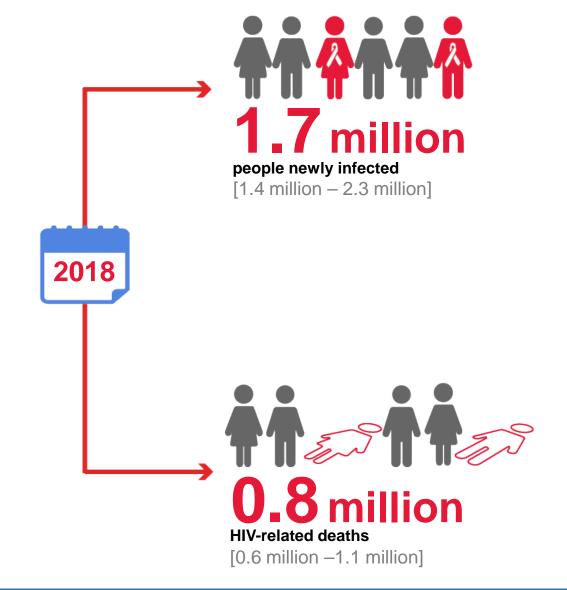
## Summary of the global HIV epidemic (2018)

	People living with HIV in 2018	People newly infected with HIV in 2018	HIV-related deaths 2018
Total	37.9 million	1.7 million	<b>770 000</b>
	[32.7 million – 44.0 million]	[1.4 million – 2.3 million]	[570 000 – 1.1 million]
Adults	36.2 million	1.6 million	<b>670 000</b>
	[31.3 million – 42.0 million]	[1.2 million – 2.1 million]	[500 000 – 920 000]
Women	18.8 million [16.4 million – 21.7 million]	_	-
Men	17.4 million [14.8 million – 20.5 million]	_	_
Children	1.7 million	160 000	100 000
(<15 years)	[1.3 million – 2.2 million]	[110 000 – 260 000]	[64 000 – 160 000]



### Summary of the global HIV epidemic (2018)

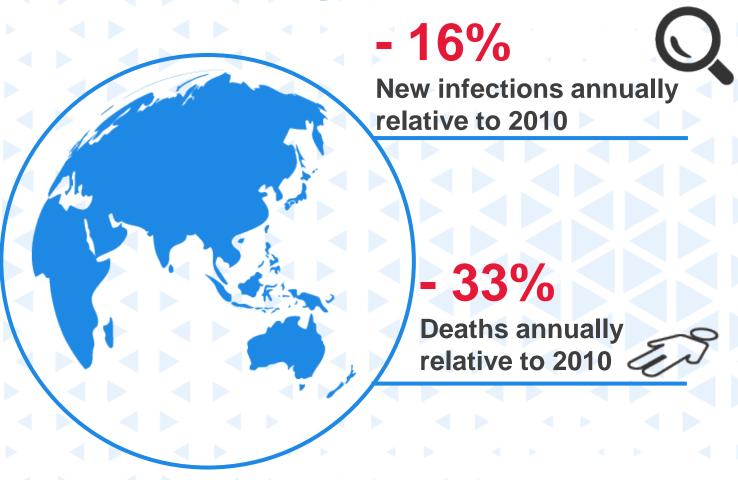






# Global HIV epidemic – incidence and mortality since 2010

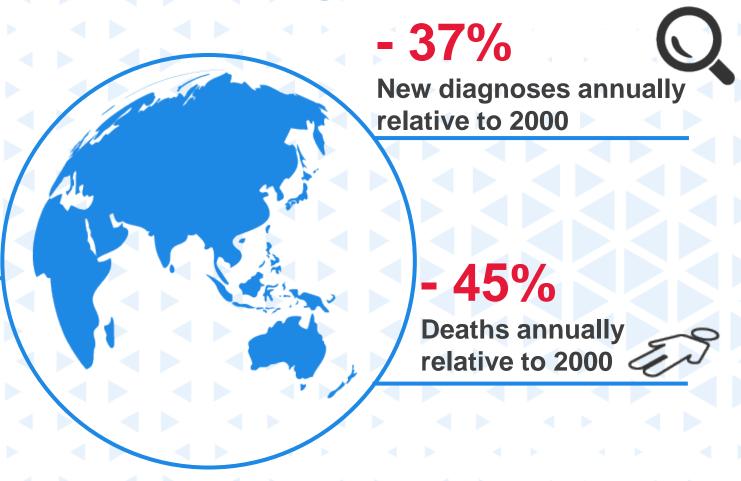






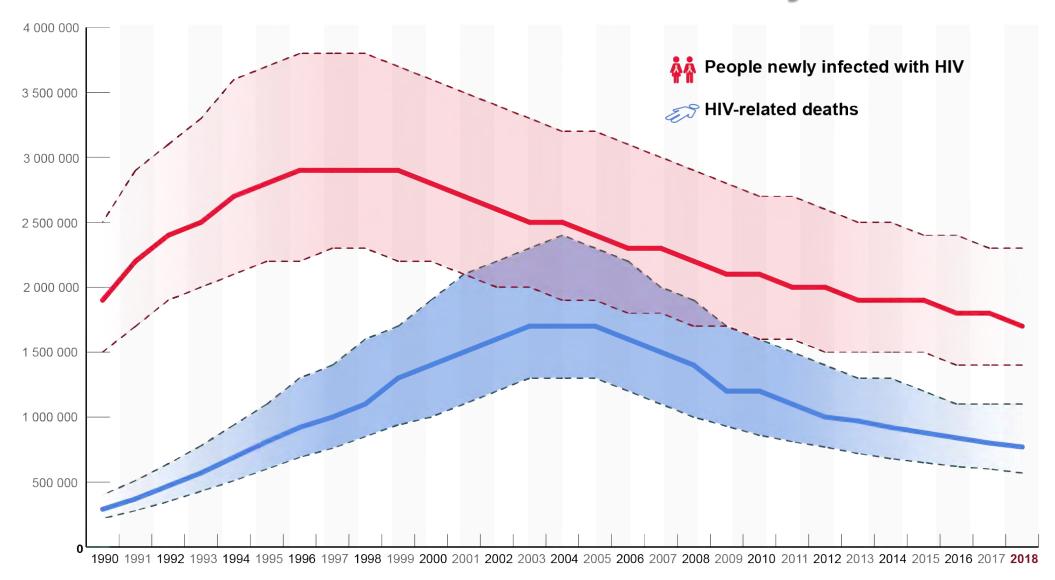
# Global HIV epidemic – incidence and mortality since 2000

2018
Globally
37.9 million
People living with HIV



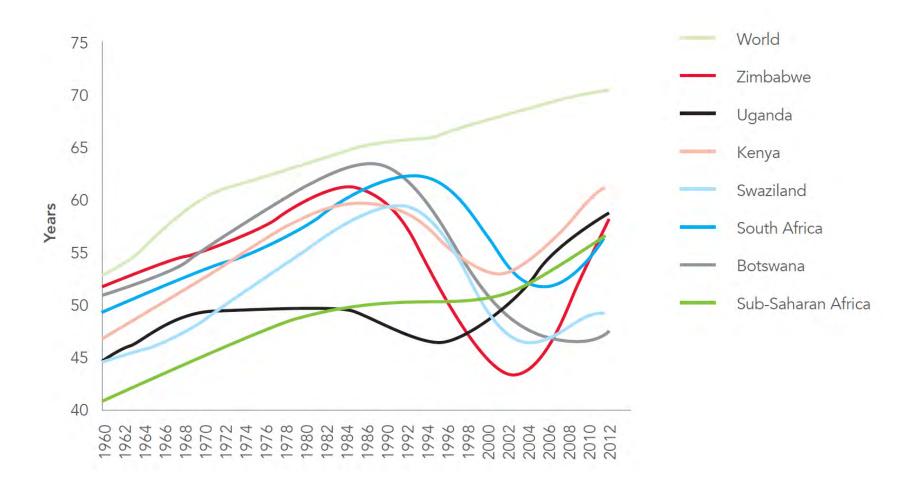


### Decline in HIV incidence and mortality over time





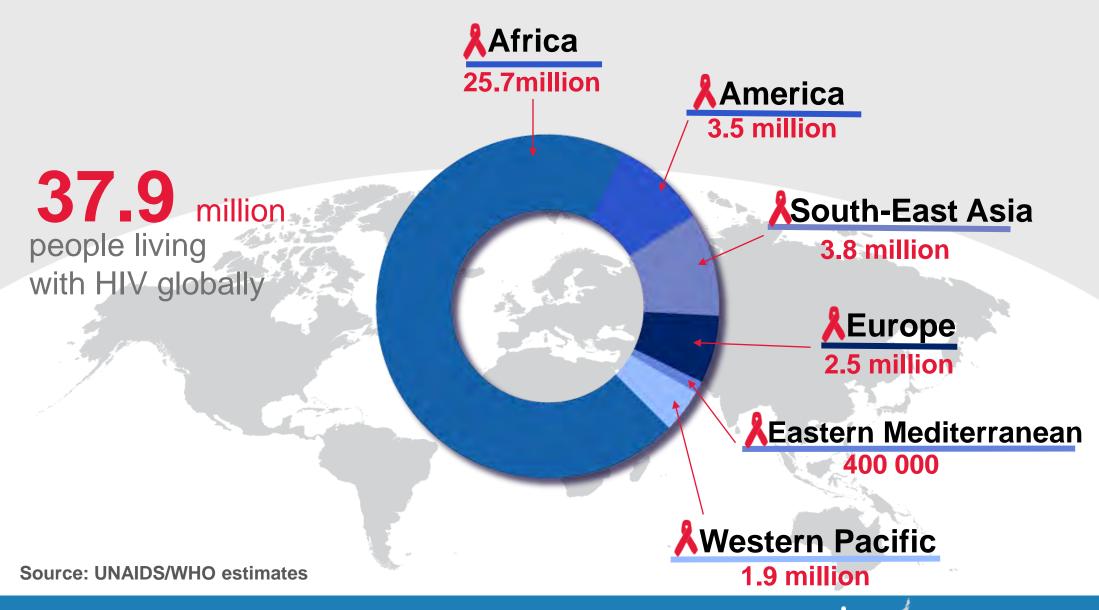
#### TRENDS IN LIFE EXPECTANCY DURING THE AIDS EPIDEMIC



Source: The World Bank life expectancy data. http://data.worldbank.org/indicator/SP.DYN.LE00.IN. Accessed 15 September 2014.



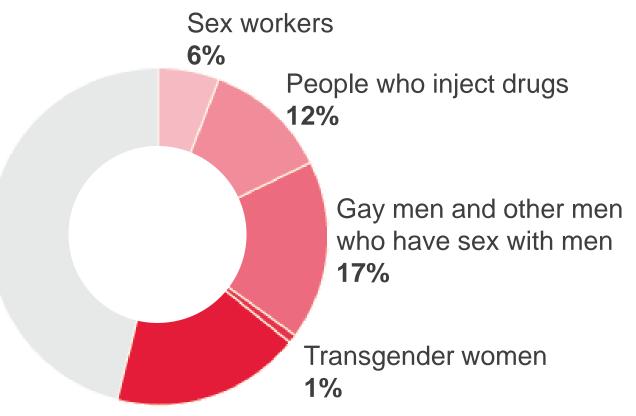
## People living with HIV by WHO region (2018)





# Distribution of new HIV infections by key population, global (2018)

Remaining population **46%** 



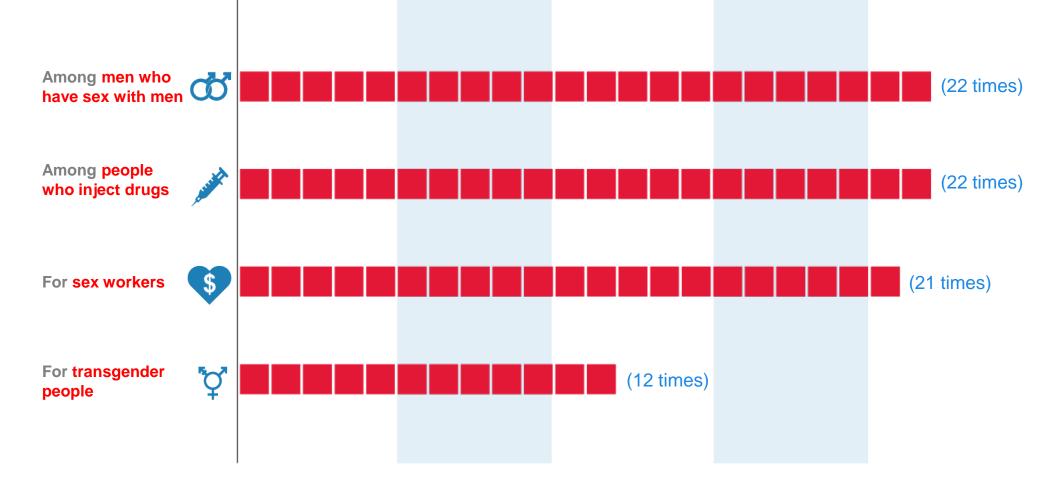
Clients of sex workers and sex partners of other key populations

18%

Source: UNAIDS special analysis, 2019



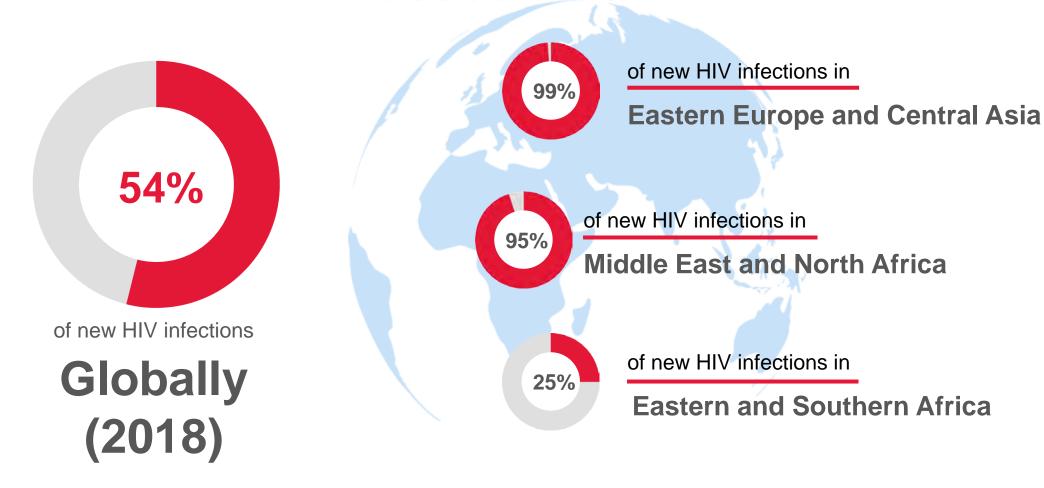
# Increased risk of acquiring HIV among key populations, global (2018)



Source: UNAIDS special analysis, 2019



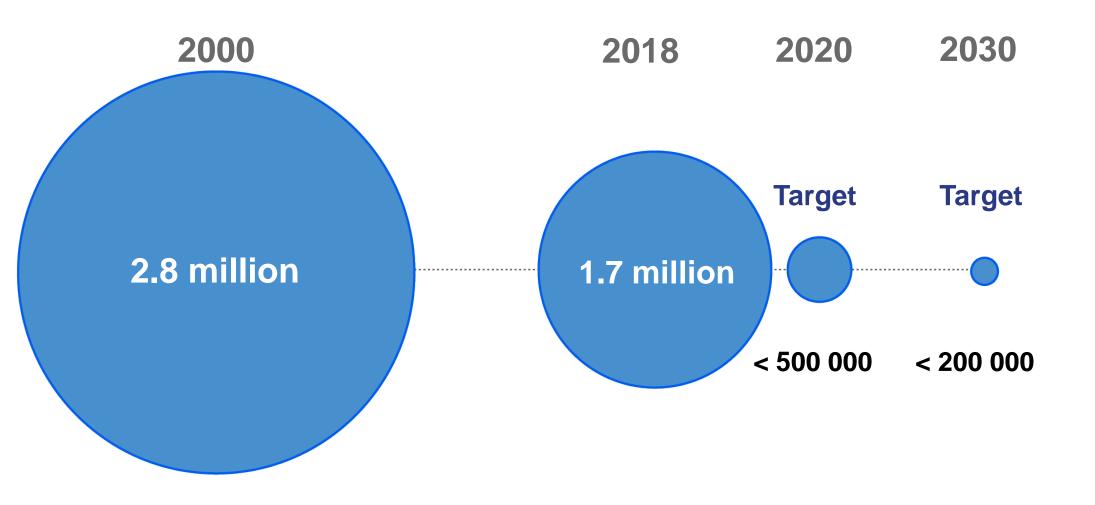
## Key populations and their sexual partners account for:



Source: UNAIDS special analysis, 2019

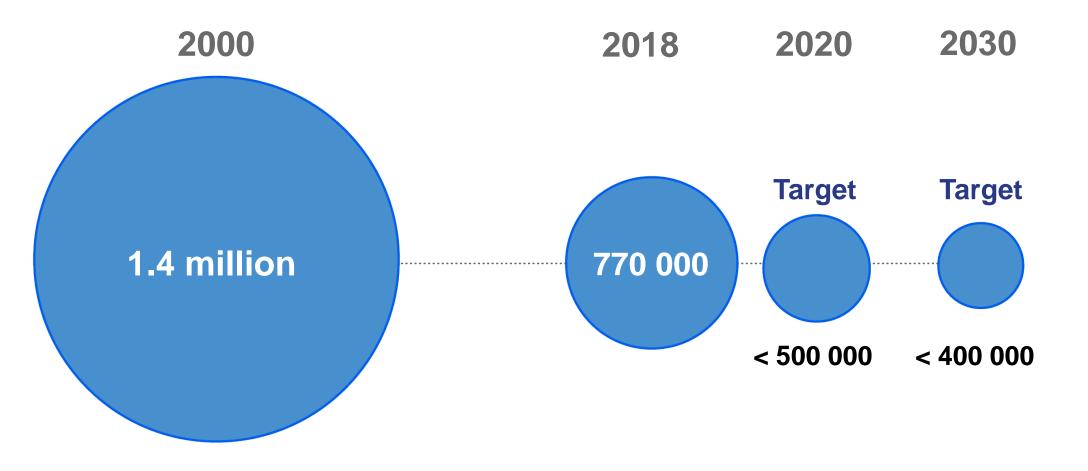


### Global number of people newly infected with HIV





#### Global number of HIV-related deaths

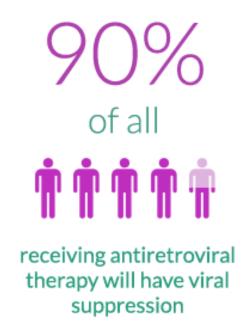




# 90–90–90 - An ambitious treatment target to help end the AIDS epidemic



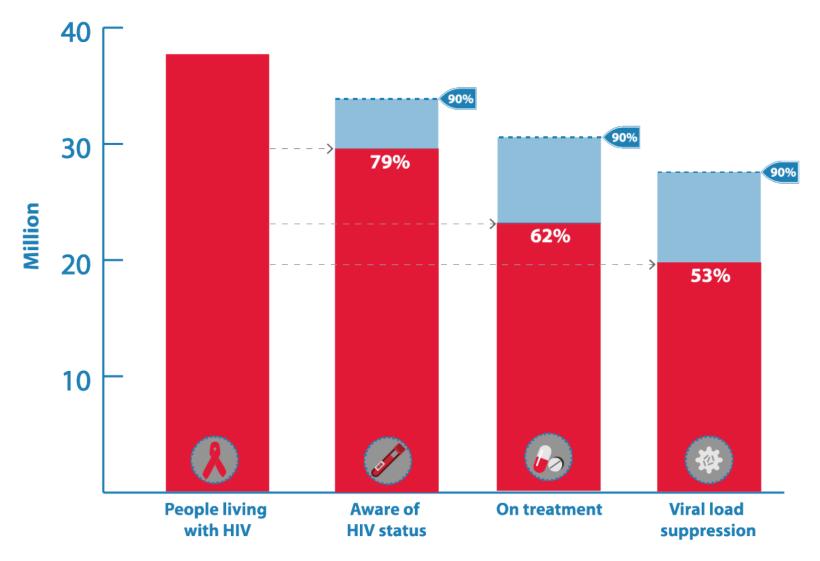




By 2020, 90% of all people living with HIV will know their HIV status. By 2020, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy. By 2020, 90% of all people receiving antiretroviral therapy will have viral suppression.



### HIV testing and care continuum, global (2018)





## CANADA'S PROGRESS ON 90-90-90 TARGETS

& CATIE

Canada has committed to meet global targets for HIV testing and treatment by 2020.

90% of people living with HIV diagnosed

90% of people diagnosed starting treatment

90% of people on treatment achieving viral suppression

It is projected that meeting these targets will end AIDS as a public health threat by 2030. This was the state of our progress at the end of 2016:



Allestillateu

63,110

CANADIANS ARE LIVING WITH HIV.

New HIV infections have increased slightly in Canada over the past several years.

TARGET: 90% of those living with HIV

PROGRESS: 86%



An estimated

54,020

HAVE BEEN DIAGNOSED.

People living with HIV have a lower risk of illness and death if they are diagnosed early.<sup>2</sup>

TARGET: 90% of those diagnosed

PROGRESS: 81%



An estimated

43,680

HAVE STARTED TREATMENT.

With prompt and effective treatment, HIV-positive people in Canada have life expectancies similar to their HIV-negative peers.<sup>3</sup> TARGET: 90% of those on treatr



PROGRESS: 919

An estimated

39,960

HAVE ACHIEVED VIRAL SUPPRESSION.

Maintaining an undetectable viral lo through treatment and care preven the sexual transmission of HIV.<sup>4</sup>

Production of this document has been made possible through a contribution from the Public Health Agency of Canada. The view do not necessarily represent t, n von ws of the Public Health Age

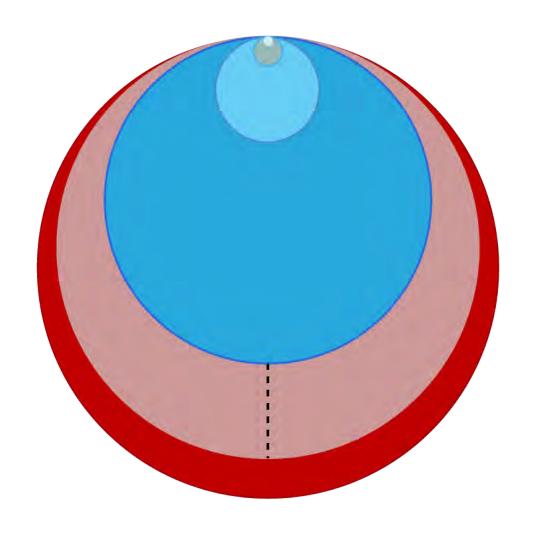
<sup>12016</sup> estimate from the Public Health Agency of Canada.

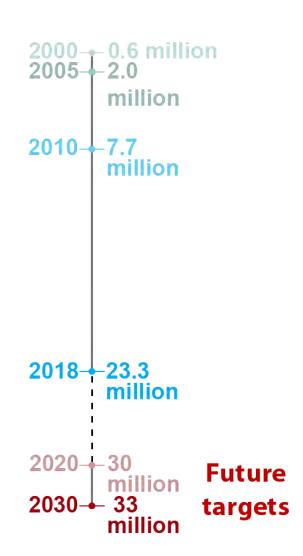
<sup>2</sup>Simmons et al. Ten-year mortality trends among persons diagnosed with HIV infection in England and Wales in the era of antiretroviral therapy: AIDS remains a silent killer. HIV Medicine. 2013.

Sabin. Do people with HIV infection have a normal life expectancy in the era of combination antiretroviral therapy? BMC Medicine. 2013.

<sup>\*</sup>Rodger et al. Sexual Activity without condoms and risk of HIV transmission in serodifferent couples when the HIV-positive partner is using suppressive antiretroviral therapy. JAMA. 2016.

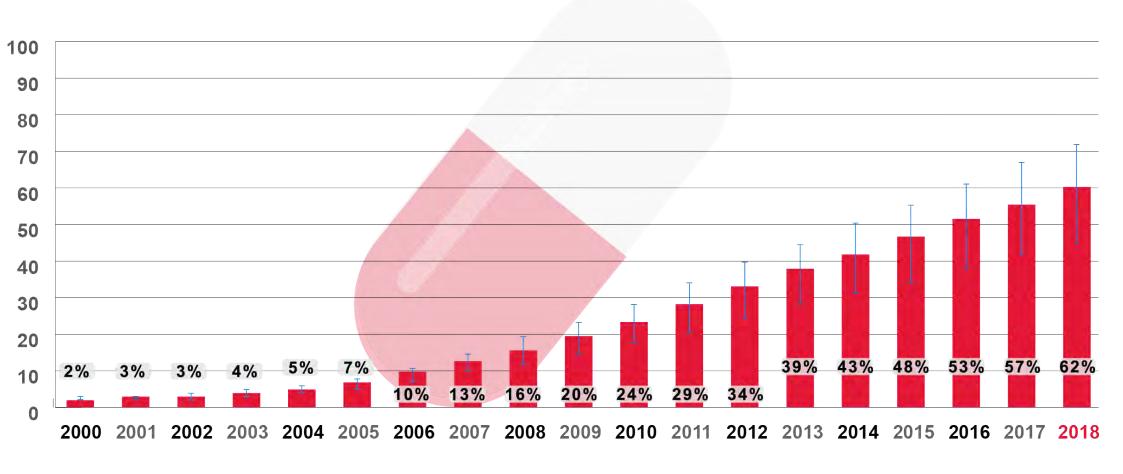
## Global number of people receiving antiretroviral treatment







### Global ART coverage over time



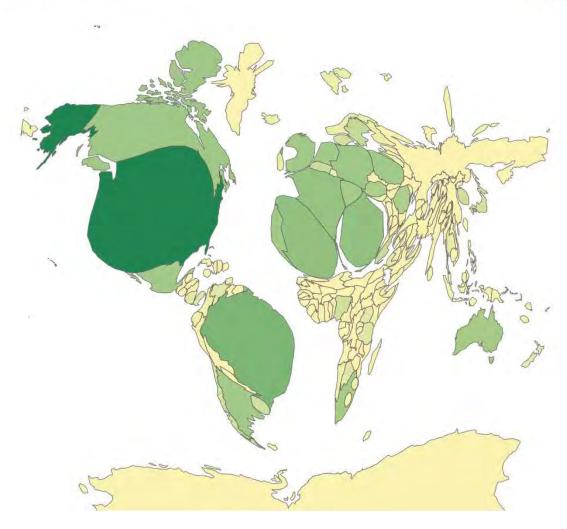


## Countries with size proportional to people on ART, 2000-2018

Cartogram of the Total number receiving ART

Scale by Total number receiving ART (2000) v calculated in 0.4 seconds





## HIV/AIDS ADVOCACY AS A MODEL FOR CATALYZING CHANGE



"What makes activism work is [patients'] anger and fear...somehow you have to be able to capture that, put it in a bottle and bottle it and use it." – Larry Kramer

The following comes from a report produced by HCM strategists, a public policy advocacy consulting firm: "Back to Basics: HIV/AIDS as a Model for Catalyzing Change."



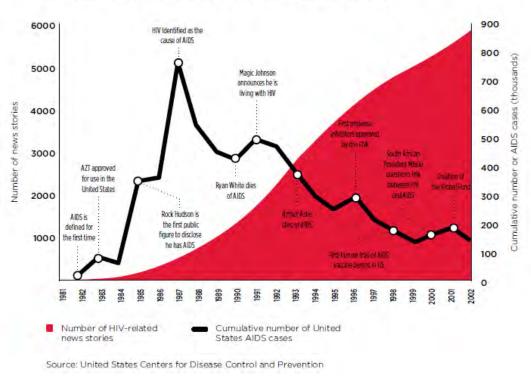




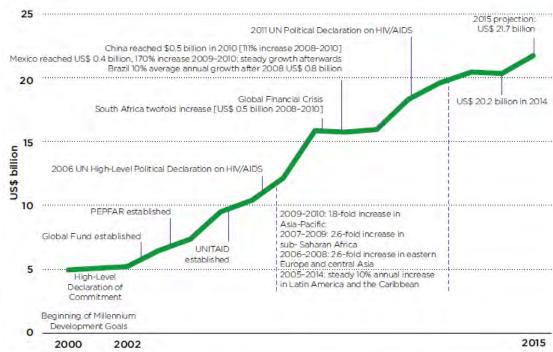
On September 14, 1989, seven ACT UP members infiltrated the New York Stock Exchange and chained themselves to the VIP balcony to protest the high price of the only approved AIDS drug, AZT. The group displayed a banner that read, "SELL WELLCOME" referring to the pharmaceutical sponsor of AZT, Burroughs Wellcome, which had set a price of approximately \$10,000 per patient per year for the drug, well out of reach of nearly all HIV positive persons. Several days following this demonstration, Burroughs Wellcome lowered the price of AZT to \$6,400 per patient per year

#### **HIV Advocacy: Driving Funding and Health Impact**

#### Total number of HIV news stories in selected media outlets, key events and cumulative United States AIDS cases from 1981 to 2002



#### Total resources for HIV/AIDS in low- and middle-income countries, 2000-2015



Source: UNAIDS estimates June 2015, based on UNAIDS-KFF reports on financing the response to AIDS in low- and middle-income countries until 2014; OECD CRS last accessed June 2015; UNGASS and GARPR reports; FCAA Report on Philanthropic funding Dec 2014.

Slide courtesy: Erika Arthun, Bill & Melinda Gates Foundation

### **HIV Advocates/Champions**



Elton John



Bono



Sting





Bill Clinton



Ellen DeGeneres







Annie Lennox



George Clooney





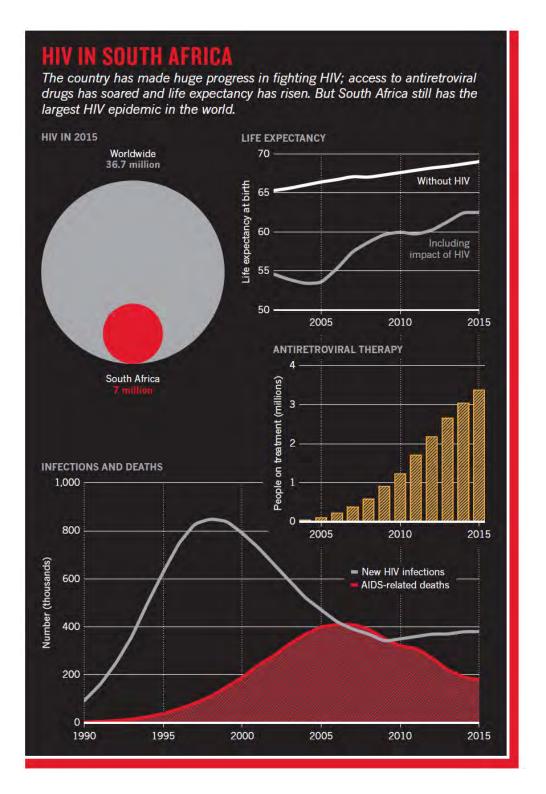


Nelson Mandela

Sharon Stone



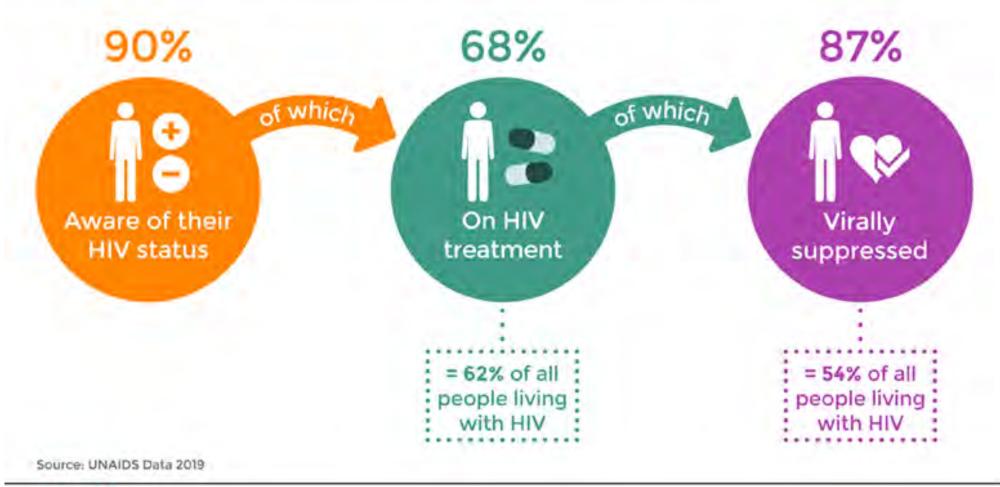
Magic Johnson



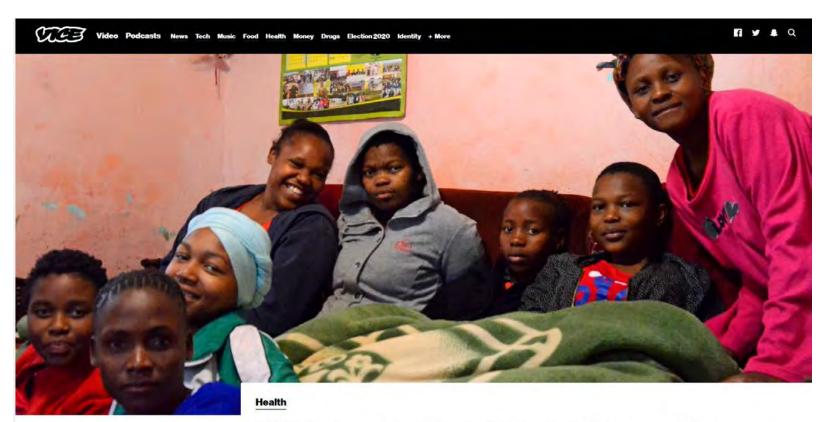


#### **SOUTH AFRICA**

#### Progress towards 90 90 90 targets (all ages)



Avert) www.avert.org



## HIV Scientists Have Failed to Protect the World's Most At-Risk Women

PrEP drugs like Truvada can drastically lower the risk of HIV transmission. But young women in South Africa are pushing for a different kind of change.

### Tools to end the HIV/AIDS Epidemic

- 1. Medical Circumcision
- 2. HIV Self testing
- 3. Treatment as prevention
- 4. Pre-exposure Prophylaxis

#### Male circumcision for HIV prevention



© Monkey Business Images - Shutterstock

There is compelling evidence that male circumcision reduces the risk of heterosexually acquired HIV infection in men by approximately 60%. Three randomized controlled trials have shown that male circumcision provided by well trained health professionals in properly equipped settings is safe. WHO/UNAIDS recommendations emphasize that male circumcision should be considered an efficacious intervention for HIV prevention in countries and regions with heterosexual epidemics, high HIV and low male circumcision prevalence.

Male circumcision provides only partial protection, and therefore should be only one element of a comprehensive HIV prevention package which includes: the provision of HIV testing and counseling services; treatment for sexually transmitted infections; the promotion of safer sex practices; the provision of male and female condoms and promotion of their correct and consistent use.









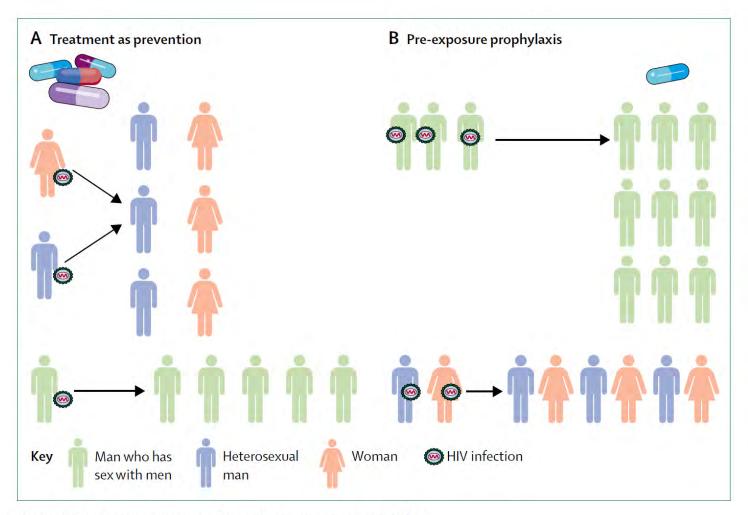
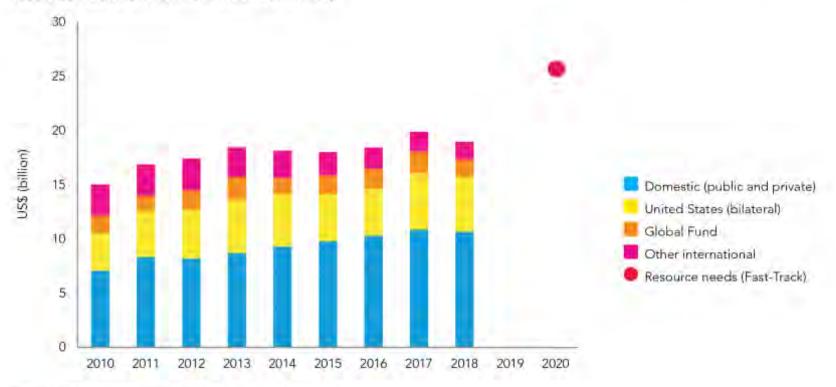


Figure 3: Treatment as prevention and pre-exposure prophylaxis

(A) Treatment as prevention involves treating HIV seropositive individuals with suppressive antiretroviral therapy to protect their HIV seronegative sexual partners from acquiring HIV infection. (B) Pre-exposure antiretroviral-based prophylaxis is given to HIV seronegative individuals to prevent viral acquisition from HIV seropositive sexual partners.

#### Financial resources for the AIDS response

HIV resource availability for HIV in low- and middle-income countries, 2010–2018 and 2020 Fast-Track resource needs (in constant 2016 US dollars)



Source: UNAIDS 2019 resource availability and needs estimates

"The world can't afford to backslide on investment in the AIDS response," said Gunilla Carlsson, UNAIDS Executive Director, a.i. "Countries must honour their pledge to steadily increase their investment in the response to HIV if the world is to meet its obligations to the most vulnerable and disadvantaged."



The was nesterly Facetrating book. It should be marked roy reading: Plants in land, colourful, imaginful, and impatient. —Stephen Levit, former UN envey on AIDS in Africa, The Globe and Mail

THE WISDOM OF WHORES

WHORES

CORNAGO MAIL

BEST BOOK

BUREAUCRATS, BROTHELS, AND THE BUSINESS OF AIDS

ELIZABETH PISANI (3)

