



Public Health  
England

# Can We End the HIV Epidemic in Our Lifetime?

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TASP Conference 2013



# Much progress has been made in the fight against HIV

- Full and detailed understanding of the **disease pathogenesis** and epidemiologic transmission dynamics
- **Diagnostic tests** developed to protect the blood supply and to identify those infected.
- Range of **effective prevention methods** identified and implemented, including risk-reduction programs, counseling and testing, condom distribution, and needle-exchange programs.
- With the discovery of **highly active antiretroviral therapy** in the mid-1990s, rates of death in developed countries started to decline with reductions in MTCT of HIV.

# Male circumcision



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

# Microbicides for women



Abdool Karim Q, Science 2010

# Treatment of STIs



Grosskurth H, Lancet 2000

# Treatment for prevention



Donnell D, Lancet 2010  
Cohen M, NEJM 2011

# Female Condoms

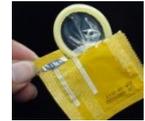


# Behavioural positive prevention



Fisher J, JAIDS 2004

# Male Condoms



# Oral pre-exposure prophylaxis



Grant R, NEJM 2010 (MSM)  
Baeten J, 2011 (Couples)  
Paxton L, 2011 (Heterosexuals)

# HIV Counselling and Testing



Coates T, Lancet 2000

# Post Exposure prophylaxis (PEP)



Scheckter M, 2002



# Vaccines

Rerks-Ngarm S, NEJM 2009

# Behavioural Intervention

- Abstinence
- Be Faithful



*Note: PMTCT, Screening transfusions, Harm reduction, Universal precautions, etc. have not been included – this is focused on reducing sexual transmission*



## Urgent threats and realities: Challenges in the global HIV/AIDS response

- More than 34 million persons are still living with HIV infection globally
- Only 60% of sex workers, 46% of IDUs, and 40% of MSM were reached by HIV-prevention programs in 2008 (UNAIDS)
- HIV incidence rising again in several countries. In 2011, less than 25% of PLWHIV had access to ARTs or had virologic suppression
- Many lower-income countries are still almost entirely dependent on international aid, which has declined in recent years
- Now seeing an increase in the need for care for chronic diseases among persons with HIV infection

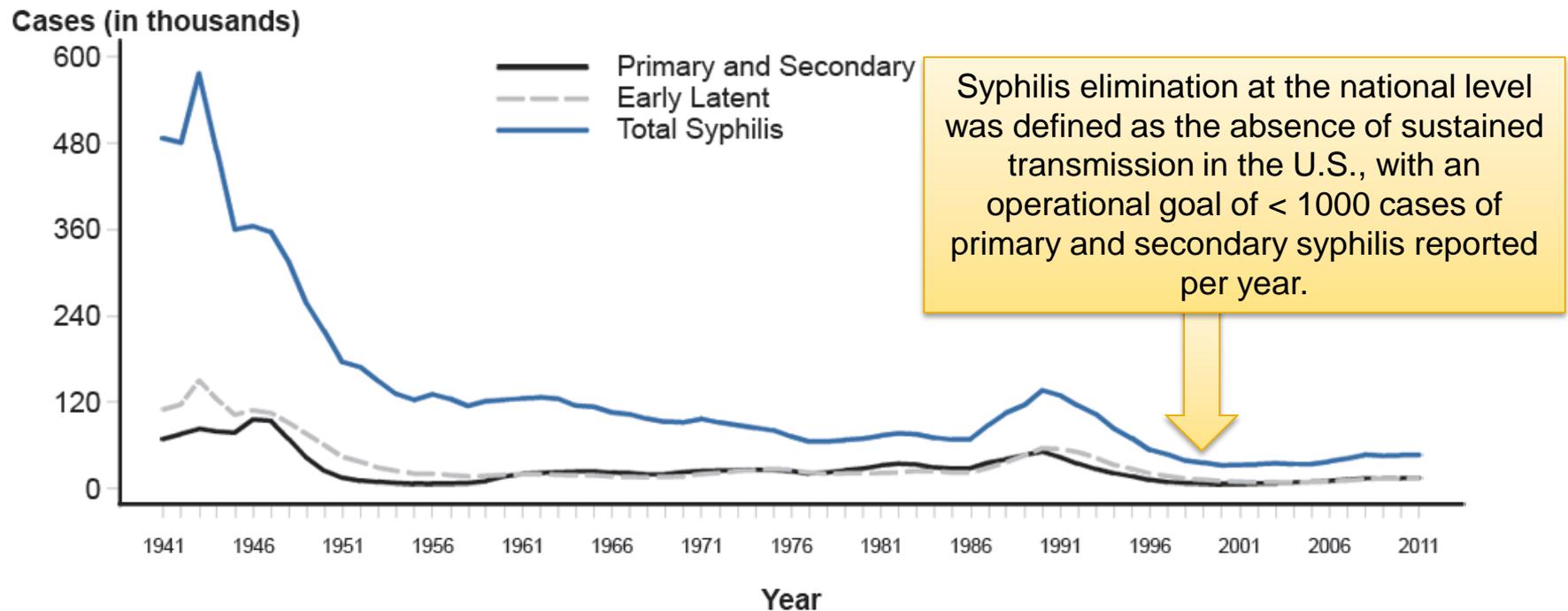


## So can we end the HIV epidemic within our lifetime?

- Any movement towards HIV elimination or eradication must be **based on a realistic assessment** of our track record with eliminating other infectious diseases.
- Lessons from **current or past elimination programmes** may help us understand the acceptability and feasibility of attempts to end the HIV epidemic within our lifetime. Syphilis and TB provide good exemplars.
- As we have learned with other infectious diseases, having an effective vaccine, treatment and a cure are **necessary but by themselves are insufficient** for ending an epidemic



# Syphilis—Reported Cases by Stage of Infection, United States, 1941–2011





# US Syphilis Elimination Effort

- US Plan to Eliminate Syphilis launched in October 1999
- Disease elimination (defined as “controlling the manifestations of a disease so that it is no longer considered a public health problem” or as “reduction to zero of a specified disease in a defined geographic area as a result of deliberate efforts”) was considered plausible for the U.S. both because of **historically low rates of infection** and **restriction to a limited number of geographic areas**, as well as cheap and **effective diagnostic tests and therapy**.
- Disease eradication (defined as the “permanent reduction to zero of the worldwide incidence of infection”) was not considered feasible because of high rates of syphilis in many parts of the world.



# US Syphilis Elimination Effort

## ACCOMPLISHMENTS

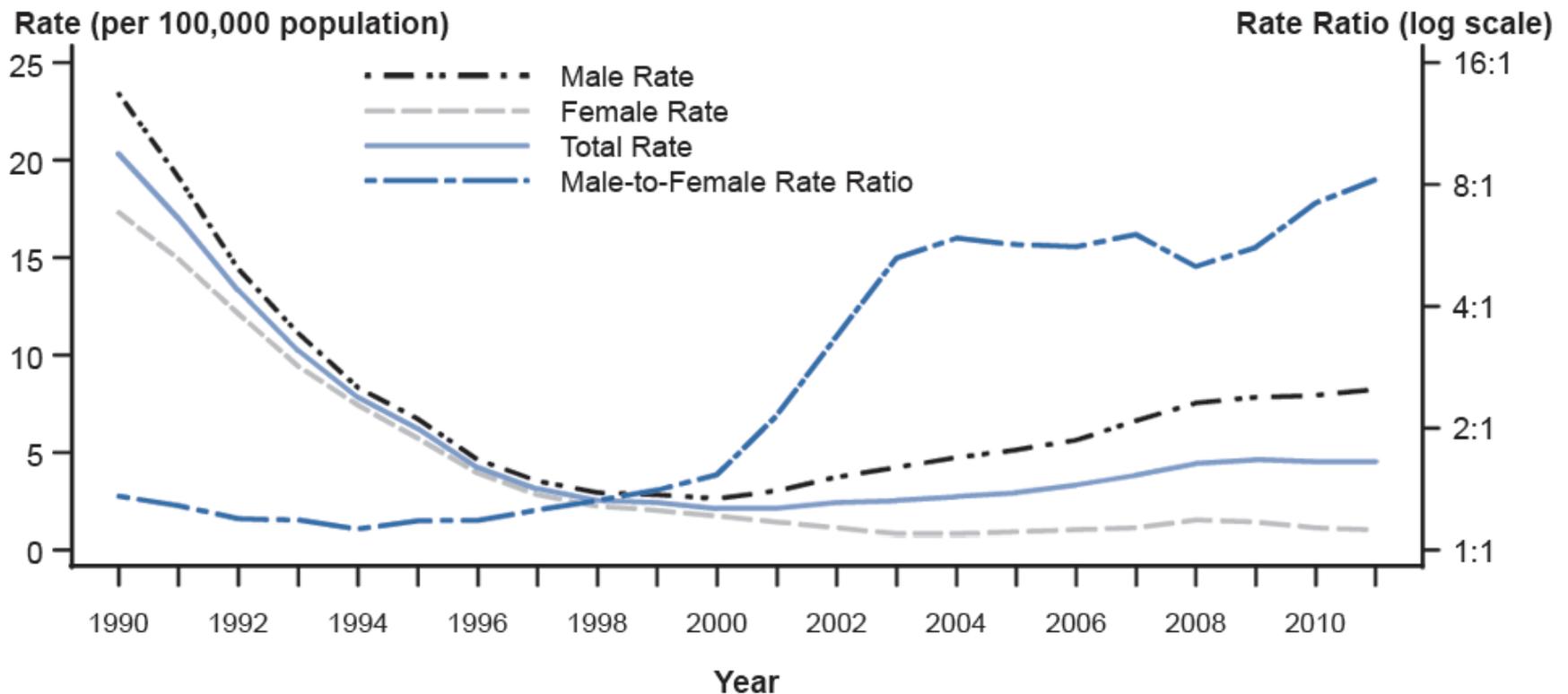
- Reductions in disease incidence
- Additional Investment
- Increased awareness about and knowledge of syphilis
- Improved partnerships with communities
- Expanded access to STD healthcare
- Improved partnerships between HIV and STD programs

## CHALLENGES

- Changing disease epidemiology
- Changing risk behavior among MSM
- Drug addiction and abuse
- Syphilis and HIV interaction
- Inadequate access to healthcare
- Partners services
- Changing socio-economic contexts
- Funding, Contracts, and Grant Guidance



# Primary and Secondary Syphilis — Rates by Sex and Male-to-Female Rate Ratios, United States, 1990-2011





# Lessons learned from the US SEE

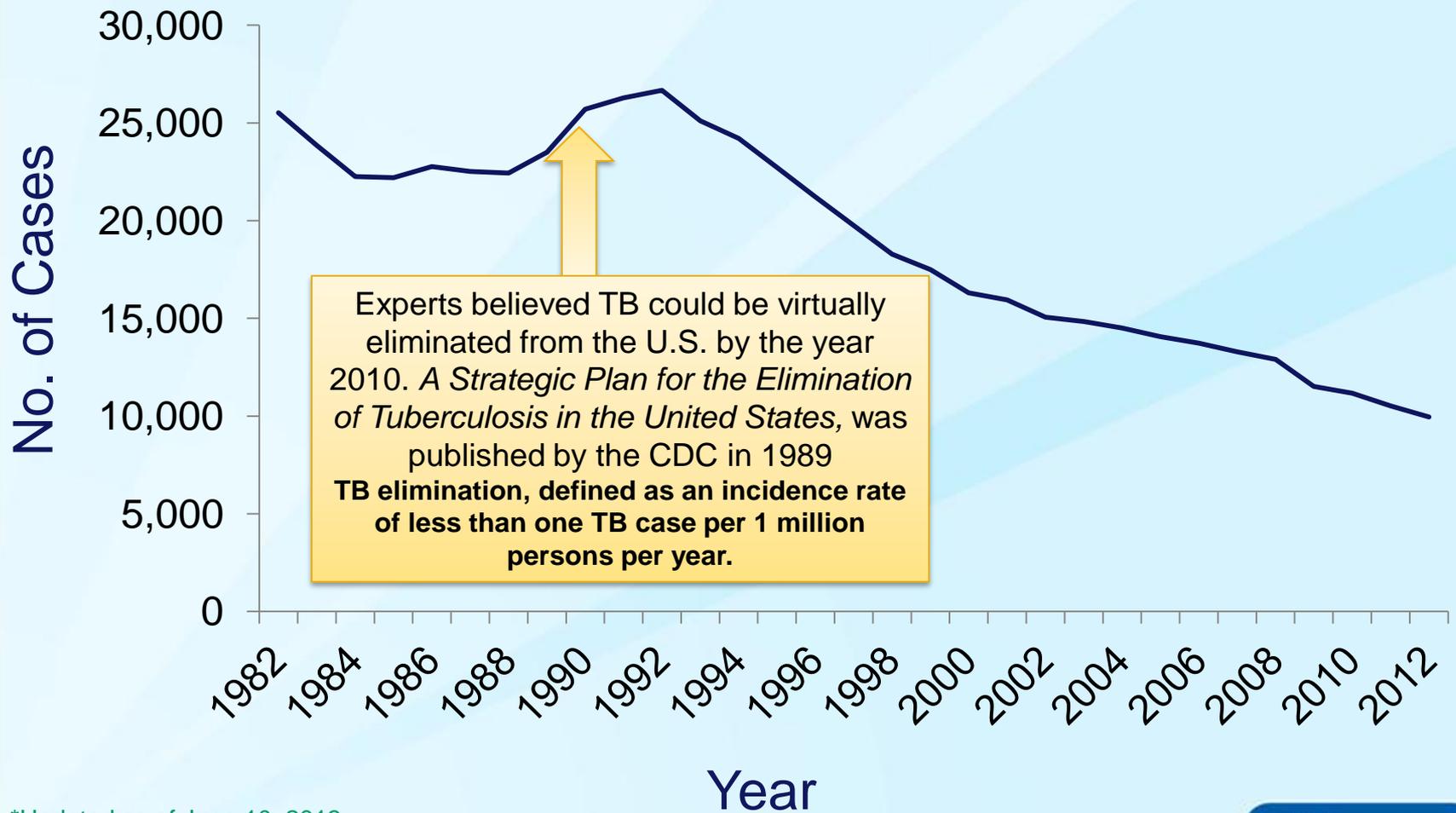
- **Integrate** syphilis elimination with other STD/HIV programmes
- Good **surveillance** is the cornerstone of disease elimination. Apply local surveillance and research data to develop strategies
- Local syphilis elimination activities should be **flexible** enough to respond to rapidly evolving epidemics.
- Adopt a more **holistic approach** which takes into consideration the social determinants of disease transmission.
- Provide good **quality STD services**. Quality STD services and good surveillance are key to syphilis elimination.



# TB Elimination in the U.S.

- With improved socio-economic conditions and the development of effective drugs, TB cases counts had fallen off dramatically by the 1980s
- Actions to achieve that goal centred on making better use of existing TB prevention and control methods; creating and evaluating new tools for diagnosing, treating, and preventing TB; and rapidly applying these tools to clinical and public health practice.

# Reported TB Cases United States, 1982–2012\*



\*Updated as of June 10, 2013.





# Challenges to TB Elimination in the U.S.

- The plan's **implementation was set back** by the unexpected resurgence of TB in the mid 1980s and early 1990s fuelled by several converging factors:
  - the onset of the HIV epidemic
  - increases in TB cases among foreign-born persons
  - outbreaks in congregate settings (e.g., hospitals, correctional facilities)
  - delays in recognizing the appearance and transmission of deadly, drug-resistant TB strains that defy traditional treatments.
- At the same time, premature **cuts in TB funding** and the subsequent deterioration of TB programmes impaired the response
- The disease also **retreated into localized areas** and “hard to reach” population groups posing threat for yet another widespread comeback.



# Lessons learned from TB elimination

- The **global TB epidemic** remains an important source of new U.S. cases in the person of immigrants and refugees
- Screening and treatment efforts drove progress however elimination will require **better tests and treatments**, plus an improved vaccine
- Changes in the organization, delivery, and financing of **health care** challenge the contexts for TB control and elimination
- Progress hampered by inefficient and outdated **diagnostic tools** and methods to optimise the use of new technology being evaluated



## Ending the HIV epidemic in our lifetime

# Lessons from elimination programmes?

- **Epidemiology:** Generally elimination programmes considered when disease incidence is low or declining; effective treatment; diagnostic tools; infrastructure.
- **Leadership:** Support broad-based efforts for HIV prevention and control at national, state, and local levels. Recommit to the global battle against HIV
- **Plan:** National strategic plans for elimination based on local surveillance/ programme evaluation data and targeted locally
- **Prioritise:** Programmes should ensure the effective implementation of the highest priority activities – diagnosing; contact investigation; test and treatment.



## Ending the HIV epidemic in our lifetime

# Lessons from elimination programmes?

- **Response:** Ensure timely responses to outbreaks or case clusters and make available adequate laboratory services and medical consultation for local areas with low or declining disease rates but inadequate expertise or infrastructure.
- **Partnerships:** Establish new strategic partnerships and reach new stakeholders
- **Research:** Enhance the use of current tools for HIV prevention and control and develop new tools for elimination
- **Sustainable endgame strategy:** How will the infrastructure for elimination and eradication be repurposed to help advance other health priorities and goals



# Conclusions

- Great progress has been made in the global response to the AIDS epidemic, but these achievements are fragile
- Lessons from the control and elimination of other infectious diseases teach us to be ambitious, pragmatic and yet humble
- Global and national leadership, focus, sufficient and sustained resources, robust monitoring systems are needed with special attention to the most marginalised
- Even if elimination is not achievable in our lifetime, the energy passion and dedication from an elimination effort will undoubtedly help accelerate our prevention efforts



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# Thank you

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