# Interventions that reduce the burden of syphilis and HIV among pregnant women

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Karin and Jonathan Fielding School of Public Health

**Thursday Oct 8th, 2015**
**2:15-2:25 pm**
**Room 121-122**

UCLA FIELDING SCHOOL OF PUBLIC HEALTH


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# *Disclosures*

- Dr. Klausner is a faculty member of the University of California Los Angeles
- Dr. Klausner is a board member of YTH, Inc, non-profit
- Dr. Klausner is an unpaid medical advisor for Healthvana.com

- In the past 12 months:
  - Research funding or donated supplies from the US NIH, US CDC, AIDS Healthcare Foundation, Gilead Sciences, Hologic, Alere-Standard Diagnostics, Chembio, Cepheid and MedMira.
  - Speakers bureau: None
  - Advisory board: None
  - Consultant activities: AIDS Healthcare Foundation, Flora Biosciences, Sentient Research, AIDS Project Los Angeles

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# Outline

- Theoretical basis for prevalence reduction
- United States, 1940-1960
- Uganda, 1985-2001
- Thailand, 1989-2005
- Zimbabwe, 1998-2011

# Prevalence = Incidence x Duration

Incidence is function of:

Transmission efficiency

X

Contact rate

X

Prevalence


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UTAH
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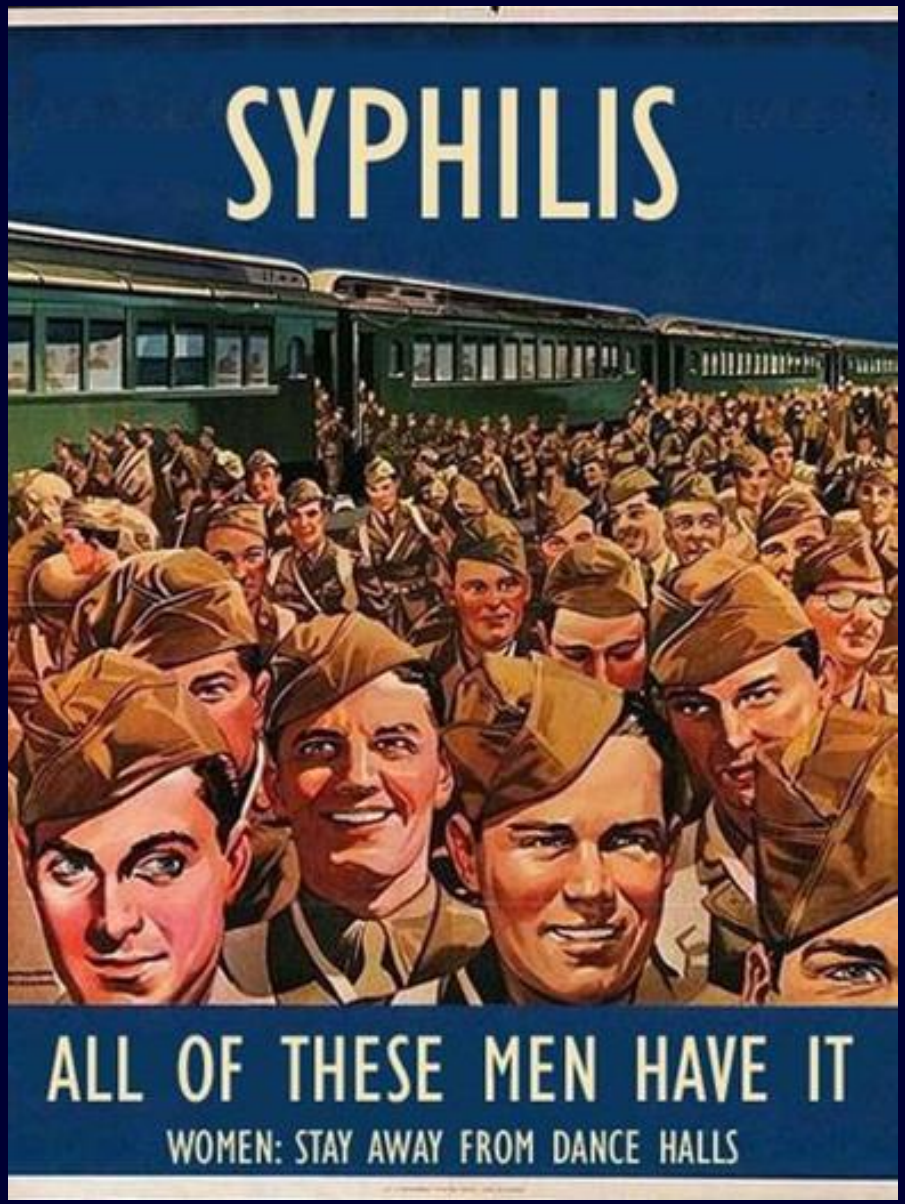
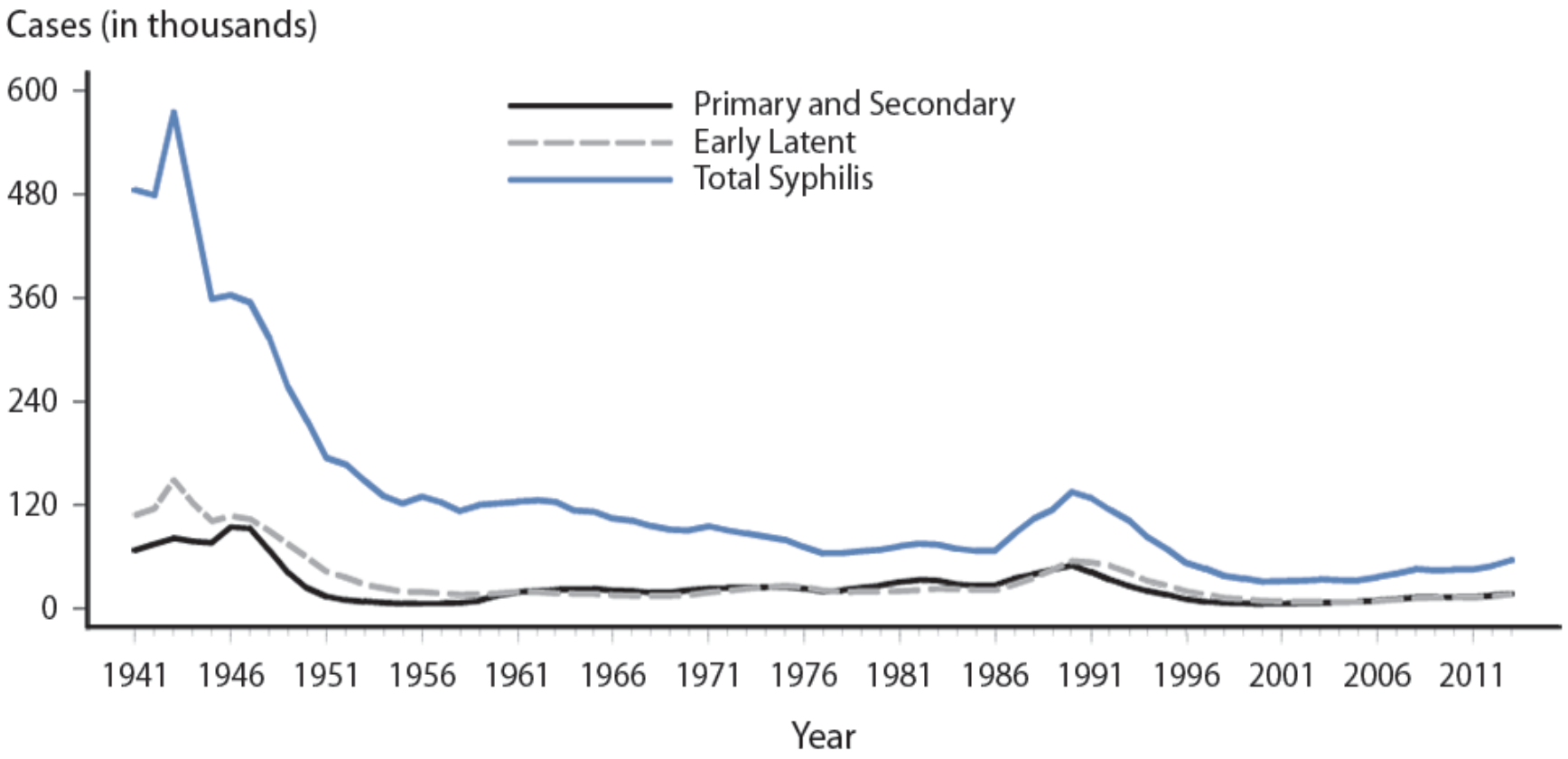
1940-1960

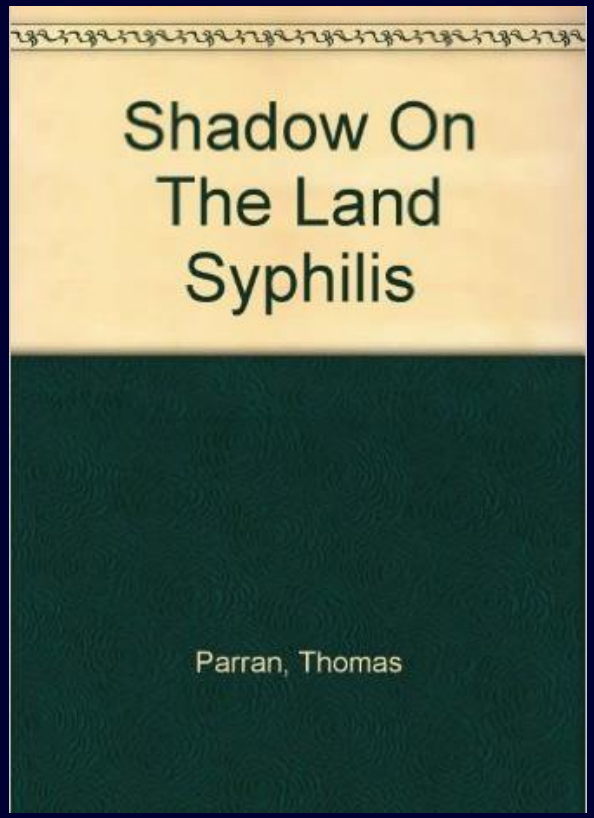

SYPHILIS
ALL OF THESE MEN HAVE IT
WOMEN: STAY AWAY FROM DANCE HALLS

# Syphilis—Reported Cases by Stage of Infection, United States, 1941–2013



# Public health approach

- Case-finding
- Contact tracing
- Partner treatment



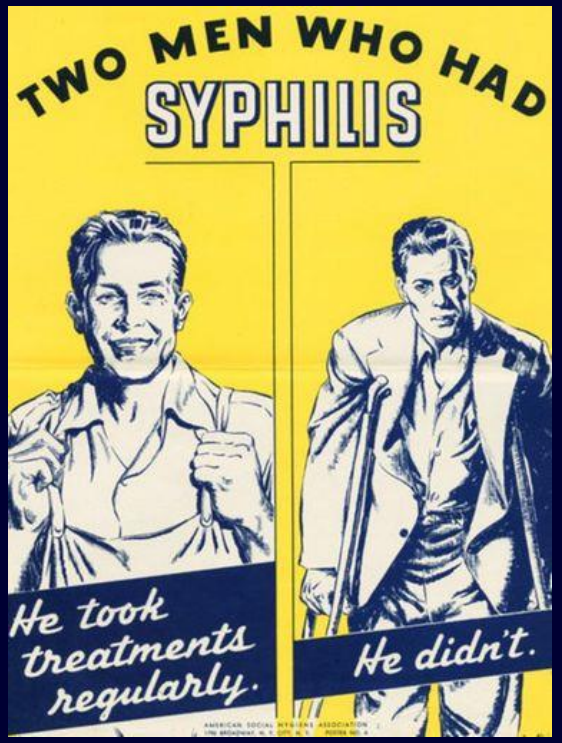

Parran, T. *Shadow on the Land Syphilis*, 1937

# Routine testing

- Blood test requirements (rubella, syphilis)
  - Marriage
  - Education
  - Employment
  - Military

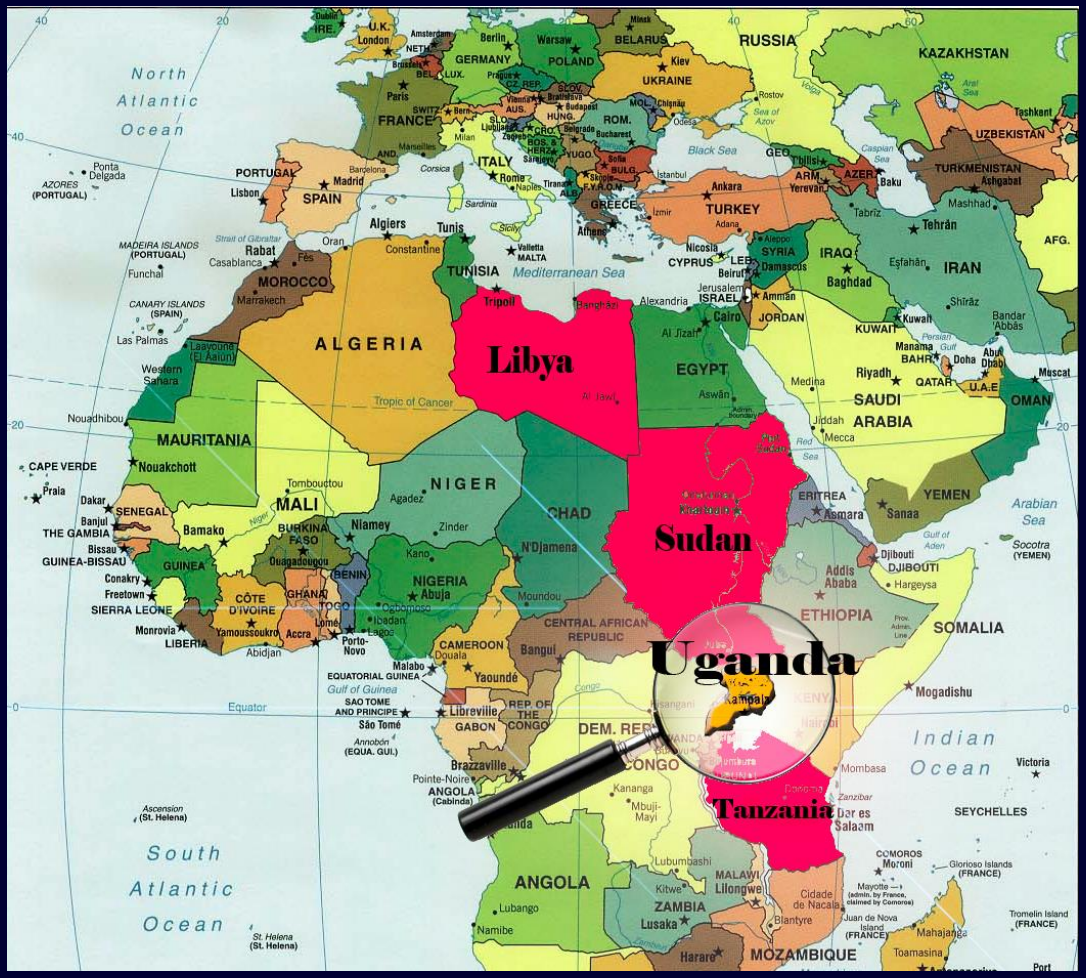
# Partner notification

- Public health workforce
  - Nurses
  - Disease control investigators
- Physician responsibility



# Prophylactic treatment

- By 1946, prophylactic penicillin treatment demonstrated effective
  - Public health clinics
  - Home therapy
  - No cost




1985-2001


Bata Bata Bata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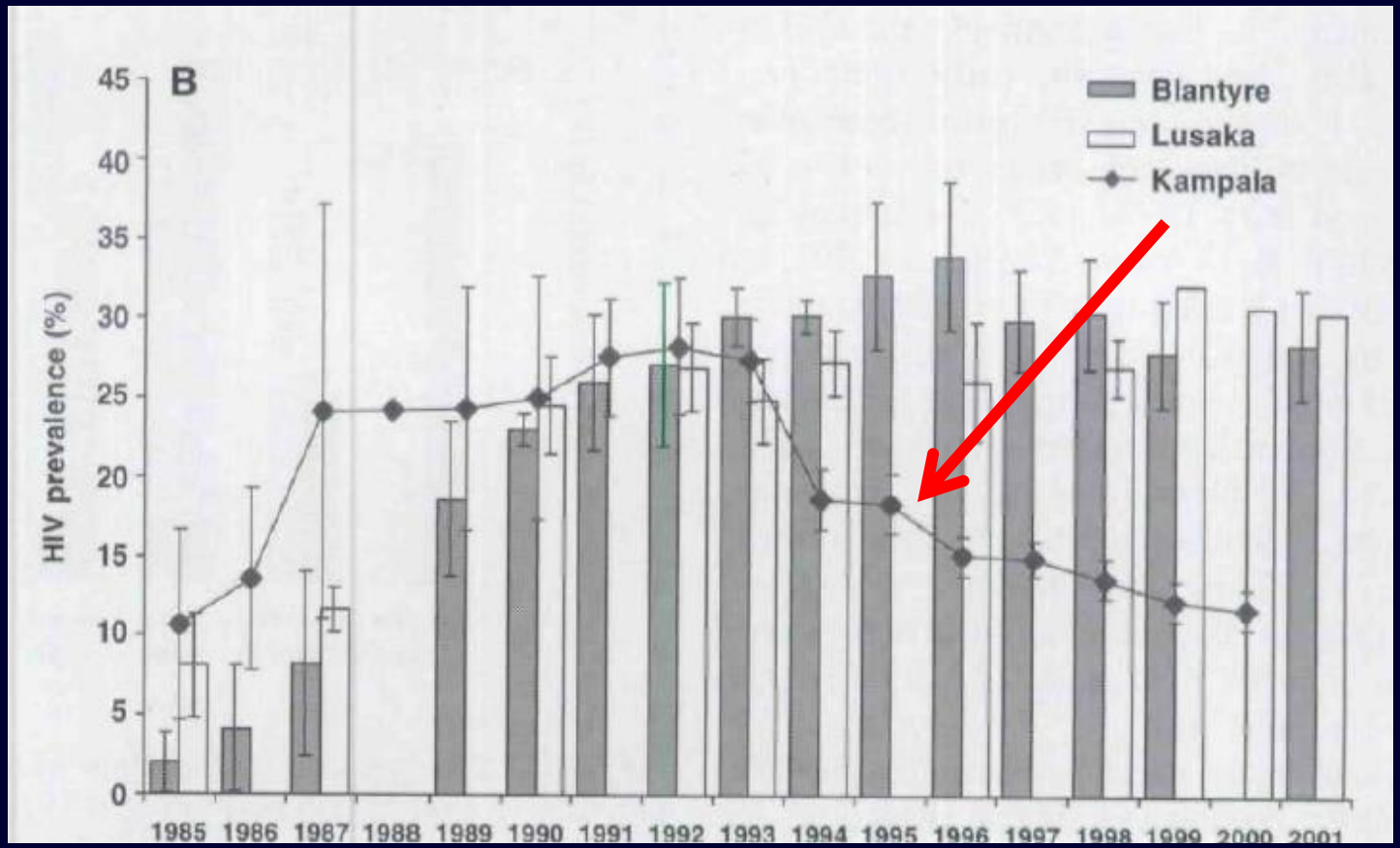
# Antenatal prevalence Malawi, Zambia and Uganda, 1985-2001




Stoneburner RL, Low-Beer D (2004) Population-level HIV declines and behavioral risk avoidance in Uganda. Science 304: 714–718

# Promotion of sexual behavior change


Image Source: Association for Diplomatic Studies and Training


CHINA
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New Delhi
BHUTAN
INDIA
BANGLADESH
BURMA
Rangoon
THAILAND
VIETNAM
CAMBODIA
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Colombo
Male
MALAYSIA
Kuala Lumpur
Singapore
Bandar Seri Begawan
BRUNEI
MALAYSIA
INDONESIA
Jakarta
Indian

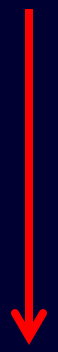
1989-2005


HOT
CHINA TOWN SCALA
中國城
COCOON
SEAFOOD

# Prevalence of HIV Infection among Young Men in Northern Thailand Conscripts, 1991-1995

**TABLE 1. PREVALENCE OF HIV INFECTION AMONG YOUNG MEN IN NORTHERN THAILAND CONSCRIPTED AT THE AGE OF 21 IN 1991, 1993, AND 1995.***

| DATE OF INDUCTION | NO. INDUCTED | NO. HIV-POSITIVE (%) |
|---|---|---|
| 1991 | | |
| May | 935 | 97 (10.4) |
| November | 888 | 111 (12.5) |
| 1993 | | |
| May | 869 | 107 (12.3) |
| November | 798 | 92 (11.5) |
| 1995 | | |
| May | 821 | 55 (6.7) |
| November† | 745 | 51 (6.8) |



Nelson KE et al. N Engl J Med 1996;335:297-303

The NEW ENGLAND JOURNAL of MEDICINE

# 100% Condom Program

- Campaign
  - Widespread
- Administrative
  - Health officials
  - Police
  - Elected officials
  - Accountability


Meechai, “Condom King”

Rojanapithayakorn, AIDS, 1996

# HIV Prevalence in Select Groups Thailand, 1989-1994

**Table 1.** HIV prevalence in various sentinel groups, and commercial sex acts where condoms were used.

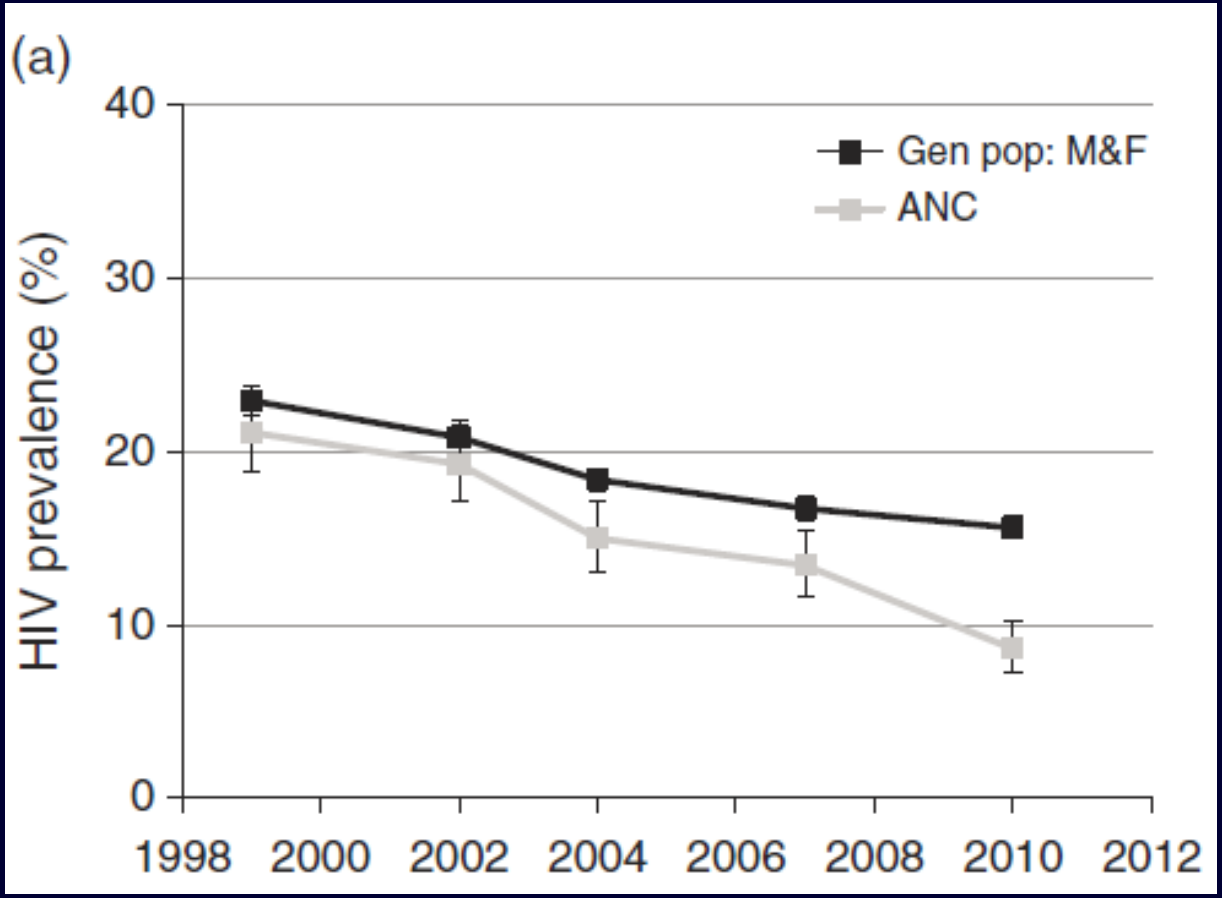
| Date | HIV prevalence (% positive) | | | | Commercial sex acts where condoms were used (%)*§¶ |
|---|---|---|---|---|---|
| | CSW*† | | Pregnant women*† | Army conscripts‡ | |
| | Direct | Indirect | | | |
| 1982–January 1989 | – | – | – | – | ~14 |
| June 1989 | 3.5 | 0.0 | 0.0 | – | 25 |
| December 1989 | 6.3 | 1.2 | 0.0 | 0.5 | 50 |
| June 1990 | 9.3 | 1.2 | 0.0 | 1.6 | 56 |
| December 1990 | 12.2 | 2.7 | 0.3 | 2.1 | 55 |
| June 1991 | 15.2 | 4.0 | 0.8 | 2.9 | 74 |
| December 1991 | 21.6 | 5.4 | 0.7 | 3.0 | 85 |
| June 1992 | 23.8 | 4.7 | 1.0 | 3.6 | 90 |
| December 1992 | 23.9 | 6.5 | 1.0 | 3.5 | 93 |
| June 1993 | 27.1 | 7.5 | 1.4 | 4.0 | 94 |
| December 1993 | 29.5 | 7.7 | 1.5 | 3.4 | 96 |
| June 1994 | 27.0 | 7.7 | 1.8 | 3.3 | 92 |
| December 1994 | 30.6 | 9.5 | 1.6 | 2.7 | – |

Rojanapithayakorn, AIDS, 1996


Mauritania
Mali
Niger
Chad
Sudan
Eritrea
Djibouti
Burkina Faso
Guinea
Cote d'Ivoire
Nigeria
Ethiopia
Cent Afr Rep
Ghana
Togo
Benin
Cameroon
Somalia
Uganda
Kenya
Rwanda
Burundi
Sao Tome & Principe
Equatorial Guinea
Gabon
Congo
Zaire
Tanzania
Comoro Is
Angola
Zambia
Mozambique
Zimbabwe
Namibia
Madagascar
Botswana
Swaziland
South Africa
Lesotho

1998-2011

# HIV prevalence trends in antenatal clinic surveillance with trends in the general population, Manicaland, Zimbabwe, 1998–2011




ANC, antenatal clinic. HIV prevalence (whiskers show 95% confidence intervals) in pregnant women versus those aged 15–49 years in the general population

**Gregson S et al. AIDS, 2015**

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PLoS MEDICINE

Policy Forum

# A Surprising Prevention Success: Why Did the HIV Epidemic Decline in Zimbabwe?

**Daniel T. Halperin[1]*, Owen Mugurungi[2], Timothy B. Hallett[3], Backson Muchini[4], Bruce Campbell[5], Tapuwa Magure[6], Clemens Benedikt[5], Simon Gregson[3,7]**

**1** Harvard University School of Public Health, Boston, Massachusetts, United States of America, **2** Ministry for Health and Child Welfare, Harare, Zimbabwe, **3** Imperial College London, London, United Kingdom, **4** Independent consultant, Harare, Zimbabwe, **5** United Nations Population Fund, Harare, Zimbabwe, **6** Zimbabwe National AIDS Council, Harare, Zimbabwe, **7** Biomedical Research and Training Institute, Harare, Zimbabwe

**Table 1.** Contributions of proximate causes to the HIV decline in Zimbabwe.

| Proximate Cause | Population-Level Effectiveness[a] | Extent of Change[b] | Consistency in Timing of Change[c] | Major Contribution |
|---|---|---|---|---|
| **Behavioral** | | | | |
| Age at first sex - postponement | Low | Low [QN] | Consistent | Unlikely |
| Partner numbers - reduction | High | High [QN & QL] | Consistent | Likely |
| Condom use - increase (in non-marital partnerships) | High (if consistent use) | Moderate [P, QN, QL] | Earlier | Plausible |
| **Biological** | | | | |
| Transmission probability - reduction[d] | High | Low [QN & P] | Earlier | Unlikely |

have been promising breakthroughs in a few other areas, notably male circumcision and prevention of mother-to-child transmission (PMTCT) [1,2,5], it is widely recognized that behavior change must remain the core of prevention efforts [2–4].

While the often cited prevention success stories of Thailand [6] and Uganda [7,8] are

the causes behind the considerable HIV decline in Zimbabwe, including evidence for changes in patterns of sexual behavior and the contextual and possible programmatic reasons for these changes, which we have published in other peer-reviewed journals [13–15]. Here we also consider some policy implications of these findings.

different contextual and programmatic factors to observed changes in behavior. Finally, DHS data on various potential proximal and contextual determinants of behavior change for Zimbabwe were compared with similar data for seven other southern African countries to identify distinctive patterns that might help to

# What do cases tell us?

1) Prevalence can decline
2) Behaviors do change
3) Policy matters
4) Public health investment required

# Dual rapid point-of-care HIV and syphilis tests


- Simplify training
- Streamline procurement
- Ensure testing for both HIV and syphilis
- Improve client experience




# Where do we go?

- Better advocacy for STD and HIV prevention
- Stronger testing and treatment programs with monitoring and accountability
- Consider use of new tools like point-of-care rapid dual tests for HIV and syphilis
- Continue routine screening

# Thank you