

# STI-HIV “Hot Topics” 2018

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The **STATE**  
of **STDs**  
in the United States



in 2016

STDs TIGHTEN THEIR GRIP  
ON THE NATION'S HEALTH  
AS RATES INCREASE FOR A  
THIRD YEAR



**1.59 million**  
CASES OF CHLAMYDIA  
4.7% increase since 2015



**468,514**  
CASES OF GONORRHEA  
18.5% increase since 2015



**27,814**  
CASES OF SYPHILIS  
17.6% increase since 2015

LEARN MORE AT: [www.cdc.gov/std/](http://www.cdc.gov/std/)

Anyone who has sex is  
at risk, but some groups  
are more affected

- YOUNG PEOPLE AGED 15-24
- GAY & BISEXUAL MEN
- PREGNANT WOMEN

LEFT UNTREATED, STDs CAN CAUSE:



INCREASED RISK OF GIVING  
OR GETTING HIV



LONG-TERM  
PELVIC/ABDOMINAL PAIN



INABILITY TO GET PREGNANT OR  
PREGNANCY COMPLICATIONS

HELP INTERRUPT THE STEADY CLIMB IN STDs WITH THESE THREE STEPS:

**TALK**

Talk openly about STDs with  
your partners & healthcare  
providers.

**TEST**

Get tested. It's the only way  
to know if you have an STD.

**TREAT**

If you have an STD, work with  
your provider to get the right  
medicine.



Centers for Disease  
Control and Prevention  
National Center for HIV/AIDS,  
Viral Hepatitis, STD, and  
TB Prevention

## Hot(est) Topics

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- 1. Embracing Complexity / Rising STD Rates –Tensions between HIV Management & Prevention and STIs.**
- 2. Syphilis-HIV**
- 3. STI Pathogen Antimicrobial Resistance and Therapeutic Limitations**

## Other “Hot Topics” Not Discussed Today

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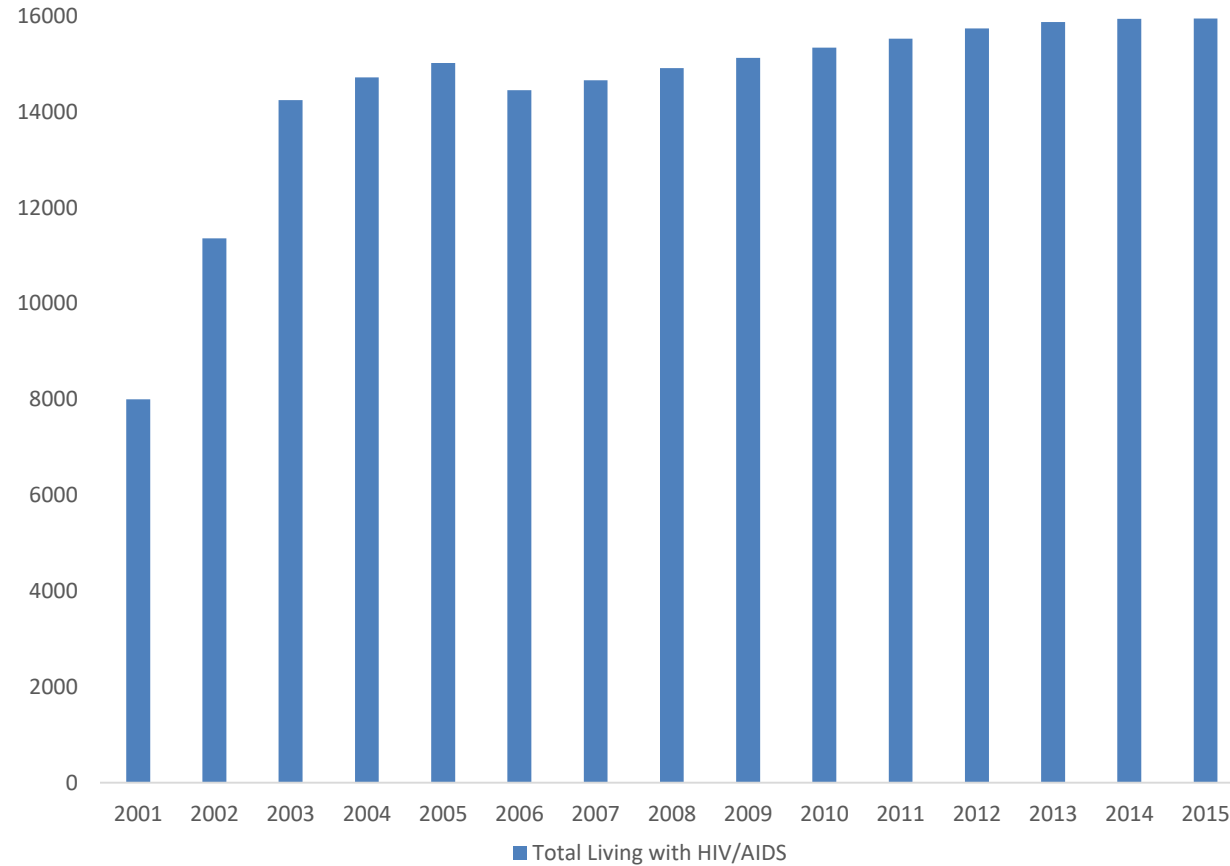
1. **Sexual transmission of Hepatitis C**
2. **Mycoplasma genitalium**
3. **Bacterial vaginosis as a dysbiosis**
4. **Diagnostics**
  - Syndromic**
  - Point of Care**
  - Multiplexed**
5. **Vaccines for STD Prevention**
  - Hepatitis B and A**
  - HPV**
  - In Development**
5. **Sexual transmission of Zika and Ebola**

## Hot(est) Topics

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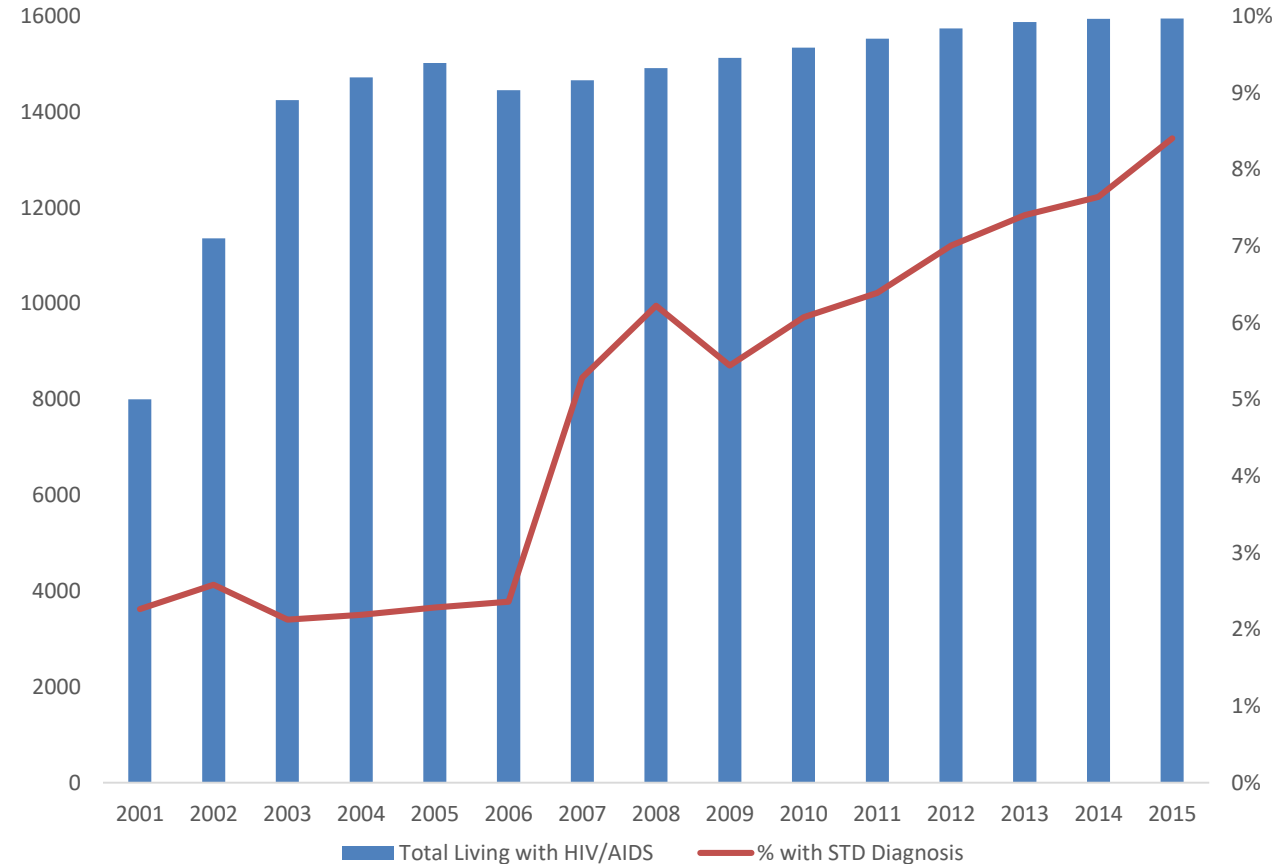
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# More People Living with HIV



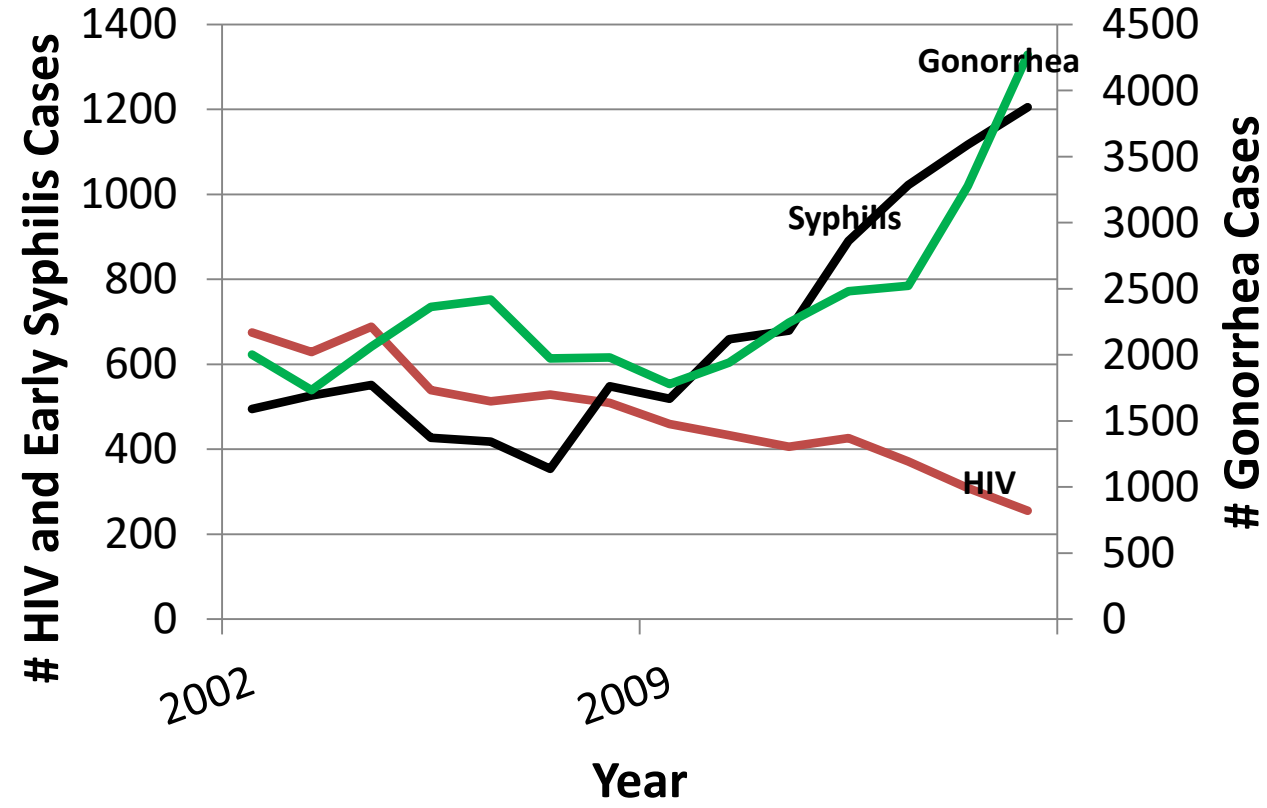
Courtesy of Susan Phillip and the SFDPH Population Health Division, Applied Research Community Health Epidemiology and Surveillance Branch

# More People Living with HIV are Being Diagnosed with an STD



Courtesy of Susan Phillip and the SFDPH Population Health Division, Applied Research Community Health Epidemiology and Surveillance Branch

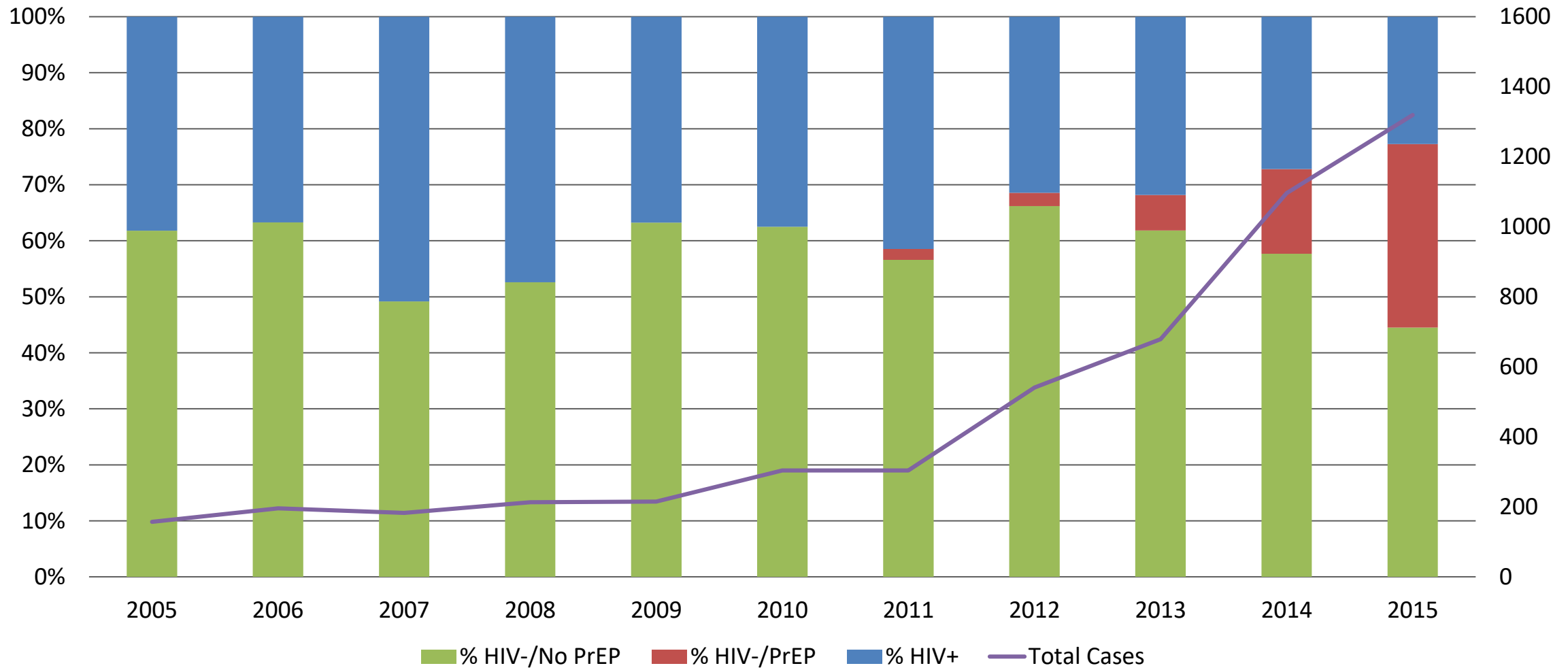
# San Francisco: STD Increasing while HIV Diagnoses Decline



Courtesy of Susan Phillip and the SFDPH Population Health Division, Applied Research Community Health Epidemiology and Surveillance Branch



# Frequency of Any Bacterial STI infection by HIV Status and PrEP Use among Male Patients, Fenway Health



Courtesy of Dr. Ken Mayer, OFID, 2017

## Hot(est) Topics

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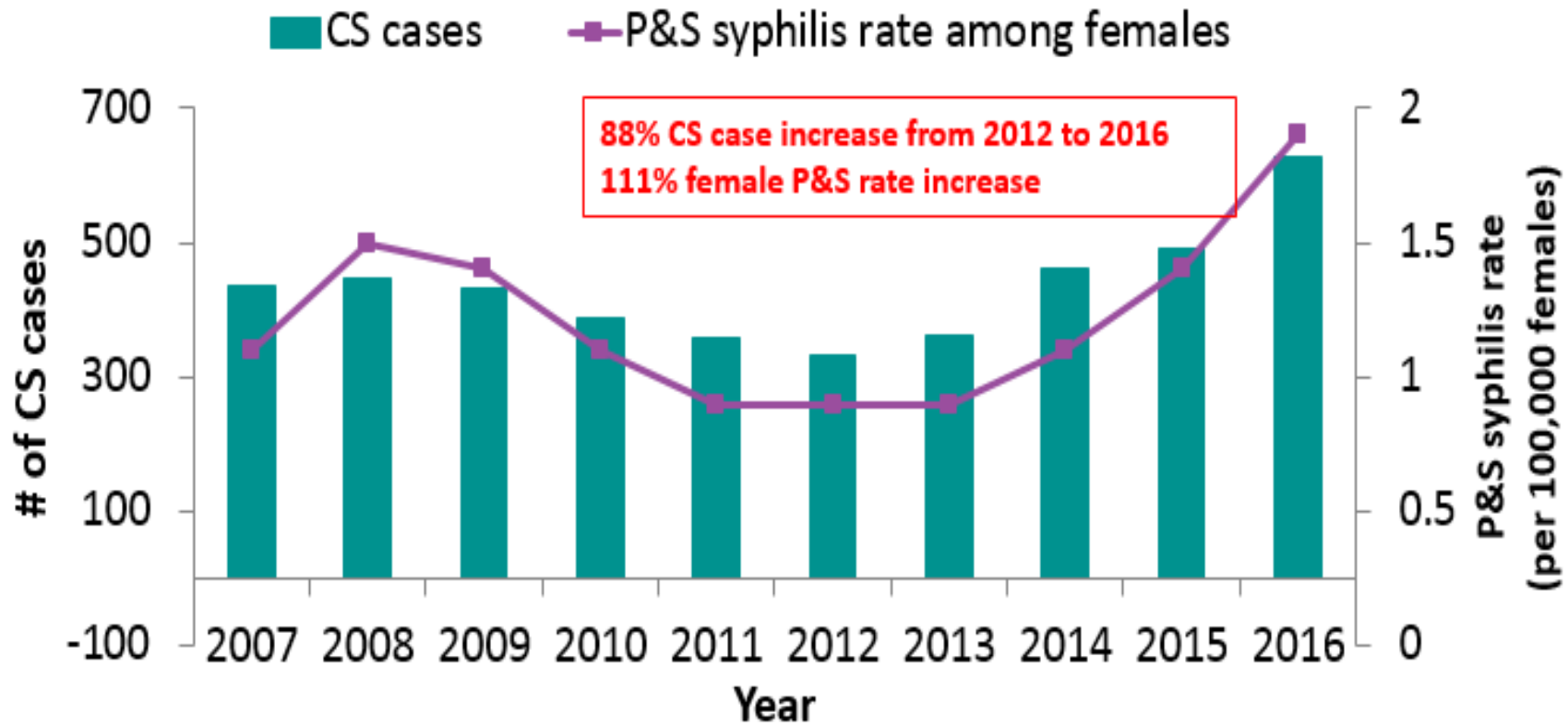
1. **Embracing Complexity / Rising STD Rates –Tensions between HIV Prevention and STIs.**
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# Syphilis: Global Impact

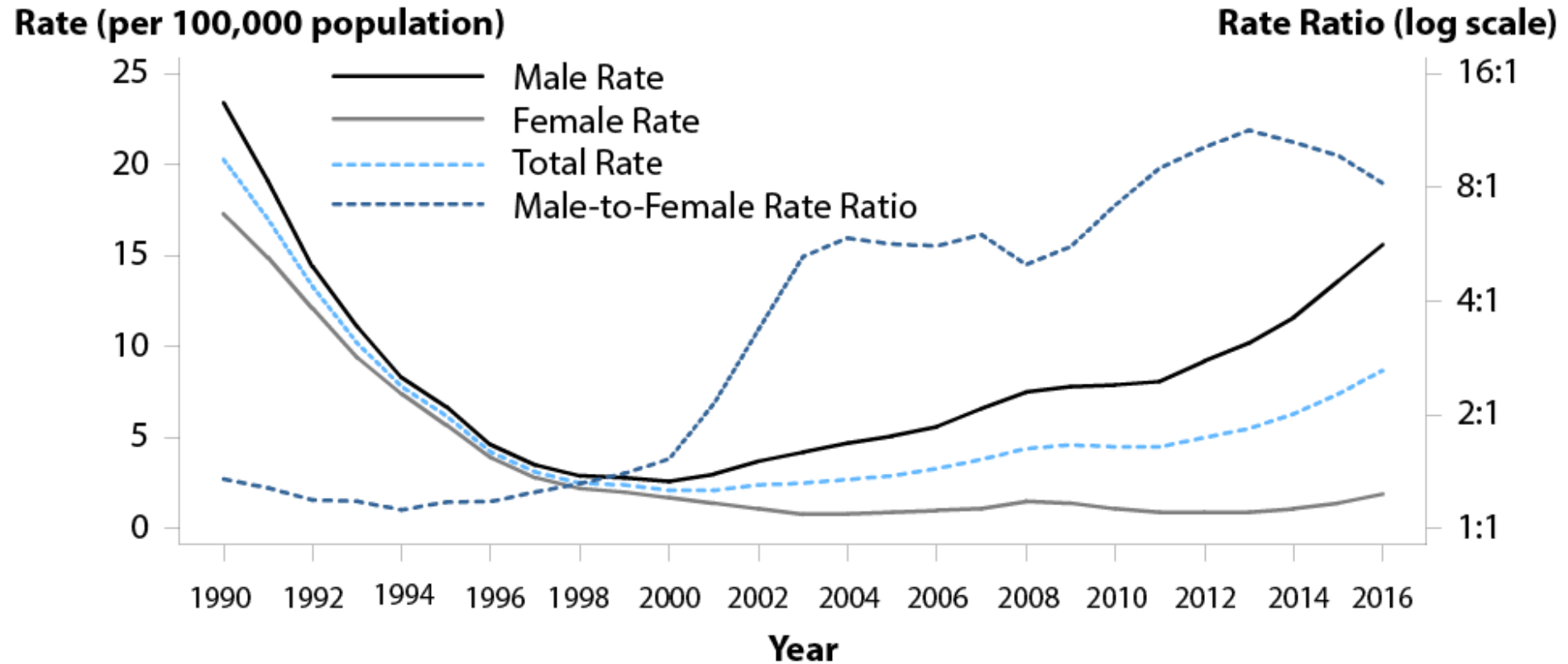
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- 1. Global Perspective**
  - a. 17-20 million cases**
  - b. Most prevalent on the margins of society**
  - c. Leading preventable cause of adverse pregnancy outcomes**
- 2. North America/Western Europe**
  - a. Recurring epidemics**
  - b. Critical consideration GUD diagnosis**
  - c. A diagnostic challenge- protean manifestations**
  - d. A driving force for incident HIV**
  - e. A public health embarrassment**

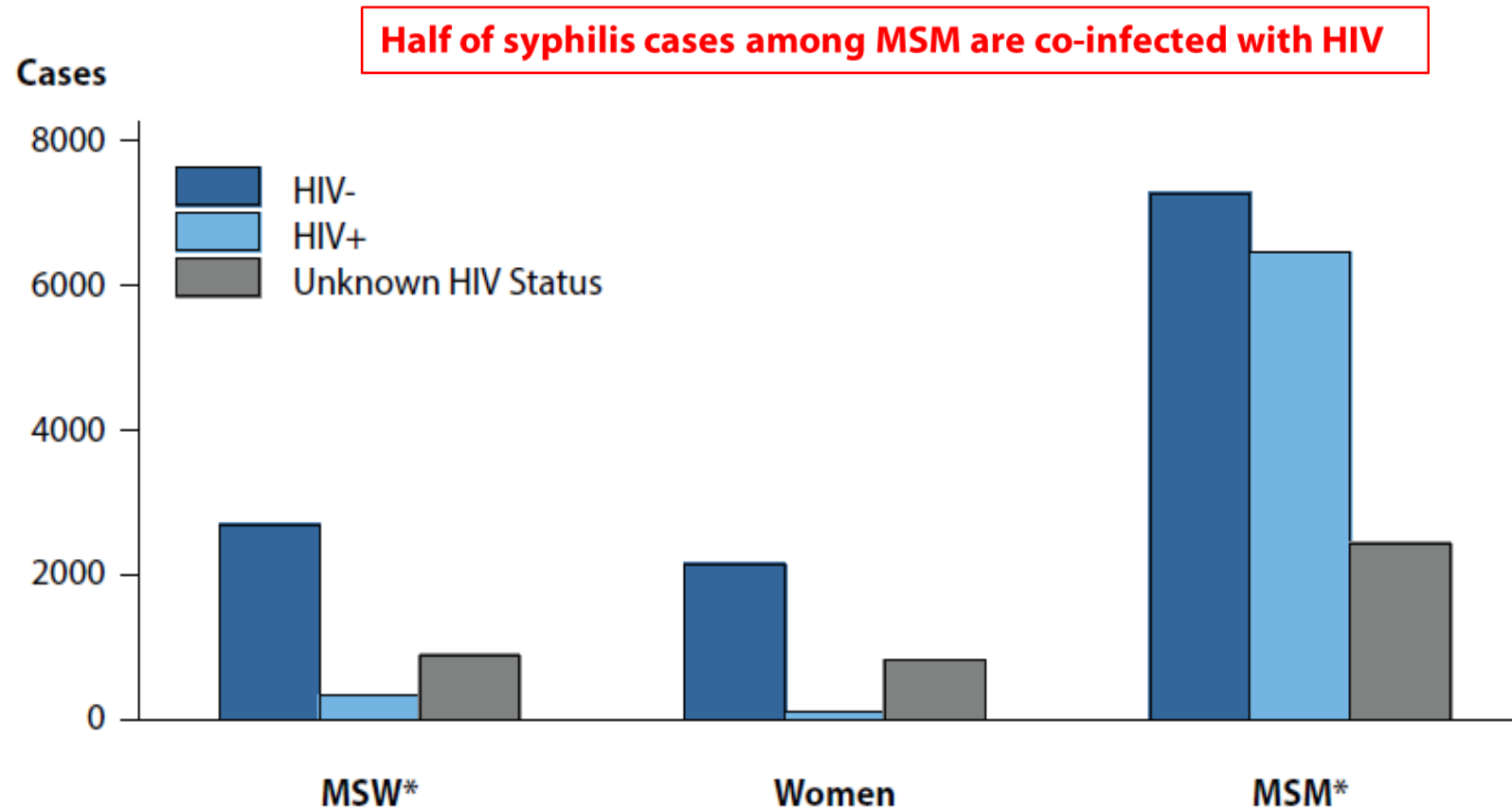
# Congenital Syphilis (CS) Cases and Rate of Primary and Secondary (P&S) Syphilis Among Females, U.S., 2007–2016



# Primary and Secondary Syphilis — Reported Case Rates by Sex and Male-to-Female Rate Ratios, United States, 1990–2016



# Primary and Secondary Syphilis — Reported Cases by Sex, Sexual Behavior, and HIV Status, United States, 2016



\* MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

# Syphilis-HIV Interactions: Epidemiologic Considerations

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**P&S Syphilis 2016: 27,814 (+17%)**

**EL Syphilis 2016: 28,173 (+20%)**

**~50% HIV Infected**

**~20% Previously Infected**

**HIV Incidence Following Syphilis Diagnosis**

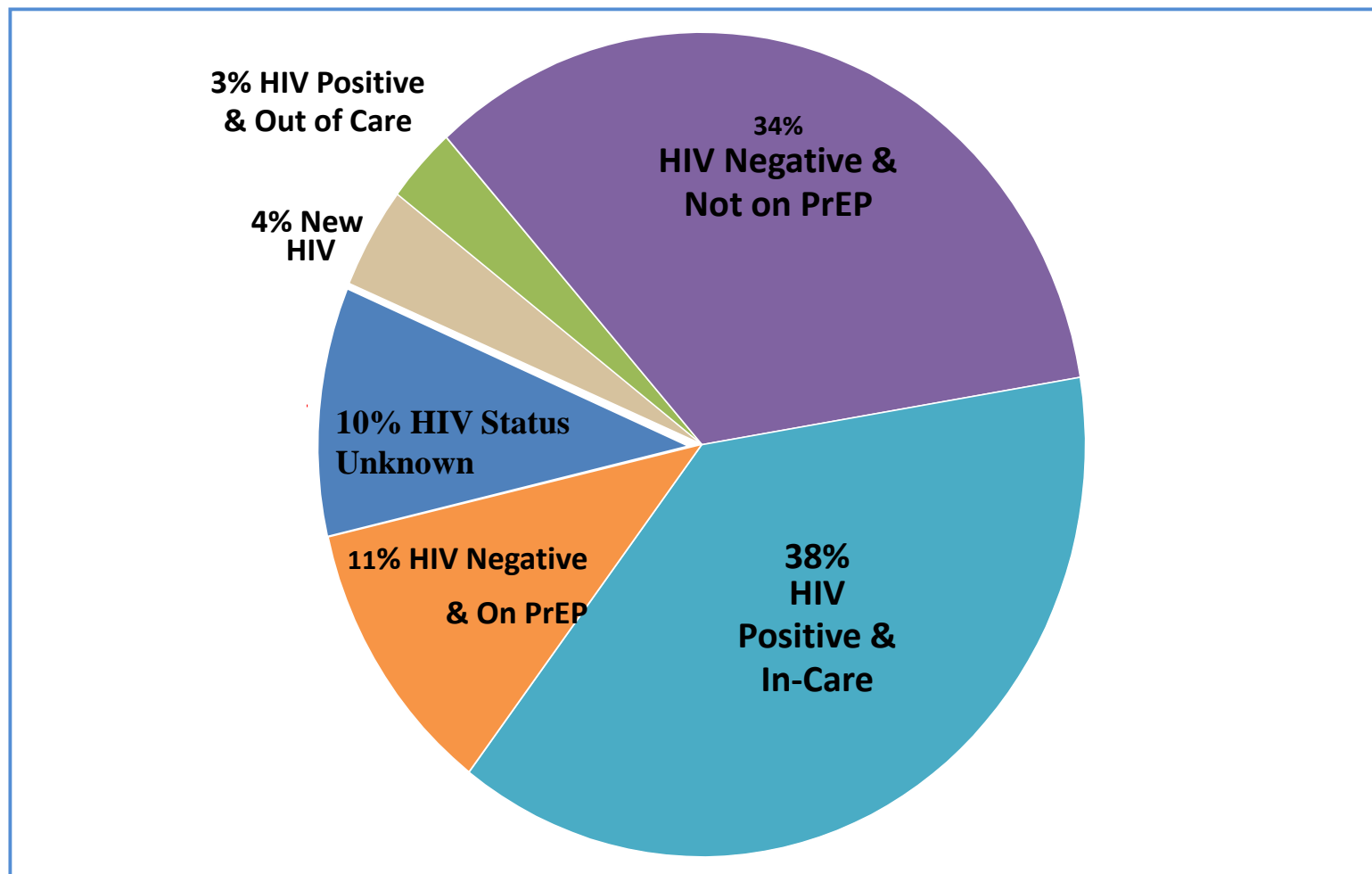
**1 Year = ~3.5%**

**10 Years = 17.5%**

- Peterman et al. Public Health Reports 2014; 129: 184-169
- Pathela et al. Clin Infect Dis 2015; 61: 281-7

# HIV Prevention & Care Opportunities, California MSM, with Early Syphilis, 2017

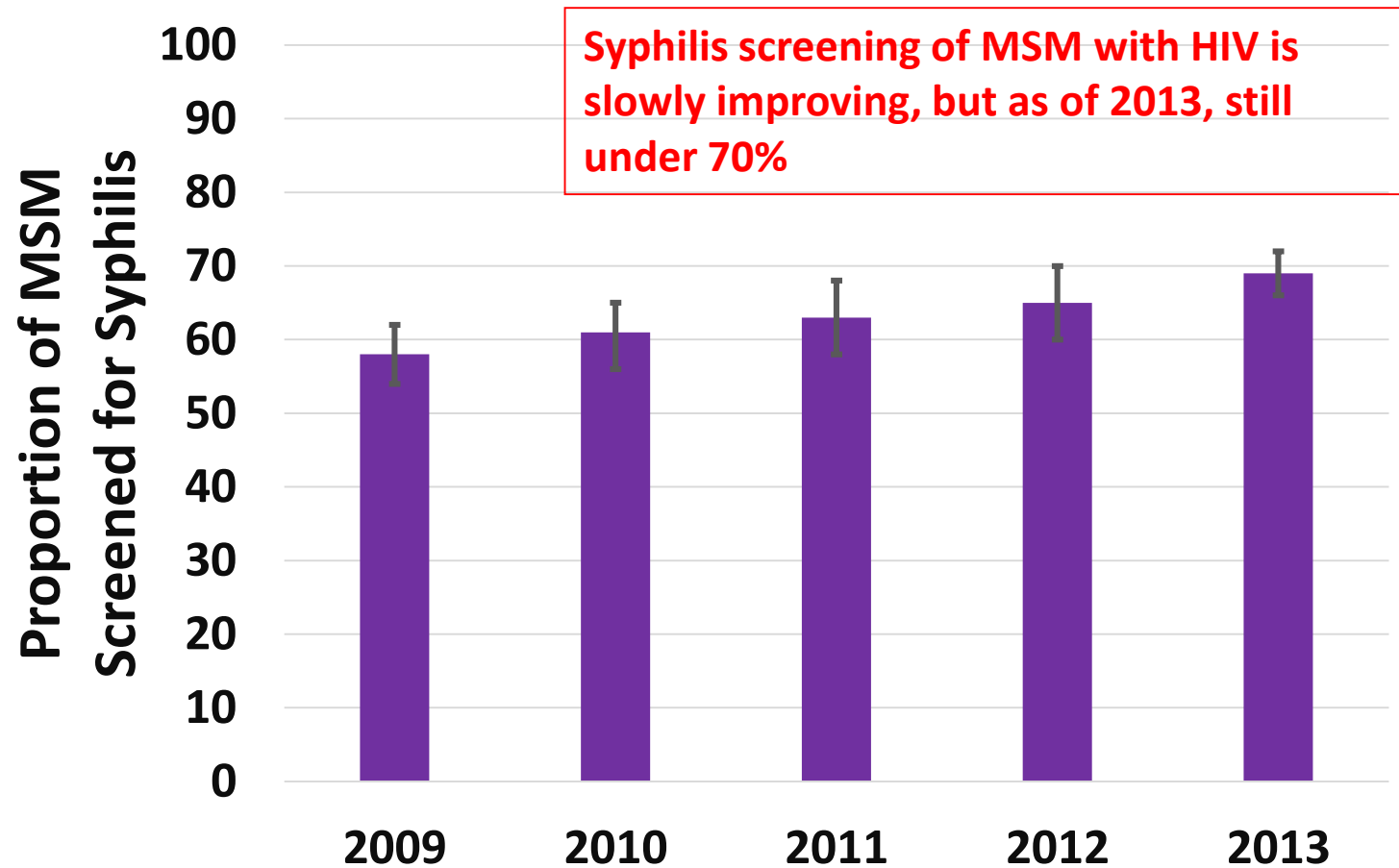
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Courtesy, Dr. Heidi Bauer  
Ca. Dept. of Public Health



# Proportion of Sexually Active HIV-Infected MSM in Medical Care Screened for Syphilis in the Prior 12 Months, Medical Monitoring Project 2009-2013



Test for trend  $p < 0.01$

# 2015 CDC STD TREATMENT GUIDELINES

## Early Syphilis

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- Recommended
- **Benazthine Penicillin G, 2.4 Mu IM**
- Penicillin Allergy
- **Doxycycline 100 mg PO, BID x 14d**
- Limited Data
- **Ceftriaxone 1.0 g IM or IV x 8-10d**
  - **Azithromycin 2.0g PO**

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The NEW ENGLAND JOURNAL of MEDICINE

Perspective  
FEBRUARY 9, 2012

## The Emerging Threat of Untreatable Gonococcal Infection

Gail A. Bolan, M.D., P. Frederick Sparling, M.D., and Judith N. Wasserheit, M.D., M.P.H.

**I**t is time to sound the alarm. During the past 3 years, the wily gonococcus has become less susceptible to our last line of antimicrobial defense, threatening our ability to cure gonorrhea and prevent severe sequelae.

Gonorrhea is the second most commonly reported communicable disease in the United States, with an estimated incidence of more than 600,000 cases annually. It disproportionately affects vulnerable populations such as minorities who are marginalized because of race, ethnic group, or sexual orientation. Unfortunately, *Neisseria gonorrhoeae* has always

Control and Prevention (CDC) are now limited to third-generation cephalosporins.<sup>2</sup>

But susceptibility to cephalosporins has been decreasing rapidly.<sup>3</sup> The proportion of GISP isolates for which the minimum inhibitory concentration (MIC) of cefixime is elevated ( $\geq 0.25 \mu\text{g}$  per milliliter) has increased by a factor of 17 — from 0.1% in 2006 to

(0.04% of those in the GISP) had a MIC of ceftriaxone of  $0.25 \mu\text{g}$  per milliliter in the first half of 2011, the proportion of GISP isolates with an elevated ceftriaxone MIC ( $\geq 0.125 \mu\text{g}$  per milliliter) has increased by a factor of 10 since 2006 (from 0.05% to 0.50%). Again, increases were greatest in the west (from 0.04% to 1.90%) and among men who have sex with men (from 0.0% to 1.0%). These geographic and demographic patterns are worrisome because they mirror those observed during the emergence of fluoroquinolone-resistant *N. gonorrhoeae*.

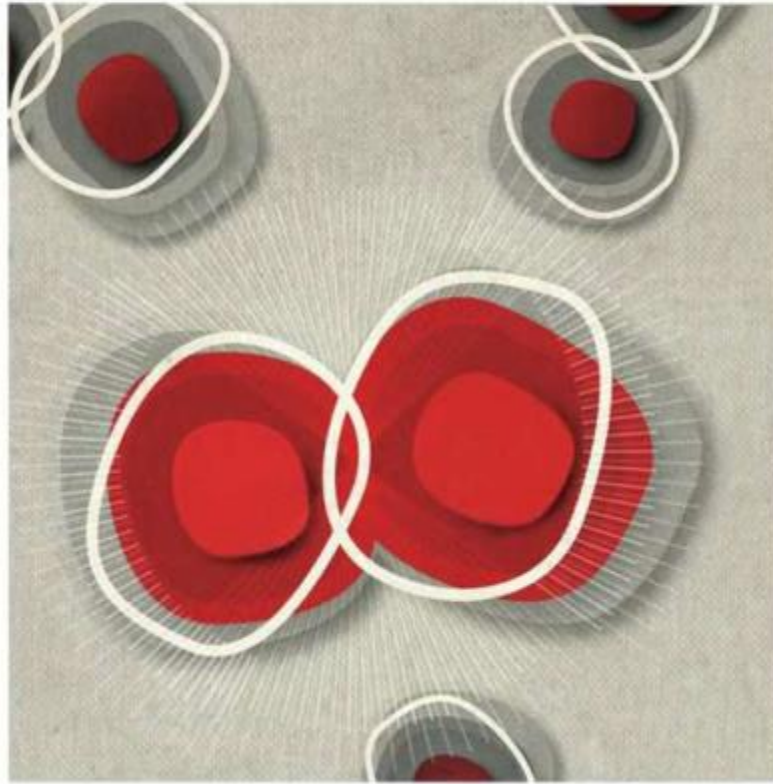
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MEDICAL DISPATCHES

# SEX AND THE SUPERBUG

*The rise of drug-resistant gonorrhea.*

BY JEROME GROOPMAN



*Gonorrhea mutates in the pharynx, making oral sex far more risky than people think.*

*The New Yorker, October 1, 2012*

# **GONORRHEA THERAPY – HISTORICAL PERSPECTIVE**

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## **Previously Recommended Medications For Gonorrhea Therapy**

**Sulfonamides**

**Penicillins**

**Macrolides**

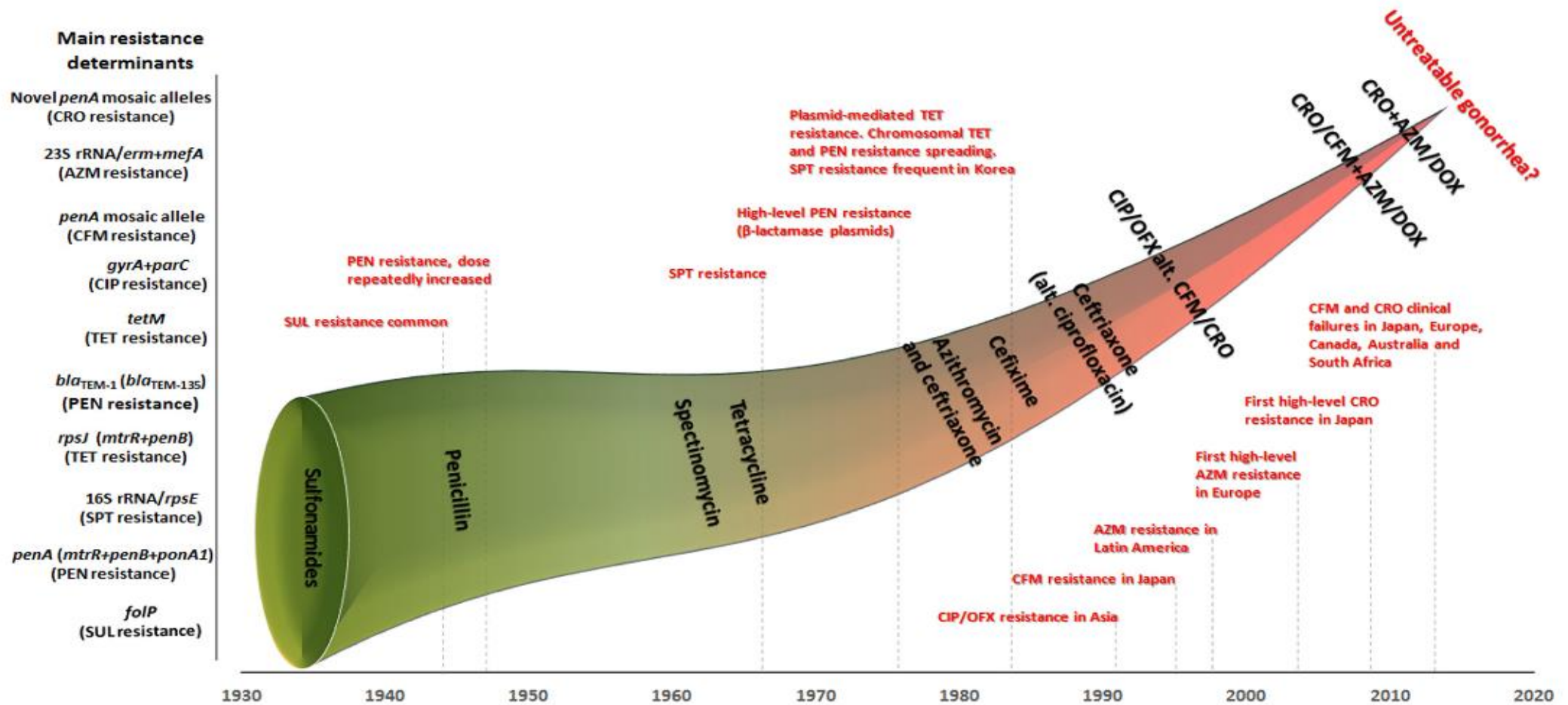
**Tetracyclines**

**Aminoglycosides**

**Spectinomycin**

**Fluroquinolones**

# Gonorrhoea Therapy: The Shrinking Pipeline



**Super Bug Status!**

**Unemo & Shafer  
2014. CMR**

# 2015 CDC STD TREATMENT GUIDELINES

## Uncomplicated Gonorrhea

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**Ceftriaxone 250 mg IM**

**PLUS**

**Azithromycin 1.0 g Single Dose  
PO**



# Gonorrhea Treatment- What's Next

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## Salvage Therapy:

**Gentamicin 240 IM/ Azithromycin 2.0g PO  
(IM Administration/Toxicity)**

**Gemifloxacin 340 mg/Azithromycin 2.0g PO  
(GI Toxicity)**

## On The Horizon:

~~**Solithromycin**~~

~~**Delafloxacin**~~

**Zoliflodacin (ETX 0914 )**

**Gepotidacin (BZT 116570)**

**Others**

# A New Model for STD Treatment Trials

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**Collaborative, multinational trial of Zoliflodacin, a candidate antibiotic for treatment of uncomplicated gonorrhea.**

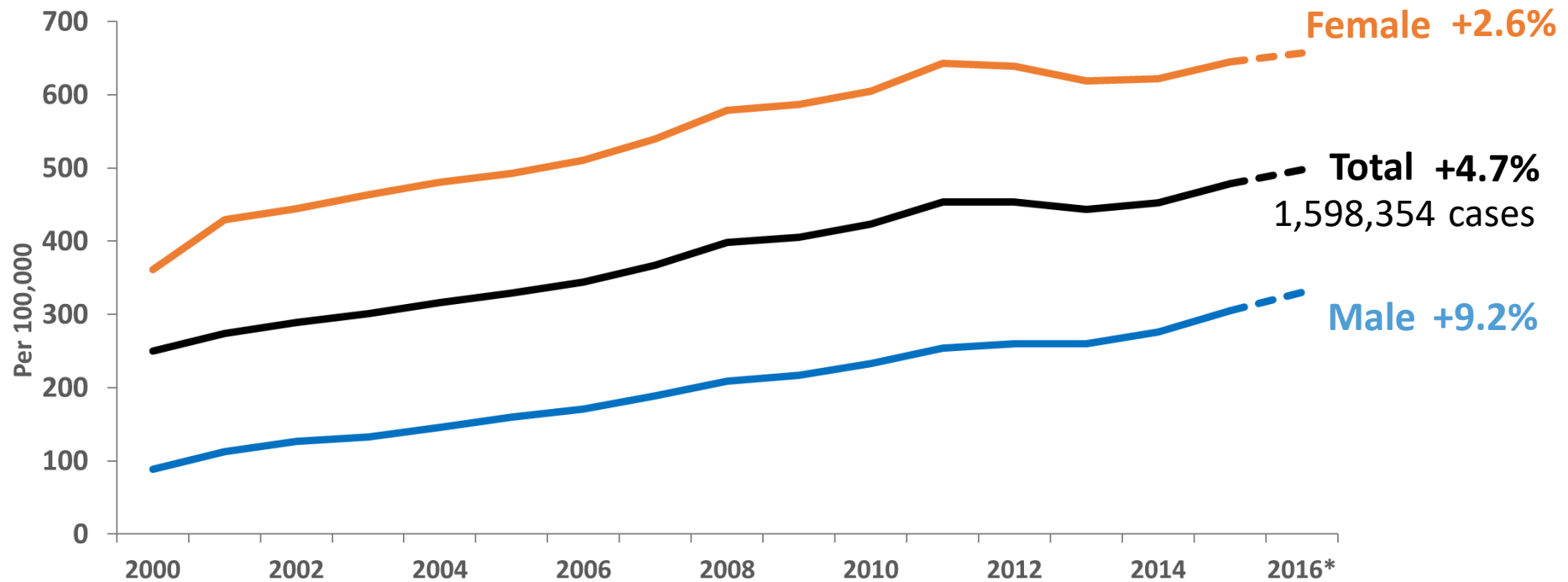
**Led by GARDP ( Global Antibiotic Research and Development Partnership)**

**Collaborators: Entasis Pharmaceuticals, NIAID, WHO**

**Study sites in : U.S. Thailand, South Africa, E.U.**

**Goal: Approval of a non-beta-lactam antibiotic effective vs. resistant gonorrhea**

# Chlamydia — Rates of Reported Cases by Sex, United States, 2000–2016



# STI Pathogen Drug Resistance and Therapeutic Limitations

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1. **Gonorrhea:**
  - a. **Progressive resistance, limited alternative therapeutics**
  - b. **Variation in therapeutic efficacy by site of infection**
2. **Chlamydia trachomatis:**
  - a. **Azithromycin efficacy**
3. **Syphilis:**
  - a. **Global penicillin shortages**
  - b. **Lingering question as to optimal therapy**
    - i. **Impact of HIV infection**
    - ii. **Serological response to therapy**
4. **Trichomoniasis**
  - a. **Optimal therapy**
5. **Bacterial vaginosis**
  - a. **Poor therapeutic response, high recurrence rates**

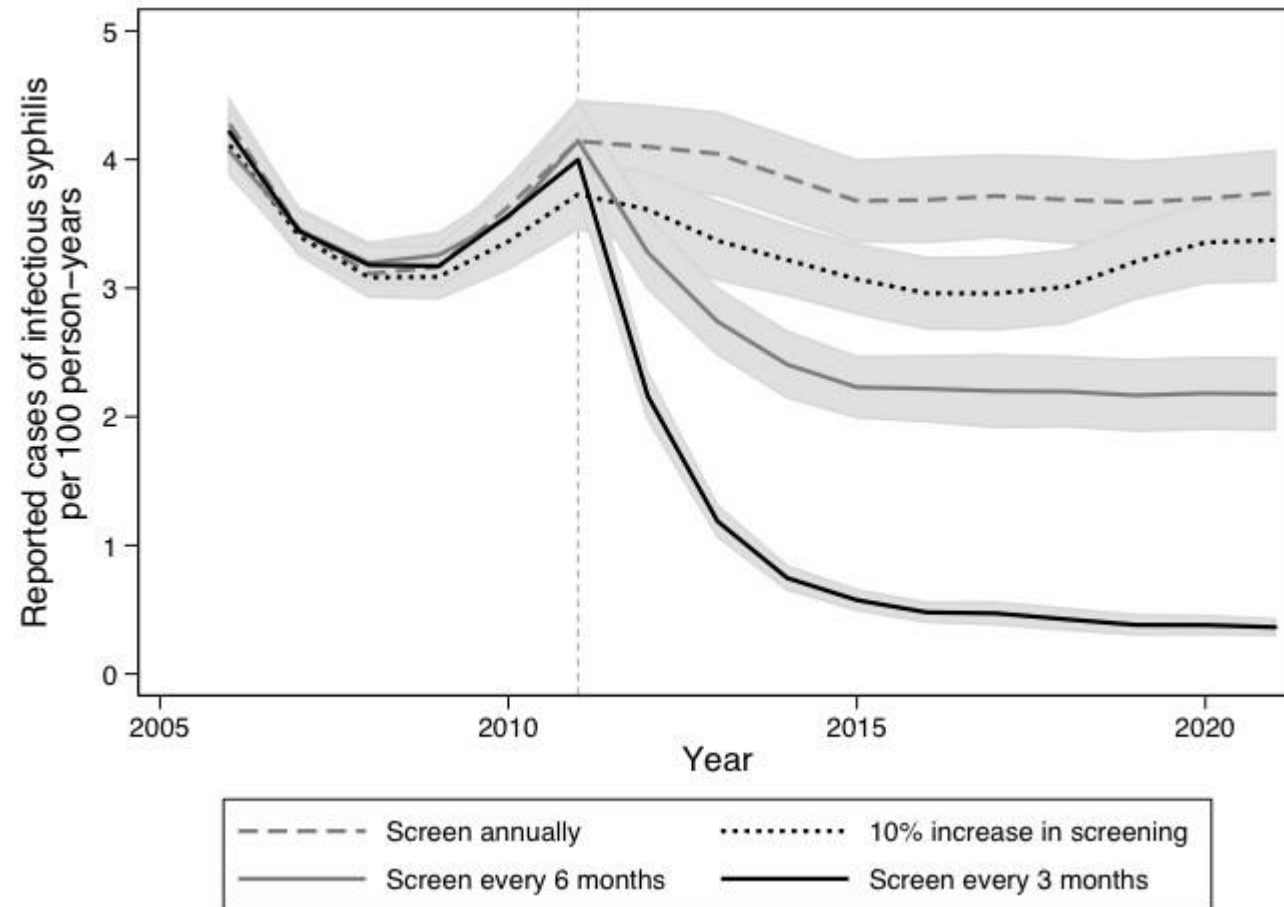
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**Thank You**

# Impact of Screening Frequency on Syphilis Incidence



Tuite AR, Fisman DN, Mishra S. Screen more or screen more often? Using mathematical models to inform syphilis control strategies. *BMC Public Health* 2013;13:606.

# TREATMENT OF EARLY SYPHILIS IN HIV-INFECTED AND UNINFECTED PERSONS

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## Proportion of Subjects with RPR Decline $\geq 2$ Dilutions

	<u>3 Mo.</u>	<u>6 Mo.</u>	<u>12 Mo.</u>
<b>Treatment Group</b>			
<b>Usual</b>	<b>75% (175)</b>	<b>76% (157)</b>	<b>82% (137)</b>
<b>Enhanced</b>	<b>71% (189)</b>	<b>81% (172)</b>	<b>83% (144)</b>
<b>HIV-Status</b>			
<b>Positive</b>	<b>62% (76)*</b>	<b>82% (69)</b>	<b>79% (61)</b>
<b>Negative</b>	<b>76% (287)</b>	<b>81% (259)</b>	<b>84% (219)</b>

\*P < 0.05

From Rolfs et al, NEJM 1997; 44: 307-14