The Battle Against STDs: New Prevention Strategies and Old Foes

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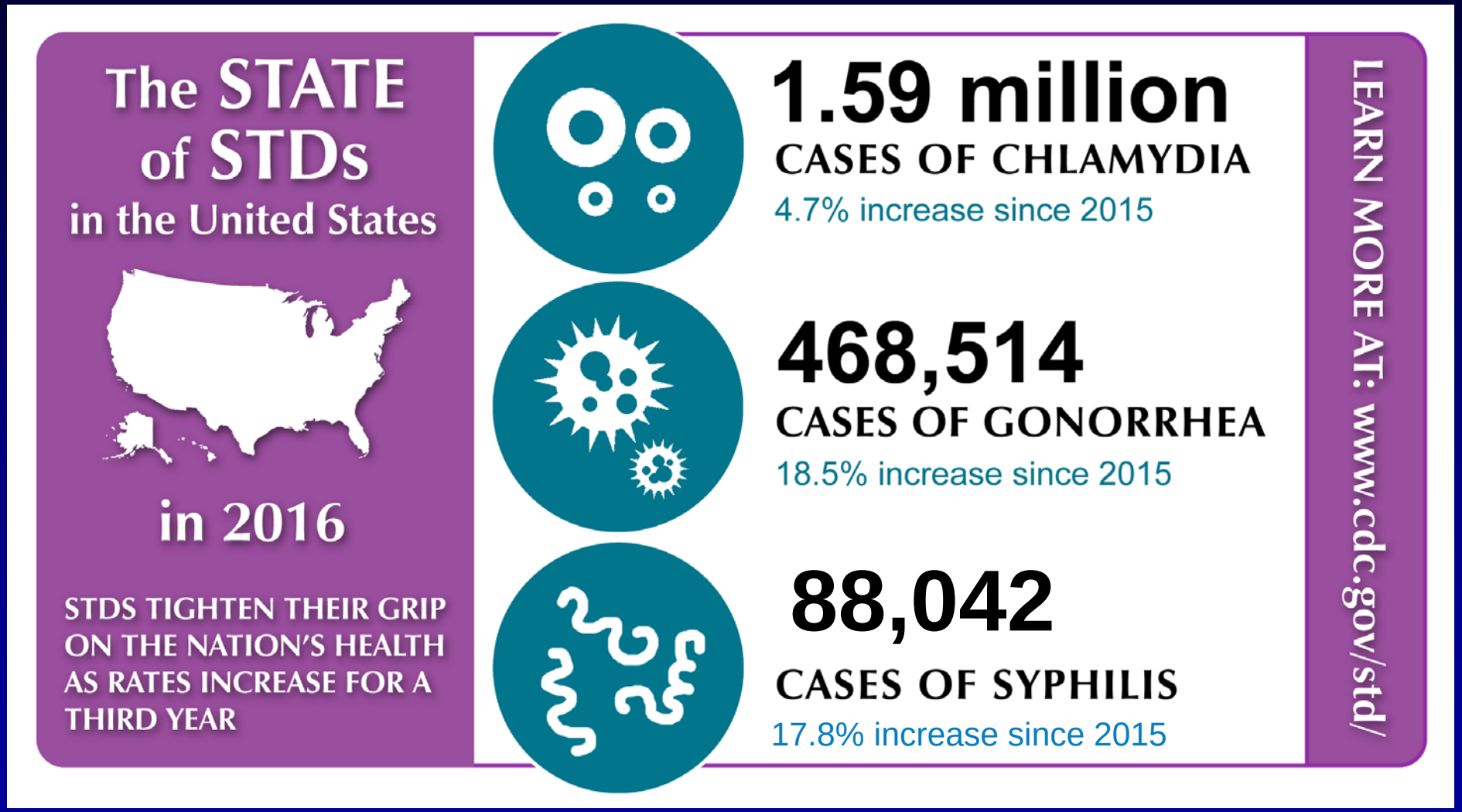
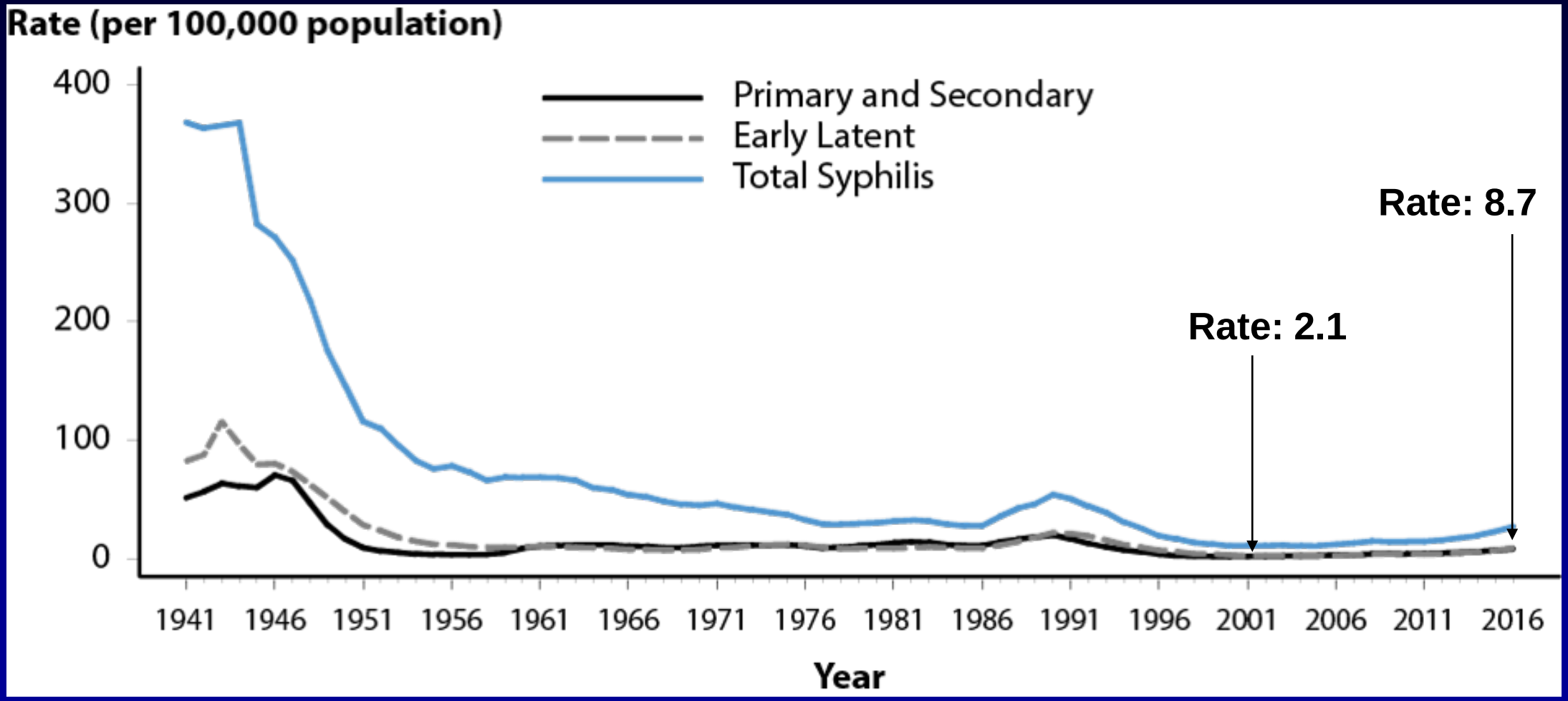
CDC

NCSD Engage
2017 Annual Meeting
Washington, D.C.
November 15, 2017

Rates of Reported STDs Increased for Third Consecutive Year in 2016

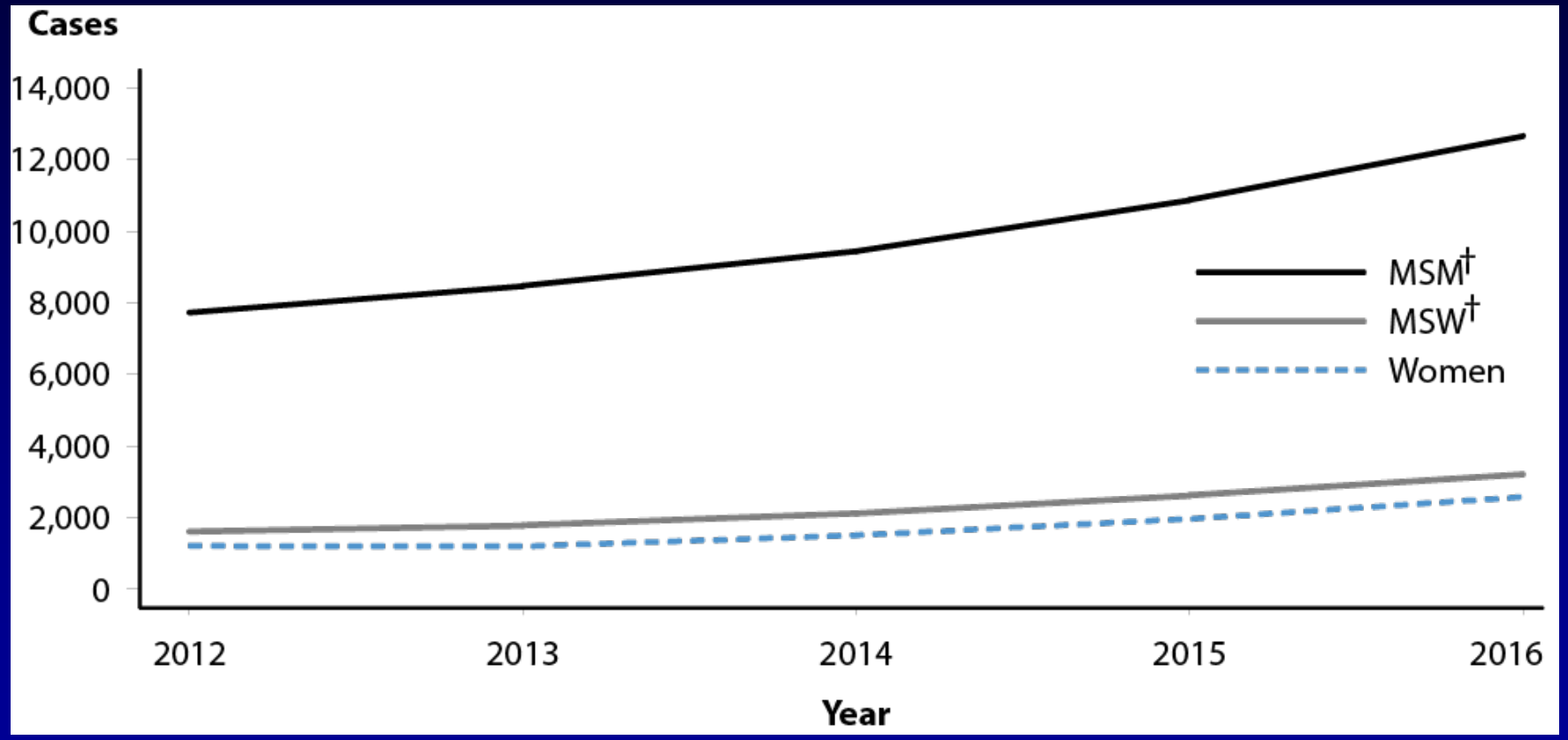


Syphilis Strikes Back: Rising Primary and Secondary Syphilis Rates since 2001



CDC. 2016 STD Surveillance Report

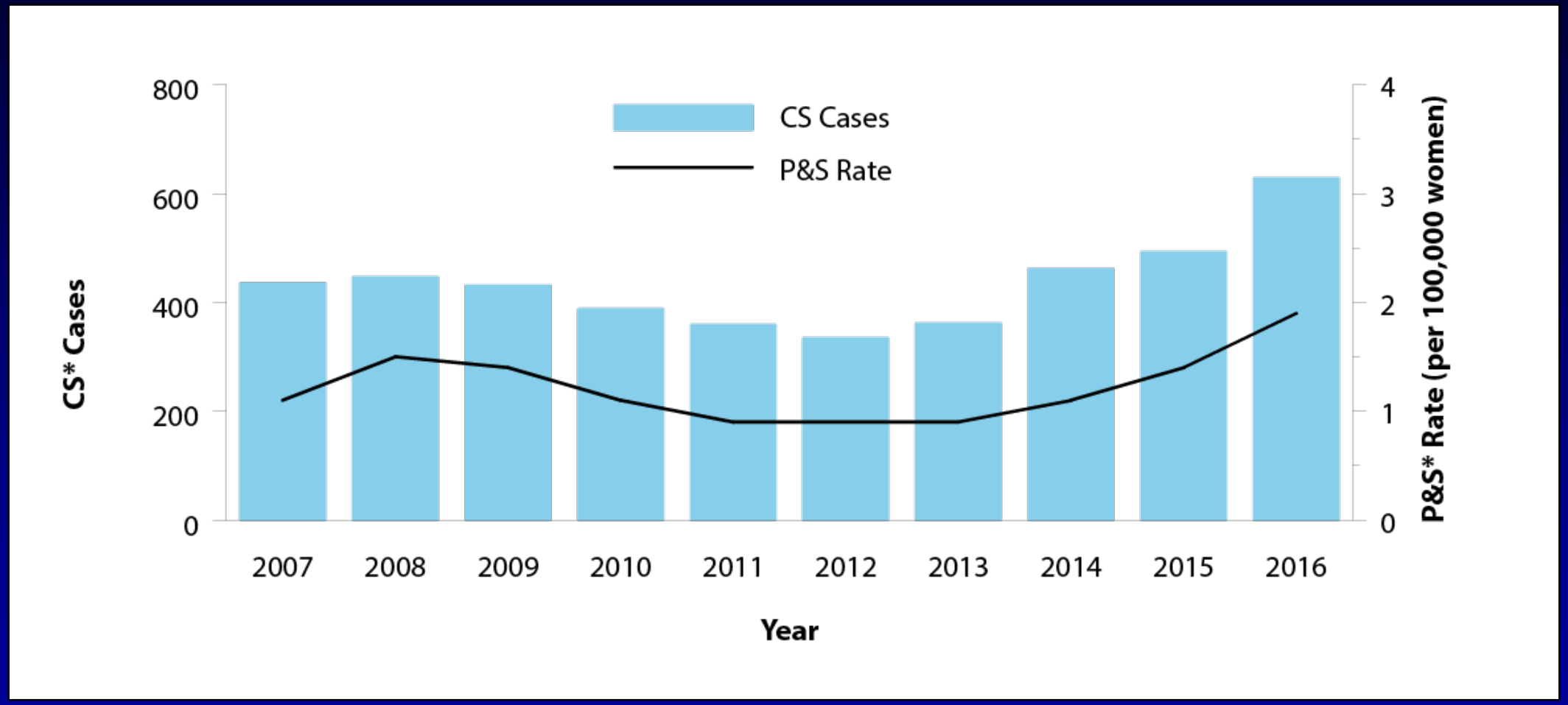
Majority of Primary and Secondary Syphilis Cases Are among MSM



- MSM account for >58% of P&S syphilis cases
- Among MSM who have P&S syphilis, about half also have HIV

CDC. 2016 STD Surveillance Report

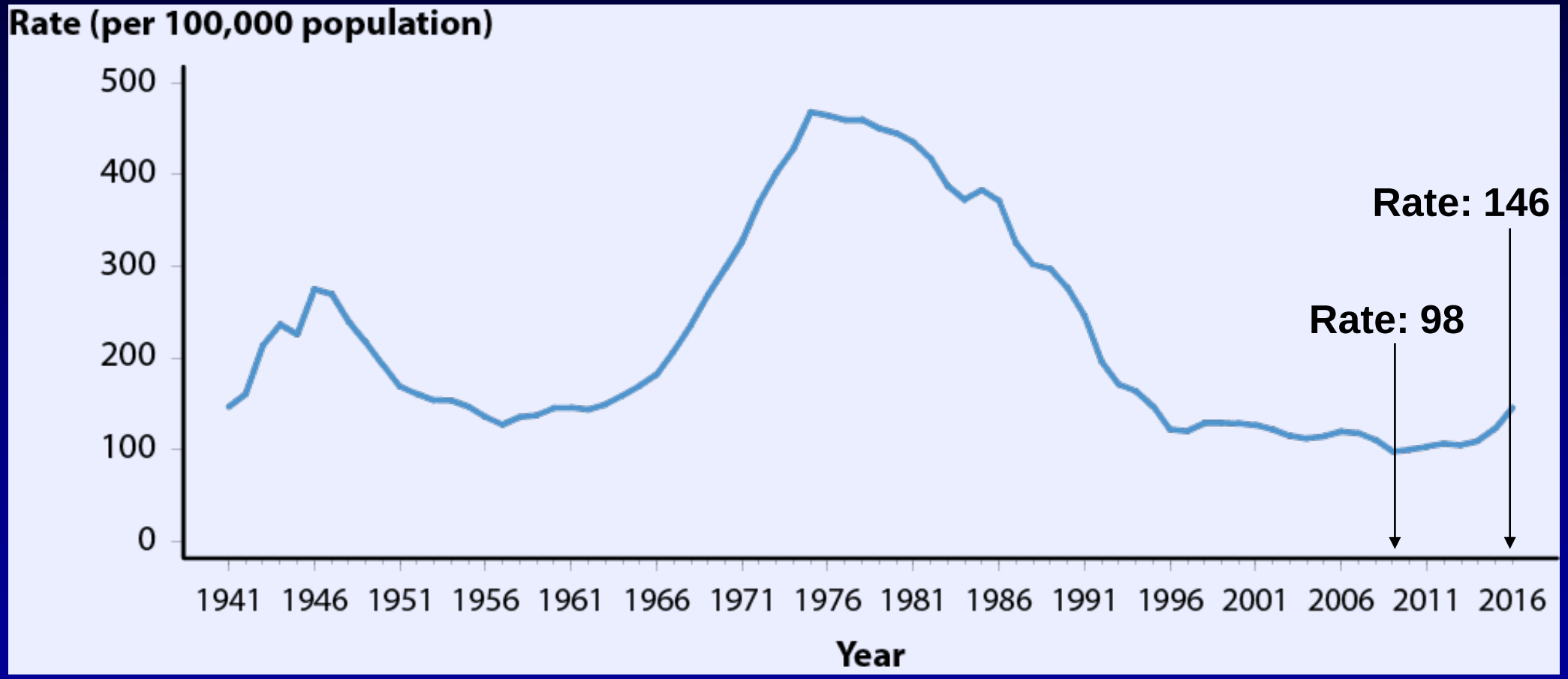
Congenital Syphilis Cases and Rates of Primary and Secondary Syphilis among Females Have Risen



CDC. 2016 STD Surveillance Report

88% congenital syphilis case increase from 2012 to 2016
111% female P&S rate increase in same period

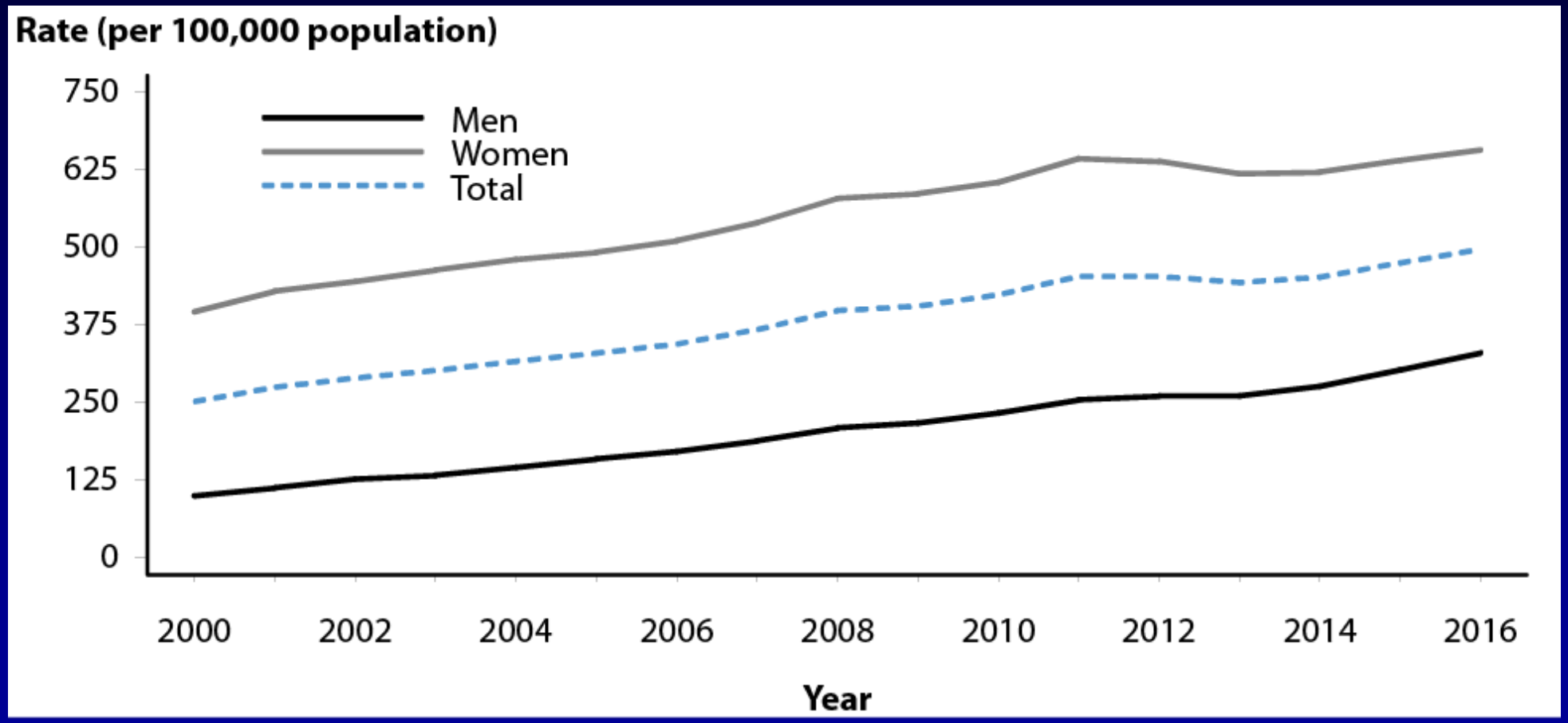
U.S. Gonorrhea Rates Have Risen from Historic Low in 2009



~25% of gonorrhea cases are in MSM

CDC. 2016 STD Surveillance Report

Total U.S. Chlamydia Rate Doubled from 2000-2016

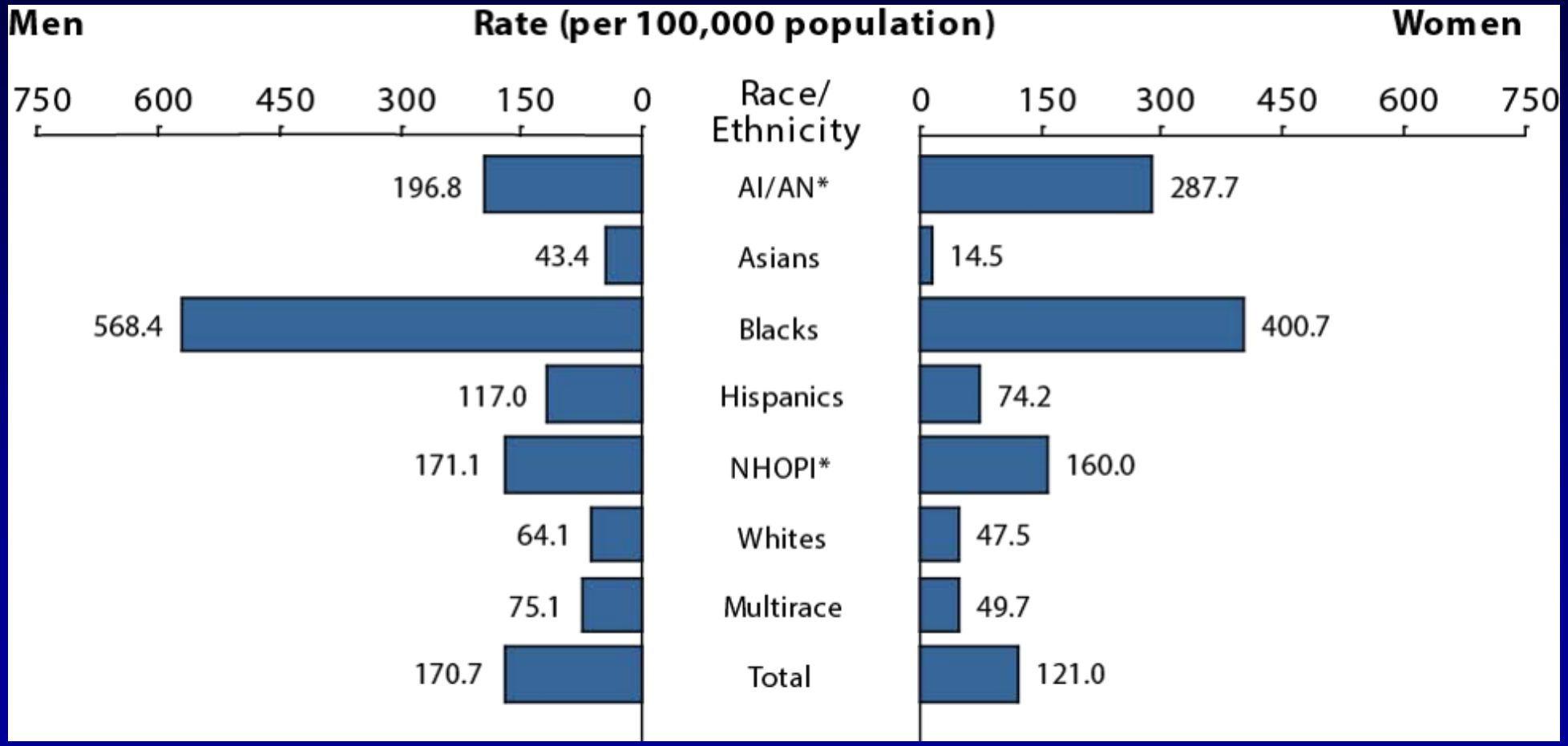


Women:
657 cases

Men:
331 cases

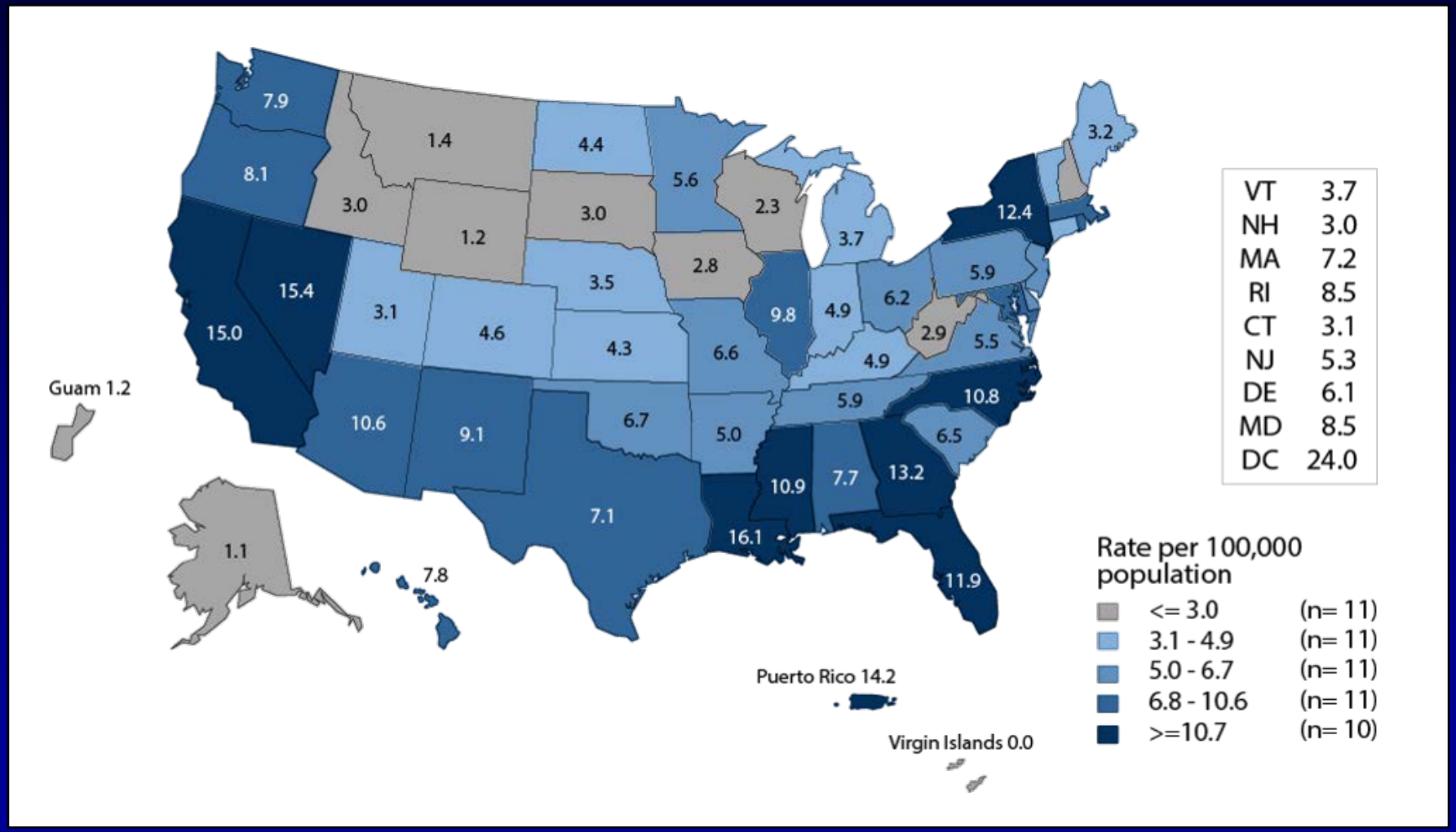
CDC. 2016 STD Surveillance Report

Highest Rates of Gonorrhea among Blacks, American Indian/ Alaska Natives, and Native Hawaiians/Other Pacific Islanders



CDC. 2016 STD Surveillance Report

Reported Rates of Primary and Secondary Syphilis Vary by State



CDC. 2016 STD Surveillance Report

What do we do now?

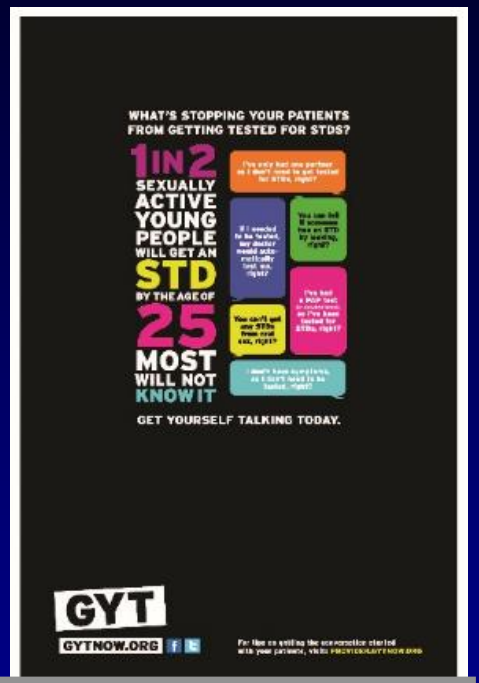
7 Big Kahuna Questions

1. What is the new generation of sexual risk messaging in a time when STD and HIV prevention are diverging?
2. What are the science and program breakthroughs that will make the healthy choice the easy choice?
3. Do dating apps help or hurt STD prevention?
4. How can we implement truly routine STD testing and screening?
5. What can we do to strike back at syphilis?
6. How do we cope with rising gonorrhea antimicrobial resistance?
7. What is the best use of resources to reduce STD incidence?

What is the new generation of sexual risk messaging in a time when STD and HIV prevention are diverging?

What is the new generation of risk messaging?

- "Protection" is no longer restricted to condoms and sexual risk avoidance
- Serosorting, PrEP, and antiretroviral treatment-associated HIV viral suppression are increasingly being used to prevent HIV acquisition and transmission
- Condoms are less frequently being used
- Where does this leave STDs?



Condoms still being used, but not often

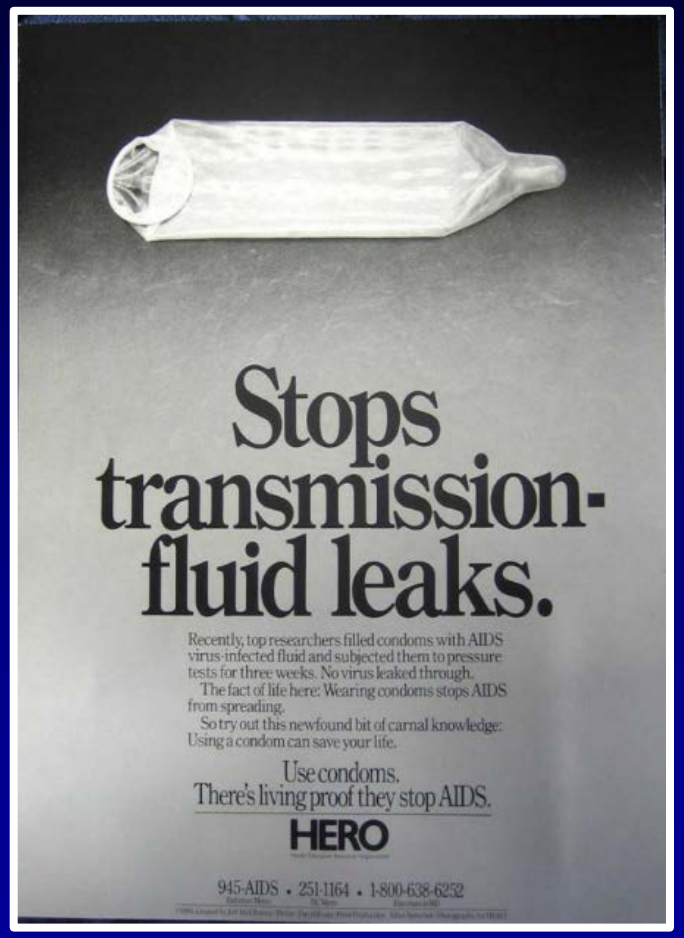
- In national sample, 57% of adolescents reported condom use during last sex
  - 21% of women and 29% of men of all ages reported condom use
  - More likely to use with casual than "relationship" partner

- Couples stop using condoms over time

CDC YRBSS 2015; Nusrallah *J Sex Med* 2017; 7 (suppl 5)

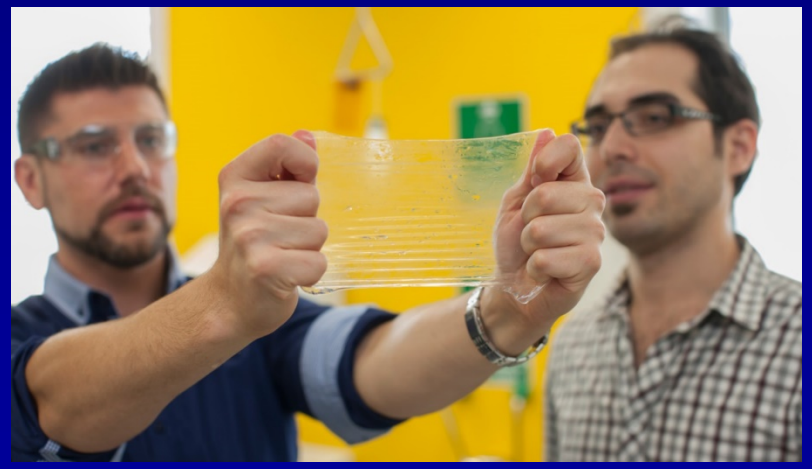
Condom distribution interventions are effective

- Condom use greatly reduces STD acquisition
- Condom distribution effective in variety of target populations
  - Meta-analysis of 21 studies showed doubling of condom use, 30% reduction in STDs, and delayed sexual debut
  - Cost-saving in study among at risk women



Weller *Cochrane* 2002; Charania *AIDS and Behavior* 2010

What are the science and program breakthroughs that will make the healthy choice the easy choice?



Can the healthy choice be easy choice?

Making default option safer, for example:

- **Effective microbicide for vaginal and anal sex inexpensive and safe enough to be in all lubricants and condoms**
- **Rapid syphilis test that accurately diagnoses current treponemal infection**
- **All oral treatment for gonorrhea that would make expedited partner therapy simpler**
- **Vaccines for syphilis, HSV-2, gonorrhea, chlamydia**
- **Using apps and web for partner services**
- **Point-of-care *N. gonorrhoeae* resistance testing**
- **Making a condom that feels better than alternative**

Do dating apps help or hurt STD prevention?

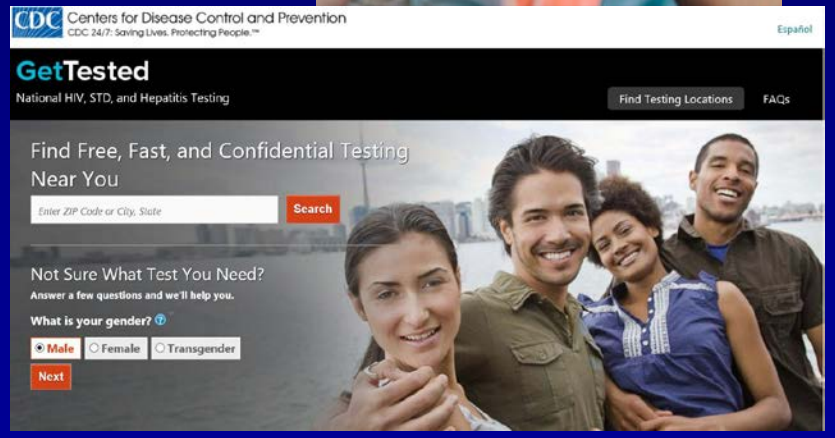
Dating Websites and Apps Challenge to STD Prevention

- 56% of 3,100 MSM surveyed were frequent users of websites and apps
  - Two thirds of frequent users had only casual partners in last year and had higher number of partners than those who did not use sites
- Survey of NYC MSM using dating app found one-third who had never had HIV test identified themselves as HIV negative
  - One-third of whom had unprotected anal intercourse in last 3 months

Badal H, et al, *AIDS and Behavior*, 2017; Rendina HJ, et al, *AIDS and Behavior*, 2014.

Dating Apps Can Link to Information and Testing

- California health department increased outreach to MSM 14-fold via app
- 64% of 450 gay and bisexual men in North Carolina taking online survey wanted STD prevention information via a dating app; 63 received testing referrals
- In Los Angeles, distributed free HIV self-tests via app ad, receiving 334 requests for tests



Lampkin D et al, *JAIDS* 2016; Sun CJ et al., *AIDS and Behavior*, 2015; Huang E et al., *AIDS Education and Prevention*, 2016.

How Apps Can Help: Promoting Prevention

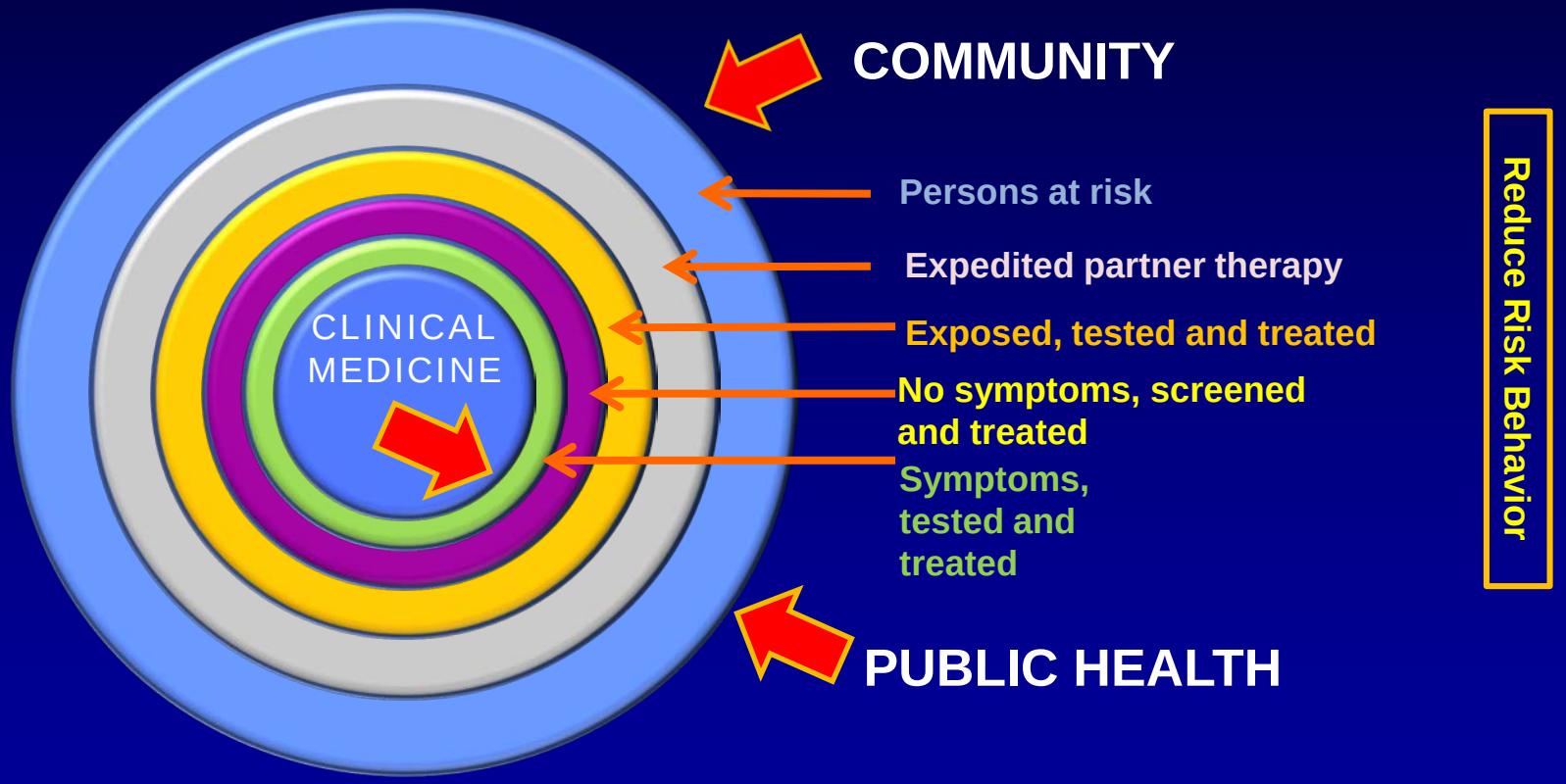
- Building Healthy Online Communities (BHOC) consortium of public health leaders and dating site owners

- BHOC Strategies:
  - Including safer sex preference as a profile option
  - Online STD testing directory searchable by zip code
  - Online partner notification with e-cards
  - Automatic STD testing reminders at users' choice of intervals
  - Filtering partners by profile information
  - Access to sexual health experts

How can we implement truly routine STD testing and screening?

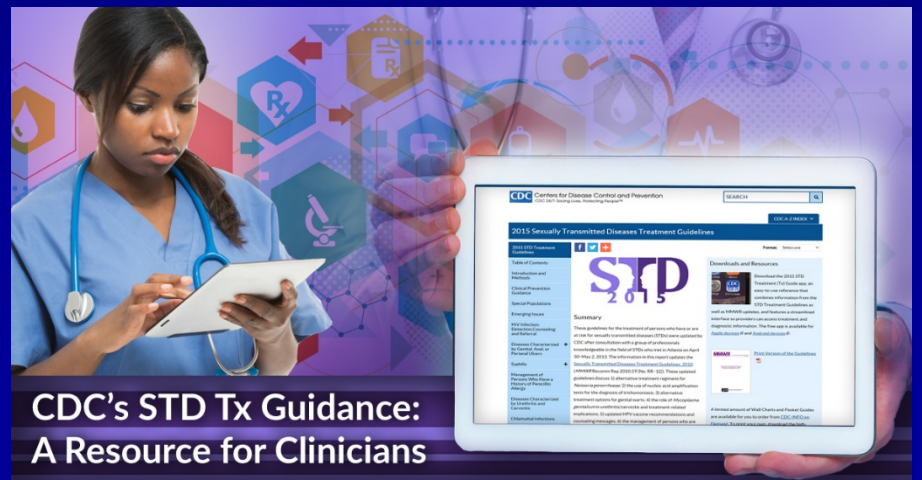
World of STD Risk

Clinical Medicine, Community, and Public Health



Collaboration Between Providers and Public Health

- CDC *STD Treatment Guidelines* available as app
- Electronic medical record screening prompts for providers
  - Helped identify 16% of cases in recent multistate syphilis outbreak of 134 cases on American Indian reservation
- Private providers key
  - Private physicians report 29% of syphilis, chlamydia and gonorrhea cases
- STD Clinical Consultation Network

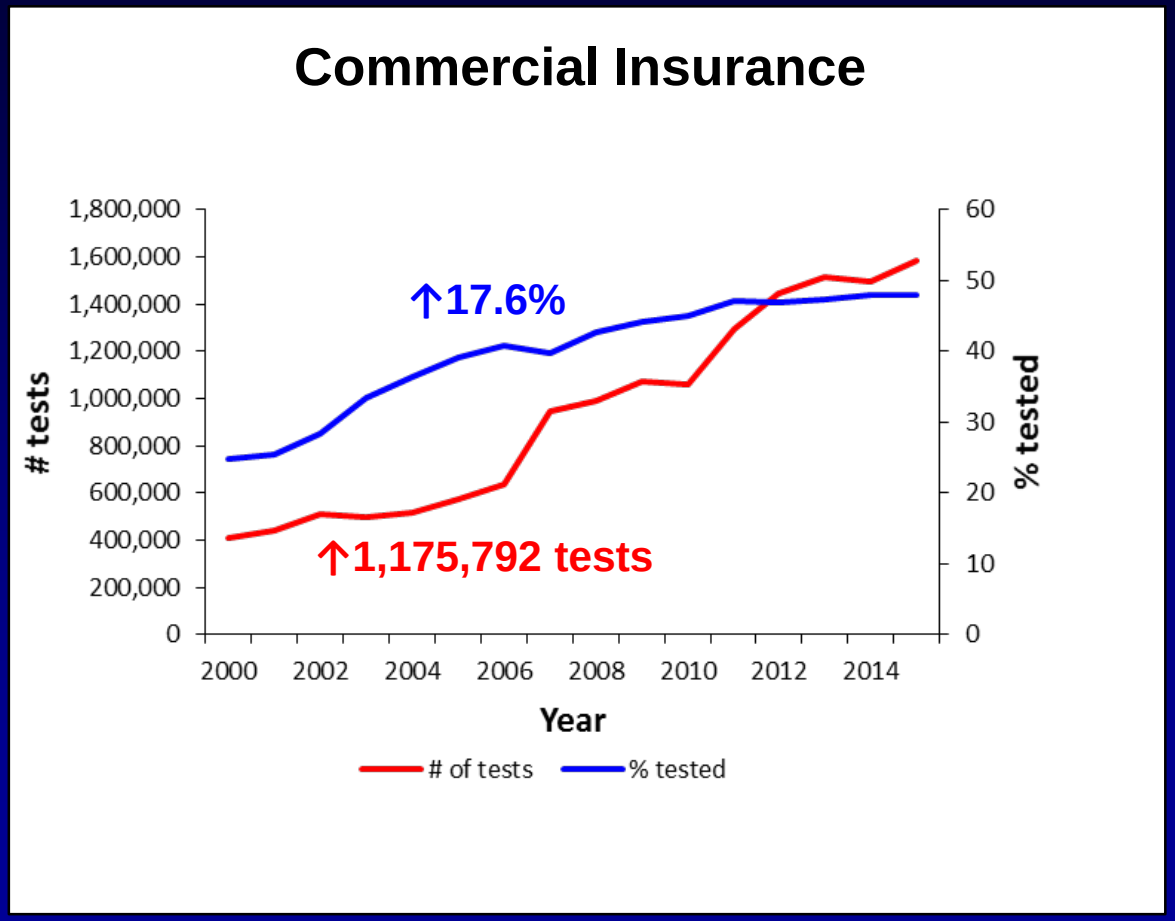


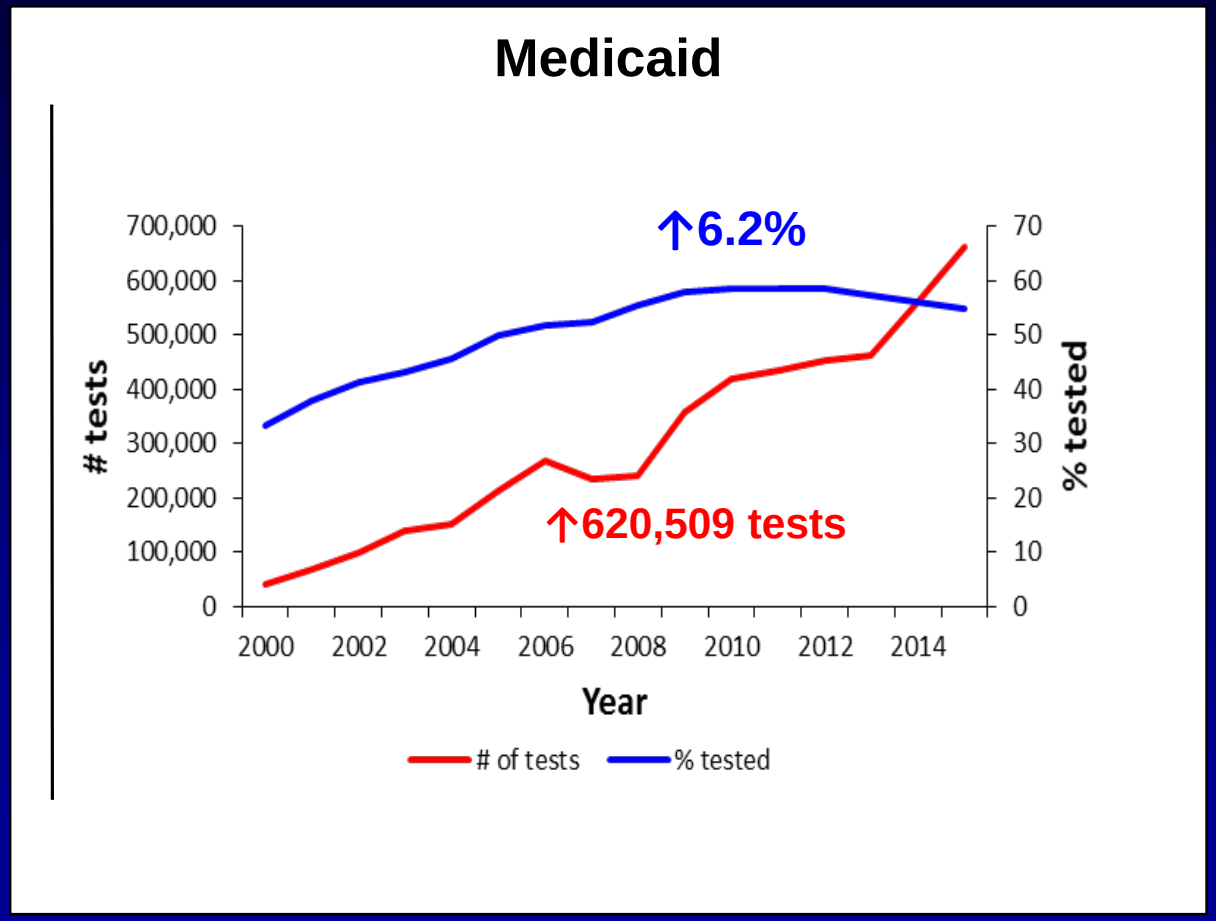
Screening Recommendations for Syphilis, Gonorrhea, and Chlamydia

- US Preventive Services Task Force (USPSTF) and CDC recommend chlamydia and gonorrhea screening for
  - Sexually active women <25 years old and all women at increased risk
- CDC recommends screening all sexually active MSM for chlamydia, gonorrhea, and syphilis at least annually
  - More often for some MSM
- USPSTF and CDC recommend screening all pregnant women and persons at increased risk for syphilis
- Make STD testing as routine as cholesterol testing and risk reduction as common as nutrition counseling, foot care for people with diabetes

http://www.uspreventiveservicestaskforce.org/recommendations.htm; CDC STD Treatment Guidelines

More Young Women Screened for Chlamydia from 2000 to 2015



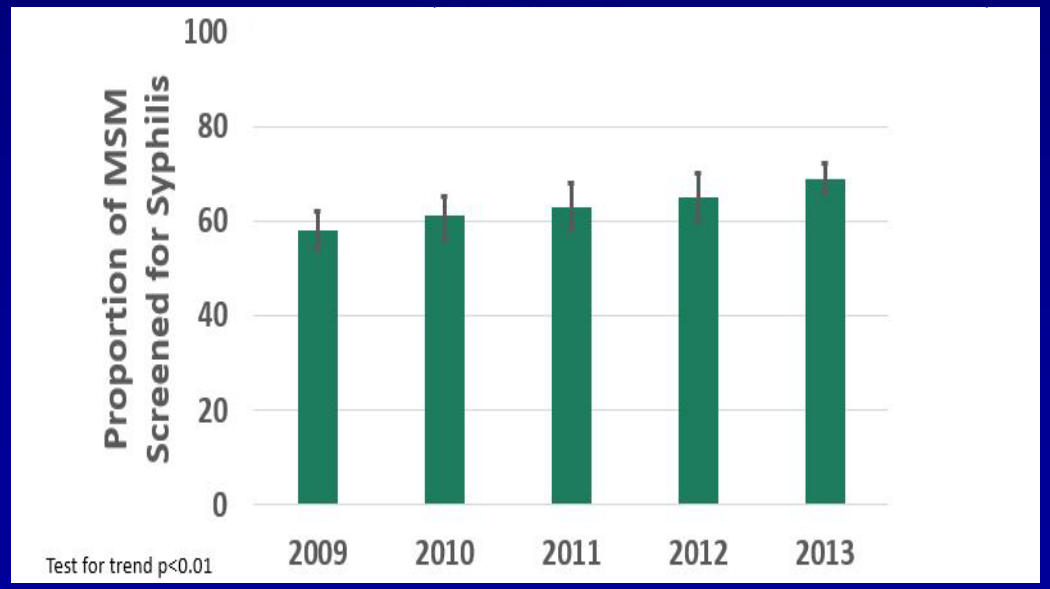


Screening of sexually active 16- to 24-year-old women increased

Healthcare Effectiveness Data and Information Set (HEDIS), United States, 2015

Partner with Primary Care and HIV Care Providers

- Taking a sexual history and providing routine STD testing is good health care
- Persons with HIV should be screened for STDs annually
- Persons taking PrEP should be screened for STDs every 3-6 months
  - Modeling indicates STD screening as part of PrEP care could reduce STDs in community



Clin Infect Dis. 2016;64(5):629-634

What can we do to strike back at syphilis?

CDC Syphilis Call to Action: What Health Care Providers Can Do

- Complete a sexual health history for patients
- Test all pregnant women for syphilis
- Test sexually active MSM at least annually, or 3 to 6 months if multiple sex partners or substance use
- Treat women infected with syphilis immediately
- Confirm syphilis testing at delivery
- Report all cases of syphilis and congenital syphilis quickly

Preventing Congenital Syphilis

- Enhance surveillance to capture maternal syphilis, fetal syphilis, stillbirths, infant morbidity and CS cases averted
- Congenital syphilis case review using infant morbidity review board model
- Develop tools to assess local context of CS cases and implement high impact interventions
- Work with other CDC Centers and registries; other Federal agencies, and partner organizations
- Update 1988 Guidelines
- Develop congenital syphilis prevention cascade

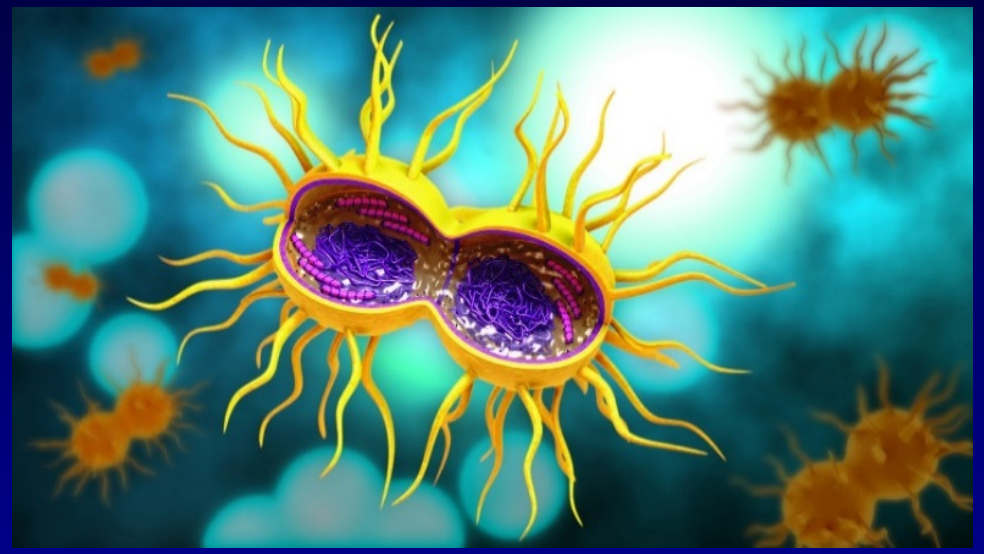
Enhanced Congenital Syphilis Response

- Total of $4 Million awarded recently to nine state or city health department grantees
  - California, Chicago, Florida, Georgia, Los Angeles, Louisiana, Maryland, Ohio and Texas
- Strengthens local capacity to address congenital syphilis
- Project areas account for 70% of U.S. cases in 2016

How do we cope with rising gonorrhea antimicrobial resistance?

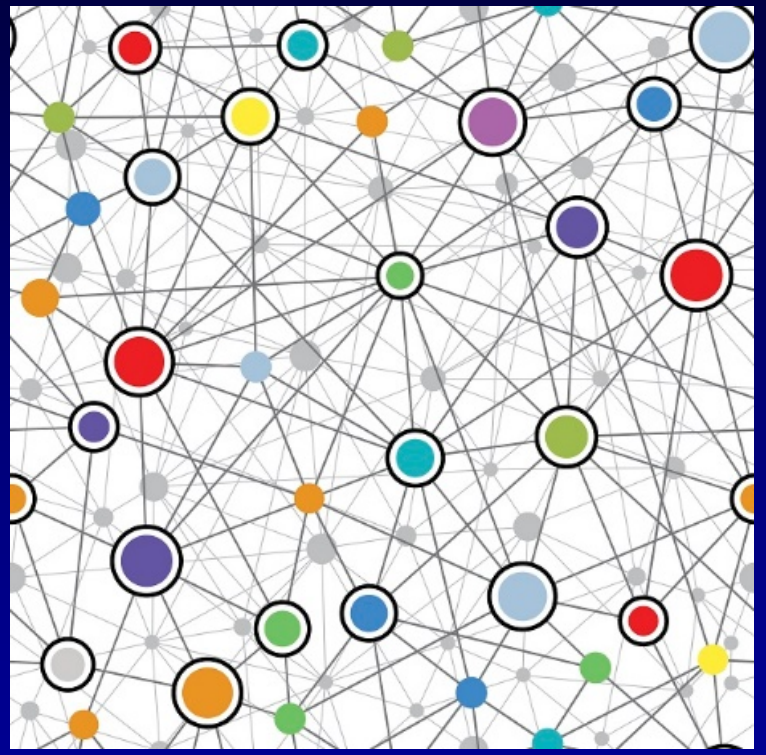
Antibiotic-resistance Threatens Gonorrhea Treatment

- Only one recommended treatment regimen
- Percentage of isolates with decreased susceptibility to azithromycin increased >300% from 2013 to 2014
- Cases of azithromycin resistant gonorrhea with decreased susceptibility to ceftriaxone identified in Hawaii 2016
- 90% of gonorrhea cases in enhanced surveillance sites treated with preferred therapy in 2016



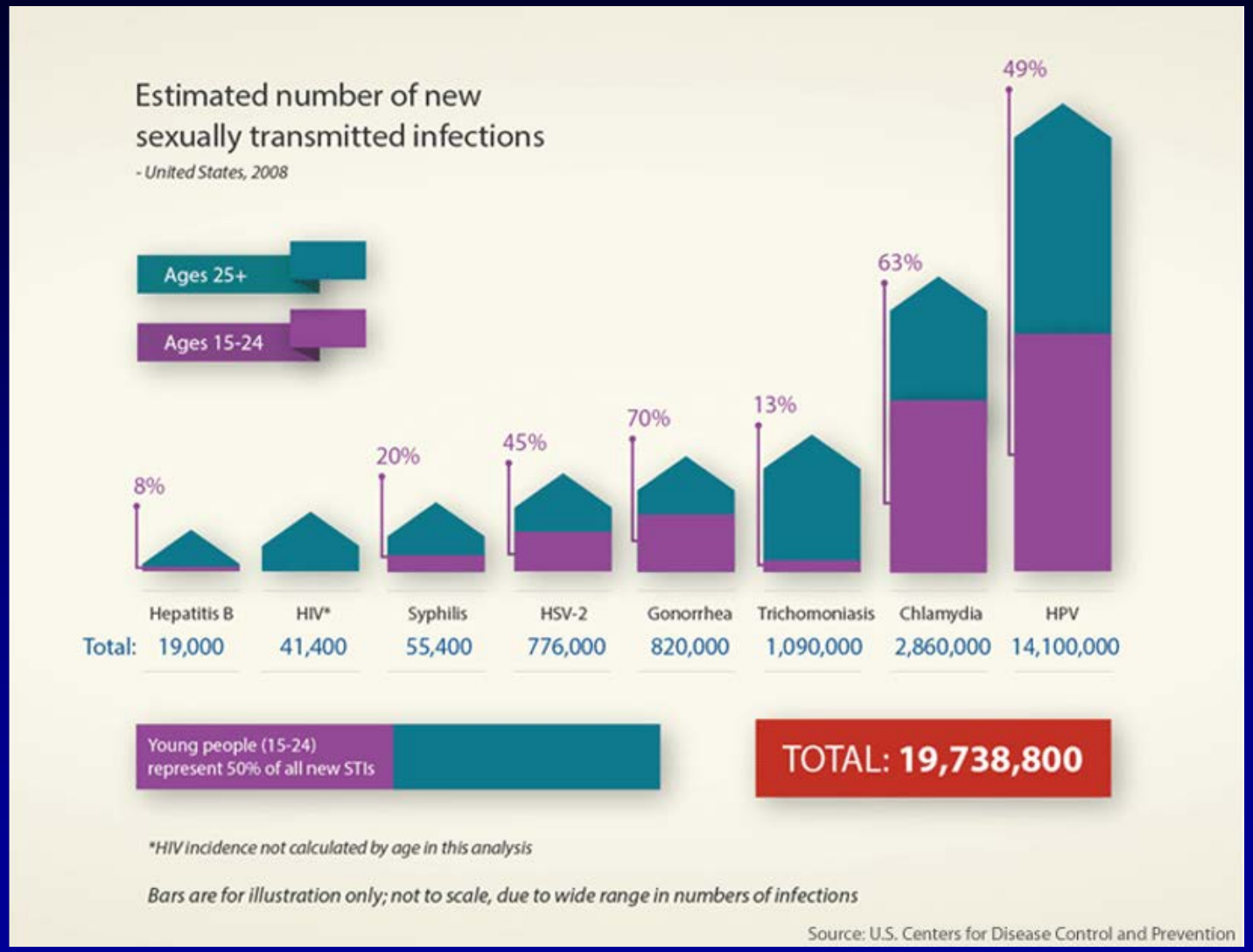
Future Directions for Combating Antibiotic-Resistant Bacteria and Advanced Molecular Detection

- Strengthen surveillance (GISP & SSuN)
- Establish regional laboratory reference network
- Build Rapid Detection and Response Capacity
  - Use antibiotic susceptibility testing tools, epidemiological network, and innovative population approaches
- Determine genetic correlates of resistance
- Estimate economic impact of resistance
- Discover new treatments and better diagnostic tests



What is the best use of resources to reduce STD incidence in the U.S.?

STIs Cost United States Billions Annually

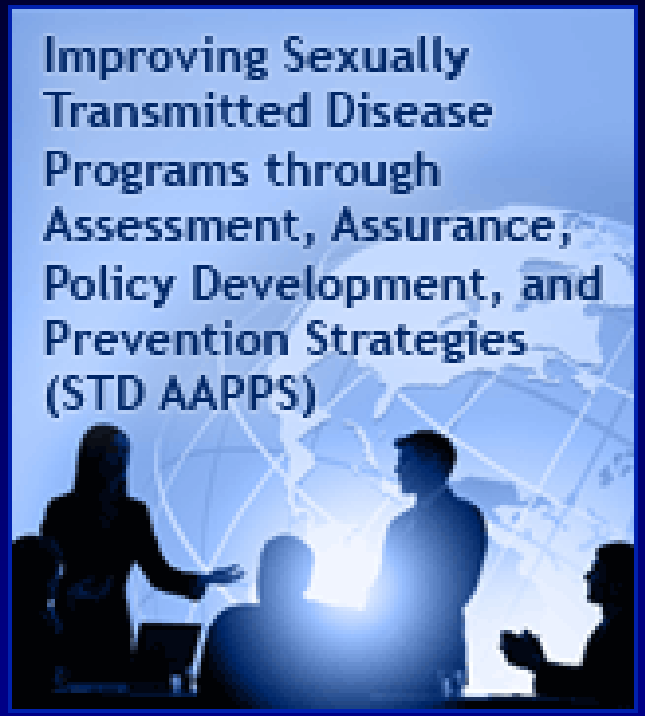


Infection	Est. Total Direct Medical Cost Per Year
HIV	$12.6 billion
HPV	$1.7 billion
HSV-2	$541 million
Chlamydia	$517 million
Gonorrhea	$162 million
Hepatitis B	$51 million
Syphilis	$39 million
Trichomoniasis	$24 million
Total	15.6 billion

Owusu-Edusei et al. *Sexually Transmitted Diseases*, Vol. 40, No. 3, March 2013. Marks, *Emerging Infectious Diseases*, May 2014. *MMWR*, Volume 20, Number 5—May 2014; CDC, *Reported Tuberculosis in the United States, 2012*.

Aligning Resources to STD burden

- State and local jurisdiction cooperative agreements issued in 2014
- Need-based formula to better align funds
- Priority Areas
  - Populations with highest morbidity: adolescents/young adults and MSM
  - Congenital syphilis
  - Threat of resistant gonorrhea
- Focus on most cost-effective activities that can be brought to scale



Using Data to Do Better

- Implement Data Driven Reviews: ongoing, collaborative data review by multidisciplinary group from Divisions and Center
  - Can be done locally
- Use Program Outcomes Measures (POMs) data to rapidly detect areas for improvement and expansion
- Examine national and state data to highlight areas for cross-jurisdictional experience sharing

STD Express Clinics

- Make STD testing easier for patients
- Offer fast, low cost, confidential STD screening without an appointment, with expanded hours
- Areas of high STD morbidity and mortality
- Opt-out chlamydia screening for young women

Develop Disease Intervention Specialist Certification Program

- Create Disease Intervention Specialists of the future through certification program
- Improve service delivery to communities
- Standardize and validate DIS knowledge, skills, and abilities

School Health Services Save Money and Promote Healthy Behaviors

- In 2013, Duval County Public Schools, Florida, increased school-based health centers
  - Teens who ever had sex decreased from 46% in 2013 to 37% in 2015
- In Detroit, chlamydia prevalence decreased over 5 years from 10% to 6% among students
- School nurses can save communities money in medical costs and lost productivity

Wang L, JAMA Pediatr. 2014; CDC data

Using New Tools to Fight STDs

- Use molecular epidemiology and social network techniques to develop high impact interventions for syphilis
- Create specimen repository to support technological developments in diagnostics, therapeutics and vaccines
- Develop molecular tests to detect antimicrobial resistant GC more rapidly
- Use electronic medical records to support clinician testing reminders and monitor implementation of recommendations

Conclusions

- STD incidence is increasing
- Changing epidemics require new prevention approaches, and doing the old ones even better
- Think big, act fast, support creativity

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