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What's new in sexually-transmitted infections?

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Fenway Health

- Independent 501(c)(3) FQHC
- Founded 1971
- Mission: To enhance the wellbeing of the LGBT community as well as people in our neighborhoods and beyond through access to the highest quality health care, education, research and advocacy
- Integrated Primary Care Model, including HIV services

The Fenway Institute

- Research, Education, Policy



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Today's Faculty

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What's new in sexually-transmitted infections?



Disclosure

I have no financial conflicts of interest.

Learning objectives

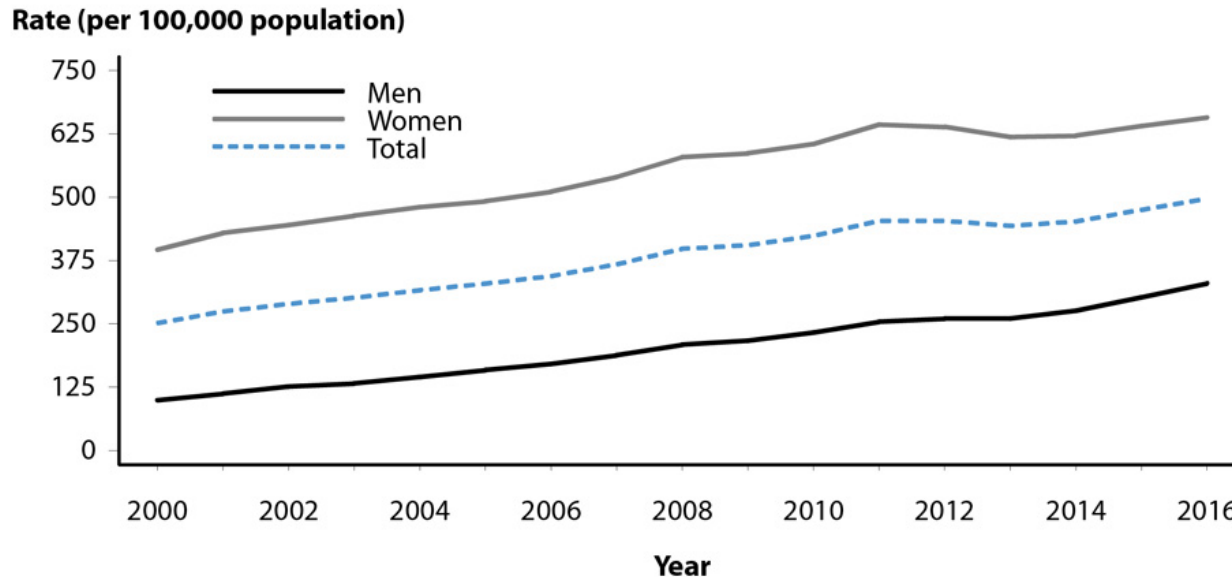
1. Summarize recent trends in gonorrhea, chlamydia, and syphilis
2. Examine potential causes of these trends
3. Describe novel approaches to STI prevention

I am a(n):

- A. Medical clinician
- B. Behavioral health clinician
- C. Administrator
- D. Public health official
- E. Case manager
- F. Something else

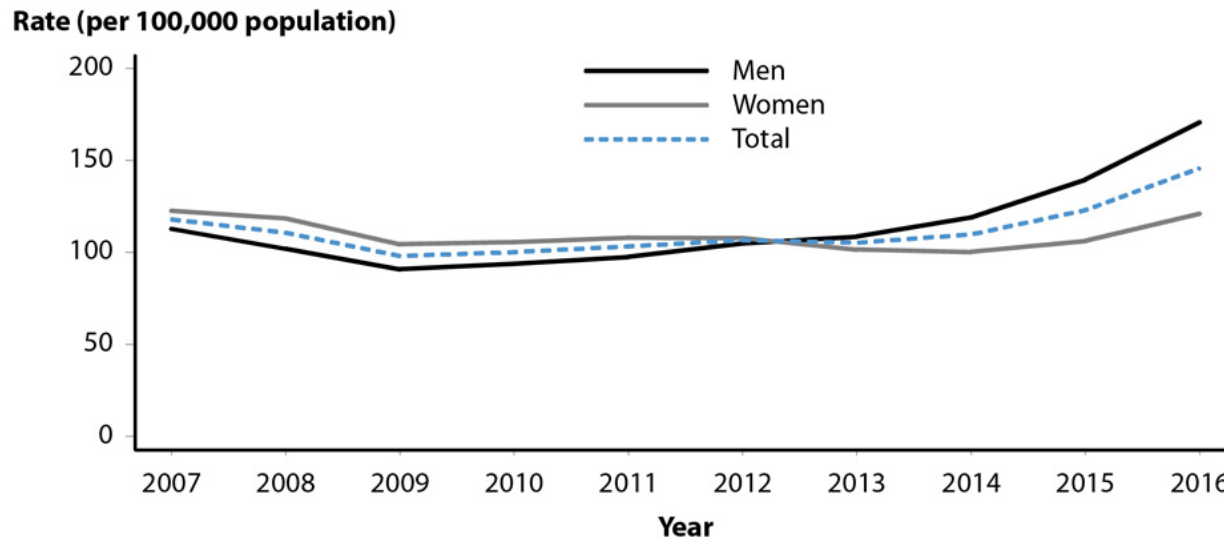


The rate of chlamydia diagnoses is increasing.



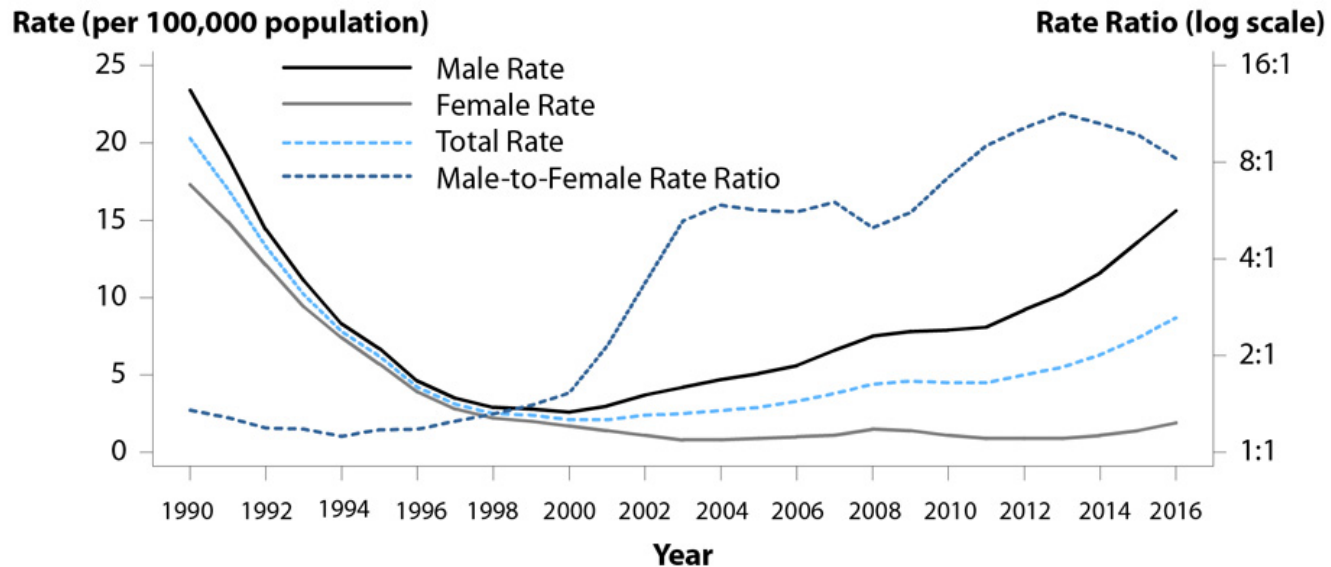
2016 STD surveillance, CDC

The rate of gonorrhea diagnoses is increasing.



2016 STD surveillance, CDC

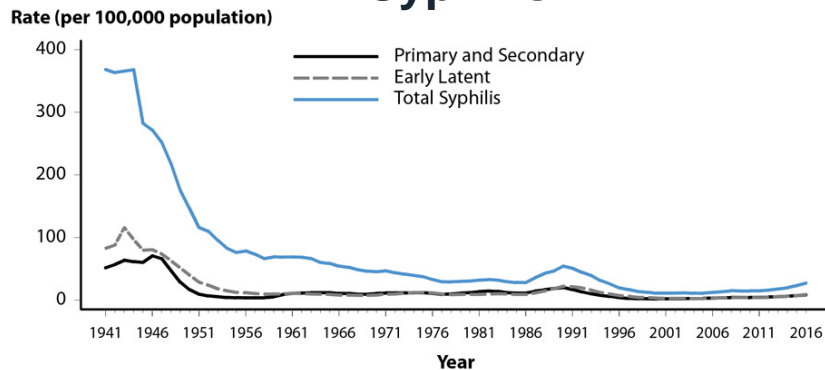
The rate of syphilis diagnoses is increasing.



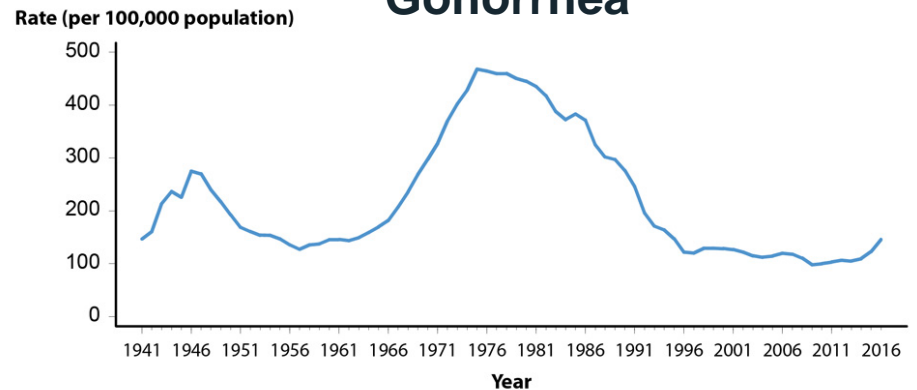
2016 STD surveillance, CDC

A bit of perspective is helpful.

Syphilis

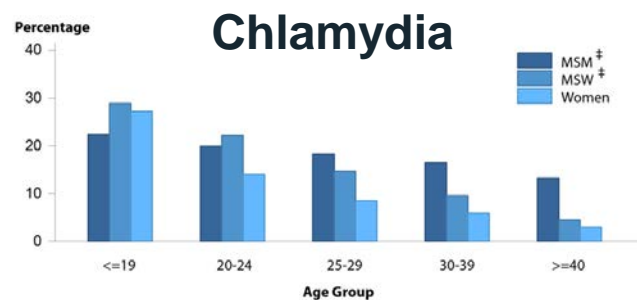
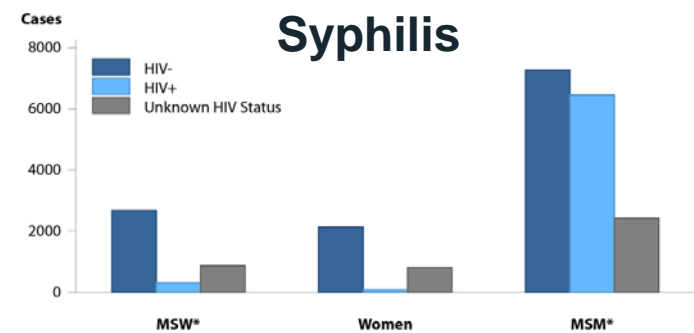
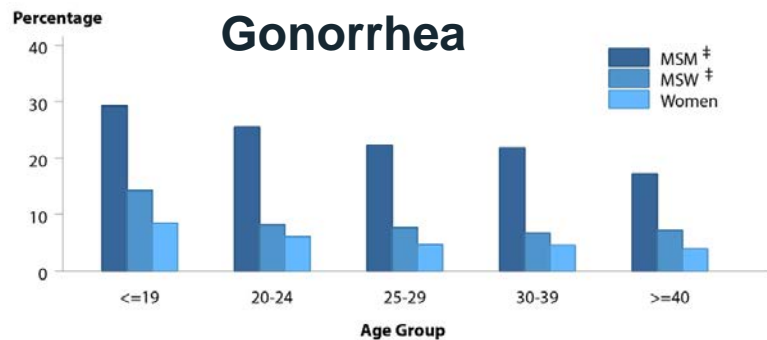


Gonorrhea



2016 STD surveillance, CDC

Most gonorrhea and syphilis cases occur in MSM.



2016 STD surveillance, CDC

STIs: More than the “big 3”

Parasites

- *Giardia lamblia*
- *Entamoeba histolytica*
- Ectoparasites

GI bacteria

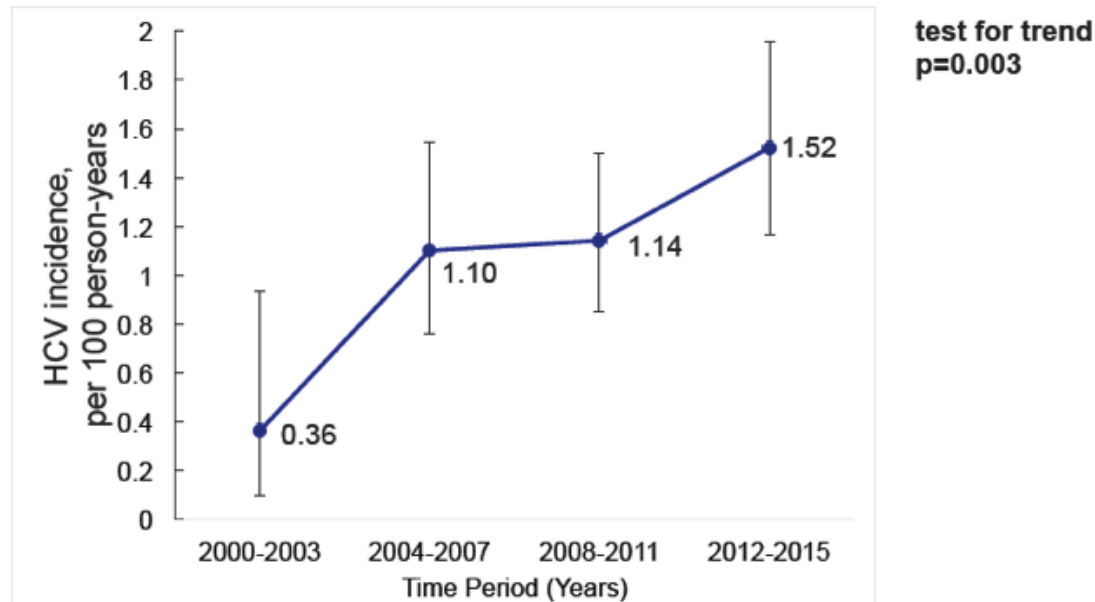
- *Shigella*
- *Campylobacter*

Viruses

- Human papillomavirus
- Herpes simplex virus
- Hepatitis A
- Hepatitis B
- Hepatitis C

2015 sexually transmitted disease treatment guidelines. Available at: <https://www.cdc.gov/std/tg2015>.

HIV-infected MSM face an increasing burden of hepatitis C.



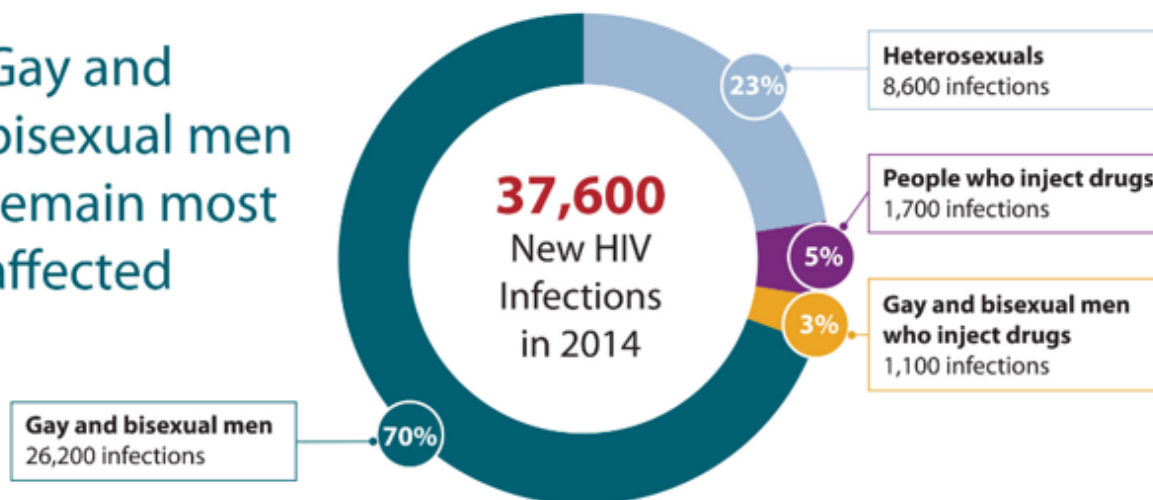
Chaillon A, CROI, 2017
Slide courtesy of Dr. Arthur Kim

Estimated annual HIV infections in the U.S. declined **18%**

Between 2008 - 2014 infections fell from 45,700 to 37,600



Gay and
bisexual men
remain most
affected



CDC, 2017



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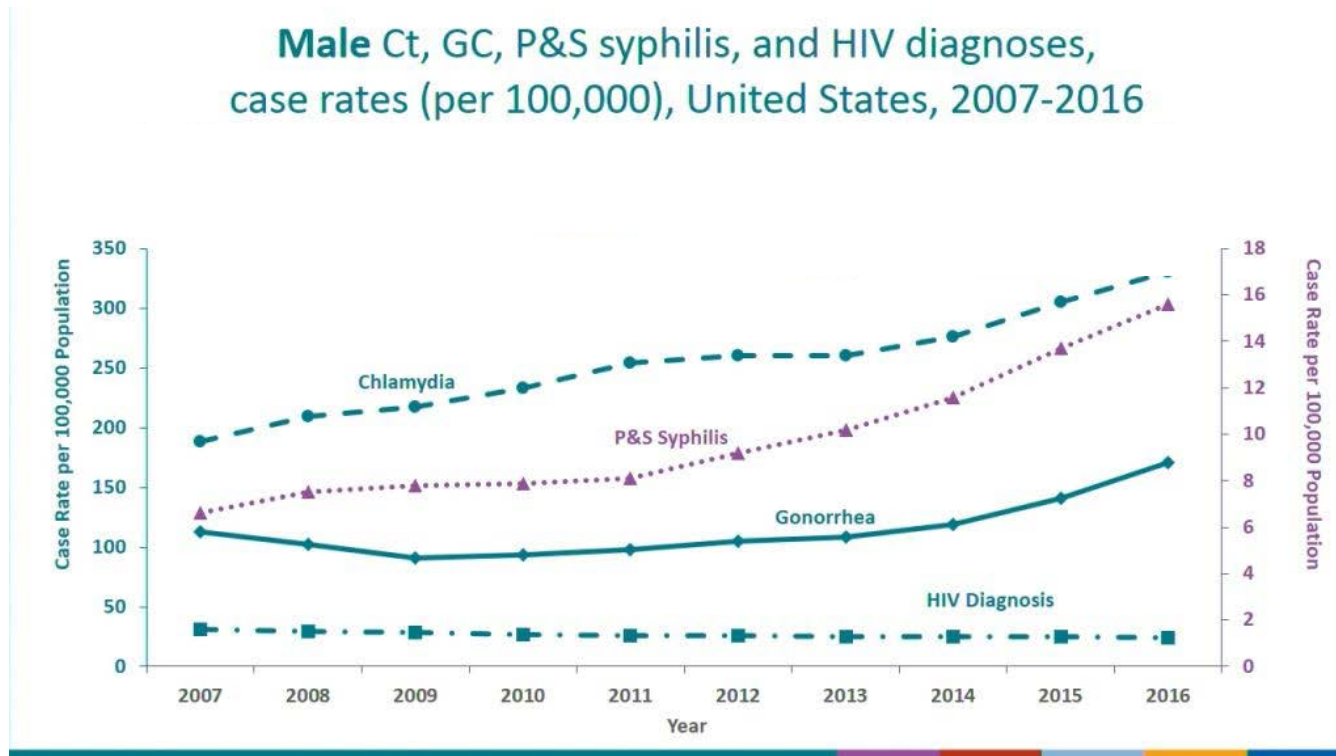
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What's going on?

1. Increased diagnosis
2. Increased reporting
3. Increased transmission



What's going on?



Schillinger JA, CROI 2018

What's going on?

1. Increased diagnosis
2. Increased reporting
3. Increased transmission



Increased detection

- Extragenital gonorrhea/chlamydia screening has increased over time.
 - **Male rectal/pharyngeal testing increased 160-180% at LabCorp from 2013-2015.**
 - **Extragenital infections account for an increasing proportion of gonorrhea/chlamydia diagnoses.**
 - **NAATs are more sensitive than culture-based methods.**

Schillinger JA, CROI 2018

Most extragenital gonorrhea and chlamydia infections are asymptomatic.

Proportions of gonorrhea and chlamydia infections at different sites which are asymptomatic

Infection	Pharyngeal	Urethral (urine)	Rectal
Gonorrhea	90%	10%	84%
Chlamydia	---	42%	86%

Kent CK, CID, 2005

Increased detection

- Extragenital gonorrhea/chlamydia screening has increased over time.
 - **Male rectal/pharyngeal testing increased 160-180% at LabCorp from 2013-2015.**
 - **Extragenital infections account for an increasing proportion of gonorrhea/chlamydia diagnoses.**
 - **NAATs are more sensitive than culture-based methods.**
 - **But, syphilis rates also rose, and one would expect a “backlog” of previously undetected infections to peak.**
- 17.7 million gained insurance under ACA, especially young and non-white people

Schillinger JA, CROI 2018

Geosocial networking apps are associated with sexual risk.



- Users are more likely to be diagnosed with gonorrhea and chlamydia than non-users.
- Users have greater numbers of sexual partners than non-users.
- Accentuation versus self-selection hypotheses
- Provide a new platform for messaging around STIs

Beymer MR, 2014
Lehmiller JJ, 2014

App users may base condom use decisions on biomedical prevention.

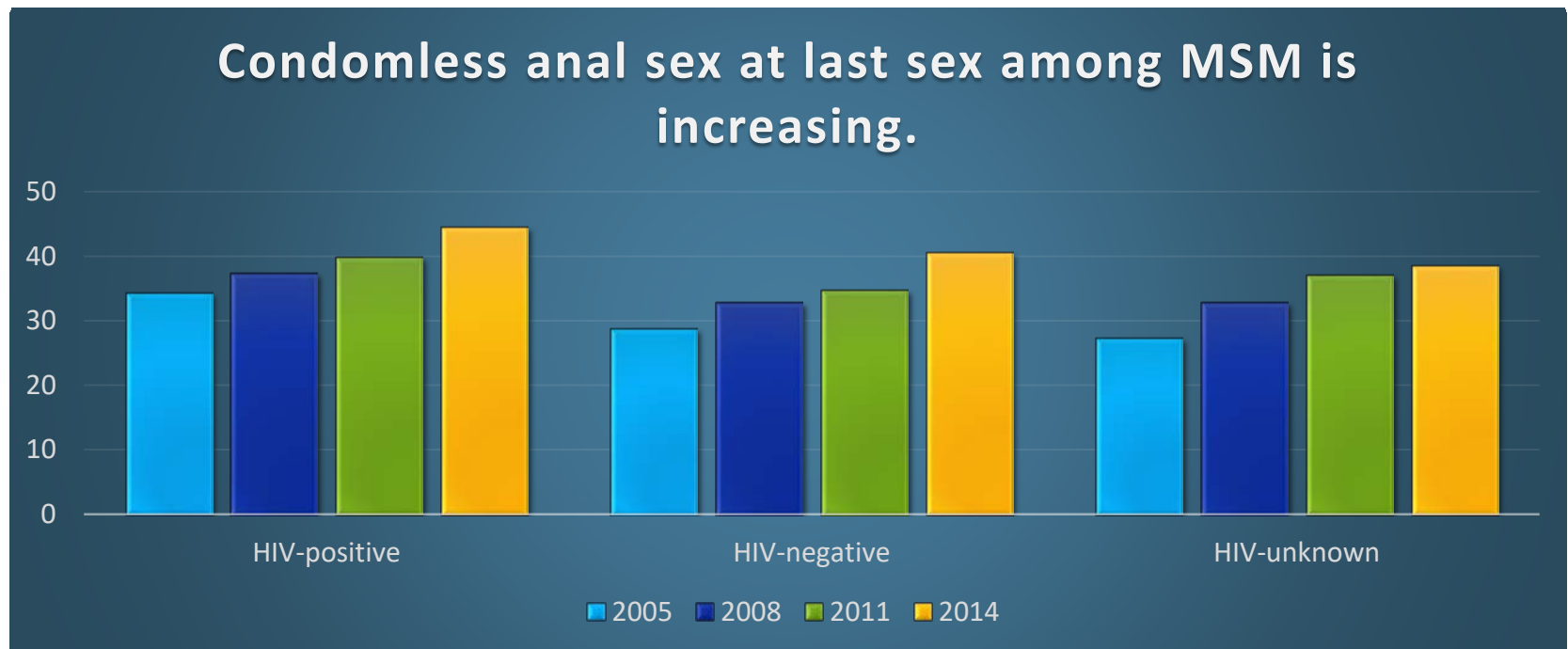
	HIV-positive MSM	HIV-negative MSM
Partner disclosed PrEP use on a mobile app	62%	43%
Partner disclosed undetectable viral load on mobile app	90%	68%

Qualitative research on reasons for condomless anal sex:

- Most common theme: HIV risk lower with biomedical intervention
- “Based on the recent studies regard[ing] undetectable transmission stats I feel it is an acceptable risk.”

Newcomb ME, 2016

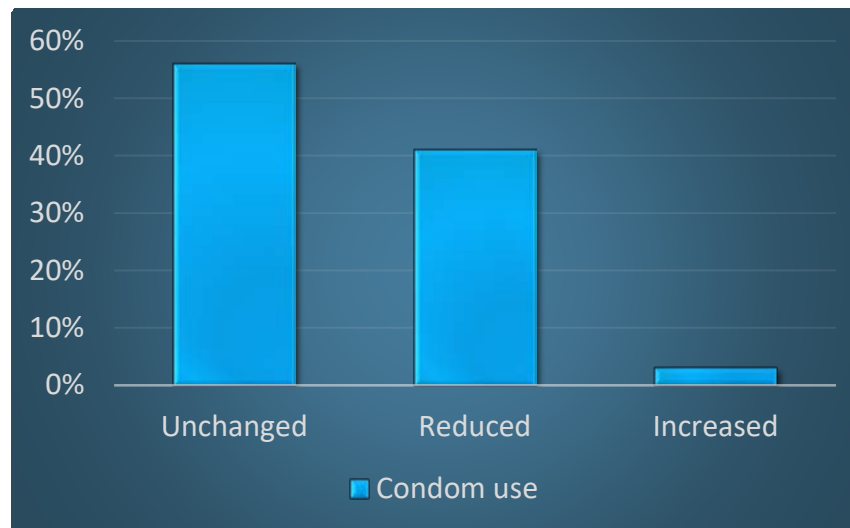
Increased transmission



Paz-Bailey G, AIDS, 2016

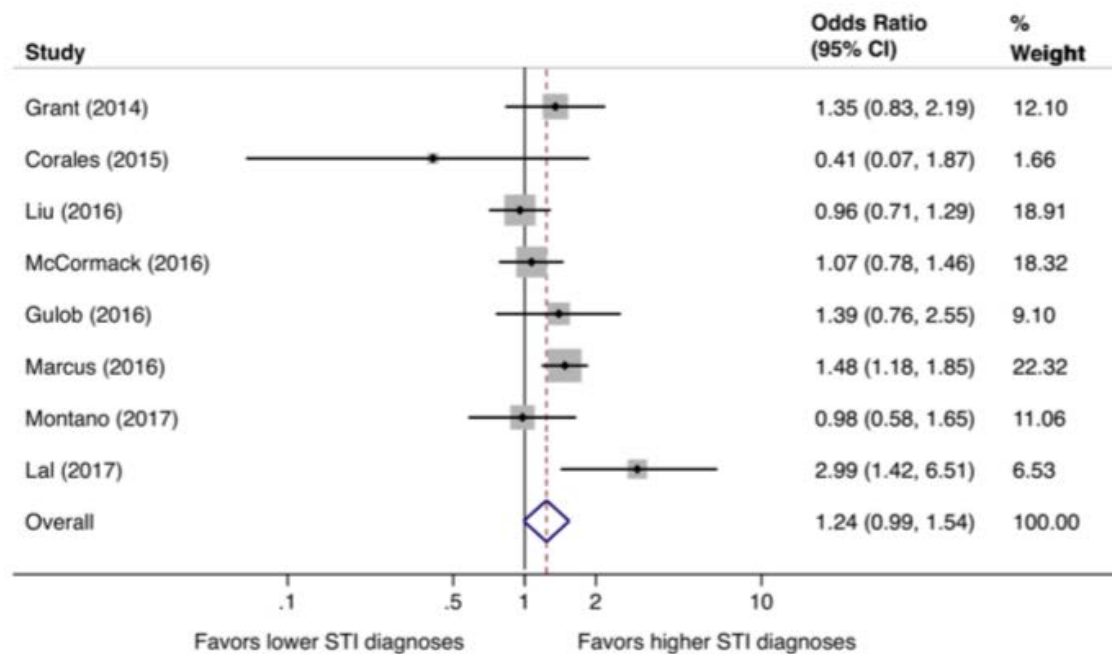
Some PrEP users increase sexual risk behavior...

Changes in condom use among PrEP users



Volk JE, CID, 2015

Some PrEP users increase sexual risk behavior...

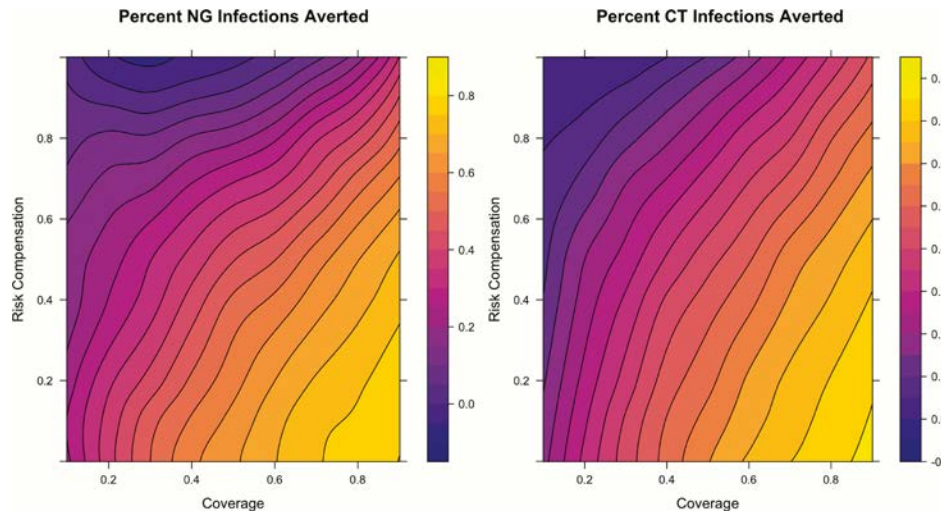


Traeger MS, CID, 2018

Some PrEP users increase sexual risk behavior, BUT...

- The number of PrEP users is small and probably could not account alone for the observed increases in STIs.
- PrEP users should be screened for STIs, which may increase diagnosis and treatment of otherwise undetected, asymptomatic infections.

PrEP may be an STI control intervention.



From: Incidence of Gonorrhea and Chlamydia Following Human Immunodeficiency Virus Preexposure Prophylaxis Among Men Who Have Sex With Men: A Modeling Study

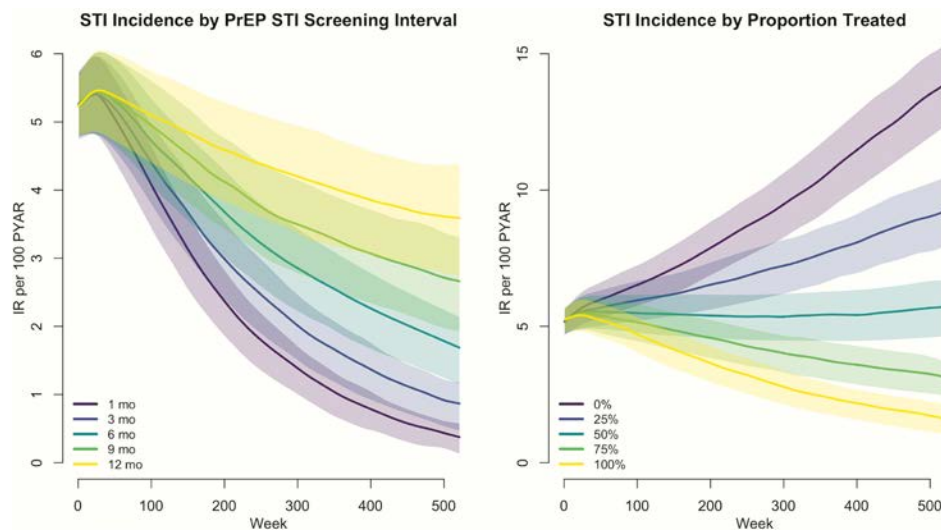
Clin Infect Dis. 2017;65(5):712-718. doi:10.1093/cid/cix439

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Every-3-month STI screening for MSM who are on PrEP and at high risk for STIs

- New recommendation in the 2017 update to CDC's PrEP guidelines
- In one PrEP demonstration project:
 - Compared to quarterly screening, biannual screening would miss/delay diagnosis of 34% of gonorrhea, 41% of chlamydia, and 20% of syphilis infections
 - 83% of gonorrhea and 76% of chlamydia infections would have been missed if extragenital testing had not been performed

Cohen S, 2016

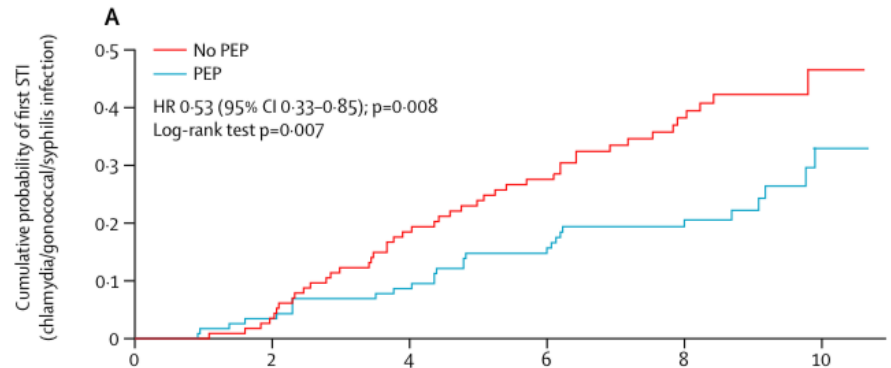


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PEP for some STIs works.

- 232 MSM in a trial of open-label, on-demand PrEP with TDF-FTC
- Randomized to doxycycline within 72 hours of sex or no PEP
- Doxycycline reduced chlamydia and syphilis infections but not gonorrhea



Molina JM, Lancet Infect Dis, 2018

PEP with doxycycline is generally well-tolerated.

	PEP (n=116)	No PEP (n=116)	p value
Any adverse events	106 (91%)	104 (90%)	0.65
Any serious adverse events	5 (4%)	10 (9%)	0.18
Any grade 3 or 4 events	4 (3%)	8 (9%)	0.24
Treatment discontinuation because of adverse events	8 (7%)	NA	..
Gastrointestinal adverse events	62 (53%)	47 (41%)	0.05
Drug-related gastrointestinal adverse events	29 (25%)	16 (14%)	0.03
Nausea or vomiting	10 (9%)	3 (3%)	..
Abdominal pain	14 (12%)	5 (4%)	..
Diarrhoea	6 (5%)	9 (8%)	..
Other gastrointestinal disorders	5 (4%)	1 (1%)	..

Molina JM, Lancet Infect Dis, 2018

I would prescribe PEP with doxycycline to an man reporting condomless sex with multiple male partners.

A. Yes

B. No

Doxycycline post-exposure prophylaxis: let the debate begin



Should physicians prescribe doxycycline to prevent syphilis? In their study published in *The Lancet Infectious Diseases*, Jean-Michel Molina and colleagues¹ report on the findings of the first large, open-label randomised control trial to help answer this question.² Their findings show that, among men who have sex with men (MSM) who were using pre-exposure prophylaxis (PrEP) for HIV and who had a median of ten partners every 2 months, taking doxycycline within 24 h after sex reduced the incidence of chlamydia by 70% when compared with no

could rightly argue that the antibiotic is commonly prescribed for many conditions, including in 6-month courses for acne.⁵ A key issue to discuss with patients, however, is the number of doses of doxycycline that are required to prevent one case of syphilis. In the present study, men had a median of 120 sexual acts a year (based on a median of 10 per month) and had an incidence of syphilis of about 13 per 100-person years.¹ Most MSM have substantially fewer partners and are less sexually active and have a lower incidence of syphilis than those



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See **Articles** page 308

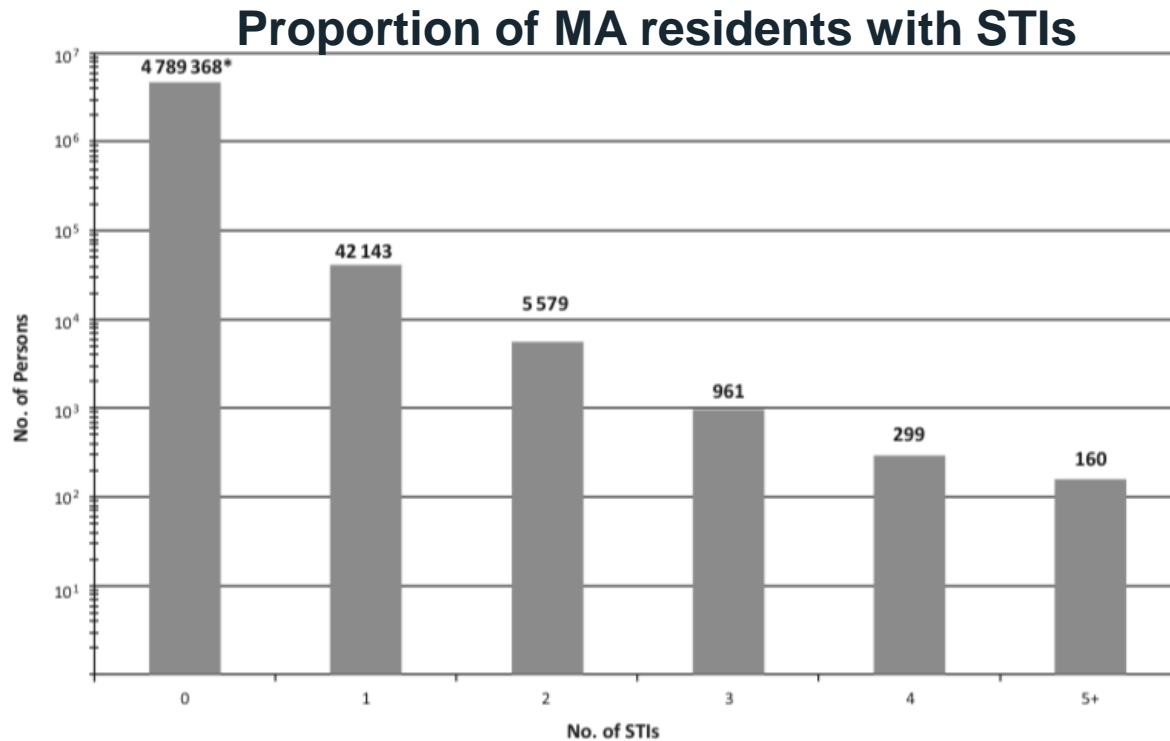
Fairley CK, *Lancet Infect Dis*, 2018



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A small proportion of people account for a large proportion of STIs.



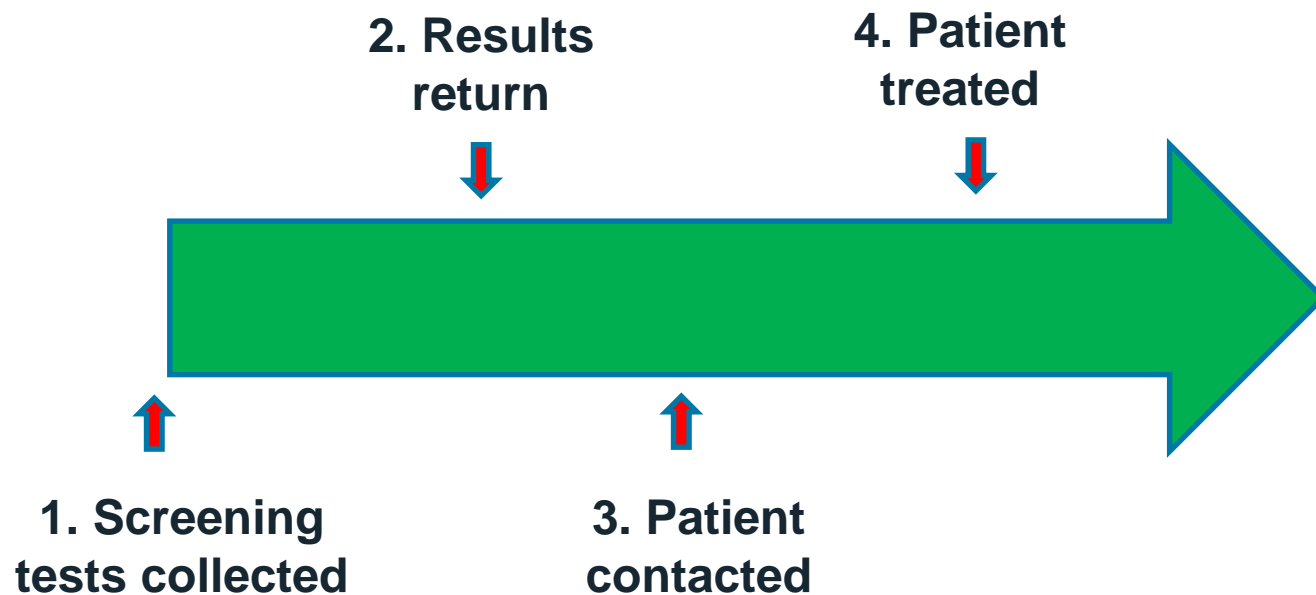
Hsu KK, CID, 2018

Characteristics of people with repeat STIs

Characteristic	Overall Sample	Men (N=118)	Women (N=42)
Race/ethnicity non-Hispanic white	37%	43%	19%
Gender of sexual partners = male	75%	79%	64%
HIV infection	25%	35%	0%
Diagnoses in > 1 system	56%	51%	69%

Hsu KK, CID, 2018

Point-of-care testing for STIs may decrease transmission but shortening duration of infectivity.



Amsterdam STI clinic modelling study:

- 35% of MSM had sexual contexts in the time between testing and treatment (23% of whom had CAS)
- POC testing for all MSM anticipated to decrease gonorrhea prevalence by 11% over 5 years

Bartelsman M, Sex Transm Infect, 2017

Brief clinician counseling impacts sexual behavior.

- Reduction in condomless sex
- Reduction in the number of sexual partners
- Reduction in STI acquisition

Fisher JD, 2006
Gardner LI, 2008
Rose CD, 2010
Patel P, 2012



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Take-home points

- Syphilis and gonorrhea infections are increasing among MSM; HIV is decreasing.
- Both increased detection and increased transmission likely contribute to the observed rise in STIs.
- PrEP is a “sexual health program, not a pill*,” that may be an STI control intervention.

*Julia Schillinger



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Thank you!

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