

# Doxycycline for the Prevention of Bacterial Sexually Transmitted Infections

Julie Dombrowski, MD, MPH

Associate Professor, Department of Medicine, UW

Deputy Dir., HIV/STD Program, Public Health – Seattle & King County

July 25, 2019

# Disclosures

---

Hologic (research support)

# Outline

- The need
- The pros
- The cons
- My opinion and approach

# The STATE of STDs in the United States



in 2017

THE NATION EXPERIENCES  
STEEP AND SUSTAINED STD  
INCREASES.



**1.7 million**  
CASES OF CHLAMYDIA

22% increase since 2013



**555,608**  
CASES OF GONORRHEA

67% increase since 2013



**30,644**  
CASES OF SYPHILIS

76% increase since 2013

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

# What Tools do we Have for STI Prevention?



Counseling & Education

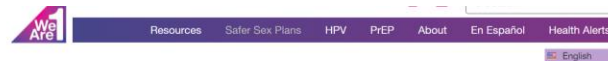


Condom promotion



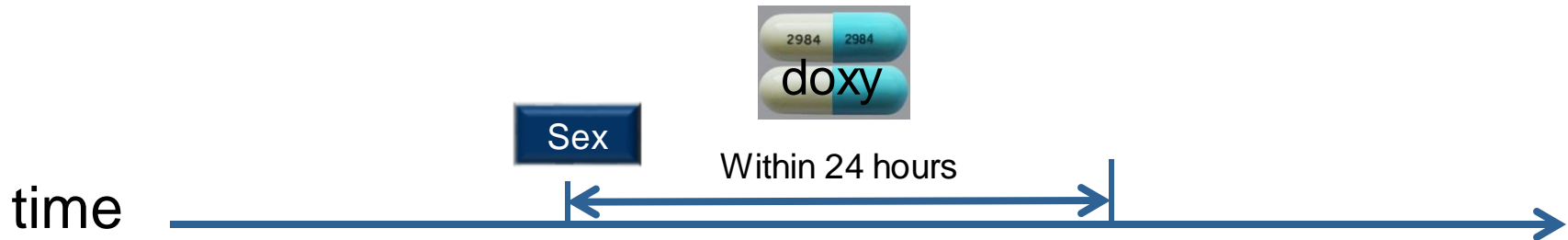
Frequent testing & treatment

Combination prevention



# Doxycycline Prophylaxis for STIs

- Doxycycline **post-exposure** prophylaxis (PEP)

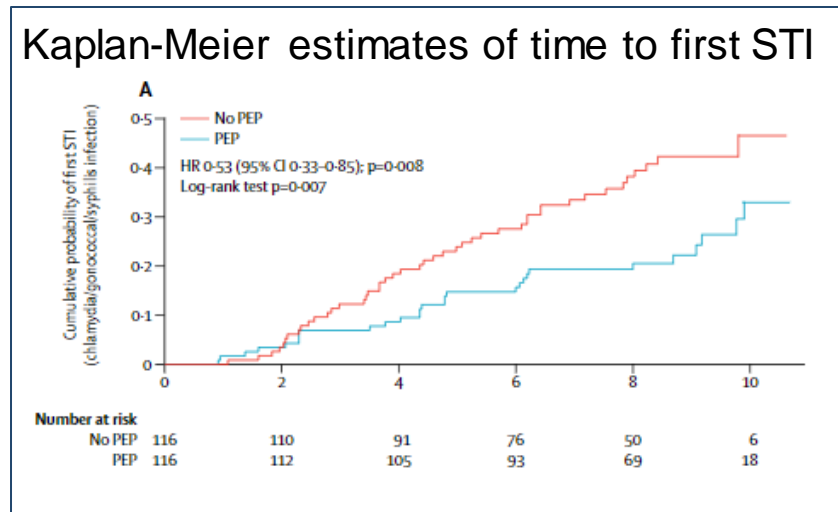


- Doxycycline **pre-exposure** prophylaxis (PrEP)



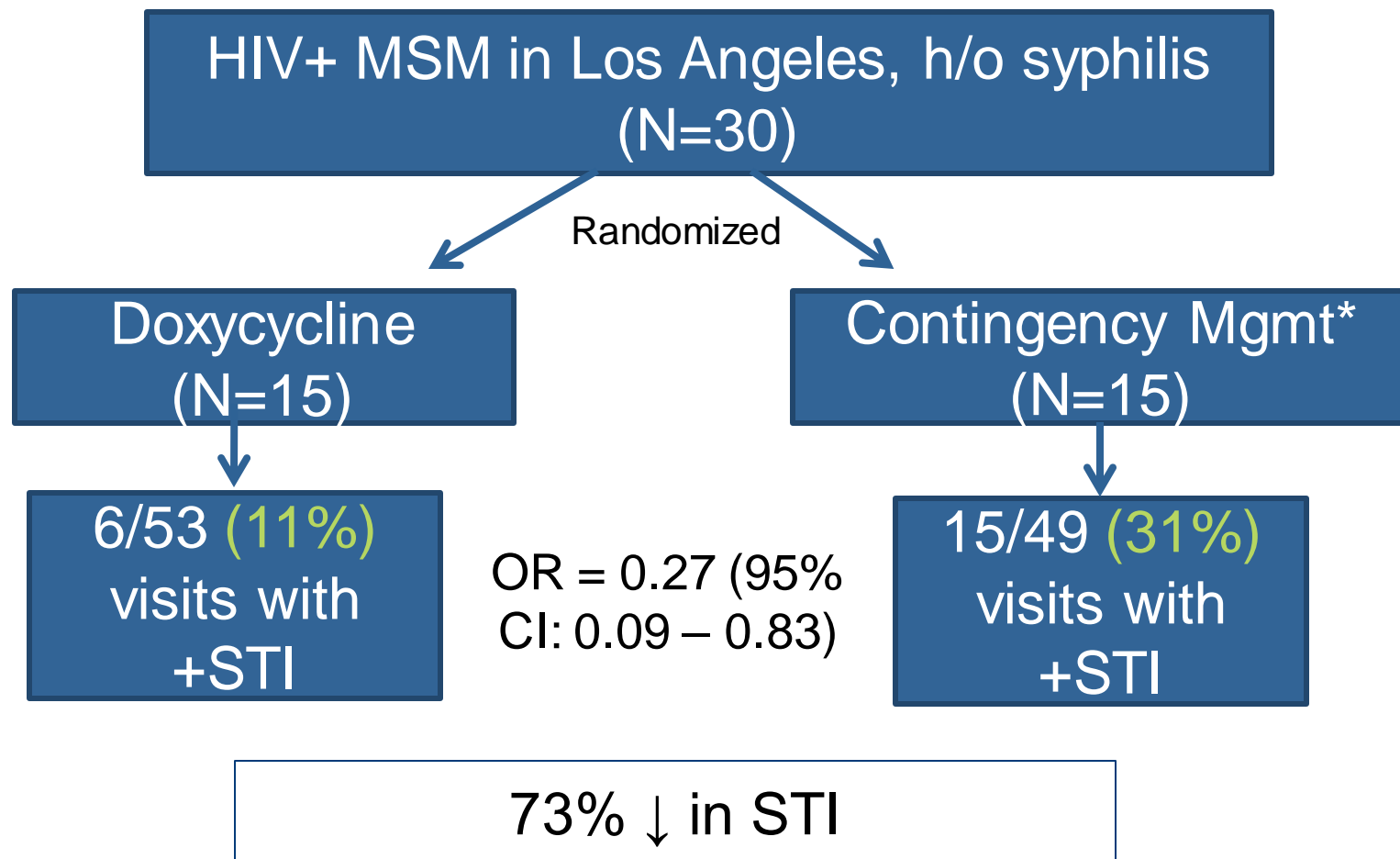
# Doxycycline PEP

- RCT in open label extension of IPERGAY (N=232)
  - Event-driven (2-1-1) HIV PrEP study in France
  - Doxy PEP vs. usual care
- Doxy 200mg x1 ~24h after sex ( $\leq 72$ h)
- Targeting CT & syphilis
- Median 7 pills/month



47% ↓ in STI  
(69.7 vs 37.7/100 PY)

# Doxycycline PrEP





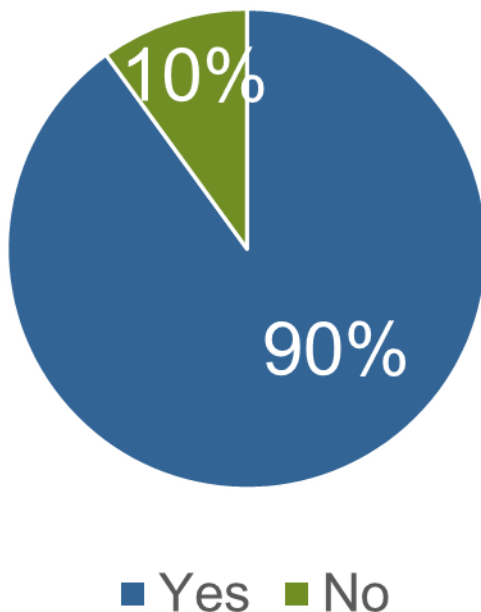
# Experience with Doxycycline Prophylaxis

- Widely used for a number of indications, including
  - Prevention of malaria, leptospirosis, Lyme
  - Treatment of moderate to severe acne
- Predictable and manageable side effects
  - Sun sensitivity
  - Esophagitis

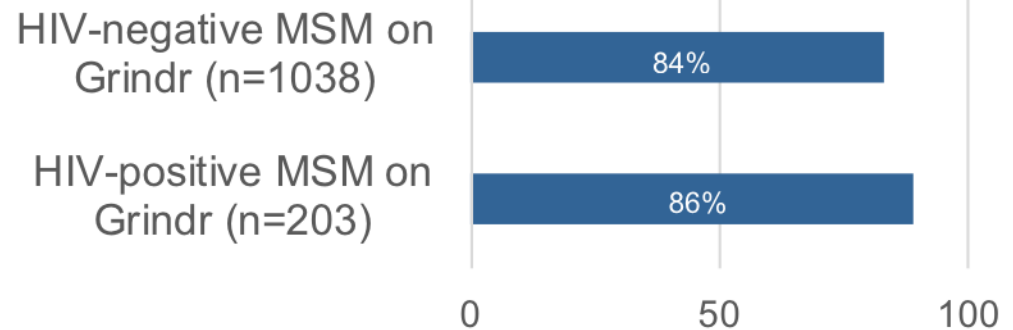


# Interest in Doxycycline PEP for STI among MSM

King County STD Clinic  
PrEP Program (N=35)




Atlanta, Birmingham, Chicago,  
NYC, SF, Seattle




African American & Latino MSM were *more* likely to report interest than non-Hispanic white MSM

# Community Use?



Public Health  
England

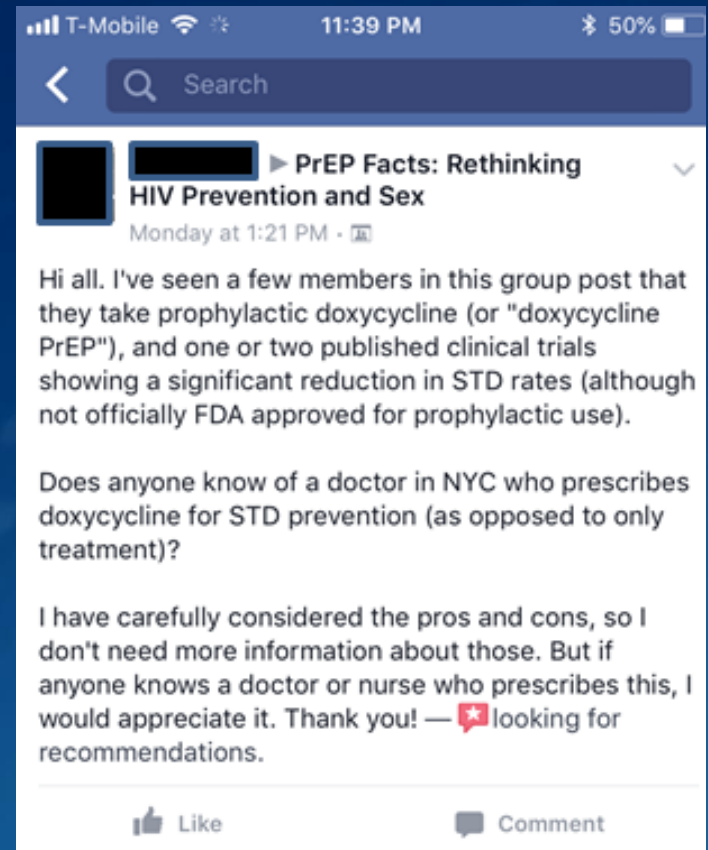


**BASHH**

Position Statement on Doxycycline as Post-Exposure Prophylaxis for Sexually Transmitted Infections

**Key Points**

- Doxycycline Post Exposure Prophylaxis for sexually transmitted infections (STIs) is not endorsed by BASHH or Public Health England.



T-Mobile 11:39 PM 50%

Search

PrEP Facts: Rethinking HIV Prevention and Sex  
Monday at 1:21 PM

Hi all. I've seen a few members in this group post that they take prophylactic doxycycline (or "doxycycline PrEP"), and one or two published clinical trials showing a significant reduction in STD rates (although not officially FDA approved for prophylactic use).

Does anyone know of a doctor in NYC who prescribes doxycycline for STD prevention (as opposed to only treatment)?

I have carefully considered the pros and cons, so I don't need more information about those. But if anyone knows a doctor or nurse who prescribes this, I would appreciate it. Thank you! — looking for recommendations.

Like Comment



- London sexual health clinic
- July 2018 survey
- 107 men on PrEP
- 8 (8%) had taken antibiotics to prevent STIs

# Antimicrobial Resistance

- Antibiotic use = antibiotic resistance
- STI pathogens
  - *N. gonorrhoeae* - doxycycline not used
  - *T. pallidum* - no tetracycline resistance
  - *C. trachomatis* - no tetracycline resistance
- Non-STI commensals/pathogens
  - *S. aureus* and *S. pneumoniae*
  - Commensal *Neisseria*
  - Enteric bacteria
- Broader microbiome effects?
- The unknown unknowns

# Doxycycline Safety

- Long-standing clinical experience = doxy is safe
- but
- Recommended duration for acne: 12-16 weeks, beyond 24 weeks not recommended
  - Weight gain (?)
  - Benign intracranial hypertension – rare association

# Balance of Risks and Benefits?

Need to consider STD morbidity, not just infection



# Where Are We Now?

- Need more evidence for effectiveness
  - $\geq 4$  studies planned or ongoing internationally
- Insufficient evidence to recommend routine use in practice
- Pros
  - Doxycycline is generally safe
  - Patients are interested
  - Public health STD control: little else to offer
- Cons
  - Antimicrobial resistance
  - Uncertain balance of risks and benefits
- My approach: very rare and time-limited

# Thank you



[jdombrow@uw.edu](mailto:jdombrow@uw.edu)



[@DrJDombrowski](https://twitter.com/DrJDombrowski)