

Ending the STI Epidemic Through Prevention: The Role of Doxy-PEP

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Objectives

1. Review the state of the HIV/STI Epidemic
2. Summarize the current landscape of HIV/STI prevention options
3. Appraise new methods for STI prevention like Doxy-PEP
4. Discuss implementation of Doxy-PEP

PTC Disclaimer

Some terms in this presentation may have been modified to align with executive order requirements that this CDC-funded grant has received.

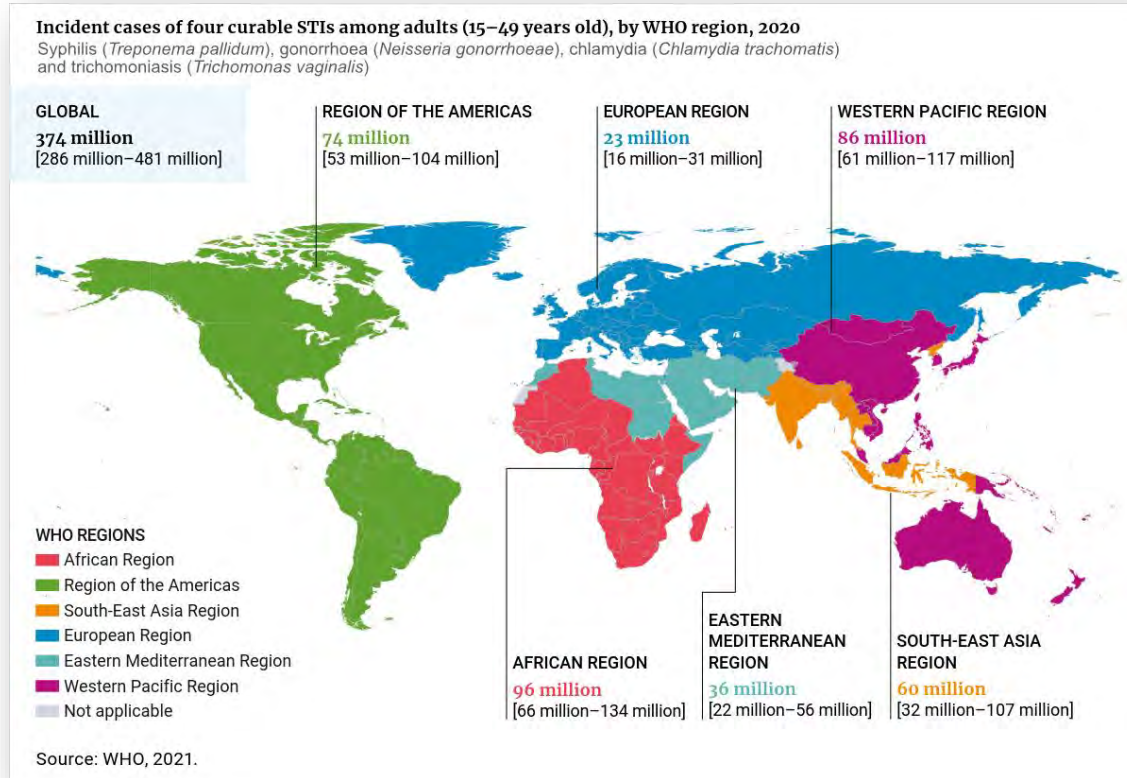
Audience Poll #1

Where is your clinic on your Doxy-PEP Journey? (Choose the closest)

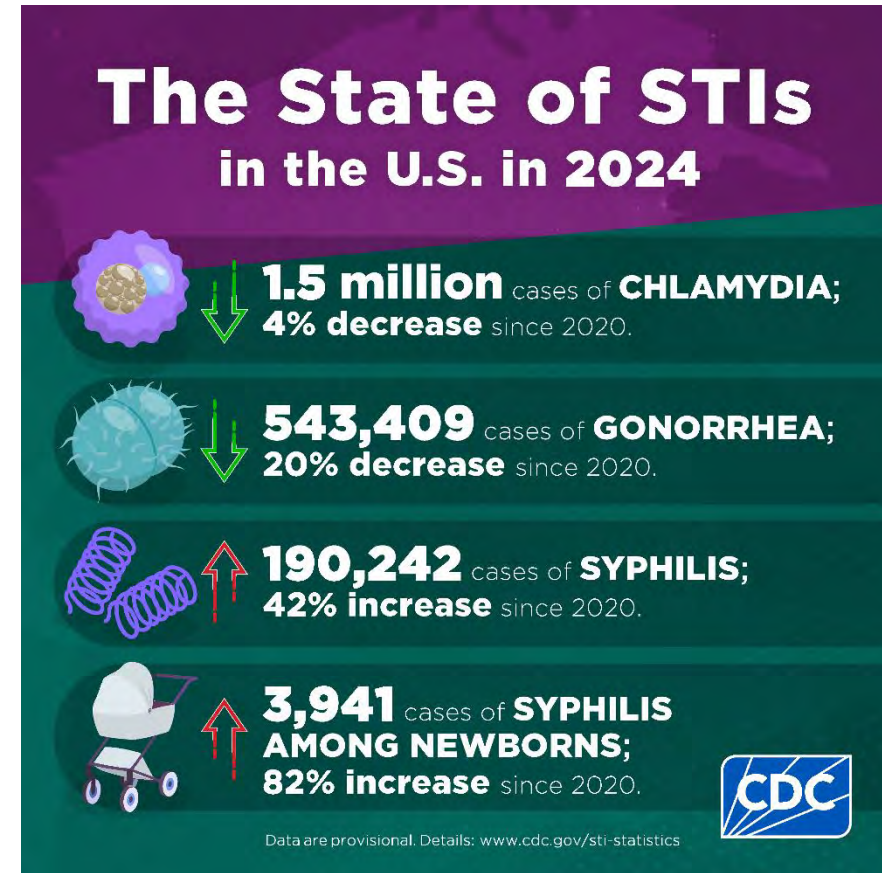
1. We offer Doxy-PEP routinely to all patients
2. We offer Doxy-PEP routinely to patients with an STI in the prior 12 months
3. We offer Doxy-PEP in patients who ask for it
4. We don't offer Doxy-PEP currently but are planning to in the next 6 months
5. We don't offer Doxy-PEP currently but may in the future
6. We do not have plans to offer Doxy-PEP

Sexually Transmitted Infections (STIs) Are Prevalent

1 Million STIs are Acquired Every Day



US Cases Remain High



Why Do We Need to Prevent STIs?

Rising Resistance



Surveillance Program	Ceftriaxone	Cefixime	Azithromycin	Ciprofloxacin
WHO EGASP 2023 9 countries (Asia/Africa) N=2,491 isolates	3.8% overall (Cambodia 15%; Vietnam 20%)	8.9% overall (Cambodia 53%; Vietnam 30%)	3.6% overall (Cambodia 21%; Vietnam 7%)	95% (all countries)
Euro-GASP 2022 23 EU/EEA countries N=3,008 isolates	0.03% (1 isolate, Germany)	0.3% (10 isolates, 6 countries)	24.9% (↑ from 9% in 2019)	65.8% (↑ from 57% in 2019)
China MMWR 2022 13 provinces N=2,804 isolates	8.1% (↑ from 2.9% in 2017; >20% in some provinces)	16.0%	16.9%	97.6%
United States 2022 First MDR cases reported	MIC ≥0.5 µg/mL (non-susceptible; clinically cleared)	Non- susceptible	Non- susceptible	Resistant

Why Do We Need to Prevent STIs?

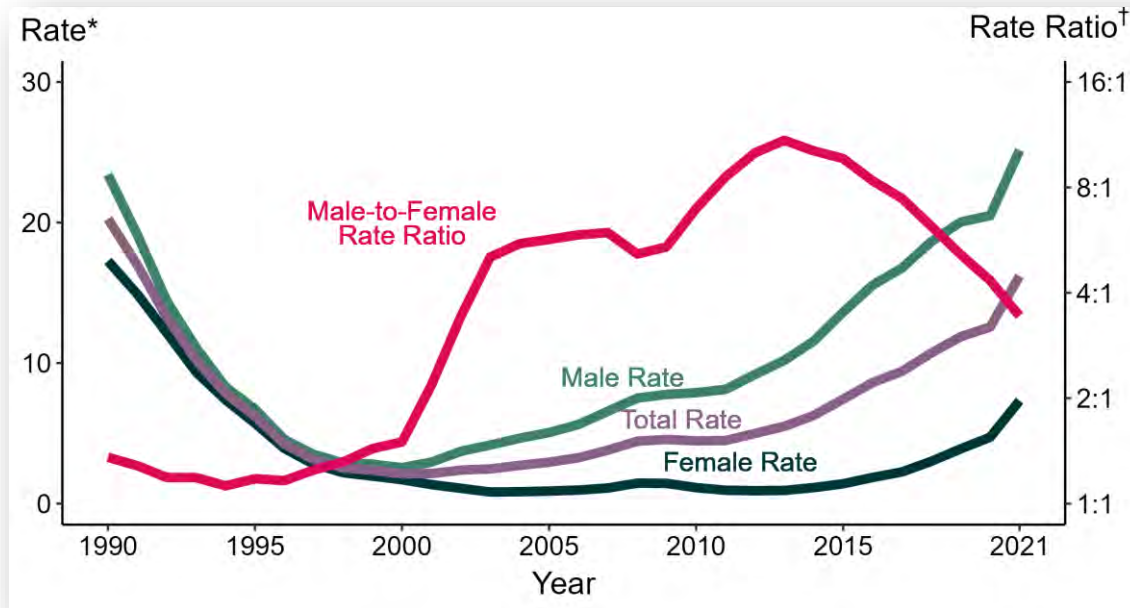
STIs Are Not Benign

- Pelvic inflammatory disease
- Chronic pelvic pain
- Infertility
- Adverse pregnancy outcomes
 - Prematurity
 - Stillbirth
- Urethral strictures
- Gastrointestinal fistulas
- Peri-rectal abscesses
- Severe complications of syphilis
 - Permanent hearing or vision impairment

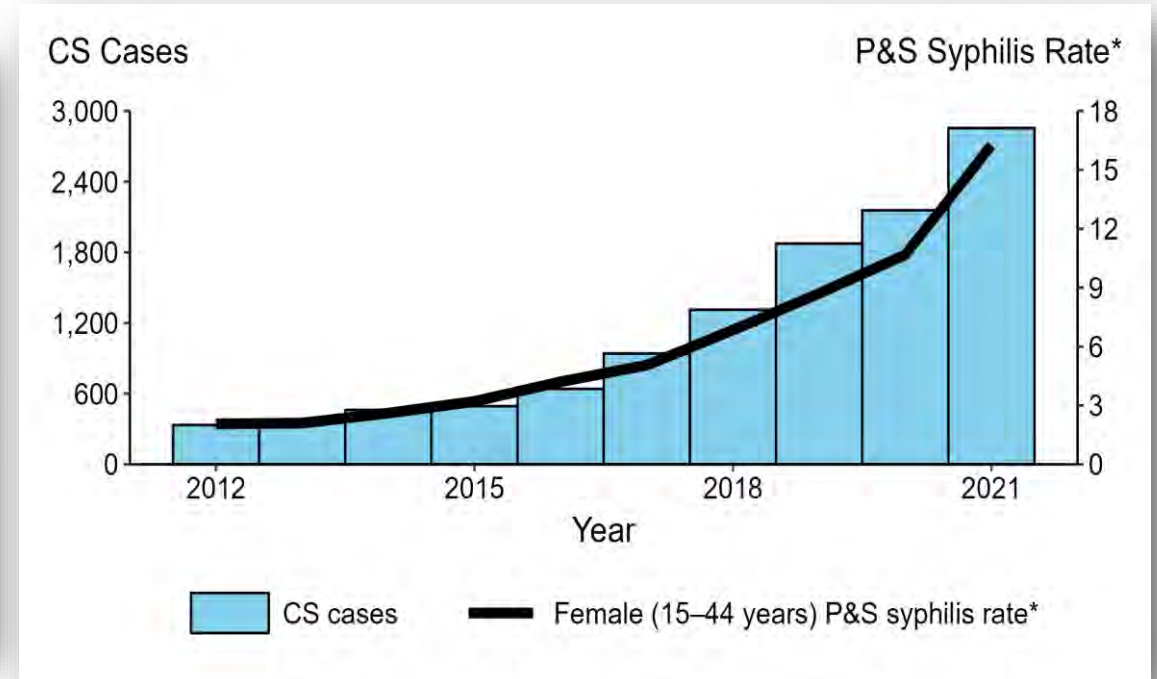


Why Do We Need to Prevent STIs?

Male to Female Ratio - Syphilis



Congenital Syphilis



STI Prevention Landscape



• Illustrated by Barolini, Nicoletta. 2024.

Audience Poll #2

Which Prevention Method Are You Least Likely to Offer Patients Regularly? (Choose the closest)

1. Barrier protection (condoms)
2. Risk reduction counseling
3. Vaccination
4. Medication prophylaxis
5. Routine screening
6. Symptomatic treatment
7. Presumptive Treatment
8. Partner Services (bringing the partner into clinic)
9. Expedited partner therapy

Medication Prophylaxis

Medication Prophylaxis

1. HIV post-exposure prophylaxis (PEP)
2. HIV pre-exposure prophylaxis (PrEP)



Medication Prophylaxis

Medication Prophylaxis

1. HIV post-exposure prophylaxis (PEP)
2. **HIV pre-exposure prophylaxis (PrEP)**



Medication Prophylaxis

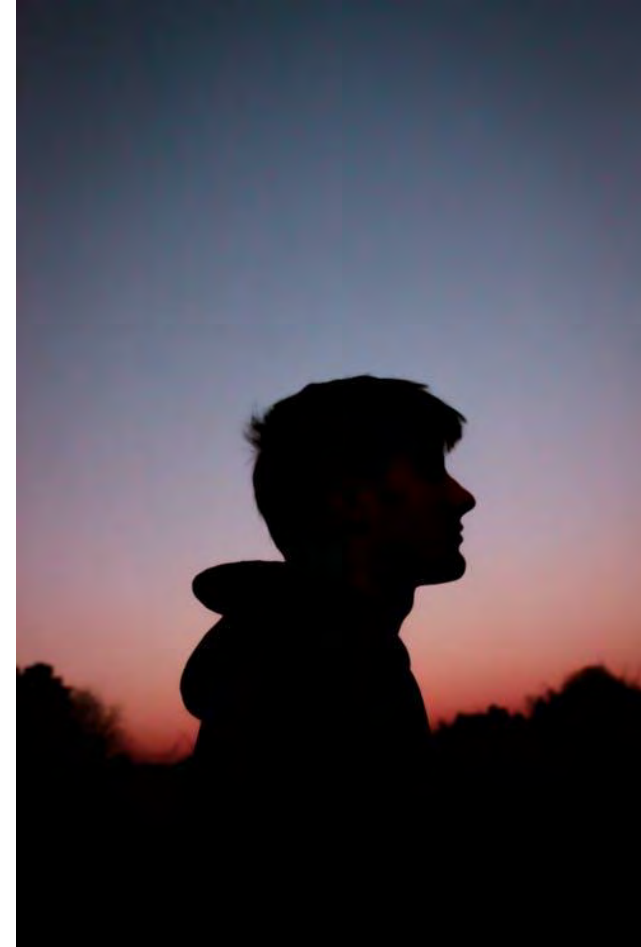
Medication Prophylaxis

1. HIV post-exposure prophylaxis (PEP)
2. HIV pre-exposure prophylaxis (PrEP)
3. **Doxy-PEP**



Meet Marcus

- 29-year-old male in New York City
- Takes HIV PrEP for HIV prevention
- Sexually active with men
 - Four partners since his last visit, no condom usage
- Walks into clinic due with 2 days of green penile discharge
- **Routine testing for HIV, syphilis, and three-site gonorrhea/chlamydia testing performed**
- **Treated empirically with Ceftriaxone and Doxycycline**



Marcus's Prevention Plan



Primary Prevention

Vaccination

- HPV
- Hepatitis A/B
- Meningococcal ACYW
- Mpox

Medication

- HIV PrEP



Secondary Prevention

Routine screening

- Q3 Month Screening

Syndromic testing/treatment

Presumptive treatment

Marcus's Results

Lab results:

HIV Ab/Ag - Negative

Urine GC/CT – GC positive

Pharyngeal GC/CT – GC positive

Rectal GC/CT – GC positive

RPR – 1:128

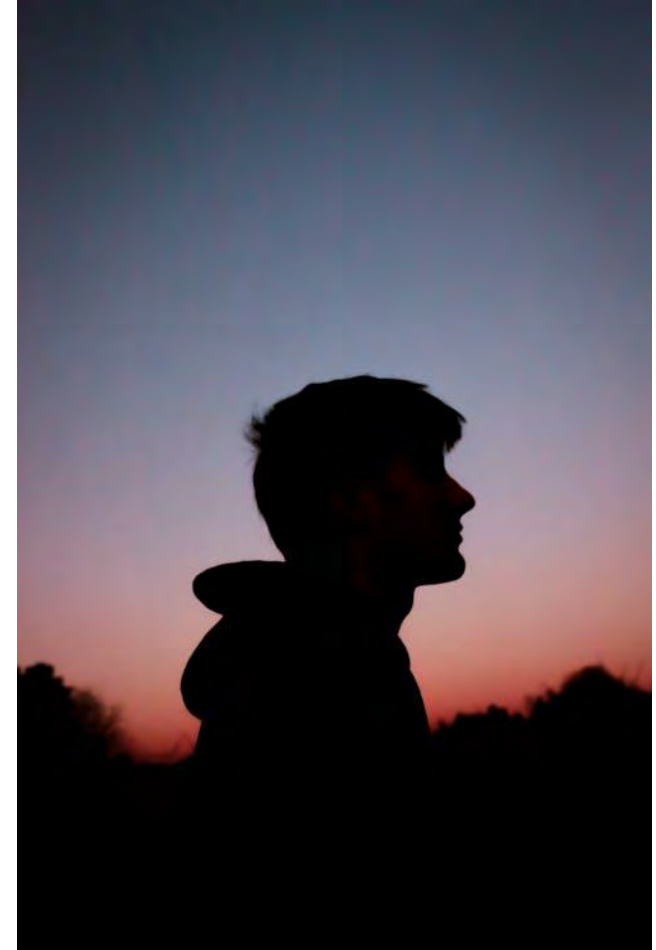
- 1:4 - 2 months ago



Received additional 7 days (total 14 days) of doxycycline for early latent syphilis due to the BPG shortage at the time

Marcus

- Returned 6 weeks later
- **“I got totally better but now it hurts again when I pee”**
 - Seven partners since his last visit
 - Is sure that his regular partners got treated for gonorrhea and syphilis
 - Repeat routine testing for HIV, syphilis, and three-site gonorrhea/chlamydia testing was performed
 - Treated empirically with Ceftriaxone and Doxycycline



Marcus's Results

Lab results:

HIV Ab/Ag - Negative

Urine GC/CT – GC positive

Pharyngeal GC/CT – GC positive

Rectal GC/CT – CT positive

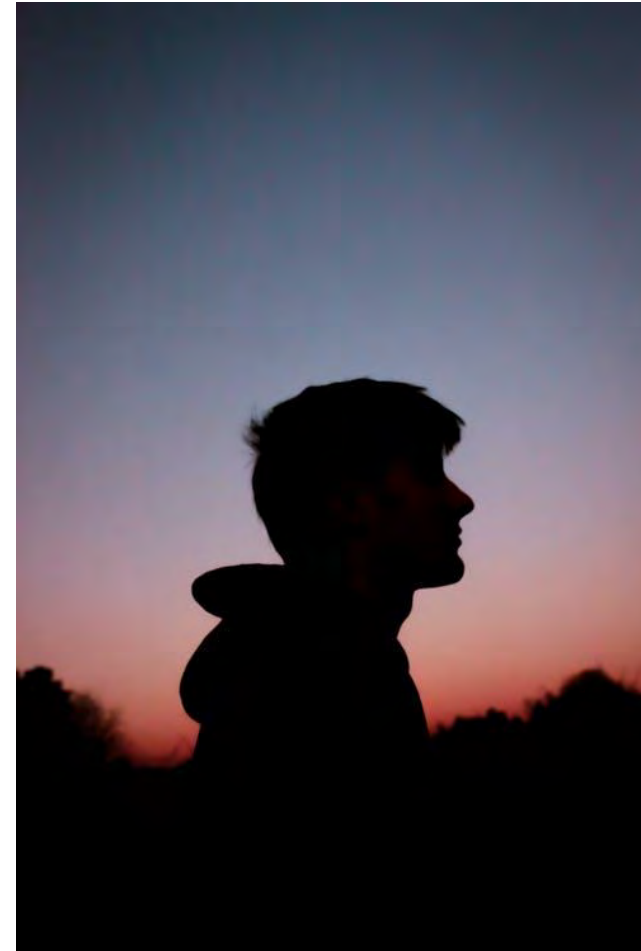
RPR – 1:32

- 1:128 – 6 weeks ago



Marcus

- Called to give Marcus his results and he was pretty upset
- **“This is frustrating, is there anything I can do so I stop getting STIs?”**



What is Doxy-PEP?

Doxycycline 200 mg

by mouth up to 72 hours
after a condomless
sexual encounter at any
anatomical site



- Doxycycline
- 200mg by mouth
- Up to 72 hours after
- A condomless sexual encounter at any anatomical site

What Do I Need To Know About Doxy-PEP?



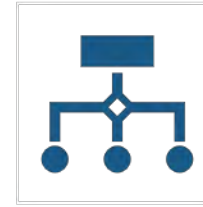
Benefits

Does it work?



Risks

Does it harm?



Implementation

How do I do this?

Benefits: Does Doxy-PEP Prevent STIs?

Audience Poll #3

Approximately how effective is Doxy-PEP against chlamydia and syphilis? (Choose the closest)

1. 100%
2. 80%
3. 50%
4. 20%
5. 0%

Benefits: Clinical Trial Data

Trial	Population	Chlamydia	Syphilis	Gonorrhea
<i>IPERGAY</i> <i>Molina Lancet ID 2018</i>	N=232 MSM on PrEP	↓ 70% (CI 0.13–0.70)	↓ 73% (CI 0.07–0.98)	↓ 17% (CI 0.47–1.47)
<i>DoxyPEP Trial</i> <i>Luetkemeyer et al. NEJM 2023</i>	N=327 MSM/TGW on HIV PrEP	↓ 88% (CI 0.05–0.25)	↓ 87% (CI 0.03–0.59)	↓ 55% (CI 0.32–0.65)
	N=174 MSM/TGW with HIV	↓ 74% (CI 0.12–0.57)	↓ 77% (CI 0.04–1.29)	↓ 57% (CI 0.26–0.71)
<i>DoxyVac</i> <i>Molina et al. Lancet ID 2024</i>	N=502 MSM on PrEP (~50% MenB vaccine)	↓ 83% (0.12–0.26) Combined primary endpoint		↓ 33% (CI 0.52–0.87)
<i>dPEP (Kenya)</i> <i>Stewart et al. NEJM 2023</i>	N=449 Cisgender women on PrEP	↓ 27% (CI 0.47–1.13)	1 event	↑ 64% (CI 0.78–3.47)

Doxycycline (PEP)

- **Safe and well tolerated in trials.**
- **Reduced bacterial STIs in MSM and transgender women**, with strongest effects for **chlamydia and syphilis**
- **Did not show efficacy in cisgender women** in the dPEP study; **low adherence** may have contributed

Benefits: Real-World Data Among Males

Study	Setting / N	Chlamydia	Syphilis	Gonorrhea	Time
<i>Sankaran et al.</i> <i>JAMA Intern Med</i> 2025	SF citywide (ITS) MSM & TGW	↓ 50% (CI -59% to -38%)	↓ 51% (CI -58% to -43%)	↑ significant (+1.8%/mo; CI +0.9% to +2.7%)	13 mo
<i>Traeger et al.</i> <i>JAMA Intern Med</i> 2025	Kaiser Permanente N. CA N=11,551 PrEP users; 2,253 on doxy-PEP	↓ 79% (RR 0.21; CI 0.16–0.27)	↓ 80% (RR 0.20; CI 0.11–0.37)	↓ 12% (RR 0.88; CI 0.77–1.00)	2022–23
<i>Spinelli et al.</i> <i>Clin Infect Dis</i> 2025	SF sexual health clinic (ITS) N=4,592; 2,524 on doxy-PEP	↓ 83% (AOR 0.17; CI 0.12–0.25)		↓ 44% then ↑ (CI 0.44–0.71; late ↑ AOR 1.28)	96 wk
<i>Luc et al.</i> <i>Sex Transm Dis</i> 2026	Chicago CDPH Clinics N=219 MSM (96%)	↓ 78% (p<0.001)	0 cases post-provision	↓ 54% (p<0.001)	2024
<i>Lewis et al.</i> <i>Sex Transm Dis</i> 2025	Philadelphia STI Clinic N=508 MSM on PrEP	↓ 72% (IRR 0.28; CI 0.20–0.39)	Too few cases (n=2 each period)	↓ 51% (IRR 0.49; CI 0.37–0.65)	2019–23
<i>Raccagni et al.</i> <i>Lancet Infect Dis</i> 2025	San Raffaele, Milan N=222 MSM, (HIV+ or PrEP)	↓ 87% (aIRR 0.13; CI 0.09–0.19)	↓ 80% (aIRR 0.20; CI 0.13–0.32)	↓ 74% (aIRR 0.26; CI 0.20–0.33)	2022–24 (pre/post)
<i>Huang et al.</i> <i>AJPH</i> 2025	Northern Manhattan, NYC N=100 EADP cohort, (propensity-matched)	↓ 76% (IRR 0.24; CI 0.09–0.51)	Not reported separately	NS reduction (IRR 0.95; CI 0.49–1.82)	Apr 2023– Feb 2024
<i>Os... OF</i>	LA LGBT Center (EQHC) N=2,082	↓ 98%	↓ 96%	↓ 55%	

⚠️ **Chlamydia & Syphilis: Real-world reductions across settings.**

Benefits: At the Population Level

52%

Total reduction in syphilis cases vs. counterfactual
9,951 cases analyzed over 102 study months

Reduction by population n	
Cisgender men	53%
Cisgender women	47%
Trans / non-binary	33%
Total population	52%

The good news: indirect effects

Cisgender women dropped 47% in a population that essentially does not receive doxy-PEP.
May reflect indirect network effects through MSMW partners.

The bad news: syphilis in pregnancy was not affected

This decline did not affect syphilis in pregnant persons or congenital syphilis.

Benefits: What About Females?

- Qualitative sub-study of 69 young women (18–30, Kisumu, Kenya) in dPEP trial
- Barriers to adherence:
 - Side effects (esp. nausea on empty stomach)
 - Pill burden (dPEP + daily HIV PrEP)
 - Stigma, privacy concerns
 - Partner disapproval & conflict
 - Forgetfulness, routine disruptions
- Facilitators:
 - Belief in effectiveness
 - Discreet pill carriers (lipstick containers)
 - Social/family encouragement
 - Integration into routines
- **Suggests adherence challenges, not drug ineffectiveness, explain null results**

Table 2 Barriers and Facilitators Identified in The Interviews, Grouped by Time Points

Theme	Month 1 (Initial IDIs)	Month 6 (IDIs)	Month 12 (IDIs at Exit)	FGDs (after study exit)
Barriers				
Side Effects	✓ (28/40)	✓ (15/40)	✓ (25/40)	✓
Stigma and Privacy Concerns	✓ (21/40)	✓ (27/40)	✓ (15/40)	✓
Forgetfulness and Routine Disruptions	✓ (8/40)	✓ (16/40)	✓ (20/40)	✓
Partner Influence and Reactions	✓ (13/40)	✓ (14/40)		✓
Pregnancy and Health Concerns		✓ (5/40)		
Access Issues			✓ (5/40)	
Facilitators				
Perceived Effectiveness/Protection	✓ (12/40)	✓ (15/40)	✓ (30/40)	✓
Use of Discreet Pill Carriers	✓ (10/40)	✓ (16/40)	✓ (15/40)	✓
Social Support and Encouragement	✓ (9/40)	✓ (14/40)	✓ (20/40)	✓
Routine Integration	✓ (7/40)	✓ (14/40)	✓ (25/40)	✓
Health Education and Provider Support		✓ (8/40)		
Fear Reduction		✓ (1/40)		
Positive Experiences and Benefits		✓ (7/40)		

• Kwach B et al. *BMC Infect Dis.* 2025

Benefits: Real-World Data Among Females

Study	Population & Setting	Design	Chlamydia	Syphilis	Gonorrhea	Notes
<i>Abe et al. JAC Antimicrob Resist 2025</i>	Cisgender female sex workers Tokyo, Japan N=40	Retrospective cohort (doxyPrEP 100mg daily)	↓ 65%, NS (IRR 0.35; CI 0.12–1.03; p=0.056)	↓ 100% (0 cases post-initiation; 8 cases pre)	NS reduction (IRR 0.45; CI 0.15–1.29; p=0.136)	Overall STI ↓ 67% (IRR 0.33; CI 0.13–0.84; p=0.020); no change in BV or VVC
<i>Hazra et al. Sex Transm Dis 2026</i>	AFAB persons 4 US SHCs N=35 (83% trans men)	Multicenter case series (no comparator)	1 rectal CT post-initiation	1 case post-initiation	Most common post-PEP STI (GC at 3 sites)	STI pre: 45.7% had STI in prior 12 mo; STI post: 20%.

**⚠ Evidence in AFAB individuals is limited.
Preliminary data in the real world suggests potential benefit.**

Risks: What Do We Know About The Risks of Doxy-PEP?

Audience Poll #4

What is your biggest concern about providing Doxy-PEP to patients?

(I know that many of them may apply)

1. It doesn't work (or won't work long-term)
2. Risk compensation (my patient may be more likely to have sex without barrier protection)
3. I am worried about it changing the presentation of STIs
4. I am worried about generating resistance to STIs
5. I am worried about generating resistance to commensal organisms like staph
6. Something else (please put it in the chat)

Risks: Doxy-PEP

Well Known Side Effects:

- GI distress
- Pill esophagitis
- Dermatologic

Growing Understanding:

Resistance with chlamydia or syphilis

Antimicrobial resistance in gonorrhea and commensals

Impact on STI diagnostics and presentations

Unknowns:

Impact on *M. genitalium*

Impact on microbiome long-term (and implications)

Potential cross-resistance with other antibiotics

Change in skin flora?

Risks: Doxy-PEP

Well Known Side Effects:

- **GI distress**
- **Pill esophagitis**
- **Dermatologic**

Growing Understanding:

Resistance with chlamydia or syphilis

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Change in skin flora?

Dermatologic Adverse Events With Doxycycline

Meta Analysis Results

- 18 placebo-controlled trials, 100-200mg doxycycline daily
- Dermatologic adverse events
 - 5.52 times increased risk
 - (95% CI: 1.75-17.42, $p < 0.01$)
 - **Highest relative risk of all adverse event categories**

Specific Dermatologic Findings

- Rash: most commonly reported
- Photosensitivity reactions: dose-dependent
- Fixed drug eruptions: recurrent at same sites
- Acne-like reactions: paradoxical
- Severity varied: mild to severe requiring discontinuation

Risks: Doxy-PEP

Well Known Side Effects:

- GI distress
- Pill esophagitis
- Dermatologic

Growing Understanding:

Resistance with chlamydia or syphilis

Antimicrobial resistance in gonorrhea and commensals

Impact on STI diagnostics and presentations

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Impact on microbiome long-term (and implications)

Potential cross-resistance with other antibiotics

Change in skin flora?

Risks: Resistance in Chlamydia and Syphilis

Chlamydia

- No clinical resistance to tetracyclines in *Chlamydia trachomatis*
- Tetracycline resistance has been seen in *C. suis* (pigs)
 - tetC (efflux pump)

Syphilis

- No clinical resistance to tetracyclines in *Treponema pallidum*



- Widespread macrolide resistance was seen with a single point mutation

⚠️ Chlamydia and syphilis resistance has not been seen.

Risks: Resistance and STI Pathogens

Study	Key Finding	Implication
<i>Mortimer & Grad Clin Infect Dis 2023</i>	Global genomic analysis (N=5,644): 26.8% tet-R in MSM isolates; co-resistance with ciprofloxacin common; geographic variation substantial	Regionally varying doxy-PEP GC efficacy; surveillance is critical
<i>Bell et al. MJA 2024</i>	GC tetracycline resistance 45% in Australia overall; up to 78% in some regions. Doxy-PEP trials show increasing tet-R GC in users.	High background GC tet-R severely limits doxy-PEP gonorrhea efficacy in Australia.
<i>Unemo et al. Lancet Reg Health Eur 2024</i>	4,787 European GC isolates (2022): 63.4% tetracycline resistance overall; high-level resistance rising. Country variation 30–90%.	Europe-wide high tet-R GC makes doxy-PEP gonorrhea benefit unreliable; AMR acceleration risk is real.
<i>Soge et al. Clin Infect Dis 2025</i>	King County: tet-R GC ↑ 27%→70%; high-level resistance ↑ 2%→65%; strongest increase in those taking >3 doses/month	Real-world evidence that doxy-PEP is already accelerating gonorrhea resistance
<i>Berçot et al. Clin Infect Dis 2025</i>	DoxyVac RCT (France): high-level tet-R GC (tetM) ↑ in doxy-PEP arm (60% vs 25%, P<.001). Reduced cefixime susceptibility also ↑ (32% vs 10%, P=.033). All isolates remained susceptible to ceftriaxone.	RCT-level evidence: doxy-PEP selects for tet-R and reduced cefixime susceptibility in GC. Ceftriaxone still effective.

⚠ Tetracycline resistance in gonorrhea is the primary AMR concern.

Risks: Resistance and Commensals

Study	Organism / Compartment	Key Finding	Implication
<i>Luetkemeyer et al. NEJM 2023</i>	<i>S. aureus</i>	↓ <i>S. aureus</i> colonization overall ↑ doxy-R <i>S. aureus</i> in carriers (p=0.0008)	Doxy reduces overall <i>S. aureus</i> carriage but selects for resistant strains; net stewardship risk unclear
<i>Mittelstaedt et al. J Infect Dis 2025</i>	<i>S. aureus</i>	Baseline tet-R: 13.2% ↑ co-resistance: 4.52× TMP/SMX, 3.62× clindamycin (p<0.001)	Pre-existing co-resistance in doxy-PEP-eligible populations; doxy will amplify
<i>Soge et al. Clin Infect Dis 2025</i>	<i>S. aureus</i> & GAS	↑ tet-R <i>S. aureus</i> : 18% vs 8% (p<0.001) ↑ GAS colonization: 9% vs 4% (p=0.008) Both dose-dependent	Doxy-PEP selects for resistance in off-target commensal pathogens; <i>S. aureus</i> and GAS surveillance warranted
<i>Molina et al. (DoxyVac) Lancet Infect Dis 2024</i>	MRSA & ESBL <i>E. coli</i>	→ No sig. Δ MRSA (pharyngeal) → No sig. Δ ESBL <i>E. coli</i> (rectal) vs control in RCT	Reassuring: no doxy-PEP-driven increase in MRSA or ESBL <i>E. coli</i> in this RCT. Full <i>S. aureus</i> AMR substudy still pending publication.
<i>Robinson et al. Sci Rep 2025</i>	Commensal <i>Neisseria</i>	↑ 46% of isolates carry doxy-R ↑ with recent doxy use; rapid in vitro resistance acquisition	Commensal <i>Neisseria</i> are active resistance reservoirs; doxy-PEP drives selection and cross-species HGT to pathogenic GC
<i>Chu et al. Nat Med 2024</i>	Gut resistome	↑ tet ARGs: 46%→51% metagenome; 4%→15% metatranscriptome ↓ Reversible post-stop; no Δ microbial diversity	Reversible but clinically significant during use; tetracycline ARG burden rises substantially

⚠ Doxy-PEP may increase tetracycline resistance in bacteria and the gut resistome. Need to account for this when providing empiric antibiotics

Antimicrobial Resistance in Doxy-PEP: Summary

- **Sexually Transmitted Infections:**
 - No resistance seen in chlamydia trachomatis or treponema pallidum
 - Tetracycline resistance rising rapidly in gonorrhea (up to 70% in King County MSM) likely **making doxy-PEP less effective for gonorrhea prevention**
 - Reduced cefixime susceptibility observed; ceftriaxone remains effective
 - Impact on Mycoplasma genitalium remains unknown (for now)
- **Commensal Organisms:**
 - Resistance emerging in commensal Neisseria, gut flora, S. aureus, Group A strep
 - Reservoirs for both horizontal gene transfer and their own infections
 - Tet-resistant S. aureus linked to TMP-SMX and clindamycin resistance
 - Monitor for indirect selection of multidrug resistance
 - Increase in tetracycline resistant elements in the resistome
 - **Account for this in empiric antibiotic choices**
- **Ongoing observation is required as Doxy-PEP use increases**

Syphilis Serology Impacted by Doxy-PEP/PrEP?

Case report

DOXY do, or DOXY Don't? Syphilis and doxycycline post-exposure prophylaxis: A case report

Omar Chircop¹, Courtney Jagers², Martha Spiteri³, Aaron Schembri⁴ and Valeska Padovese⁵

INTERNATIONAL JOURNAL OF
STD & AIDS

International Journal of STD & AIDS
2025, Vol. 36(4) 324–326
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JOURNAL ARTICLE

A 24-year-old man taking PrEP with unusual syphilis test results

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Marika L Forsythe, MD ✉, Hong-Kee Lee, PhD

Laboratory Medicine, Volume 56, Issue 5, September 2025, Pages 550–553,

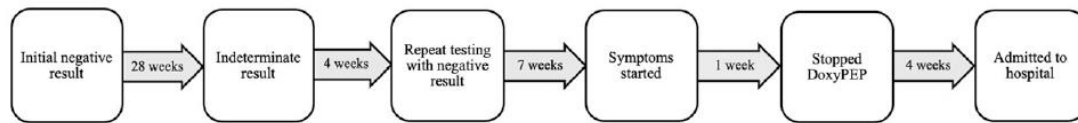
<https://doi.org/10.1093/labmed/lmae114>

Published: 29 March 2025

Table 1. Summary of the patient's laboratory results and subsequent interpretations regarding a syphilis diagnosis

Date	Test	Result, antibody index (AI)	Interpretation
July 16, 2022	Syphilis antibody, total	1.3 (reactive)	Negative
	RPR quantitative test	Nonreactive	
	Syphilis antibody, TP-PA	Nonreactive	
July 30, 2022	Syphilis antibody, total	1.0 (equivocal)	Negative
	RPR quantitative test	Nonreactive	
	Syphilis antibody, TP-PA	Nonreactive	
March 4, 2023	Syphilis antibody, total	>8.0 (reactive)	Negative
	RPR quantitative test	Nonreactive	
	Syphilis antibody, TP-PA	Nonreactive	
March 28, 2023	Syphilis antibody, total	6.0 (reactive)	Positive
	RPR quantitative test	Nonreactive	
	Syphilis antibody, Trep-Sure	Positive (reactive)	
November 10, 2023	Syphilis antibody, total	0.5 (nonreactive)	Negative
February 21, 2024	Syphilis antibody, total	0.4 (nonreactive)	Negative

RPR, rapid plasma reagin; TP-PA, *Treponema pallidum* particle agglutination.



Risks: Impact on Syphilis Serology

Lehman et al. | STD 2026

Red Door Clinic, Minneapolis • n=596 doxyPEP Rx users • Dec 2022-2024

56%*

lower syphilis incidence
in doxyPEP Rx users
vs all AMAB pre-period

66%

of breakthrough cases:
no reactive RPR
at diagnosis

1:4

median RPR in
Doxy-PEP users vs 1:16
(all AMAB)

- 9/596 doxyPEP Rx users with syphilis; lab-confirmed: 33% vs 76% in non-Rx users (p=0.007)

Cannon et al. | STI/HIV World Congress 2025 (OA11.02)

Seattle-King County PrEP clinic • n=1777 patients • Apr 2023-Dec 2024

12%

of P&S syphilis cases
in doxyPEP users
vs 88% in non-user

1:8

median RPR in
doxyPEP users vs 1:32
in non-users (p=0.03)

1:2

RPR mode in
doxyPEP users
vs 1:128 in non-users

- 59 syphilis cases: 42 (71%) non-users, 14 (24%) doxyPEP users, 3 (5%) unknown

**⚠ Breakthrough cases appear more likely to have lower titers.
In a patient taking doxyPEP with syphilis suspicion, RPR is not confirmatory.
Exam and direct treponemal testing remain essential**

Risks: Doxy-PEP

Well Known Side Effects:

GI distress
Pill esophagitis
Dermatologic

Growing Understanding:

Resistance with
chlamydia or syphilis
Antimicrobial resistance
in gonorrhea and
commensals
Impact on STI
diagnostics and
presentations

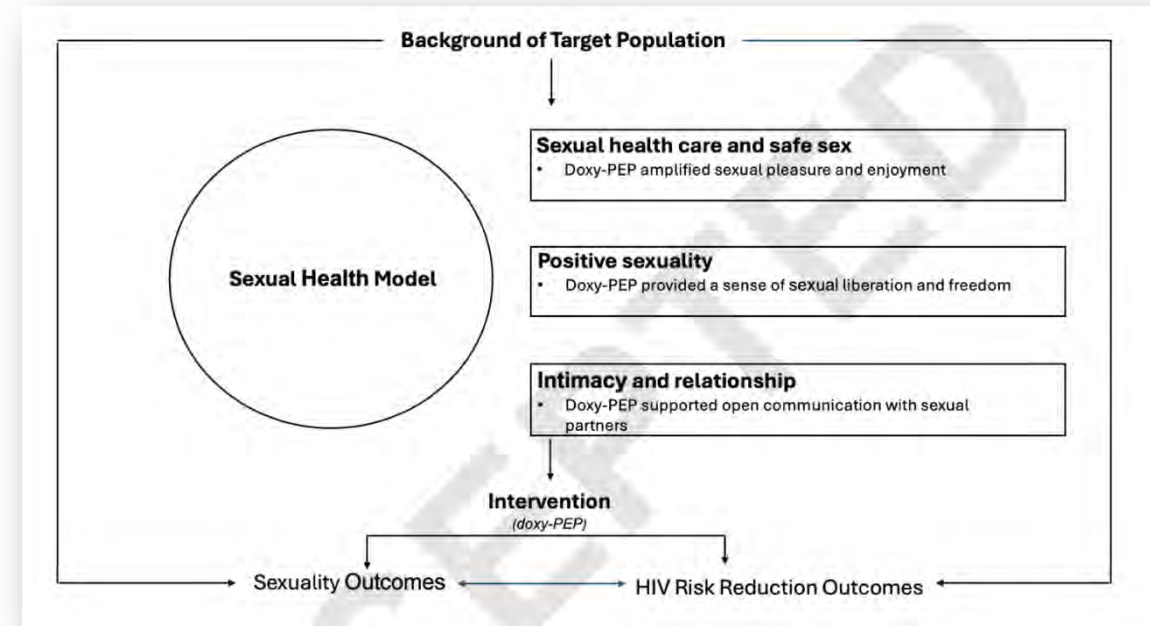
Unknowns:

Impact on *M. genitalium*
**Impact on microbiome
long-term (and
implications)**
**Potential cross-
resistance with other
antibiotics**
Change in skin flora?

Implementation: How Do I Implement Doxy-PEP In Practice?

Implementation - Why You Should Give Doxy-PEP?

- Qualitative study:
 - 43 MSM (Seattle & San Francisco, HIV+ and PrEP users)
- **Three key themes:**
 - **Amplified pleasure & enjoyment**
 - Reduced STI anxiety
 - **Sexual liberation & freedom**
 - Confidence to explore desires, casual encounters
 - **Open partner communication**
 - More honest discussions about STI prevention

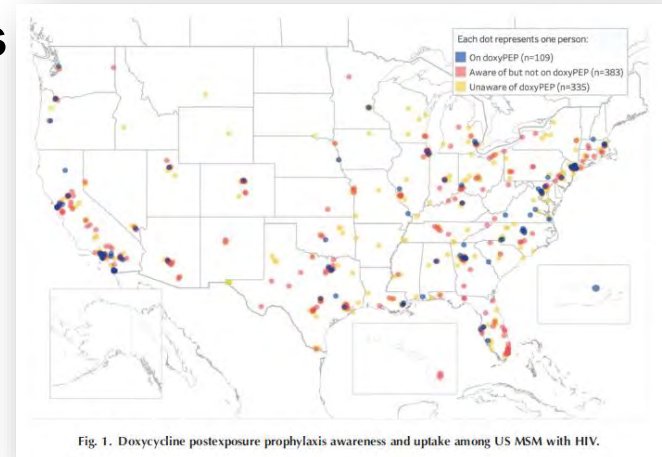


⚠ Doxy-PEP is not just a tool for STI prevention, but a tool for sexual well-being

Implementation - Why You Should Offer Doxy-PEP?

- National survey of 827 MSM with HIV (46 states, DC, Puerto Rico)
 - **Awareness:** 59% aware, 41% never heard of Doxy-PEP
 - **Use:** 13% currently prescribed; 20% of CDC-eligible on Doxy-PEP
 - Strong correlates:
 - Recent bacterial STI (↑ awareness & uptake)
 - Higher income, Pacific region residence
 - Lower awareness/uptake in **South, Midwest, Mountain states**

⚠️ **>80% not on Doxy-PEP said they would start if offered by their HIV provider**



Implementation – Who Should Get Doxy-PEP?

CDC Clinical Guidelines on the Use of Doxycycline Postexposure Prophylaxis for Bacterial Sexually Transmitted Infection Prevention, United States, 2024

Recommendation*	Strength of recommendation and quality of evidence [†]
<ul style="list-style-type: none"> Providers should counsel all gay, bisexual, and other men who have sex with men (MSM) and transgender women (TGW) with a history of at least one bacterial sexually transmitted infection (STI) (specifically, syphilis, chlamydia or gonorrhea) during the past 12 months about the benefits and harms of using doxycycline (any formulation) 200 mg once within 72 hours (not to exceed 200 mg per 24 hours) of oral, vaginal, or anal sex and should offer doxycycline postexposure prophylaxis (doxy PEP) through shared decision-making. Ongoing need for doxy PEP should be assessed every 3–6 months. 	<p style="text-align: center;">AI</p> <p>High-quality evidence supports this strong recommendation to counsel MSM and TGW and offer doxy PEP.</p>
<ul style="list-style-type: none"> No recommendation can be given at this time on the use of doxy PEP for cisgender women, cisgender heterosexual men, transgender men, and other queer and nonbinary persons. 	<p>Evidence is insufficient to assess the balance of benefits and harms of the use of doxy PEP</p>
<p>*Although not directly assessed in the trials included in these guidelines, doxy PEP could be discussed with MSM and TGW who have not had a bacterial STI diagnosed during the previous year but will be participating in sexual activities that are known to increase likelihood of exposure to STIs.</p> <p>[†] See Table.</p>	

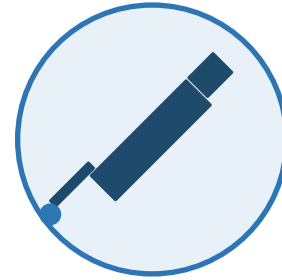
• Bachmann L et al. *MMWR*. 2024

Implementation – Screening



Test

- HIV
- Gonorrhea/Chlamydia NAATs
 - 3 sites (urine, pharynx, rectum)
 - GC culture if recurrent
- Syphilis
- Hepatitis A, B, C



Vaccinate

- HPV
- Hepatitis A and B
- MenACWY
- Mpox



Counsel

- Full menu of prevention options
- Doxy-PEP benefits and risks
- Use for its intended purpose
- Drug and food interactions (antacids, cations)

Implementation - Counsel on the Full Menu of Prevention Options



Implementation – Counseling on Risks

Well Known Side Effects:

- GI distress
- Pill esophagitis
- Dermatologic

Growing Understanding:

Resistance with chlamydia or syphilis

Antimicrobial resistance in gonorrhea and commensals

Impact on STI diagnostics and presentations

Unknowns:

Impact on *M. genitalium*

Impact on microbiome long-term (and implications)

Potential cross-resistance with other antibiotics

Change in skin flora?

Implementation - Counsel on Use for Its Intended Purpose

Not for colds, sinus infections, or sore throats

- Patients with Doxy-PEP prescription have doxycycline at home
- ~24% of households with leftover antibiotics use them to self-treat, most commonly for respiratory infections
 - Most URIs, sinusitis, and pharyngitis are viral; doxycycline provides no benefit
 - Doxycycline showed no benefit over placebo for acute sinusitis in a randomized trial (De Sutter et al. 1997)

⚠ Counseling message: "This prescription is only for after sex, not for when you feel sick."

Not for treating active STI symptoms

- Doxy-PEP is prophylaxis, not treatment: 200 mg single dose is not a curative regimen for any bacterial STI
 - Gonorrhea requires IM ceftriaxone
 - Syphilis treatment is IM penicillin; doxycycline is an alternative at different dosing
 - Chlamydia treatment is doxycycline 100 mg BID x 7 days, not a one-time 200 mg dose
- Self-treating delays proper evaluation, culture, and partner notification

⚠ Counseling message: "If you have symptoms, come in. Don't try to treat yourself with Doxy-PEP."

Implementation - Counsel on Drug and Food Interactions

Interaction	Effect	Counseling
Divalent/trivalent cations (Ca, Mg, Fe, Zn, Al)	Chelation; reduced doxycycline absorption	Separate by ≥ 2 hours from multivitamins, iron supplements, and antacids
Dairy products	Mild reduction in absorption	Take with water; can take with food but avoid heavy dairy meals
Isotretinoin / other retinoids	Risk of pseudotumor cerebri	<u>Avoid co-administration</u>
Warfarin	May potentiate INR	Monitor INR if both are used chronically
Bismuth subsalicylate	Reduced absorption	Separate dosing
Oral contraceptives	<u>Historical concern</u> ; modern evidence does not support reduced OCP efficacy	Reassure; no need for backup contraception solely due to doxycycline

Implementation - Patient Decision Aids

What is Doxy-PEP? A way to lower your chance of getting a sexually-transmitted infection (STI) such as gonorrhea, chlamydia and syphilis by taking an antibiotic called doxycycline after condomless sex.

Below is an example of how to take Doxy-PEP. This schedule can vary depending on when and how you have sex.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
NO SEX	SEX	SEX multiple times	SEX	NO SEX	NO SEX	SEX
	Doxy-PEP 200 mg	Doxy-PEP 200 mg	Forgot pills			Doxy-PEP 200 mg

Sex = oral, anal or vaginal/front-hole sex where a condom isn't used for the entire time.

🔴🔴 = 200mg of doxycycline (two 100mg pills). No more than 200mg should be taken every 24 hours, even if you have sex multiple times in a day.

If you forget to take your Doxy-PEP after sex and have sex again within 72 hours, simply take a 200mg dose now. No need for multiple doses.

You have up until 72 hours after sex to take Doxy-PEP, but it's best to take it as close to sex as possible.

Doxy-PEP is not 100% effective against preventing STIs, so you will still need to get tested for STIs regularly.

Doxy-PEP does not protect against HIV. It is different from STI treatment. In this case, do not take Doxy-PEP.

How to take Doxy-PEP

- Doxy may increase sun sensitivity; use sunscreen for protection.
- Take with a large glass of water and food to ease stomach upset.
- Remain upright for 30 minutes after taking to minimize stomach irritation.
- Wait 2 hours before taking dairy, calcium, vitamins, or antacids after taking doxy. Fiber intake is fine.

Tell your healthcare provider if....

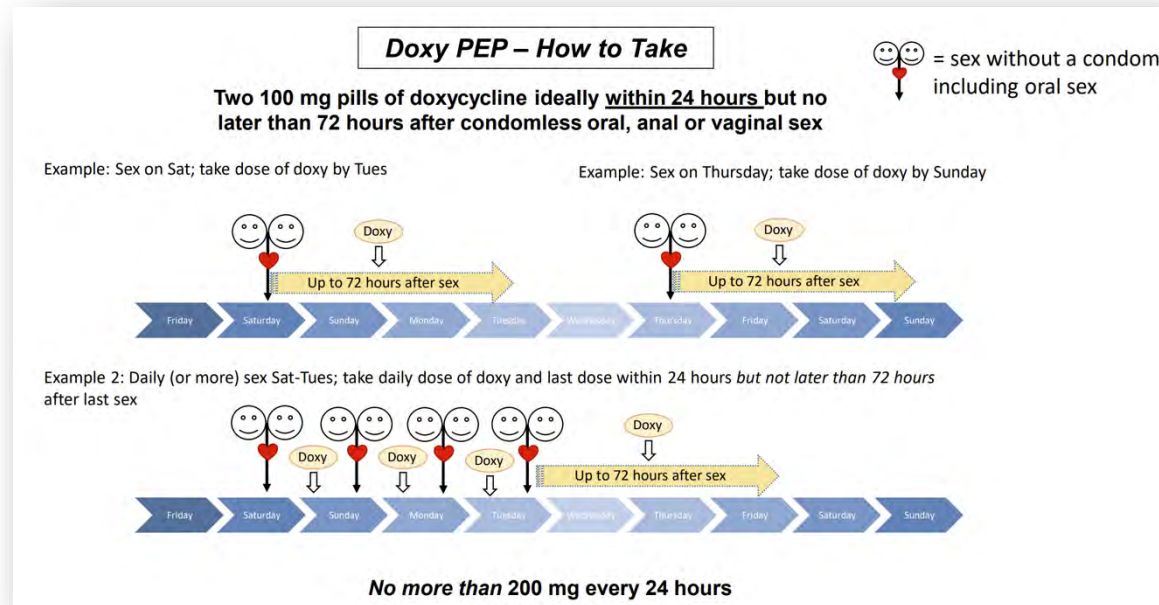
- If you have symptoms of an STI, or have a partner who knows they have an STI tell your provider. In this case, do not take Doxy-PEP.
- If you are taking any other antibiotics from another provider, pharmacy or friend.

Things we are still learning about Doxy-PEP:

- The long term effects of Doxy-PEP on the bacteria we already have in our intestines and on our skin.
- Whether using Doxy-PEP will make it harder to treat bacterial infections with doxycycline in the future.

- Pilot of a patient decision aid (PDA) in two NYC sexual health clinics
- 30 participants
 - All AMAB; 30% living with HIV; all with ≥1 STI in past year
- PDA counseling improved:
 - Familiarity with Doxy-PEP +27%
 - Comfort with Doxy-PEP +24%
 - Knowledge about Doxy-PEP +16%
- Participants rated the PDA highly acceptable, appropriate, and feasible

Implementation - Patient Decision Aids



About Doxy-PEP



What is doxy-PEP?

- Doxy-PEP means taking the antibiotic doxycycline after sex, to prevent getting an STI. It is like a morning-after pill but for STIs. Taking doxy-PEP reduces your chance of acquiring syphilis, gonorrhea, and chlamydia by about two-thirds.



When should I take doxy-PEP?

- Two 100 mg pills of doxycycline should be taken ideally within 24 hours but no later than 72 hours after condomless sex. Condomless sex means oral, anal or vaginal/front-hole sex where a condom isn't used for the entire time.

What about when I have sex again?

- If you have sex again within 24 hours of taking doxycycline, take another dose 24 hours after your last dose. You can take doxycycline as often as every day when you are having condomless sex but don't take more than 200 mg (two 100 mg pills) every 24 hours.



How should I take doxy-PEP?

- Take doxycycline with plenty of water or something else to drink so that it does not get stuck when you swallow. If your stomach is upset by doxycycline, taking it with food may help.
- Some people are more sensitive to the sun when they take doxycycline, so wear sunscreen.
- Please do not share doxycycline with others.
- Avoid dairy products, calcium, antacids, or multivitamins 2 hours before after taking doxycycline.



What are we still learning about doxy-PEP?

- Does it affect normal ("good") bacteria in our intestines?
- Could it increase or decrease the bacteria that live on our skin, or make them resistant to doxycycline (for example staph)?
- Will doxy-PEP increase doxycycline resistance in bacteria that cause STIs?
 - Although doxycycline has been used for decades, there is not resistance to doxycycline in chlamydia or syphilis.
 - About 25% of gonorrhea in the US is already resistant to doxy; doxy-PEP may not work against these strains. The DoxyPEP study and other studies will help understand whether using doxy-PEP changes resistance in gonorrhea.



Reminders

- Call us at 628-217-6692 if you run out of doxycycline, if you are having any side effects, or if you think you may have an STI.
- Please continue to get tested for STIs every 3 months and whenever you have symptoms.
- Doxy-PEP doesn't protect against MPX (monkeypox), HIV, or other viral infections



Implementation - Prescribing

FOR _____ DATE _____

ADDRESS _____

REFILL _____ TIMES

A generically equivalent drug product may be dispensed unless the practitioner hand writes the words "Brand Necessary" or "Brand Medically Necessary" on the face of the prescription.

R_x

Doxycycline Monohydrate 100mg tabs
Take 2 tabs by mouth as needed every 24 hours
Take 2 tablets by mouth, once daily as needed (take within 72 hours of condomless sex),
Take no more than 2 tablets in any 24-hour period. Take with water and remain upright for 30 mins after taking
Dispense: #60 tabs
Refills: 0

SIGNATURE

DEA NO.

ADDRESS _____

Reorder Item #6120 Total Pharmacy Supply, Inc. 1-800-878-2822

Implementation - Prescribing

FOR _____ DATE _____

ADDRESS _____

REFILL _____ TIMES

A generically equivalent drug product may be dispensed unless the practitioner hand writes the words "Brand Necessary" or "Brand Medically Necessary" on the face of the prescription.

R_x

Doxycycline Monohydrate 100mg capsules
Take 2 capsules by mouth as needed every 24 hours

Take 2 capsules by mouth, once daily as needed (take within 72 hours of condomless sex),
Take no more than 2 capsules in any 24-hour period.
Take with water and remain upright for 30 mins after taking
Dispense: #60 capsules
Refills: 0

SIGNATURE

DEA NO.

ADDRESS _____

Reorder Item #6120 Total Pharmacy Supply, Inc. 1-800-878-2822

Hyclate or Monohydrate

- Hyclate – cheaper
- Monohydrate – less GI distress

Capsules vs Tablets

- Tablets with decreased risk for esophagitis

Detailed instructions

Dispense and refills

- 25% of patients used ≥ 10 doses per month

Implementation - Prescribing

doxycycline 100 MG Capsule

Product: DOXYCYCLINE HYCLATE 100 MG OR CAPS View Available Strengths

Sig Method: Specify Dose, Route, Frequency Taper/Ramp Combination Dosage Use Free Text

Dose: 200 mg 100 mg

doxycycline 100 MG Capsule Details

Single dose of 200 mg exceeds recommended maximum of 100 mg by 100% Use 100 mg

Override Reason/Comment: Not clinically significant

Calculated dose: 2 capsule

Route: Oral Oral

Frequency: Daily PRN Daily (0900) 2X Day

Duration: Doses Days

Starting: 9/9/2023 Ending: First fill:

Dispense: Days/Fill: Full (0 Days) 30 Days 90 Days

Quantity: 60 capsule Refill: 0

Dispense As Written

Renewal Provider: Do not send renewal requests to me

Mark long-term: DOXYCYCLINE HYCLATE (TETRACYCLINES)

⚠ Patient Sig: Take 2 capsules by mouth Daily As Needed Take within 72 hours of condomless sex and ideally within 24 hours. Take no more than 2 capsules (200mg) in any 24 hour period. Take with water and remain upright for 30 mins after taking.

Edit the additional information appended to the patient sig

The sig contains both discrete and free text elements. Review the final sig above.

Indications: Antimicrobial Therapy

Acne Vulgaris Bacterial Infection

Indications (Free Text):

Class: ePrescribe ePrescribe Normal Phone In OTC Historical Med

Next Required

Hyclate or Monohydrate

- Hyclate – cheaper
- Monohydrate – less GI distress

Capsules vs Tablets

- Tablets with decreased risk for esophagitis

Detailed instructions

Dispense and refills

- 25% of patients used ≥ 10 doses per month

Implementation - How Do I Follow Patients on Doxy-PEP?

Follow-up

- Visits every 3-6 months
 - Repeat HIV and STI screening
 - Assess for side effects
 - Repeat counseling
 - Re-assess need for prevention modalities
 - Prescribe as appropriate

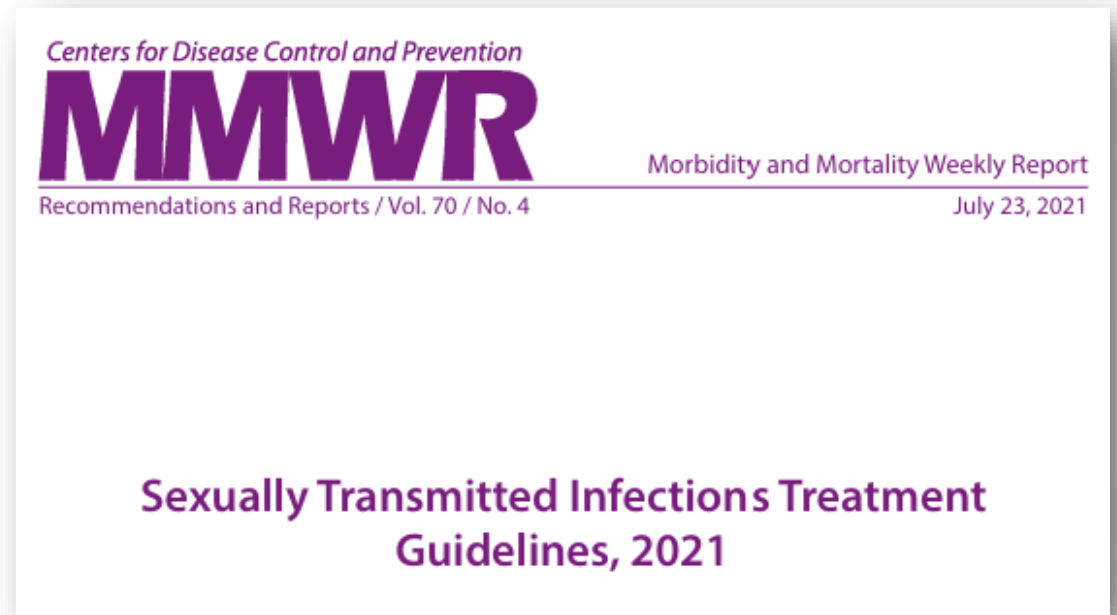
Population	Recommendations
Men who have sex with men	At least annually, test at each site of exposure (urethra, rectum) for sexually active MSM regardless of condom use or every 3-6 months <u>if at increased risk</u> .
Patients taking PrEP	All patients starting and taking oral PrEP should have genitourinary and extra-genital testing performed at baseline and every 3 months.
Persons living with HIV	For sexually active individuals, screen at first HIV evaluation and at least annually thereafter. More frequent screening might be appropriate depending <u>on individual risk behaviors</u> and local epidemiology
Non-pregnant Women	Test at least annually for sexually active women under 25 years of age and those aged 25 years and older <u>if at increased risk</u> Rectal chlamydial testing can be considered in females <u>based on sexual behaviors and exposure</u> through shared clinical decision making.
Men who have sex with women***	Consider screening young men in high prevalence clinical settings (adolescent and STI clinics and correctional facilities)
Pregnant Women	All pregnant women under 25 years of age and those aged 25 years and older <u>if at increased risk</u> . retest during 3rd trimester if under 25 years of age or at risk.

How Do I Treat Patients With STIs Taking Doxy-PEP?

Treat As Needed

- Treat as per the 2021 STI Guidelines

⚠ Exception: Consider in-person exam and deferring empiric treatment for “exposure” to chlamydia and syphilis when Doxy-PEP taken correctly



Clinical Conundrums

- What do I do if...
 - My patient's test comes back positive for chlamydia after I've prescribed Doxy-PEP?
 - Doxycycline 100mg by mouth twice daily for 7 days
 - My patient is taking Doxy-PEP incorrectly?
 - Repeat counseling and provide documents to assist with taking it properly
 - My patient's partner was diagnosed with an STI?
 - Assess if your patient took Doxy-PEP “appropriately” after every recent encounter with that partner
 - Consider in person assessment and testing as opposed to empiric treatment

The Future of Doxycycline for Prophylaxis

The Future of Doxycycline for Prophylaxis

- **Doxy-PrEP**
- Cis-gender women
- Weekly Doxy-PEP

Daily Doxycycline Pre-Exposure Prophylaxis: The DuDHS Trial

Outcome	Immediate (n=26)	Deferred (n=26)	p-value
Any STI (0-24 wks)	4 cases	19 cases	0.002
Chlamydia (0-24 wks)	0	10 cases	0.002
Syphilis (0-24 wks)	0	1 case	0.31
Gonorrhea (0-48 wks)	6 cases (all pharyngeal)	9 cases (anogenital)	NS
Adverse events	Mild GI at wk 4; resolved	1 mild nausea at wk 28	Well tolerated

⚠️ Dual daily HIV PrEP + doxyPrEP is feasible and well tolerated. Pilot data suggest STI protection comparable to doxyPEP.

- Doxy-PrEP
- **Cis-gender women**
- Weekly Doxy-PEP

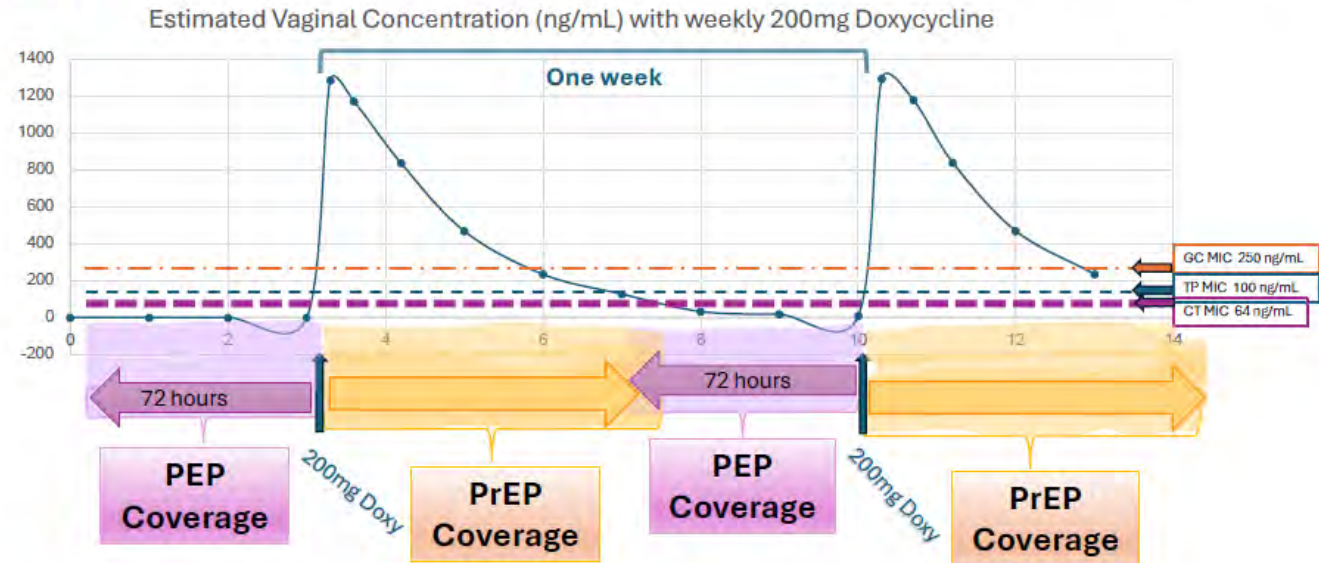
FoXXy Doxy – ATN/HPTN 113 trial of on-demand vs. weekly doxycycline vs. standard of care in females ages 13-29.



- Doxy-PrEP
- Cis-gender women
- **Weekly Doxy-PEP**



Hypothesis: Combination PEP and PrEP



Analysis	Endpoint	Weekly DoxyDOT (N=60)	SOC dPEP Kenya (N=225)	RR	95% CI	P-value
GEE Censoring Clinical Hold Time	All STIs	6/57 (10.5%)	31/220 (14.1%)	0.73	0.28-1.91	0.52
	Chlamydia	3/57 (5.3%)	29/220 (13.2%)	0.39	0.12-1.25	0.11
	Gonorrhea	4/57 (7.0%)	5/220 (2.3%)	3.03	0.637-14.40	0.16

* Two additional cases of chlamydia and 3 additional gonorrhea cases among people on holds

• Stewart et al, STI World Congress 2025.

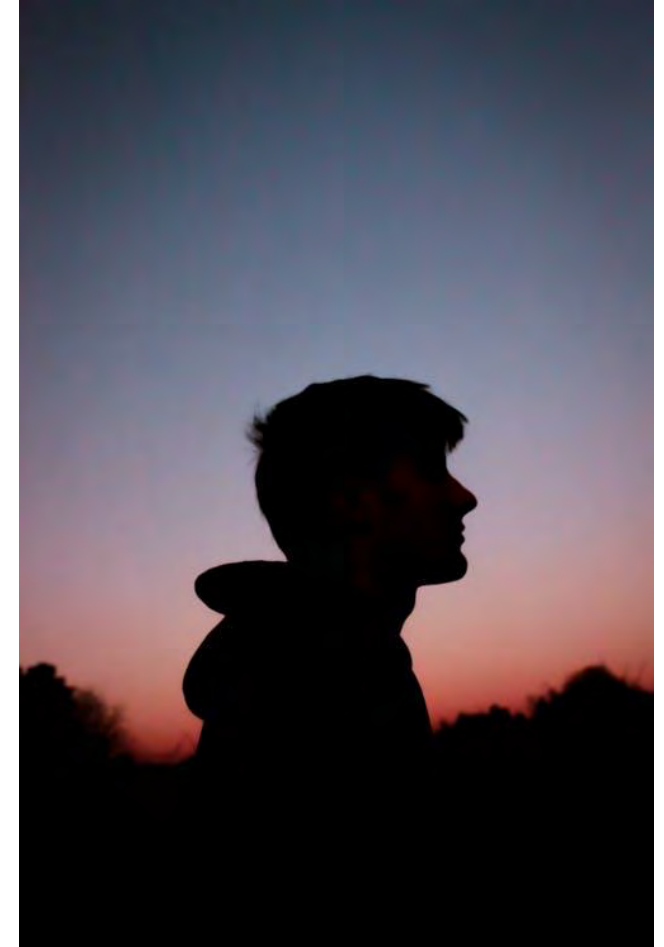
Audience Poll #5

Would you offer Marcus Doxy-PEP?

1. Yes
2. No

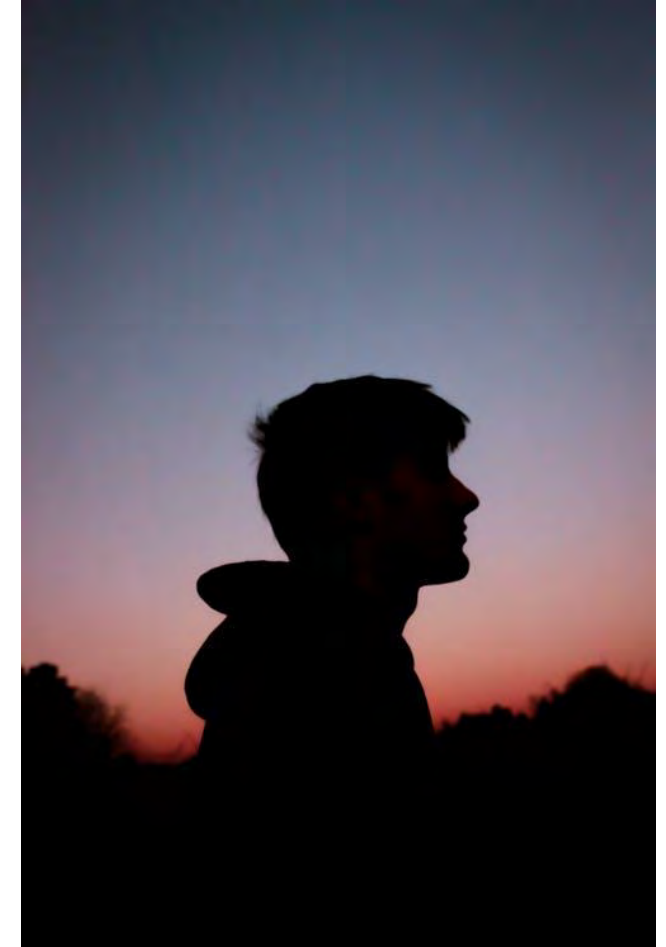
Marcus

- Marcus decides to start Doxy-PEP



Marcus Comes Back

- Return to clinic 4 weeks later
- “It hurts when I pee, and I have a lot of green discharge”
- Labs repeated
 - Plus, gonorrhea culture
- Treated with Gentamicin and Azithromycin



Marcus's Results

Lab results:

HIV Ab/Ag - Negative

Urine GC/CT – GC positive

Pharyngeal GC/CT – GC positive

Rectal GC/CT – negative

RPR – 1:16

- 1:128 – 10 weeks ago, 1:32 4 weeks ago



Marcus's Gonorrhea Culture

Lab results:

Azithromycin – susceptible (MIC 0.125)

Ciprofloxacin – resistant (MIC 1)

Ceftriaxone – susceptible (MIC 0.016)

Cefixime – Susceptible (48mm)

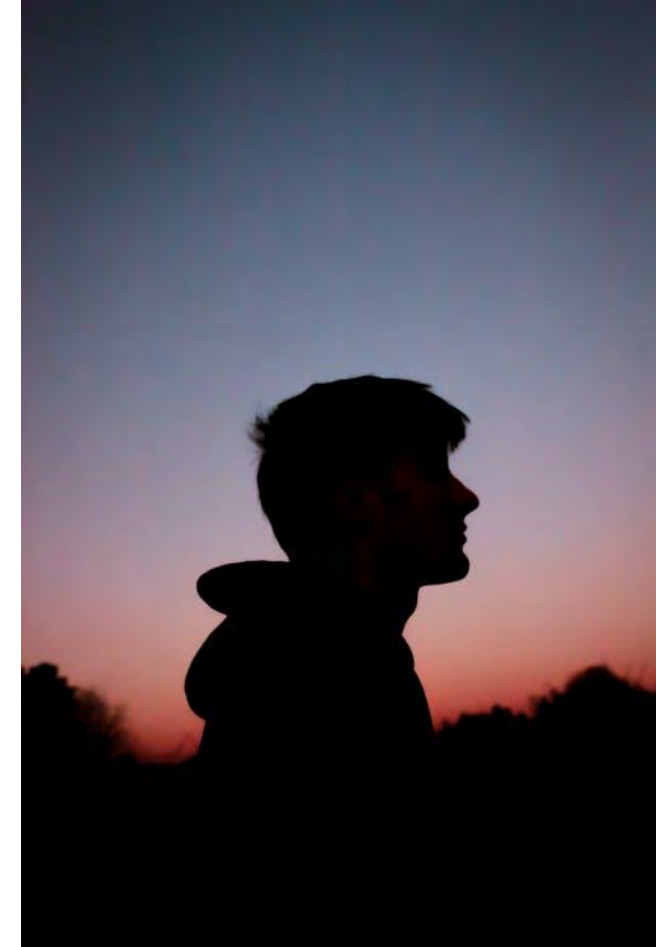
Tetracycline – resistant (MIC 12)



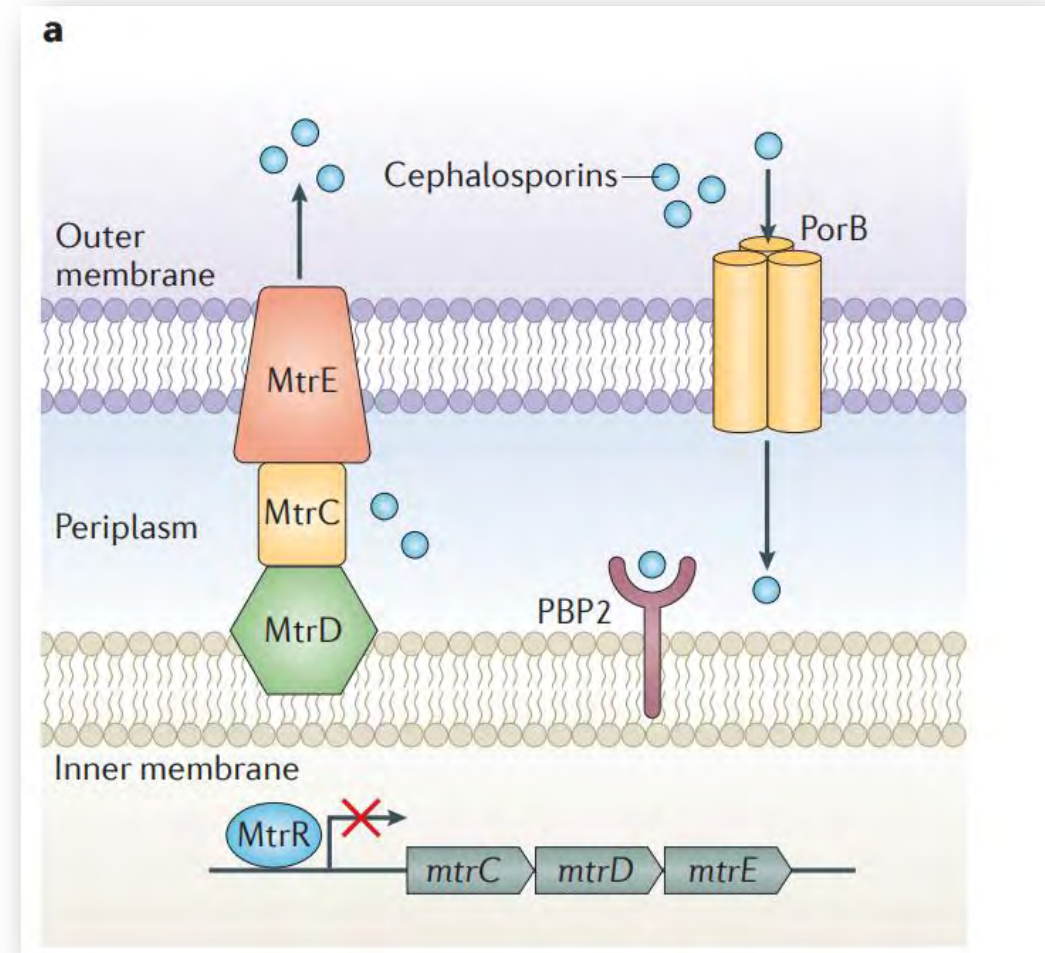
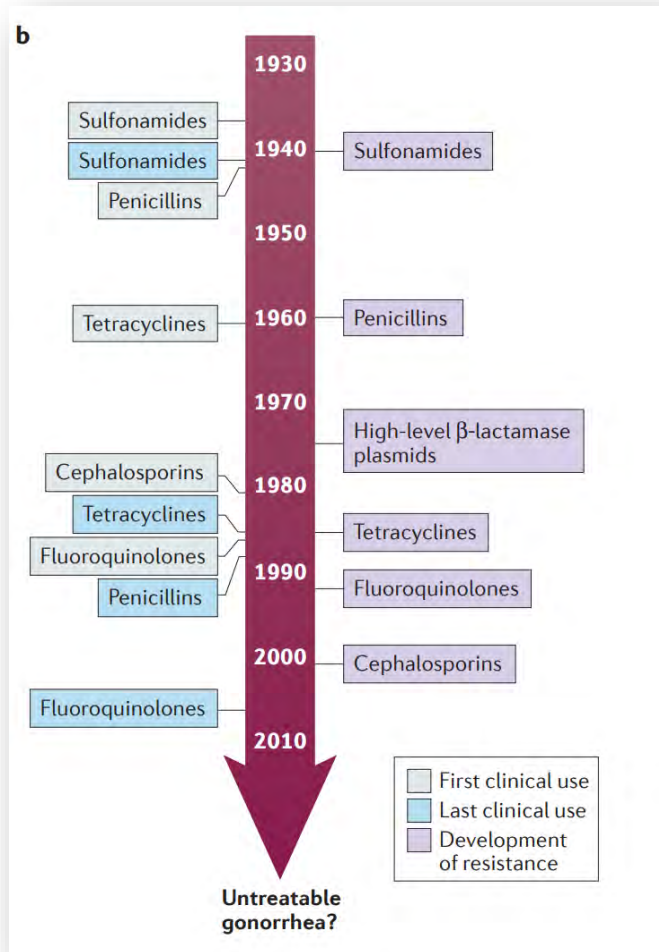
Marcus Comes Back

- Return to clinic 4 weeks later
- “It hurts when I pee, and I have a lot of green discharge”
- Labs repeated
 - Plus, gonorrhea culture
- Treated with Gentamicin and Azithromycin

- **“Why did the Doxy-PEP not work?”**



Why May Doxy-PEP Not Work for Gonorrhea?

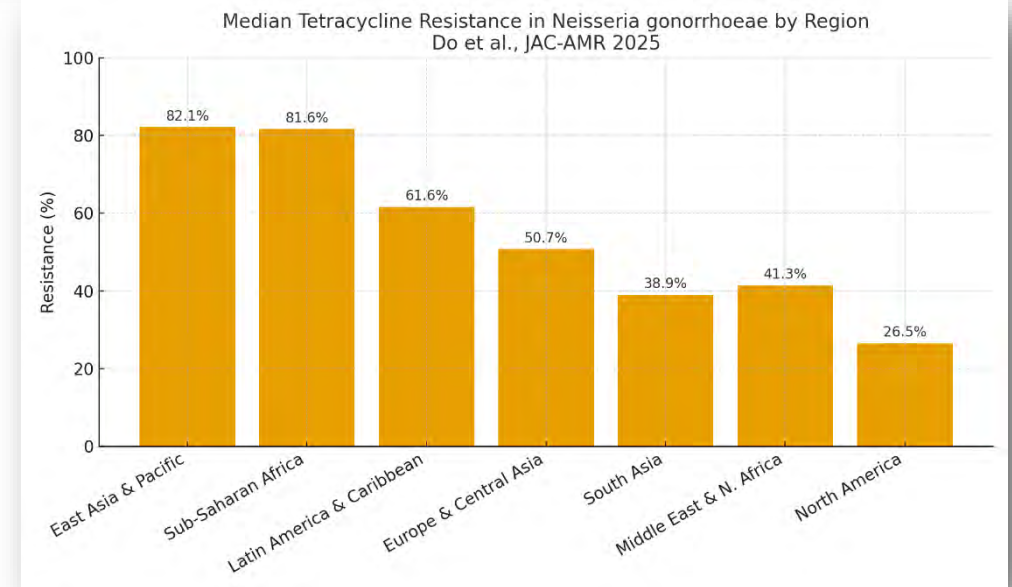


Global Tetracycline Resistance in *NG*

- Systematic review:
 - 67 studies
 - 51 countries
 - 80,645 isolates (1996–2023)
- **Global median resistance = 54% (range 4–100%)**
- Regional variation:
 - East Asia & Pacific: 82%
 - Sub-Saharan Africa: 82%
 - Europe & Central Asia: 51%
 - Latin America: 62%
 - **North America: 26% (but 4-fold increase since 2009)**
- Few data from MSM, women, or oropharyngeal isolates

Tetracycline-resistant *Neisseria gonorrhoeae* global estimates—impacts on doxycycline post-exposure prophylaxis implementation and monitoring: a systematic review

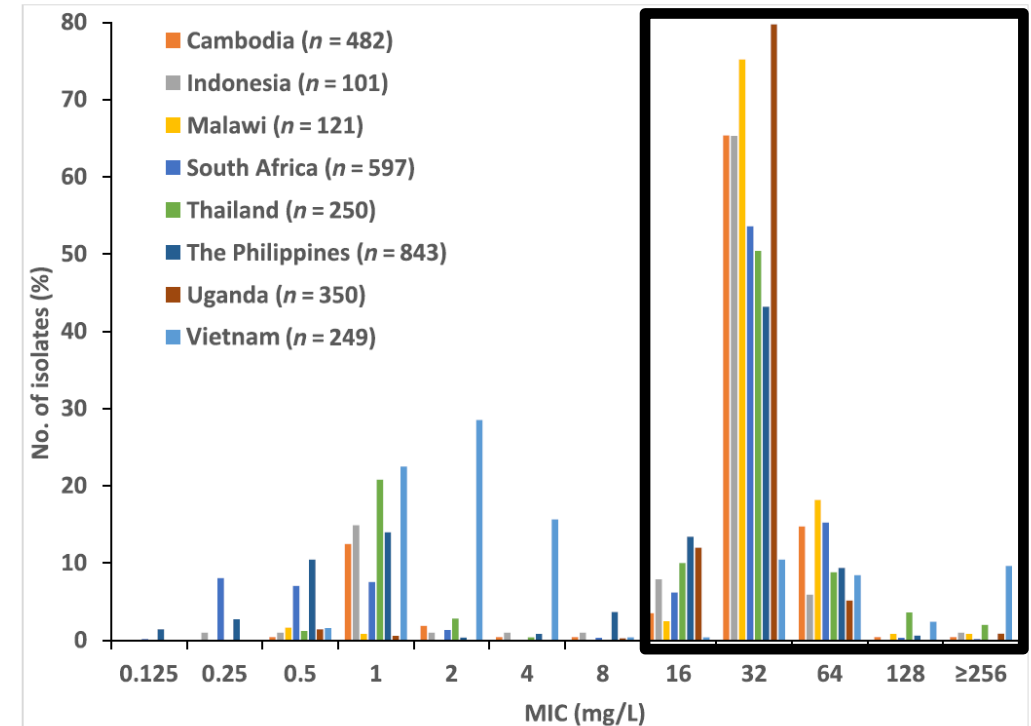
Kim Do¹, Magnus Unemo^{2,3}, Chris Kenyon^{4,5}, Jane S. Hocking⁶ and Fabian Yuh Shiong Kong^{1,6*}



• Do K, Unemo M, Kenyon C, Hocking JS, Kong FYS. JAC-AMR. 2025

Tetracycline Resistance - NG

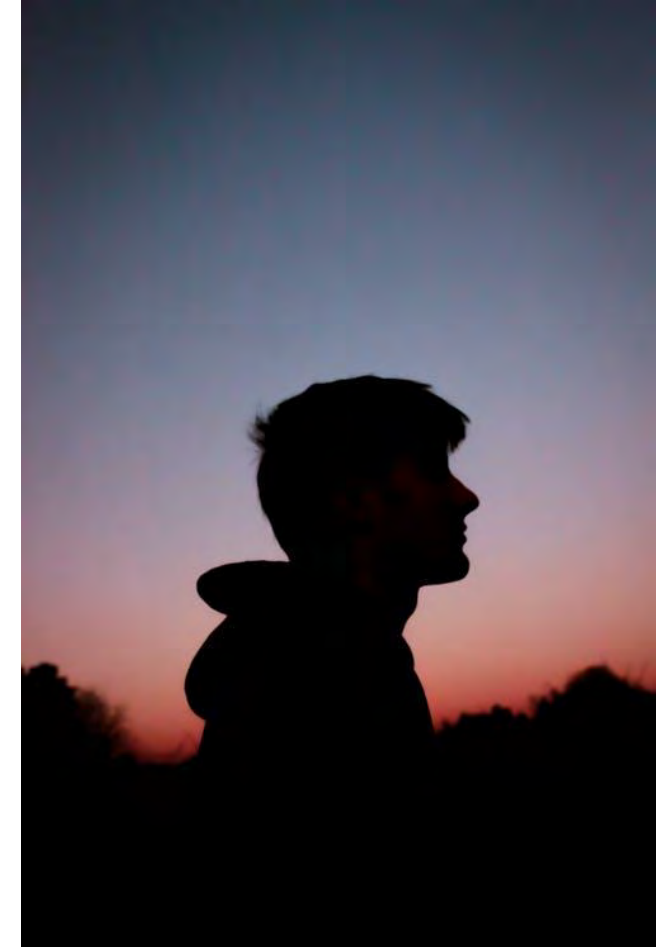
- 2,993 gonorrhea isolates from 8 WHO EGASP countries
- Tetracycline resistance:
 - 92% (EUCAST breakpoint >0.5 mg/L)
 - 81% (CLSI breakpoint >1 mg/L)
 - Higher thresholds: 74–77% resistant
- Resistance nearly universal in some countries:
 - Uganda ≥98%
 - Malawi ≥97%
 - Cambodia ≥99%



⚠ Doxy-PEP is unlikely to prevent GC given rates of high-level (MIC ≥16) resistance

Marcus Comes Back

- Return to clinic 4 weeks later
- “It hurts when I pee, and I have a lot of green discharge”
- Labs repeated
 - Plus, gonorrhea culture
- Treated with Gentamicin and Azithromycin
- “Why did the Doxy-PEP not work?”
- **“Why can’t I just get the vaccine?”**



Vaccination to Prevent GC Infection and Resistance

World-first gonorrhoea vaccine rollout begins in UK as infection rates soar

3 August 2025

Share Save

Josh Parry
LGBT & Identity Reporter



Gonorrhoea vaccines will be widely available from Monday in sexual health clinics across the UK, in a bid to tackle record-breaking levels of infections.

The jabs will first be offered to those at highest risk - mostly gay and bisexual men who have a history of multiple sexual partners or sexually transmitted infections.

NHS England say the roll out is a world-first, and predict it could prevent as many as 100,000 cases, potentially saving the NHS almost £8m over the next decade.

The Terrence Higgins Trust, who **campaigns for the vaccine** to be introduced in the UK, told the BBC it was "a huge win" for sexual health.

- The roll-out of the NHS's world-first routine vaccination for gonorrhoea...is a real step forward for sexual health and I know health service staff, alongside local authority colleagues, have been working hard to hit the ground running.
- This vaccine is already used to protect against Men B and **is proven to be effective against gonorrhoea**, preventing the spread of infection and reducing the rising rates of antibiotic-resistant strains.

Audience Poll #6

Is there a proven effective vaccine against gonorrhea?

1. Yes
2. No

Vaccination to Prevent Infection and Resistance

- Meningococcal serogroup B (MenB)-4C vaccine
 - 57 proteins were predicted to be surface expressed (outer membrane proteins [OMPs])
 - Majority of OMPs showed high sequence identity between the 2 bacterial species

Clinical Infectious Diseases

MAJOR ARTICLE



The Serogroup B Meningococcal Vaccine Bexsero Elicits Antibodies to *Neisseria gonorrhoeae*

Evgeny A. Semchenko,¹ Aimee Tan,¹ Ray Borrow,² and Kate L. Seib^{1,*}

¹Institute for Glycomics, Griffith University, Gold Coast, Queensland, Australia; and ²Vaccine Evaluation Unit, Public Health England, Manchester Royal Infirmary, United Kingdom

Background. *Neisseria gonorrhoeae* and *Neisseria meningitidis* are closely-related bacteria that cause a significant global burden of disease. Control of gonorrhoea is becoming increasingly difficult, due to widespread antibiotic resistance. While vaccines are routinely used for *N. meningitidis*, no vaccine is available for *N. gonorrhoeae*. Recently, the outer membrane vesicle (OMV) meningococcal B vaccine, MeNZB, was reported to be associated with reduced rates of gonorrhoea following a mass vaccination campaign in New Zealand. To probe the basis for this protection, we assessed the cross-reactivity to *N. gonorrhoeae* of serum raised to the meningococcal vaccine Bexsero, which contains the MeNZB OMV component plus 3 recombinant antigens (*Neisseria* adhesin A, factor H binding protein [fHbp]-GNA2091, and *Neisseria* heparin binding antigen [NHBA]-GNA1030).

Methods. A bioinformatic analysis was performed to assess the similarity of MeNZB OMV and Bexsero antigens to gonococcal proteins. Rabbits were immunized with the OMV component or the 3 recombinant antigens of Bexsero, and Western blots and enzyme-linked immunosorbent assays were used to assess the generation of antibodies recognizing *N. gonorrhoeae*. Serum from humans immunized with Bexsero was investigated to assess the nature of the anti-gonococcal response.

Results. There is a high level of sequence identity between MeNZB OMV and Bexsero OMV antigens, and between the antigens and gonococcal proteins. NHBA is the only Bexsero recombinant antigen that is conserved and surfaced exposed in *N. gonorrhoeae*. Bexsero induces antibodies in humans that recognize gonococcal proteins.

Conclusions. The anti-gonococcal antibodies induced by MeNZB-like OMV proteins could explain the previously-seen decrease in gonorrhoea following MeNZB vaccination. The high level of human anti-gonococcal NHBA antibodies generated by Bexsero vaccination may provide additional cross-protection against gonorrhoea.

Keywords. STI; gonorrhoea; *Neisseria gonorrhoeae*; immune response; meningococcal vaccine.

Gonorrhea Vaccine Does Not Need to Be Perfect

A Gonococcal Vaccine Has the Potential to Rapidly Reduce the Incidence of *Neisseria gonorrhoeae* Infection Among Urban Men Who Have Sex With Men

[Ben B Hui](#)^{1,✉}, [Thilini N Padeniya](#)¹, [Nic Rebuli](#)¹, [Richard T Gray](#)¹, [James G Wood](#)², [Basil Donovan](#)¹, [Qibin Duan](#)^{1,3}, [Rebecca Guy](#)¹, [Jane S Hocking](#)⁴, [Monica M Lahra](#)^{5,6}, [David A Lewis](#)^{7,8,9}, [David M Whiley](#)¹⁰, [David G Regan](#)^{1,2}, [Kate L Seib](#)^{11,2}

- 100% efficacy, 30% vaccine coverage of MSM
 - 94% reduction in GC within 2 years
- 50% efficacy, 30% vaccine coverage of MSM
 - 62% reduction in GC within 2 years
- Elimination of gonorrhea is possible within 8 years with vaccines of $\geq 50\%$ efficacy lasting 2 years, providing a booster vaccination is available every 3 years on average.

Does 4CMenB Work for Gonorrhoea?

The Journal of Infectious Diseases

REVIEW

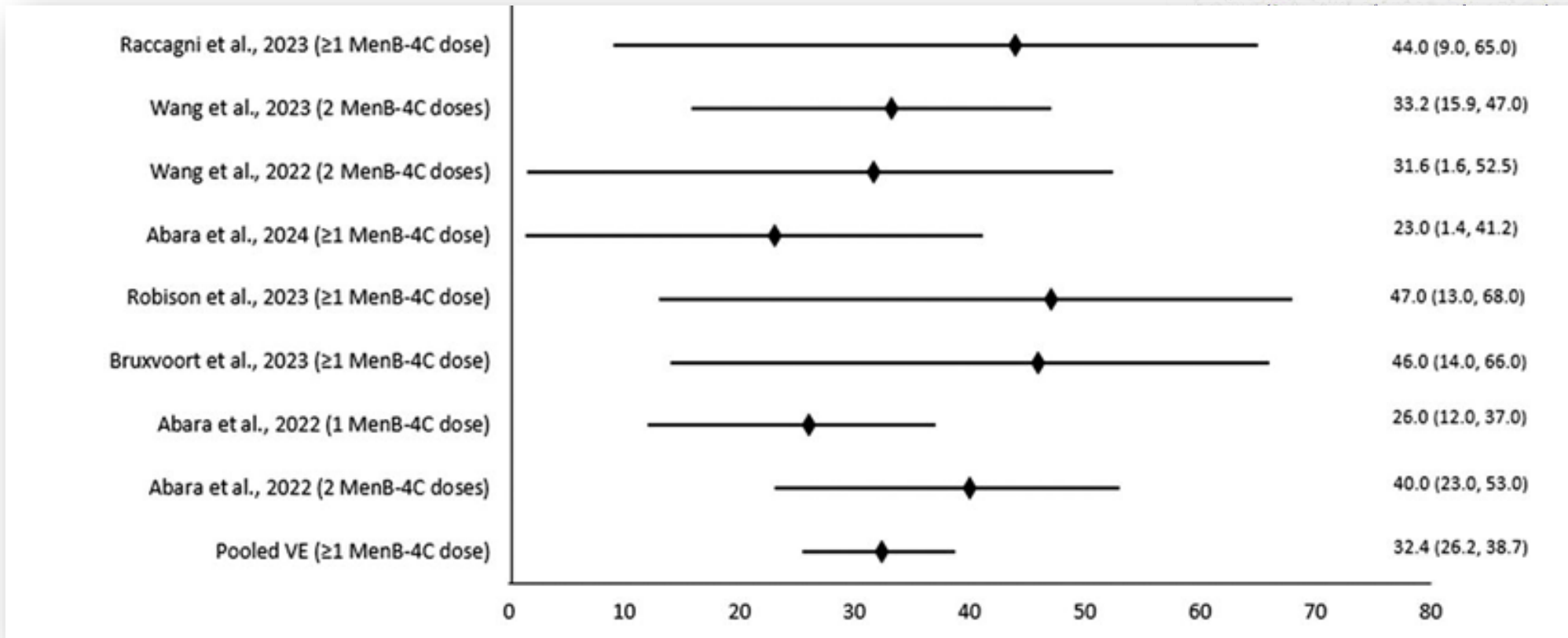
IDSAA
Infectious Diseases Society of America

hivma
HIV medicine association

OXFORD

Effectiveness of MenB-4C Vaccine Against Gonorrhoea: A Systematic Review and Meta-analysis

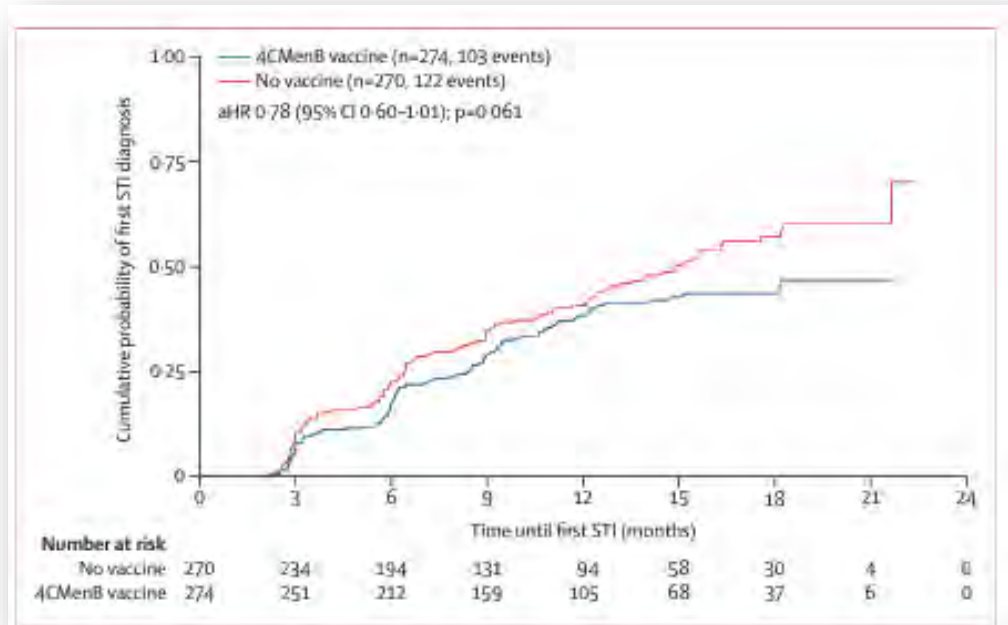
William R. Learner¹
¹Centers for Disease Control and Prevention, Atlanta, Georgia, USA



• Abara WE, et al J Infect Dis. 2025

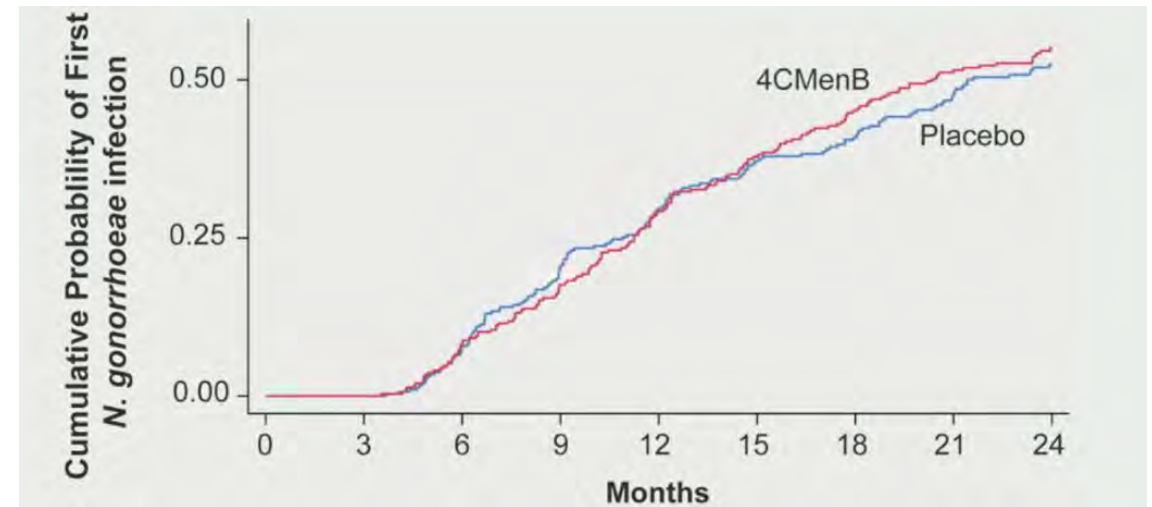
Randomized Controlled Trials Did Not Show Efficacy

DoxyVac



- "...we did not show efficacy of the 4CmenB vaccine for gonorrhoea."

GoGoVax



- 4CMenB meningococcal B vaccine did not reduce the incidence of gonorrhoea in gay and bisexual men.

Audience Poll #7

Would you offer Marcus Men B vaccination?

1. Yes
2. No

STI Prevention Summary

- We are in an era of STI prevention choice and patients should be aware of their options
- Doxy-PEP
 - Highly effective for chlamydia and syphilis in MSM and transgender women on PrEP or living with HIV; population-level indirect benefits potentially observed in cisgender women
 - Evidence is insufficient in people AFAB but growing; FoXXy Doxy (ATN/HPTN 113) is enrolling
 - Breakthrough syphilis may present with blunted RPR; exam and treponemal testing are essential
 - Growing tetracycline resistance in gonorrhea and commensals (*S. aureus*, GAS); should impact your empiric antibiotic choices
- Gonorrhea
 - RCTs have not demonstrated 4CMenB efficacy for gonorrhea prevention
- **Flexibility is key, management will change as we learn more**

Additional Information

National STD Curriculum
A free educational website from the University of Washington STD Prevention Training Center.

[ABOUT](#) [CONTRIBUTORS](#)

Funded by
Centers for Disease Control and Prevention
Cooperative Agreement (CDC-RFA-PS20-2004)

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Syphilis QUICK REFERENCE • SELF STUDY CME/CME	Syphilis During Pregnancy and Congenital Syphilis QUICK REFERENCE • SELF STUDY CME/CME
Genital Herpes QUICK REFERENCE • SELF STUDY CME/CME	Human Papillomavirus Infection QUICK REFERENCE • SELF STUDY CME/CME
Pelvic Inflammatory Disease QUICK REFERENCE • SELF STUDY CME/CME	Vaginitis QUICK REFERENCE • SELF STUDY CME/CME
Mycoplasma genitalium QUICK REFERENCE • SELF STUDY CME/CME	Mycoplasma genitalium QUICK REFERENCE • SELF STUDY CME/CME

**National Network of
PTC Clinical
Consultation Warmline**
Clinical guidance
regarding STD cases; no
identifying patient data is
submitted

<https://www.stdccn.org/>

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Questions

