10 HOT TOPICS in infectious diseases

14ª edizione

Genova | 10 giugno 2025

Centro Congressi Castello Simon Boccanegra
Ospedale Policlinico San Martino

14:20 -15:00 **Luci e ombre sulla profilassi pre-esposizione antibatterica e antivirale**
A. Di Biagio (Genova) | *Discussant*: A. De Maria (Genova)

Università di Genova

Asl 5
Sistema Sanitario Regione Liguria

Disclosures

PReP

- WHO 2015:
  - people who experience substantial risk of HIV infection should be offered PrEP as an **additional prevention choice to**
    - HIV testing,
    - condom usage,
    - Screening for , and
    - treatment of sexually transmitted infections (STIs)

Potential Cons of PrEP

- HIV infection
- HIV resistance
- Increase in Sexually Transmitted Infections
  - Decreased safe-sex procedures
  - Decreased condom use
  - Decresed acceptance of other prophylactic procedures
- Increased administration ot treatmen/ptophylaxis for other STI Pathogens

HIV infection/resistance

Seroconversions in randomized studies of oral tenofovir disoproxil fumarate with or without emtricitabine as HIV preexposure prophylaxis.

Study	Reference	Acute HIV prior to randomization				Incident HIV after randomization			
		TDF/FTC	TDF	Placebo	Total	TDF/FTC	TDF	Placebo	Total
Bangkok Tenofovir Study	Choopanya et al. (2013)	-	0	2	2	-	17	33	50
HPTN 082/Partners Demonstration Project	Baeten et al. (2016), Heffron et al. (2017)	14	-	-	14	4	-	-	4
FEM-PrEP	Van Damme et al. (2012)	1	-	1	2	33	-	35	68
HPTN 067/ADAPT[a]	Sivay et al. (2017)	3	-	-	3	8	-	-	8
IPERGAY	Delaugerre et al. (2018)	4[b]	-	0	4	2	-	13	15
iPrEx	Liegler et al. (2014)	2	-	8	10	48	-	83	131
iPrEx OLE	Grant et al. (2014)	0	-	-	0	28	-	-	28
Partners PrEP + Open Label Extension/Continuation Study[c]	Baeten et al. (2012), Lehman et al. (2015)	4	8	6	18	21	30	52	103
Project PrEPare 2	Hosek et. (2017)	2	-	-	2	4	-	-	4
PROUD	McCormack et. (2016)	3[d]	-	-	3	2	-	-	2
TDF2	Thigpen et al. (2012), Chirwa et al. (2014)	1	-	2	3	9	-	24	33
US MSM Safety Trial	Grohskopf et al. (2013)	-	0	1	1	-	0	3[e]	3
VOICE[f]	Marrazzo et al. (2015)	9	5	1	15	55	58	60	173
Total		43	13	21	77	214	105	303	622

Gibas KM, et al.. Drugs. 2019 Apr;79(6):609-619

- **Risk of infection= 8%** AND a 92% risk reduction of HIV (Grant RM et al.2010)
- 699 seroconversions; 11% acute infection; 89% (n=622) during follow up
- Of 622 seroconversions, **3% resistance mutations** to TDV or FTC
- *No data so far for cabotegravir, lenacapravir, Dapivirina,*

Università di Genova

Asl5 Sistema Sanitario Regione Liguria

Increased STIs

EPIDEMIOLOGY AND SOCIAL

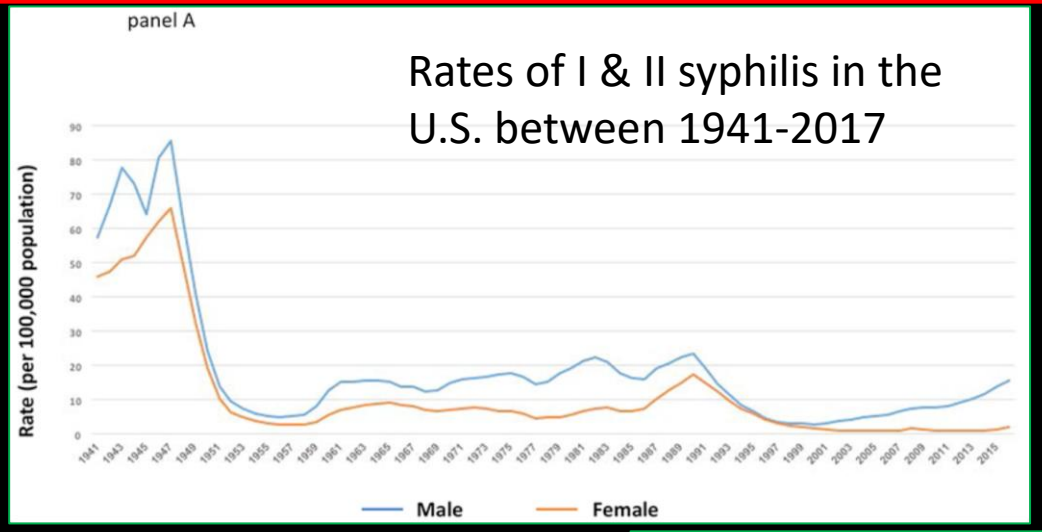
The impact of HIV preexposure prophylaxis on bacterial sexually transmitted infection occurrence in MSM: a systematic review and meta-analysis

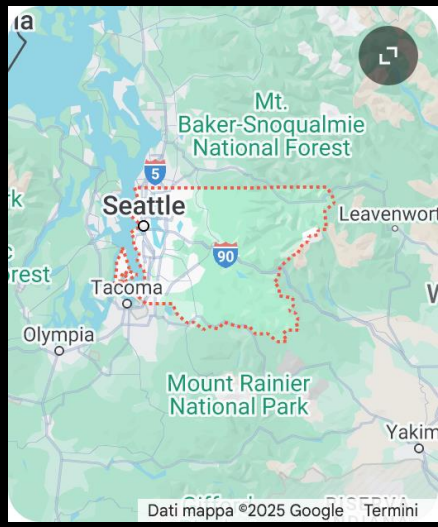
Georgiadis, Nikolaos[a,*]; Papamichail, Dimitrios[a,*]; Lytras, Theodore[b]; Halkitis, Perry N.[c]; Tzanakaki, Georgina[a]; Kornarou, Eleni[a,†]; Vassilakou, Nair-Tonia[a,†]; Sergentanis, Theodoros N.[a,†]

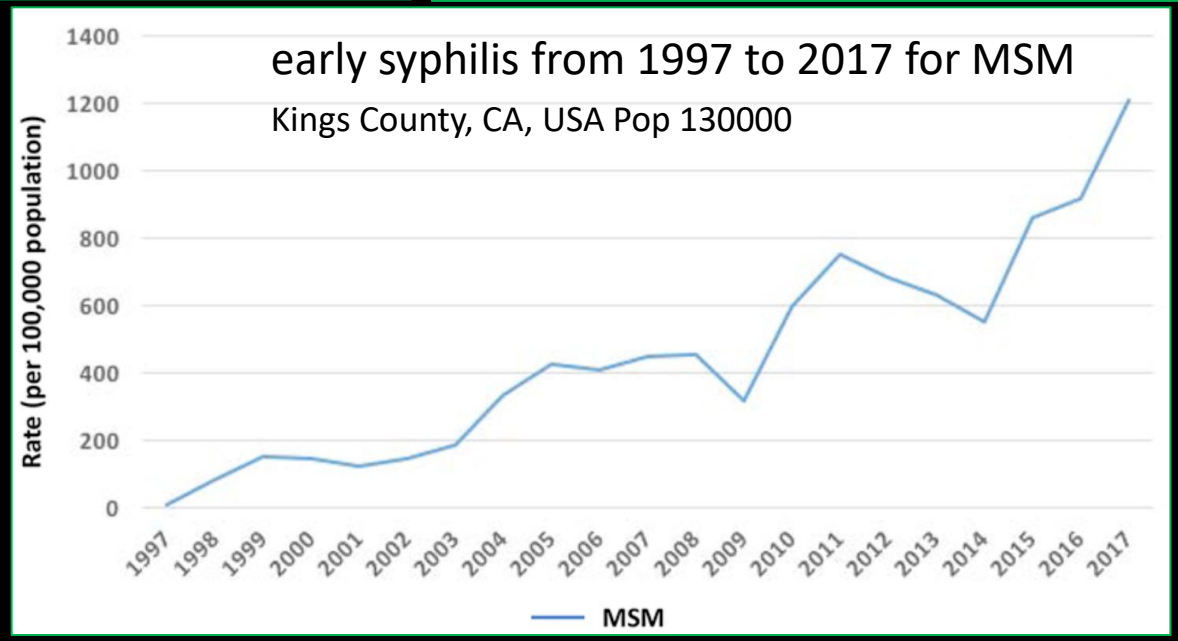
AIDS 38(7):p 1033-1045, June 01, 2024.

- 23 studies- - 11 776 participants (age range: 18–71 years)
- median follow-up = 12 months
- significant increase in the occurrence of any STI (pooled effect size: 1.15
- any gonorrhea (pooled effect size: 1.17,
- any chlamydia (pooled effect size: 1.31,
- rectal chlamydia (pooled effect size: 1.31,
- borderline increase in urethral chlamydia (p=0,06)
- NO increase in any Syphilis

No increase of Syphilis with PrEP?



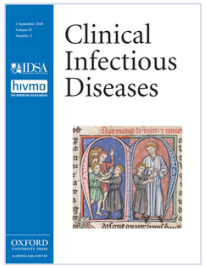




Università di Genova

Asl5 Sistema Sanitario Regione Liguria

Increased STIs and Increase in Condomless Sex



Volume 67, Issue 5
1 September 2018

JOURNAL ARTICLE EDITOR'S CHOICE

Effects of Pre-exposure Prophylaxis for the Prevention of Human Immunodeficiency Virus Infection on Sexual Risk Behavior in Men Who Have Sex With Men: A Systematic Review and Meta-analysis FREE

Michael W Traeger , Sophia E Schroeder , Edwina J Wright , Margaret E Hellard , Vincent J Cornelisse , Joseph S Doyle , Mark A Stoové Author Notes

PrEP use was associated with

- a significant increase in rectal chlamydia (odds ratio 1.59)
- an increase in any STI diagnosis (OR, 1.24;).
- The association of PrEP use with STI = stronger in later studies.
- Increase in condomless sex among PrEP users.

Università di Genova

Asl 5 Sistema Sanitario Regione Liguria

PrEP = Condomless Sex

Low use of condom and high STI incidence among men who have sex with men in PrEP programs

Oskar Ayerdi Aguirrebengoa, Mar Vera García, Daniel Arias Ramírez, Natalia Gil García, Teresa Puerta López, Petunia Clavo Escribano, Juan Ballesteros Martín, Clara Lejarraga Cañas, Nuria Fernandez Piñeiro, Manuel Enrique Fuentes Ferrer, Mónica García Lotero, Estefanía Hurtado Gallegos, Montserrat Raposo Utrilla, [...], Carmen Rodríguez Martín [view all]

PLOS One

4.2.2021

A total of 110 MSM and TGW were selected

The Risk compensation consisted primarily of a **lower rate of condom use**, while the **number of sexual partners and recreational drug consumption remained stable.**

From PrEP to combined PrEP+PEP

- PrEP increases STI
- Increases in Chlamydia and gonorrhea documented
- Independent increase in Syphilis
- Doxy-PEP is being used,
  - Does it work?
  - Does it increase resistance?

Post-Exposure Prophylaxis – PEP – works out fine

JAMA Internal Medicine | Original Investigation

Doxycycline Postexposure Prophylaxis and Bacterial Sexually Transmitted Infections Among Individuals Using HIV Preexposure Prophylaxis

Michael W. Traeger, PhD, MSc; Wendy A. Leyden, MPH; Jonathan E. Volk, MD; Michael J. Silverberg, PhD; Michael A. Horberg, MD; Teaniese L. Davis, PhD; Kenneth H. Mayer, MD; Douglas S. Krakower, MD; Jessica G. Young, PhD; Samuel M. Jenness, PhD; Julia L. Marcus, PhD

- **Doxi-PrEP: 200mg 1 tablet within 72hrs** after unprotected intercourse
- 11 551 HIV PrEP users - 2253 (19.5%) were dispensed doxyPEP
- Among doxyPrEP recipients,
  - quarterly chlamydia positivity decreased from 9.6% to 2.0
  - Quarterly gonorrhea positivity decreased from 10.2% to 9.0%
  - Quarterly syphilis positivity decreased from 1.7% to 0.3%

Post-Exposure Prophylaxis – PEP – works out fine

ORIGINAL ARTICLE

Postexposure Doxycycline to Prevent Bacterial Sexually Transmitted Infections

Authors: Anne F. Luetkemeyer, M.D., Deborah Donnell, Ph.D., Julia C. Dombrowski, M.D., M.P.H., Stephanie Cohen, M.D., M.P.H., Cole Grabow, M.P.H., Clare E. Brown, Ph.D., Cheryl Malinski, B.S., +10 , for the DoxyPEP Study Team* Author Info & Affiliations

Published April 5, 2023 | N Engl J Med 2023;388:1296-1306 | DOI: 10.1056/NEJMoa2211934 | VOL. 388 NO. 14

- STI: 10.7% doxy-group vs 31.9% standard-care (−21.2%; RR= 0.34)
- RR= 0.45 for gonorrhea, RR=0.12 for chlamydia, RR= 0.13 for syphilis
- Gonorrhea culture available, tetra-R N.gonorrhoeae occurred in
  - 5 of 13 (39%) doxycycline groups
  - 2 of 16 (13%) standard-care groups

Università di Genova

Asl5 Sistema Sanitario Regione Liguria

Increased resistance of other STI Pathogens

ORIGINAL ARTICLE

Postexposure Doxycycline to Prevent Bacterial Sexually Transmitted Infections

Authors: Anne F. Luetkemeyer, M.D., Deborah Donnell, Ph.D., Julia C. Dombrowski, M.D., M.P.H., Stephanie Cohen, M.D., M.P.H., Cole Grabow, M.P.H., Clare E. Brown, Ph.D., Cheryl Malinski, B.S., +10, for the DoxyPEP Study Team* Author Info & Affiliations

Published April 5, 2023 | N Engl J Med 2023;388:1296-1306 | DOI: 10.1056/NEJMoa2211934 | VOL. 388 NO. 14

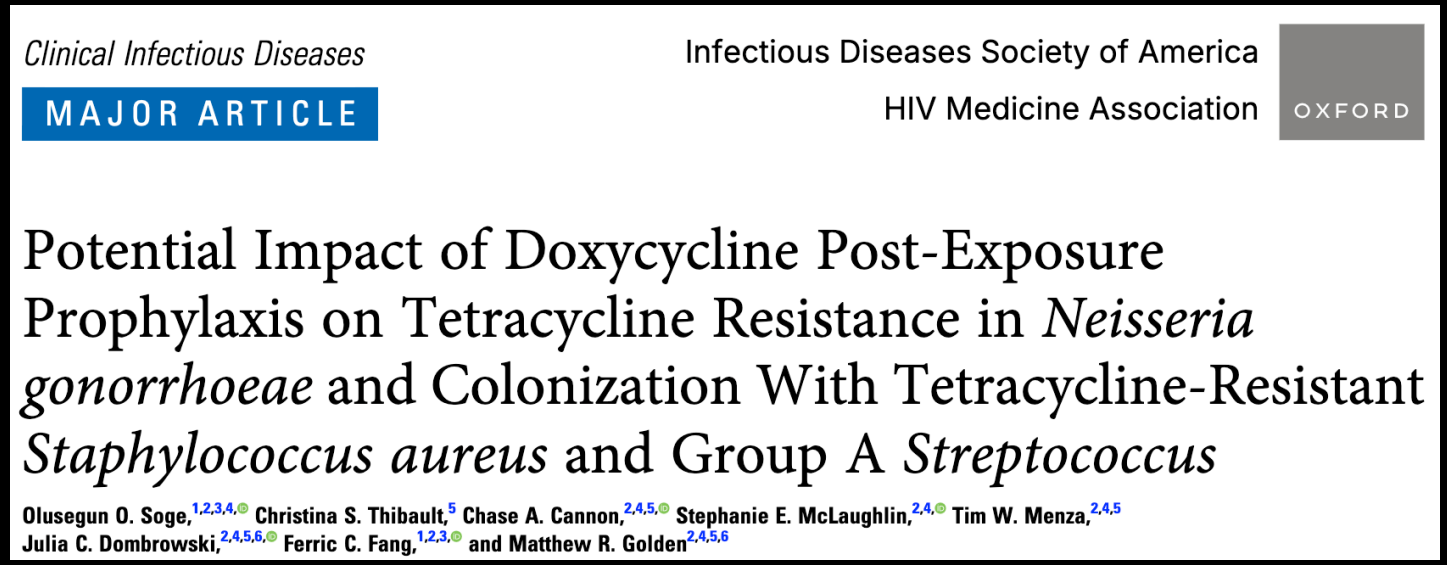
- Gonorrhea culture available, *tetra-R* N.gonorrhoeae occurred in
  - 5 of 13 (39%) doxycycline groups
  - 2 of 16 (13%) standard-care groups
- *S. aureus* - oronasopharynx in 45% of pts., 12% doxycycline-R.
- At month 12, *S. aureus* was isolated in
  - 28% in the doxycycline groups and
  - 47% in the standard-care groups (P=0.03), with
  - doxycycline-Resistant isolates in 16% and 8%, respectively

Università di Genova

Asl5 Sistema Sanitario Regione Liguria

Increased resistance of other STI Pathogens

- Doxy-PEP reduces the incidence of syphilis, chlamydia, and gonorrhea
- drive the emergence and spread of tetracycline resistance, particularly in commensal Neisseria, S.aureus



Clinical Infectious Diseases

MAJOR ARTICLE

Infectious Diseases Society of America

HIV Medicine Association

OXFORD

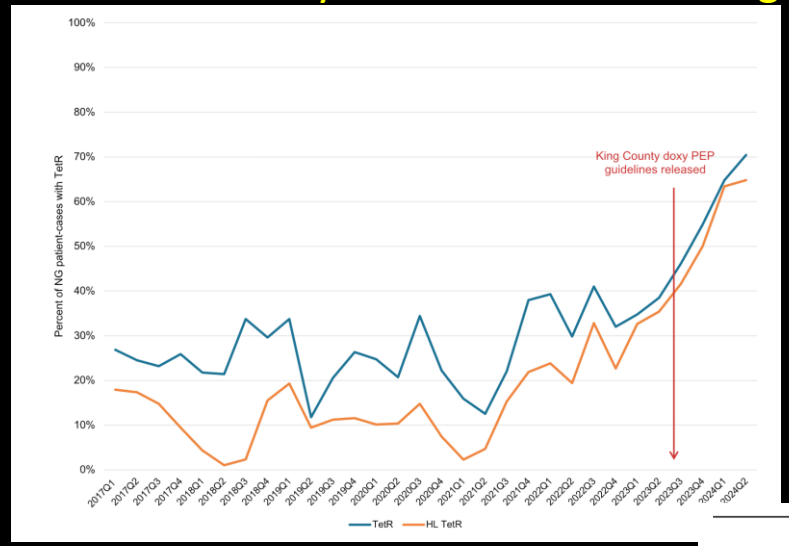
Potential Impact of Doxycycline Post-Exposure Prophylaxis on Tetracycline Resistance in *Neisseria gonorrhoeae* and Colonization With Tetracycline-Resistant *Staphylococcus aureus* and Group A *Streptococcus*

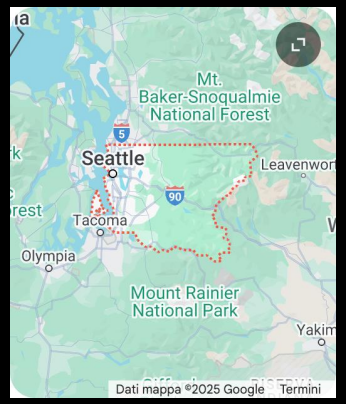
Olusegun O. Soge,[1,2,3,4] Christina S. Thibault,[5] Chase A. Cannon,[2,4,5] Stephanie E. McLaughlin,[2,4] Tim W. Menza,[2,4,5] Julia C. Dombrowski,[2,4,5,6] Ferric C. Fang,[1,2,3] and Matthew R. Golden[2,4,5,6]

Soge OO et al CID 2025

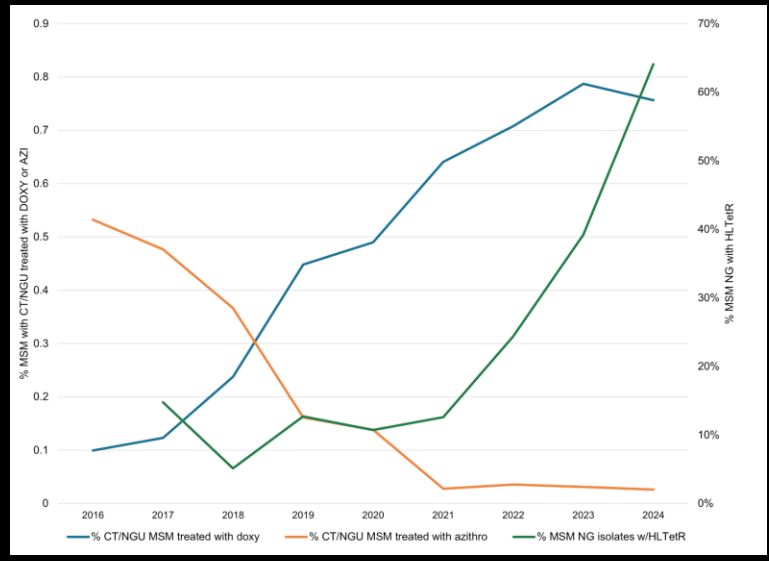
Increased resistance of other STI Pathogens

Prevalence of tetracycline resistance among MSM with NG,





Proportion of MSM with CT or NGU who were treated within 7 d, and proportion NG isolates w.high-level-tet-R 2016–2024.



SA &GAS screening in doxy-PEP

	Total		Used doxy PEP in Past Month		Did Not Use doxy PEP in Past Month		
	N	%	N	%	N	%	*P* value[a]
Screened for *S. aureus*	838	100	227	27%	602	72%	
Screened positive for:							
S. aureus	281	34%	62	27%	216	36%	.020
MRSA	12	1%	2	1%	10	2%	.528
Tetracycline-resistant *S. aureus*	89	11%	41	18%	47	8%	<.0001
Tetracycline-resistant MRSA	10	1%	2	1%	8	1%	.736
Screened for GAS	512	100%	158	31%	352	69%	
Screened positive for:							
GAS	28	5%	15	9%	13	4%	.008
Tetracycline-resistant GAS	23	4%	12	8%	11	3%	.025

Università di Genova

Asl5 Sistema Sanitario Regione Liguria

PReP

- WHO 2015:
  - people who experience substantial risk of HIV infection should be offered PrEP as an **additional prevention choice to**
    - HIV testing,
    - condom usage,
    - Screening for , and
    - treatment of sexually transmitted infections (STIs)