STIs and STI testing in times of PrEP

Breach Spring Meeting La Hulpe – 07/05/2022

Jens Van Praet

Outline

- **Sexually transmittable diseases (STIs) after PrEP initiation**
- Testing for STIs in patients taking PrEP
- Screening: the pro/con debate
- Conclusions
- Questions and answers

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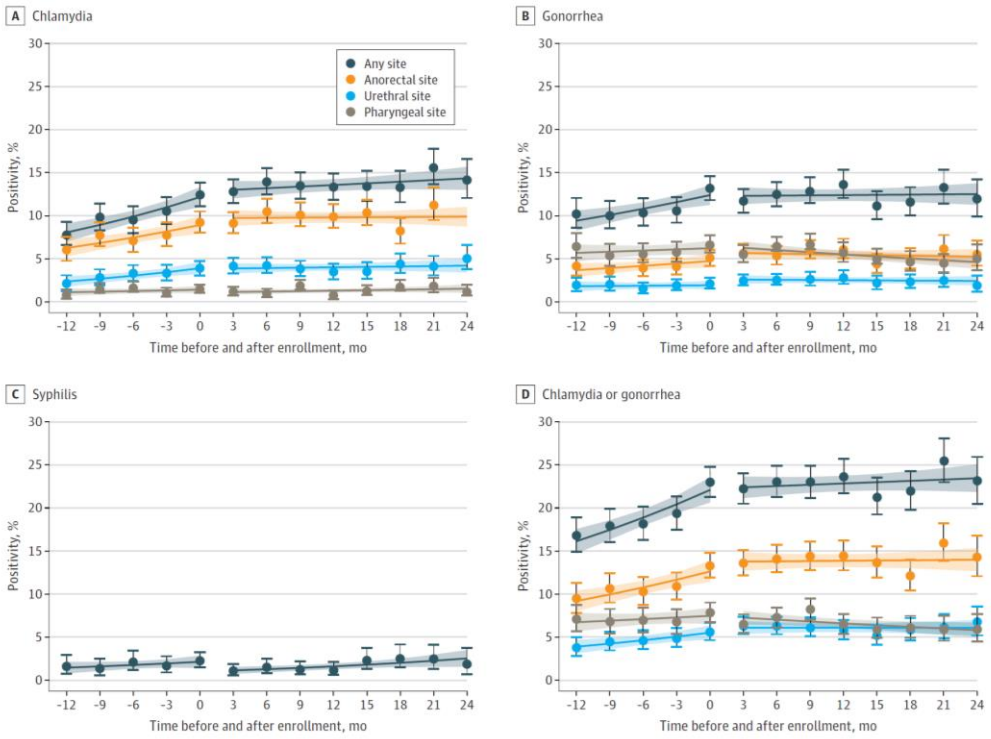
STIs after PrEP initiation



- Cohort study of MSM in New South Wales, Australia (n=2404)
- STI rates were high but stable among high-risk MSM while taking PrEP, compared with a high but increasing trend in STI positivity before commencing PrEP

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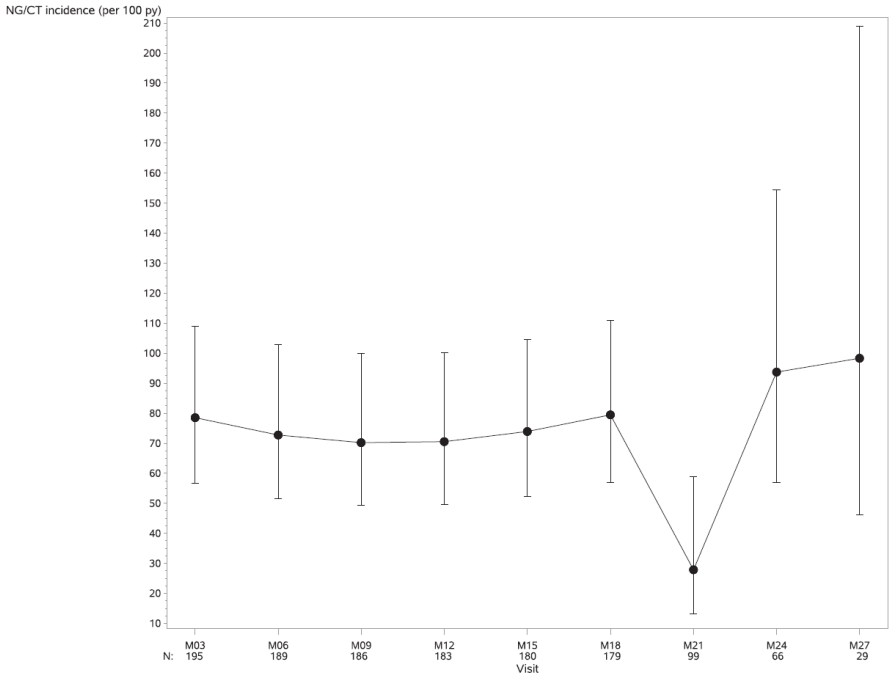
McManus H et al, JAMA Open Netw 2020; MSM: men who have sex with men

STIs after PrEP initiation



- Cohort study of MSM after PrEP initiation in Antwerp (n=200)
- No significant change in NG/CT incidence over time

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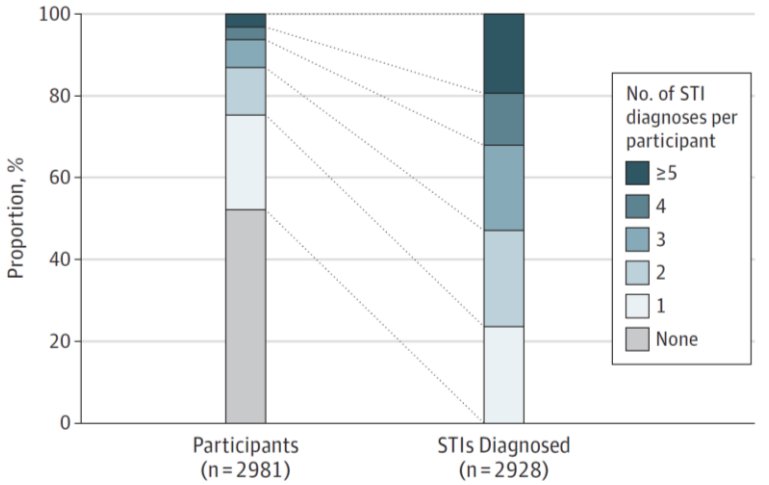
Vuylsteke B et al, J Int AIDS Soc 2019; NG: *Neisseria gonorrhea*; CT: *Chlamydia trachomatis*

STIs after PrEP initiation

Figure. Distribution of Participants and STI Diagnoses by Number of Infections per Participant During Follow-up



- Cohort study of MSM under PrEP in Victoria, Australia (n=2981, median follow-up time 1,2 y)
- Multiple infections were observed in 25% participants, with infections among these participants accounting for 76% of all infections during follow-up
- Risk factors for STI infection were younger age, greater partner number and group sex

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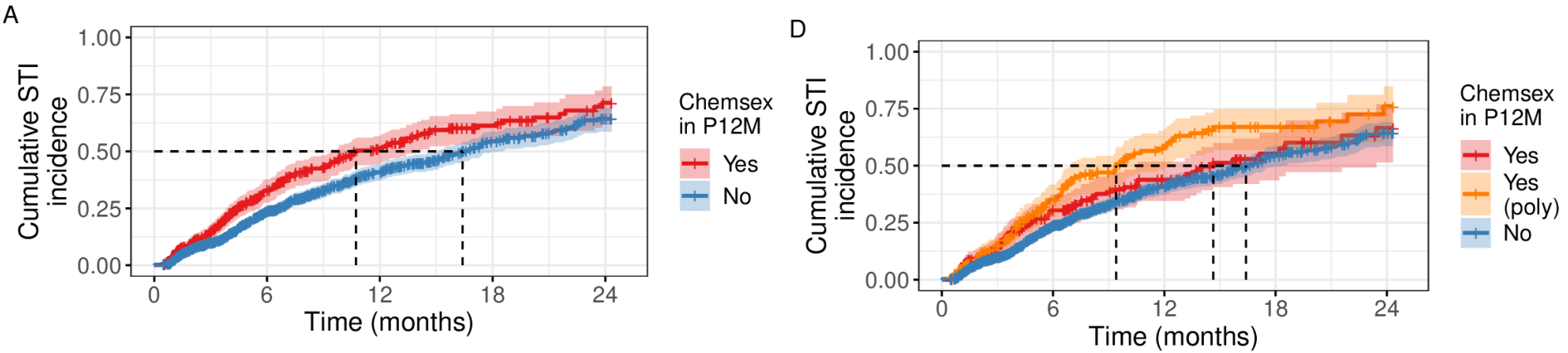
Traeger MW et al, JAMA 2019

STIs after PrEP initiation



- Cohort study of PrEP users in Montréal, Canada (n=2086)
- Chemsex at baseline was linked to increased incidence of NG and CT
- This effect was stronger for people reporting multiple chemsex substances

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Flores Anato JL et al, Sex Transm Infect 2022

STIs after PrEP initiation

Table 2 Multivariable analysis of the association between recent (in the past 12 months) diagnosis of gonorrhoea, syphilis and chlamydia

MSM subgroup and participation in chemsex in the past 12 months	n (% of total individuals)	Syphilis in the past 12 months, n (% of subgroup)	aOR* (95% CI)	P value†	Gonorrhoea in the past 12 months, n (% of subgroup)	aOR* (95% CI)	P value†	Chlamydia in the past 12 months, n (% of subgroup)	aOR* (95% CI)	P value†
HIV-diagnosed MSM										
No chemsex	642 (66)	48 (8)	1.0		66 (10)	1.0		69 (11)	1.0	
Yes, exclusively dyadic chemsex	82 (8)	4 (5)	0.5 (0.2 to 1.5)	0.225	11 (13)	1.2 (0.6 to 2.5)	0.596	5 (6)	0.5 (0.2 to 1.3)	0.171
Yes, including multiple partners	242 (25)	46 (19)	2.6 (1.7 to 4.1)	<0.001	78 (32)	3.9 (2.6 to 5.8)	<0.001	66 (28)	2.9 (1.9 to 4.3)	<0.001
PrEP users‡										
No chemsex	490 (66)	37 (8)	1.0		97 (20)	1.0		106 (22)	1.0	
Yes, exclusively dyadic chemsex	44 (6)	3 (7)	0.9 (0.3 to 3.0)	0.817	15 (34)	2.4 (1.2 to 4.7)	0.014	8 (18)	0.7 (0.3 to 1.7)	0.468
Yes, including multiple partners	206 (28)	27 (13)	1.9 (1.1 to 3.3)	0.018	84 (42)	2.9 (2.0 to 4.2)	<0.001	69 (34)	1.9 (1.3 to 2.8)	0.001
PrEP non-users‡										
No chemsex	7026 (92)	80 (1)	1.0		337 (5)	1.0		285 (4)	1.0	
Yes, exclusively dyadic chemsex	299 (4)	10 (3)	2.8 (1.4 to 5.6)	0.002	22 (7)	1.6 (1.0 to 2.5)	0.058	12 (4)	0.9 (0.5 to 1.7)	0.836
Yes, including multiple partners	344 (4)	17 (5)	4.0 (2.3 to 6.9)	<0.001	43 (13)	2.7 (1.9 to 3.8)	<0.001	33 (10)	2.3 (1.6 to 3.4)	<0.001

- UK 2017–2018 European MSM Internet Survey data (PrEP users, n=740)
- Recent multipartner chemsex in PrEP users was associated with recent syphilis, NG and CT diagnoses
- Recent exclusively dyadic chemsex had much weaker associations than multipartner chemsex

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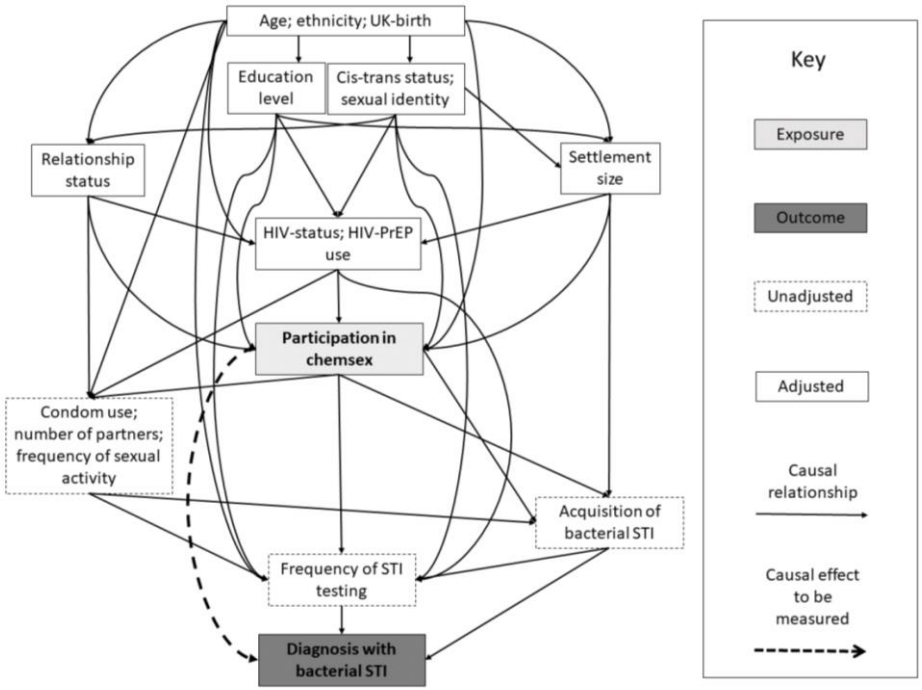
MacGregor L et al, Sex Transm Infect 2021

STIs after PrEP initiation



The causal graph illustrates the acquisition of STI after PrEP initiation is a complex interplay between multiple factors

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MacGregor L et al, Sex Transm Infect 2021

STIs after PrEP initiation

Cohort	Incidence rate hepatitis C (per 100 person-years)	Risk factors
Antwerp	2,9	
Amsterdam	2,3	Reporting receptive anal sex without using condoms, having an anal STI, injecting drugs and sharing straws when snorting drugs
Paris	1,4	Higher number of sexual acts and/or partners, and more frequent recreational drug use at baseline
New South Wales and the Australia Capital Territory	0,2	Higher age and self-reported methamphetamine use

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Gras J et al, AIDS 2020; Amin J et al, Clin Infect Dis 2022;
Hoornenborg HE et al, J Hepatol 2020; Vuylsteke B et al, J Int AIDS Soc 2019

STIs after PrEP initiation

- A robust body of literature describes the sexual transmission of *Campylobacter spp.*, *Giardia lamblia*, and *Shigella spp.* in sexual networks of MSM
- A recent Belgian epidemiologic study (2013-2019) provided evidence of 4 independent clusters of persistently circulating *Shigella* MDR strains associated with MSM, and of the same genotypes as previously described international MSM-related clades
- In a monthly epidemiological letter (March 2022), a recent outbreak of a MDR *Shigella sonnei* strain in MSM was reported, with resistance against azithromycine, ciprofloxacine and cephalosporines

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McNeil CJ et al, Clin Infect Dis 2022; Fisher N et al, J Antimicrob Chemother 2021;
MDR: multidrug resistant

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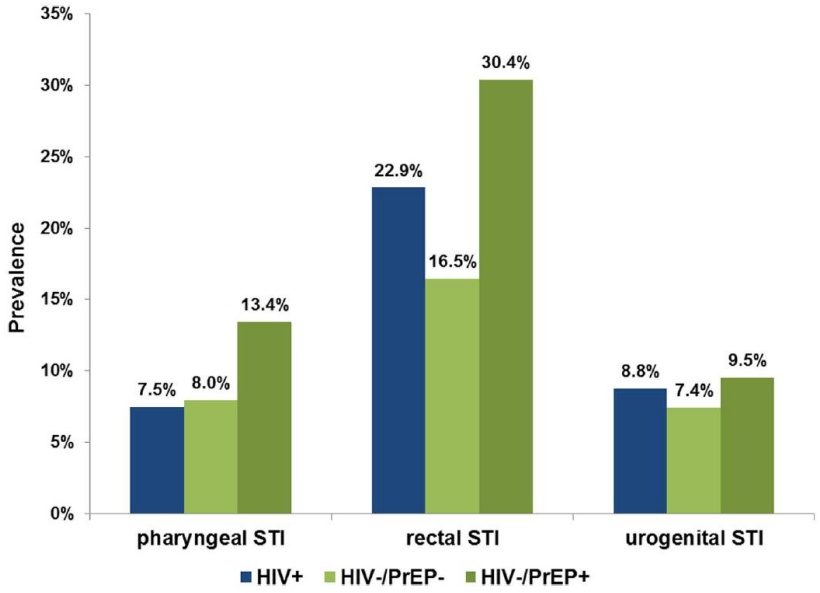
Testing for STI in patients taking PrEP: extra genital sites



- German cross-sectional study in MSM (n=2303)
- STI (CT, NG and *M. genitalium*) are most frequently found in extra genital sites
- Laboratory tests of these specimens should be validated for these specimen types

FDA NEWS RELEASE

FDA clears first diagnostic tests for extragenital testing for chlamydia and gonorrhea

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Jansen et al, BMC Infect Dis 2020

Testing for STI in patients taking PrEP: self-screening and pooling

- The Systematic trial included 1284 women and 509 MSM (Leeds, UK)
- Self-taken swabs of throat and rectum gave diagnoses as accurately as swabs taken by trained clinicians (both for NG and CT)
  - Other recent evidence indicates CT tests have a comparable performance on self-collected meatal swabs as with the other urogenital specimens
- NG was detected equally well by pooled and single swabs, both in women and MSM
- CT was slightly less likely to be picked up in pooled swabs than in three separate tests
  - Further research will explore different pooling techniques

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Wilson JD et al, Clin Infect Dis 2020; Geisler WM et al, Clin Infect Dis 2022

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Screening: the pro/con debate

- Theoretical advantages
  - Prevention of clinical disease through reduction of transmission to new partners
  - Prevention of long-term sequelae (syphilis and chronic hepatitis C)
  - Asymptomatic rectal CT and NG infections increase the risk of HIV acquisition among those engaging in receptive anal sex (not valid for PrEP users)
- Theoretical disadvantages
  - Costs (visits, laboratory tests,…)
  - Adverse drug reactions
  - Increase antibiotic use and potentially associated increased antimicrobial resistance

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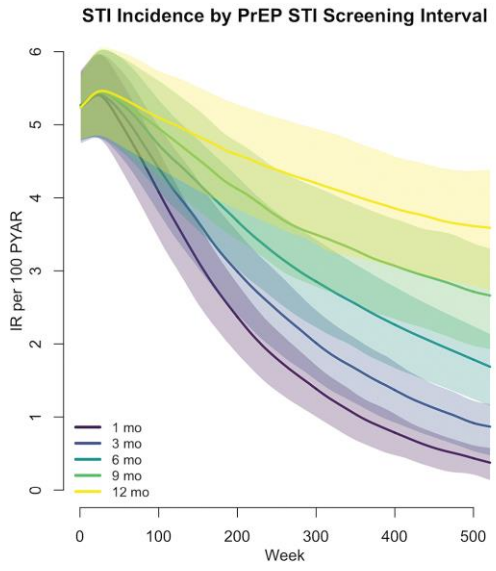
Screening: the pro/con debate



- Network-based mathematical model of NG and CT transmission dynamics among MSM in the United States
- Scenarios varied PrEP coverage, a reduction in the per-act probability of condom use and the STI screening interval
- STIs declined because PrEP-related STI screening resulted in a 17% and 16% absolute increase in the treatment of asymptomatic and rectal STIs
- Screening and timely treatment at quarterly vs biannual intervals would reduce STI incidence an additional 50%

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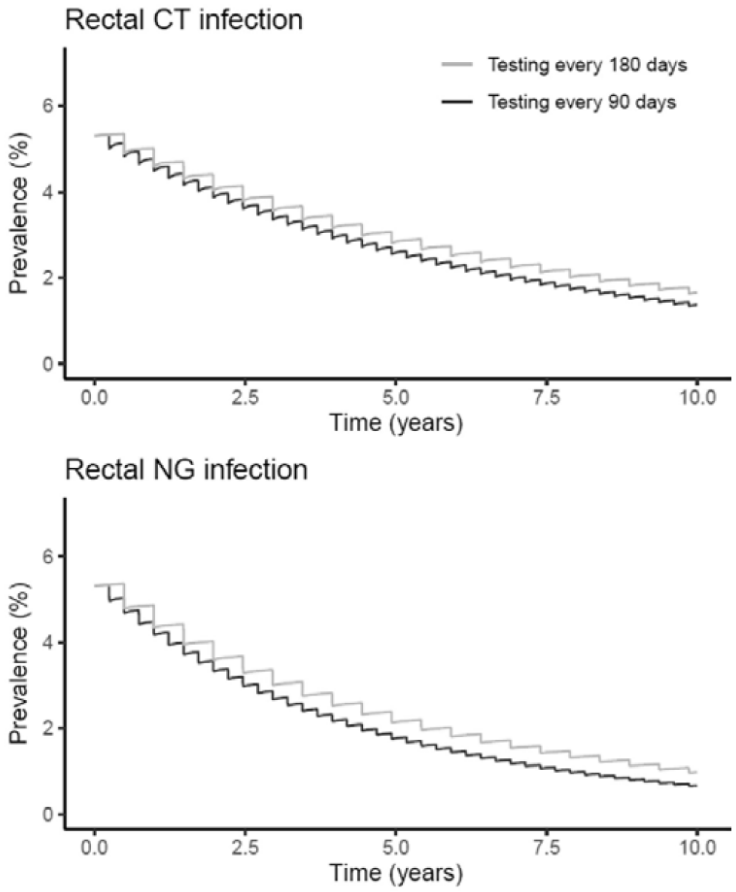
Jenness SM et al, Clin Infect Dis 2017

Screening: the pro/con debate



- Comparison of a 3-monthly screening programme for CT and NG with a 6-monthly screening programme among MSM included in the national PrEP programme in the Netherlands
- With screening of a reasonably large MSM population, a profound impact on the transmission of CT and NG is projected
- 3-monthly screening is not cost-effective compared with 6-monthly screening, because only a small number of additional incident infections would be averted

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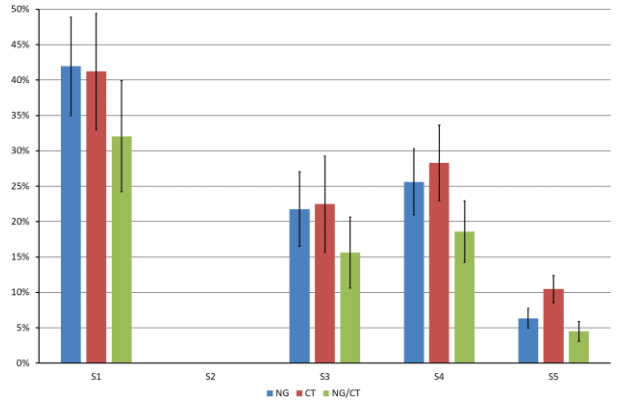
van Wifferen F et al, Sex Transm Infect 2021

Screening: the pro/con debate



Proportion of missed NG, CT, and NG/CT infections using different screening strategies in a simulated population of 1000 MSM over 1 year

- Compartmental model (anal, pharyngeal, and urinary (APU) samples) of NG/CT screening and infections in MSM (Lyon)
- Different screening strategies were evaluated:
  - S1: APU samples every 12 months
  - S2: APU samples every 3 months (reference)
  - S3: APU samples every 6 months
  - S4: AP samples every 6 months
  - S5: AP samples every 3 months
- S5 appears to be the best strategy, missing only 6.3/10.5% of NG/CT diagnoses, for a cost reduction of 33%

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Voirin N et al, Clin Infect Dis 2020

Conclusions

- STI rates after PrEP initiation are high and show a stable trend
- Monitoring of less prevalent infections, including acute hepatitis C and enteric infections, is warranted
- Screening for bacterial STIs should include extragenital sites
- Pooling of samples and self-sampling is a reasonable approach when screening for bacterial STIs
- Screening for NG/CT is probably only useful when a sufficient large part of the MSM population is covered, and more evidence is needed to prove its effectiveness

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