

# Recurrence of Sexually Transmitted Infections is Commonly Found in a Subpopulation of Austrian PrEP Users

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## Background

In recent years, a rise in sexually transmitted infections (STIs) has been observed among men who have sex with men (MSM) using HIV Pre-Exposure Prophylaxis (PrEP).<sup>1</sup> Additionally, chemsex (sexualized drug use) has been linked to increasing STI rates in numerous studies.<sup>2,3</sup> In Austria, however, data on behavioral trends and STI incidence among PrEP users remain limited, complicating the development of prevention strategies for this subpopulation. To address this gap, we aimed to assess the incidence of bacterial STIs and associated risk factors among Austrian PrEP users.

## Materials & Methods

In June 2020, we initiated a prospective observational cohort study at the General Hospital of Vienna, comprising Viennese PrEP users.

Per-protocol, individuals were tested for STIs quarterly and sexual behavior was documented using a self-administered questionnaire addressing sexual behavior over the past 12 months at baseline or the past 3 months at follow-up visits. Questions included preferences for on-demand versus daily PrEP, number of sex partners, sex practices, anal bleeding after intercourse and chemsex. The primary outcome of the study was the incidence of STIs in Austrian PrEP users.

## Results

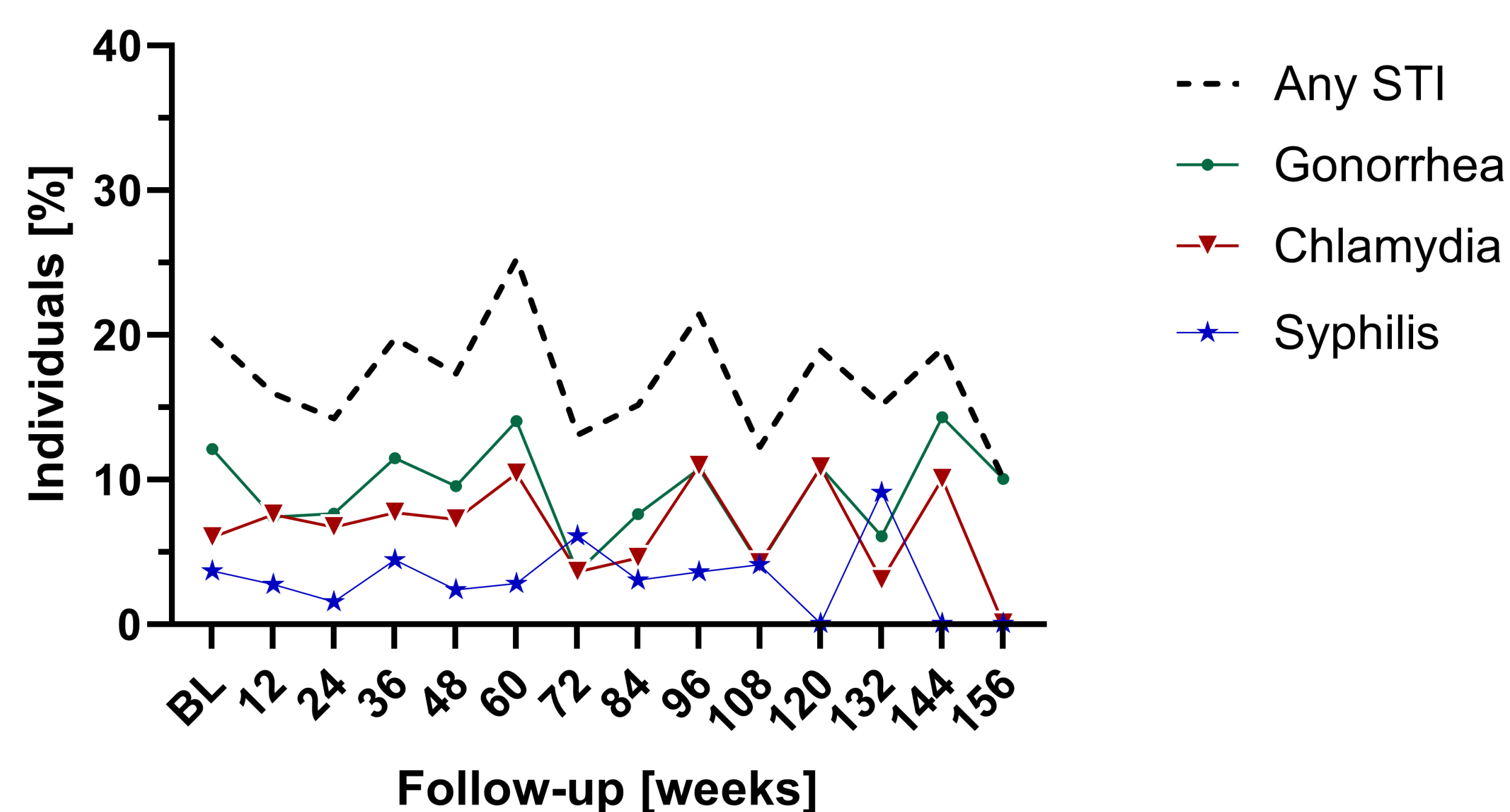
Between 06/2020 and 12/2023, 360 individuals were enrolled, contributing 379 person-years of follow-up. The median age of participants was 31.2 years; 99% (359/360) identified as MSM, with one transgender woman included. Fifty-eight percent (210/360) of individuals preferred daily PrEP, while 42% (150/360) opted for on-demand PrEP.

The incidence rates per person-years were as follows:

- **Gonorrhea: 29.8 (95% CI: 24.3–35.3)**
- **Chlamydia: 22.7 (95% CI: 17.9–27.5)**
- **Syphilis: 9.8 (95% CI: 6.6–12.9)**

No HIV- or hepatitis C virus infections were detected. STI incidence during the observation period is illustrated in **Figure-1**.

**Figure-1. STI incidence during the observation period**



Extragenital infection (i.e., anal or pharyngeal) accounted for 95% (97/102) of gonorrhea cases and 81% (65/80) of chlamydia cases. Additionally, only 23% (36/154) of individuals experienced symptomatic infections. Further information on STI infections during the study period are detailed in **Table-1**.

Notably, individuals with one or more reinfections (18%; 65/360) comprised 68% (187/276) of all STIs, as illustrated in **Figure-2**.

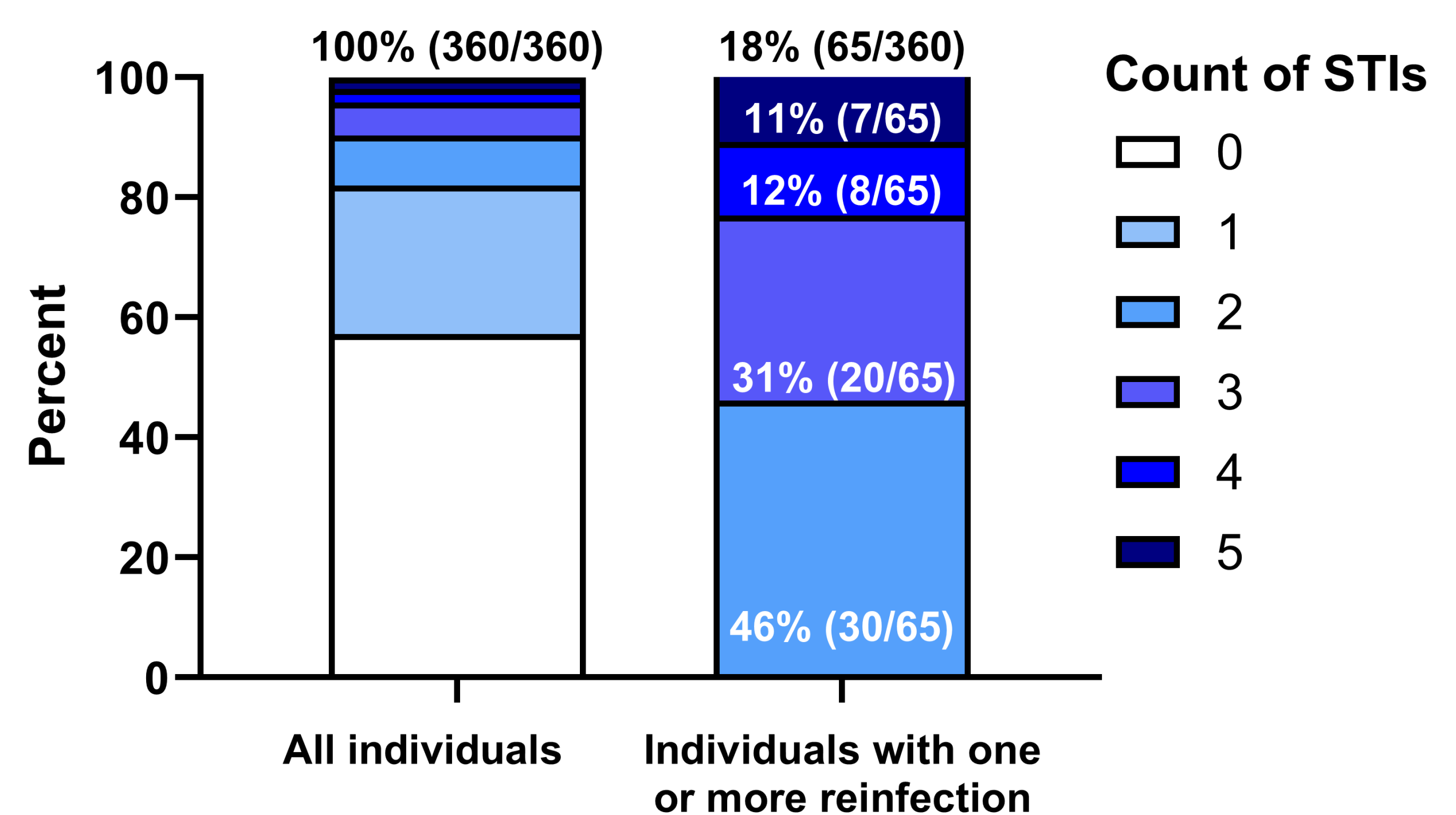
Engaging in chemsex was reported by 44% (157/360) during the study period and was associated with testing positive for gonorrhea (38% vs. 21%,  $p < 0.001$ ) and syphilis (17% vs. 5%,  $p < 0.001$ ), but not chlamydia (26% vs. 19%,  $p = 0.118$ ). A binary logistic regression model was established to identify predictors for STI reinfection, and in multivariate analysis, chemsex use was found as the only predictor (adjusted odds ratio: 3.34 [95% CI: 1.67–6.65];  $p < 0.001$ ).

**Table-1. Sexually transmitted infections**

Individuals affected at least once by the respective STI during follow-up (% , n/all)	All individuals (N=360)	Never reported chemsex use (N=203)	Reported chemsex use (N=157)	p-value
<b>Any infection§</b>	43% (154/360)	33% (67/203)	55% (87/157)	<b>&lt;0.001</b>
<b>Symptomatic disease</b>	23% (36/154)	22% (15/67)	24% (21/87)	0.799
<b>Median count of any STI (range)</b>	1 (4)	1 (4)	1 (4)	-
<b>Any reinfection</b>	42% (65/154)	34% (23/67)	48% (42/87)	0.082
<b>Syphilis</b>	11% (38/360)	5% (11/203)	17% (27/157)	<b>&lt;0.001</b>
<b>Gonorrhea</b>	28% (102/360)	21% (42/203)	38% (60/157)	<b>&lt;0.001</b>
<b>Pharyngeal infection</b>	18% (66/360)	16% (33/203)	21% (33/157)	0.247
<b>Urethral infection</b>	7% (25/360)	3% (7/203)	11% (18/157)	<b>0.003</b>
<b>Anal infection</b>	19% (67/360)	10% (20/203)	30% (47/157)	<b>&lt;0.001</b>
<b>Chlamydia</b>	22% (80/360)	19% (39/203)	26% (41/157)	0.118
<b>Pharyngeal infection</b>	3% (11/360)	2% (5/203)	4% (6/157)	0.458
<b>Urethral infection</b>	5% (19/360)	5% (11/203)	5% (8/157)	0.892
<b>Anal infection</b>	17% (62/360)	15% (30/203)	20% (32/157)	0.163

§ comprises all gonorrhea, chlamydia and syphilis infections  
Abbreviations: IQR, interquartile range; MSM, men who have sex with men; PrEP, HIV post-exposure prophylaxis; PrEP, HIV pre-exposure prophylaxis; STI, sexually transmitted infection.

**Figure-2. STI infections and reinfections**



The left box displays the entire study population stratified by the count of sexually transmitted infections, while the right box provides a detailed view on those affected by one or more reinfection during follow-up. Notably, while the cumulative number of STIs was 276, individuals with one or more reinfections (18%; 65/360) accounted for 68% (187/276) of them.

## Conclusions

- **Forty-three percent of all participants were affected by gonorrhea, chlamydia and/or syphilis at least once.**
- **The majority of infections were asymptomatic and occurred at extragenital sites.**
- **Two-thirds of all STIs occurred in the 18% of PrEP users who experienced reinfections.**
- **'Chemsex' was the only independent predictor for STI reinfection, which highlights the potential benefits of harm reduction interventions in combating STIs.**

## References

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