

SUPPLEMENTARY MATERIAL FOR

Long-Term Health Outcomes of PWH Engaged in Chemsex: A Prospective Cohort Study on Drug Use, Sexual Behavior, STI and Vulnerability

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SELF-ADMINISTERED ELECTRONIC QUESTIONNAIRES

(Spanish is the original language of the study population, English translation for the article)

Visit Date

(dd/mm/yyyy)

CLINICAL HISTORY

Previous diagnosis/episode of:

Sexually Transmitted Infections (STIs):

No/Yes/ unk-na

Type of STI

Chancroid

Chlamydia

Gonorrhea

Granuloma inguinale

Herpes

HPV (human papillomavirus)

Lymphogranuloma venereum

Syphilis

Mycoplasma genitalium

Molluscum contagiosum

Pubic lice

Proctitis

Scabies

Urethritis

(Multiple answers allowed)

CO-INFECTIONS

HIV+

No / Yes / unk-na

Hepatitis B

No / Yes / unk-na

Hepatitis C

No / Yes / unk-na

Hepatitis A

No / Yes/ unk-na

Date HIV+

(dd/mm/yyyy)

Date Hepatitis B

(dd/mm/yyyy)

Date Hepatitis C

(dd/mm/yyyy)

Date Hepatitis A

(dd/mm/yyyy)

CONTACT TRACING STUDIES

Sexual partners in the last 3 months	No / Yes / unk-na
Number of male sexual partners in the last 3 months	(Number)
Number of female sexual partners in the last 3 months	(Number)
Total number of sexual partners in the last 3 months	(Number)
Identifiable sexual partners:	No / Yes / unk-na
Number of identifiable male partners	(Number)
Number of identifiable female partners	(Number)
Total number of identifiable sexual partners	(Number)

EPIDEMIOLOGY AND BEHAVIOR

Current partner	No / Yes / unk-na
Open relationship	No / Yes / unk-na
Number of different sexual partners (<i>≤12 months if baseline questionnaire;</i> <i>≤3 months if follow-up questionnaire</i>)	(Number)
I am a sex worker	No / Yes / unk-na
If sex worker:	
I use drugs while working	No / Yes / Sometimes /unk-na
I use drugs to have sex outside of work	No / Yes / Sometimes/ unk-na
Sex only with men	No / Yes/ Sometimes/ unk-na
Sex with men and/or women	No / Si / Sometimes/ unk-na
Sex with men and/or women who are transgender	No / Si /Sometimes/ unk-na

SEXUAL PRACTICES

ORAL	No / Yes / unk-na
If oral sex is practiced:	
Type of oral practice	Active / Passive / Versatile/ unk-na
With protection	No / Yes / Sometimes / unk-na
ANAL	No / Yes / unk-na
If anal sex is practiced:	

Type of anal practice
With protection

Active / Passive / Versatile / unk-na
No / Yes / Sometimes / unk-na

DOUBLE PENETRATION

No / Yes / unk-na

If double penetration is practiced:

Type of practice

Active / Passive / Versatile / unk-na

With protection

No / Yes / Sometimes / unk-na

FLUID EXCHANGE

No / Yes / unk-na

If fluids are exchanged:

Types of fluids

Feces / Urine / Saliva / Semen / unk-na

FISTING (brachio-proctic insertion)

No / Yes / unk-na

If practiced:

Type of fist-fucking practice

Active / Passive / Versatile / unk-na

With protection

No / Yes / Sometimes / unk-na

SEX TOYS

No / Yes / unk-na

If toys are used:

With protection

No / Yes / Sometimes / unk-na

Shared

No / Yes / Sometimes / unk-na

Cleaned

No / Yes / Sometimes / unk-na

VAGINAL

No / Yes / unk-na

If vaginal sex is practiced:

With protection

No / Yes / Sometimes / unk-na

GENITAL WARTS MONITORING

History of genital warts episode

No / Yes / unk-na

Date of last episode

(dd/mm/yyyy)

SUBSTANCE USE

Have you used any of the following substances to enhance sexual pleasure, to engage in LONG sex sessions, or for sex parties held in private homes or commercial venues where sex takes place (e.g., saunas, sex clubs)?

No / Sometimes/ unk-na

At least once a month in the past 6 months

No / Sometimes/ unk-na

At least 10 times per month in the past year

No / Yes / unk-na

Which substances? *(Multiple responses allowed)*

Cocaine (also known as "tema", "farlopa", "white")
Ketamine (Keta, K)
GHB/GBL (liquid ecstasy, G)
Crystal meth (*Tina, T*)
Mephedrone (*Mefe*)
Speed
Ecstasy (pills, tablets)
MDMA (crystals, M)
Poppers (alkyl nitrite)
Viagra or similar
Cannabis
None

Other substances:

Do you consume alcohol during these sessions?

No / Yes / Sometimes / unk-na

How many substances (from the above list) do you consume at the same time?

1 drug / 2 drugs / 3 or more drugs / na

Specify substances (Combination 2):

Cocaine (also known as "tema", "farlopa", "white")
Ketamine (Keta, K)

GHB/GBL (liquid ecstasy, G)
Crystal meth (*Tina, T*)
Mephedrone (*Mefe*)
Speed
Ecstasy (pills, tablets)
MDMA (crystals, M)
Poppers
Viagra or similar
Cannabis
None

Specify substances (Combination 2):
(Multiple responses allowed)

Cocaine (also known as "tema", "farlopa", "white")
Ketamine (Keta, K)
GHB/GBL (liquid ecstasy, G)
Crystal meth (*Tina, T*)
Mephedrone (*Mefe*)
Speed
Ecstasy (pills, tablets)
MDMA (crystals, M)
Poppers
Viagra or similar

Cannabis
None

Route of Administration

Oral	No / Yes/ Sometimes / unk-na
Inhaled	No / Yes / Sometimes / unk-na
Nasal insufflation	No / Yes / Sometimes / unk-na
Sublingual	No / Yes / Sometimes / unk-na
Rectal	No / Yes / Sometimes / unk-na
Intravenous (<i>slamming</i>)	No / Yes / Sometimes / unk-na
If <i>slamming</i> :	
Shares injection materials	No / Yes / Sometimes / unk-na
Uses sterile materials	No / Yes / Sometimes / unk-na

Frequency of Use

Daily	No / Yes / unk-na
Weekly	No / Yes/ unk-na
How many times per week:	_____
	(number)
Monthly	No / Yes / unk-na
How many times per month	_____
	(number)
Less than once a month	No / Yes/ unk-na

Regarding sex sessions, if participating:

Attends accompanied	No / Yes / Sometimes / unk-na
When do you decide to end the session?	_____
	(texto corto)
What is the reason?	_____
	(texto corto)
Do you remember the last time you had sex without drugs?	No / Yes / unk-na
Do you bring and consume your own substances?	No / Yes / Sometimes / unk-na
Do you consume substances that are offered to you?	No / Yes/ Sometimes / unk-na

Concern

Are you currently concerned about drug use in a sexual context?	No / Yes / unk-na
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Concern related to drug use (managing consumption)	No / Yes / unk-na
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Concern related to sexuality	No / Yes / unk-na
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Concern related to potential STIs	No / Yes / unk-na
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Other (related to...)	
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(short text)

Assistance

Do you feel you need help?	No / Yes / unk-na
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Related to drug use (managing consumption)	No / Yes / unk-na
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Related to sexuality	No / Yes / unk-na
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Related to potential STIs	No / Yes / unk-na
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Other (related to...)	
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(short text)

Consumption Management

Informed about the possibility of referral	No / Yes / unk-na
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Accepts referral	No / Yes / unk-na
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Follows up	No / Yes / unk-na
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unk-na: unknown-not answered

Supplementary material for Results

Sexual Contacts

During the follow-up, the median number of sexual partners in the previous three months remained stable in the range of 30–53 contacts. In terms of relationship status, a greater percentage of people reported having a stable partner at the end of the study period (from 24% (29/119) in the first year to 40% (42/105) in year 3), with a decrease in reporting an open relationship (IRR 0.70 (95% CI 0.53; 0.93)). Most chemsex users reported having sex only with other men.

Sexual Practices

Between 94% (109/116) and 99% (75/76) of participants reported unprotected oral sex. Between 97% (113/116) and 100% (194/194) reported anal sex, of which 88% (65/74) and 96% (67/70) reported unprotected anal sex, respectively. High-risk sexual practices remained stable throughout the study period: brachio-proctic insertions (*fisting*) was reported between 40% (26/65) and 57% (36/63); second, between 40% (51/128) and 56% (44/79); and third, between 54% (48/89) and 70% (55/79).

Drug Use

With respect to the type of drugs used, there was a significant trend toward lower use of cocaine (IRR 0.57 (95% CI 0.46; 0.70)), ketamine (IRR 0.53 (95% CI 0.40; 0.71)), methamphetamine (IRR 0.71 (95% CI 0.62; 0.80)), GHB (IRR 0.71 (95% CI 0.62; 0.81)), poppers (alkyl nitrites) (IRR 0.65 (95% CI 0.56; 0.76)), and 5-phosphodiesterase inhibitors (IRR 0.67 (95% CI 0.58; 0.76)) and a slight increase in the use of mephedrone in the previous year compared with the first and second years of the study, but these differences were not statistically significant.

The administration of inhaled and nasal insufflation (*snorted*) drugs decreased significantly at year one (IRR 0.93 (95% CI 0.87; 1.00) $p=0.049$) (95% CI 0.89 (IQR 0.80; 0.98)) and two (IRR 0.88 (95% CI 0.81; 0.95)); IRR 0.60 (95% CI (0.42; 0.86)), respectively. A decrease in rectal use was observed over three years (IRR 0.60 (95% CI 0.42; 0.86)).

Sexually Transmitted Infections

Chlamydia trachomatis infections detected by PCR varied throughout the study period, with a cumulative incidence of 10% at baseline (IQ 6.4%, 14.8%) and a nonsignificant decrease at the end of the study (IRR 0.82 (95% CI 0.51; 1.33)). Similarly, the cumulative incidence of *Neisseria gonorrhoeae* infections was 22.8% at baseline (IQR 17.1%; 28.6%), and the incidence decreased significantly during year two (IRR 0.59 (95% CI 0.41; 0.83)). No differences were found for *Mycoplasma genitalium* infections (Figure 4).

SUPPLEMENTARY TABLE S1: Cumulative incidence and 95% confidence interval (CI) of sexual practice behaviors, substance use, sexually transmitted infections and HIV viral load.

	Cumulative Incidence (95% CI)			
Variable	Baseline	1st year	2nd year	3rd year
Sexual partners during last 3 months	98.5% (96.7%; 100.0%)	97.1% (95.3%; 99.0%)	95.4% (93.0%; 97.7%)	96.2% (93.5%; 98.8%)
Traceable sexual partners	94.6% (91.2%; 98.1%)	85.5% (81.4%; 89.7%)	86.6% (82.5%; 90.8%)	87.6% (83.0%; 92.2%)
Stable partner	31.8% (25.4%; 38.3%)	29.0% (23.1%; 34.8%)	32.2% (25.5%; 38.9%)	33.9% (26.8%; 41.1%)
Open relationship	79.3% (68.8%; 89.8%)	66.9% (55.3%; 78.5%)	54.2% (42.2%; 66.3%)	55.7% (42.5%; 68.8%)
Sex worker	-	22.5% (7.6%; 37.4%)	19.5% (12.3%; 26.6%)	13.7% (7.9%; 19.5%)
Oral sex	100.0% (.%; .%)	100.0% (.%; .%)	98.8% (97.7%; 99.8%)	100.0% (.%; .%)
Anal sex	100.0% (100.0%; 100.0%)	99.0% (98.1%; 99.9%)	99.0% (98.0%; 100.0%)	98.6% (97.2%; 100.0%)
Double penetration	67.2% (59.3%; 75.0%)	61.0% (54.3%; 67.7%)	59.2% (52.2%; 66.1%)	62.0% (53.5%; 70.5%)
Brachio-proctic insertion (<i>Fisting</i>)	54.3% (46.0%; 62.6%)	51.8% (44.2%; 59.5%)	51.2% (43.1%; 59.2%)	50.6% (41.1%; 60.1%)
Sexual toys	51.1% (43.8%; 58.3%)	48.6% (41.5%; 55.8%)	48.3% (41.2%; 55.4%)	50.5% (42.4%; 58.5%)
Vaginal sex	13.2% (2.4%; 23.9%)	4.5% (0.4%; 8.6%)	7.6% (3.0%; 12.2%)	20.8% (8.6%; 32.9%)
Unprotected oral sex	94.9% (91.6%; 98.1%)	94.8% (92.2%; 97.4%)	96.3% (93.9%; 98.6%)	96.1% (93.5%; 98.7%)
Unprotected anal sex	90.2% (85.3%; 95.1%)	93.0% (89.9%; 96.1%)	93.7% (90.3%; 97.0%)	92.1% (87.7%; 96.5%)
Unprotected double penetration	90.5% (83.2%; 97.7%)	93.9% (89.9%; 97.9%)	94.9% (90.9%; 98.8%)	96.4% (92.0%; 100.0%)
Unprotected brachio-proctic insertion (<i>Fisting</i>)	75.4% (64.9%; 85.9%)	81.5% (74.1%; 89.0%)	87.9% (80.5%; 95.2%)	90.8% (83.2%; 98.4%)
Unprotected sexual toys	90.0% (83.4%; 96.6%)	85.0% (78.9%; 91.1%)	87.4% (81.4%; 93.4%)	87.0% (78.7%; 95.3%)

Unprotected vaginal sex		40.0% (0.0%; 84.1%)	16.7% (0.0%; 48.3%)	42.9% (12.3%; 73.4%)	64.3% (28.0%; 100.0%)
Chemsex		100.0% (100.0%; 100.0%)	95.8% (93.6%; 98.1%)	89.4% (85.5%; 93.2%)	87.6% (82.9%; 92.3%)
Drugs	Cocaine	56.0% (49.2%; 62.7%)	45.4% (39.4%; 51.5%)	34.3% (27.6%; 40.9%)	31.9% (25.1%; 38.7%)
	Ketamine	40.7% (34.0%; 47.3%)	34.2% (28.2%; 40.3%)	21.8% (16.3%; 27.2%)	21.6% (15.9%; 27.4%)
	GHB	75.6% (69.8%; 81.4%)	64.1% (57.8%; 70.3%)	55.1% (48.3%; 61.9%)	53.8% (46.3%; 61.3%)
	Methamphetamine	79.9% (74.5%; 85.3%)	66.3% (60.1%; 72.6%)	57.6% (51.0%; 64.3%)	56.5% (48.7%; 64.2%)
	Mephedrone	48.8% (42.0%; 55.6%)	33.3% (27.4%; 39.1%)	27.8% (21.8%; 33.7%)	34.0% (27.4%; 40.7%)
	5-phosphodiesterase inhibitors	44.0% (37.3%; 50.8%)	29.7% (23.8%; 35.5%)	20.6% (15.4%; 25.8%)	16.4% (11.7%; 21.0%)
	Poppers	70.3% (64.1%; 76.5%)	65.2% (59.2%; 71.2%)	53.9% (47.2%; 60.6%)	45.6% (38.4%; 52.9%)
Frecuency	Weekly	40.6% (33.9%; 47.3%)	33.0% (27.0%; 39.0%)	35.2% (28.7%; 41.7%)	33.7% (26.6%; 40.9%)
	Monthly	33.5% (27.0%; 40.0%)	38.4% (33.0%; 43.9%)	33.9% (27.9%; 40.0%)	37.7% (31.0%; 44.5%)
Route of administration	Inhaled	84.6% (79.7%; 89.5%)	79.1% (74.3%; 83.9%)	74.4% (69.0%; 79.8%)	78.1% (71.9%; 84.3%)
	Snorted (nasal insufflation)	69.4% (63.1%; 75.6%)	61.7% (55.7%; 67.6%)	55.6% (48.8%; 62.4%)	61.1% (54.0%; 68.3%)
	Rectal	29.2% (23.0%; 35.4%)	23.7% (18.0%; 29.3%)	15.8% (11.2%; 20.4%)	17.6% (11.8%; 23.5%)
	Slamming (intravenous drug use)	19.3% (13.9%; 24.7%)	15.4% (10.7%; 20.2%)	13.8% (8.6%; 19.0%)	16.7% (10.2%; 23.1%)
Sober sex		75.7% (69.5%; 81.8%)	75.6% (69.4%; 81.8%)	68.1% (61.3%; 74.9%)	72.3% (64.8%; 79.8%)

