

Supplementary Material

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Table S1. Candidate variables considered for principal component analysis, by predefined domain (N=38)

Domain	Variables
Sociodemographic (n=5)	Age; country of birth; ethnicity; educational level; cohort of origin
Infection history (n=6)	Prior AIDS-defining conditions; prior HCV infection; prior syphilis; prior gonorrhea; prior chlamydia; HBsAg positivity
Mental health (n=7)	Self-reported anxiety; self-reported depression; adult ADHD; Barratt Impulsiveness Scale total score; cognitive impulsivity; motor impulsivity; non-planning impulsivity
Drug use (n=10)	Any illicit drug use; cocaine; mephedrone; methamphetamine; ketamine; GHB; MDMA/ecstasy; cannabis (marijuana); amphetamines; other drugs
Route of drug use (n=5)	Oral; nasal; smoking/inhalation; intrarectal; injection
Sexual behavior (n=5)	Condomless receptive anal intercourse; condomless insertive anal intercourse; number of sexual partners; chemsex; fisting

Abbreviations: HCV, hepatitis C virus; HBsAg, hepatitis B surface antigen; ADHD, attention-deficit/hyperactivity disorder; GHB, gamma-hydroxybutyric acid; MDMA, 3,4-methylenedioxymethamphetamine.

Table S2. STROBE checklist for cohort studies

	Item	Recommendation	Manuscript location
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract	Title; Abstract
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Abstract
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Introduction
Objectives	3	State specific objectives, including any prespecified hypotheses	Introduction
Methods			
Study design	4	Present key elements of study design early in the paper	Methods—Study Design and participants
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Methods—Study Design and participants; Data Collection
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	Methods—Study Design and participants
		(b) For matched studies, give matching criteria and number of exposed and unexposed	N/A
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Methods—Laboratory Procedures and STI Definitions; Statistical analysis
Data sources/measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Methods—Data Collection; Laboratory Procedures and STI Definitions
Bias	9	Describe any efforts to address potential sources of bias	Discussion—Limitations
Study size	10	Explain how the study size was arrived at	N/A
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Methods—Statistical analysis
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	Methods—Statistical analysis
		(b) Describe any methods used to examine subgroups and interactions	N/A
		(c) Explain how missing data were addressed	Results—Participant Characteristics
		(d) If applicable, explain how loss to follow-up was addressed	N/A
		(e) Describe any sensitivity analyses	Methods—Statistical analysis; Results—Identification of Clinical Phenotypes
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—e.g. numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analyzed	Results—Participant Characteristics
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (e.g. demographic, clinical, social) and information on exposures and potential confounders	Results—Participant Characteristics; Table 2

		(b) Indicate number of participants with missing data for each variable of interest	Results—Participant Characteristics
		(c) Summarize follow-up time (e.g., average and total amount)	N/A
Outcome data	15*	Report numbers of outcome events or summary measures over time	Results—Infections Across Clinical Phenotypes; Table 4
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Results—Infections Across Clinical Phenotypes; Table 4
		(b) Report category boundaries when continuous variables were categorized	N/A
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—e.g. analyses of subgroups and interactions, and sensitivity analyses	Results—Identification of Clinical Phenotypes
Discussion			
Key results	18	Summarize key results with reference to study objectives	Discussion
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Discussion—Limitations
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Discussion
Generalizability	21	Discuss the generalizability (external validity) of the study results	Discussion
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Funding

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at <http://www.strobe-statement.org>.

Table S3. Baseline characteristics and HCV prevalence among MSM with HIV, by completion of at least one behavioral questionnaire.

Variable	Completed ≥1 questionnaire (N = 540)	No questionnaire (N = 193)	<i>p</i> -value
Age, median (IQR), years	41 (33–49)	39 (34–48)	0.325
Native-born Spaniard, n/N (%)	335/540 (62.0)	112/193 (58.0)	0.345
Prior AIDS diagnosis, n/N (%)	61/533 (11.4)	23/192 (12.0)	0.895
On ART, n/N (%)	539/540 (99.8)	191/193 (99.0)	0.171
CD4 cell count, median (IQR), cells/μL	802 (608–998)	740 (555–939)	0.010
Undetectable HIV RNA, n/N (%)	510/540 (94.4)	182/193 (94.3)	1.000
History of HCV infection, n/N (%)	195/540 (36.1)	59/193 (30.6)	0.186
Any previous STI, n/N (%)	410/540 (75.9)	140/193 (72.5)	0.383
Prior syphilis, n/N (%)	367/540 (68.0)	127/193 (65.8)	0.592
Prior <i>N. gonorrhoeae</i> infection, n/N (%)	167/540 (30.9)	68/193 (35.2)	0.282
Prior <i>C. trachomatis</i> infection, n/N (%)	123/540 (22.8)	34/193 (17.6)	0.152
Baseline HCV prevalence, % (95% CI)	2.22 (1.15–3.85)	2.59 (0.85–5.94)	0.782

Abbreviations: MSM, men who have sex with men; IQR, interquartile range; ART, antiretroviral therapy; HIV, human immunodeficiency virus; HCV, hepatitis C virus; STI, sexually transmitted infection; CI, confidence interval.

Appendix 1: Baseline and Follow-up Assessments for MSM with HIV (eCRF-Based)

DEMOGRAPHICS AND MEDICAL HISTORY

Inclusion Criteria:

- Signed informed consent: Yes / No
- HIV infection status: Yes / No
- Men who have sex with men (MSM): Yes / No

Socio-demographic Data:

- Sex at birth: Male / Female
- Date of birth:
- Age:
- Country of birth: Spain: Yes / No (if no, specify country)

Race (Self-reported):

- White
- Black
- Other
- Not Available

Education Level:

- No primary education completed
- Primary education completed
- Secondary education completed
- University education completed
- Other

HIV Infection Status:

- CDC clinical category: A1, B1, C1, A2, B2, C2, A3, B3, C3
- Antiretroviral therapy (ART): Yes / No
- Current ART regimen (check all frugs that apply):

Previous Hepatitis C (HCV) Infection:

- Previous HCV infection: Yes / No
- Number of previous HCV infections:
- Previously treated for HCV: Yes / No
- Spontaneous clearance of previous infection: Yes / No
- Previous treatment regimen (if applicable):
- Treatment duration (weeks): 6, 8, 12, 16, 24, 48
- Date of sustained virologic response (SVR):
- HCV genotype: 1a, 1b, 2, 3, 4, 5, 6, Unknown

Sexually Transmitted Infections (STIs) History:

- Syphilis: Yes / No
- Gonorrhea: Yes / No
- Chlamydia (non-LGV): Yes / No
- Lymphogranuloma venereum (LGV): Yes / No
- Hepatitis A: Yes / No
- Hepatitis B: Yes / No

BASELINE AND FOLLOW-UP VISIT (6M AND 12M) ASSESSMENTS:

Clinical

- Visit completed: Yes / No (If No, specify reason)
- Date of visit:
- Incident infections since the last visit: Yes / No
 - HCV infection: Yes / No (Date: , Reinfection: Yes / No)
 - Syphilis: Yes / No (Date: , Type: primary, secondary, latent)
 - Chlamydia: Yes / No (Date: , Site: genital, anal, pharyngeal, LGV: Yes / No)
 - Gonorrhea: Yes / No (Date:)

Laboratory

- CD4+ cell count: cells/mm³
- CD8+ cell count: cells/mm³
- HIV viral load: Detectable / Undetectable (<50 copies/mL)
- HCV serology: Negative / Positive
- HCV RNA PCR: Positive / Negative
- Syphilis serology: Reactive / Non-reactive
- Chlamydia PCR: Positive / Negative
- Gonorrhea PCR: Positive / Negative

INCIDENT HCV INFECTION ASSESSMENT:

- Diagnosis date:
- Reinfection: Yes / No
- Symptoms present: Yes / No (Specify symptoms)
- AST: ALT:
- HCV viral load:
- Genotype: 1a, 1b, 2, 3, 4, 5, 6, Unknown
- Treatment initiated: Yes / No (Specify regimen and duration: 6, 8, 12, 16, 24 weeks)
- Treatment response: Undetectable (SVR at week 12 or 24) / Detectable (treatment failure) / Ongoing (pending)

STUDY COMPLETION:

- Reason for study termination:
- Date of completion:

Appendix 2: App-Based Data on Sexual Practices, Drug Use, and Mental Health in MSM with HIV

Data on sexual behavior, substance use, and mental health were collected using structured questionnaires administered via REDCap. These questionnaires were provided directly by study investigators to participants living with HIV and were self-completed by each participant at baseline and subsequent study visits. Only individuals with confirmed HIV infection completed this module. REDCap was used both to distribute the surveys and to securely download the participant responses for analysis.

Var	Field label	Field attributes
3	Date	Text field, date (DD-MM-YYYY)
4	Have you used drugs in the last 2 months?	Radio: 0 = No, 1 = Yes
5	Tick the drugs you have used in the last 2 months (select all that apply)	Checkbox (<i>shown if variable 4 = 1</i>) 1 Cocaine. 2 Cathinones. 3 Methamphetamines. 4 Ketamine. 5 GHB. 6 Ecstasy. 8 Marijuana. 9 Amphetamines. 7 Other
6	You indicated other drugs—please specify	Text field (<i>shown if variable 5 choice 7 = checked</i>)
7	In what context did you use these drugs?	Radio (<i>shown if variable 4 = 1</i>): 0 Non-sexual. 1 Sexual. 2 Both
8	Route(s) of administration in the last 2 months (select all that apply)	Checkbox (<i>shown if variable 4 = 1</i>) 0 Ingested. 1 Snorted. 2 Smoked. 3 Rectal. 4 Injected
9	Have you shared injection material?	Radio (<i>shown if variable 8 choice 4 = checked</i>): 0 No. 1 Yes
10	How often do you use these drugs?	Radio (<i>shown if variable 4 = 1</i>): 0 Daily. 1 Weekly. 2 Fortnightly. 3 Monthly. 4 Yearly
11	Have you had condom-less anal sex in the last 2 months?	Radio: 0 No. 1 Yes
12	If yes, indicate the role	Radio (<i>shown if variable 11 = 1</i>): 1 Receptive. 2 Insertive. 3 Both
13	During condom-less anal sex in the last 2 months, with how many different partners?	Text field (integer) (<i>shown if variable 11 = 1</i>)
14	Have you practiced “fisting”?	Radio: 0 No. 1 Yes
14a	HADS instructions	Descriptive text (no data captured)
15	I feel tense or nervous	Radio: 3 Almost all day. 2 Most of the day. 1 Sometimes. 0 Never
16	I still enjoy the things I used to	Radio: 0 Certainly, as before. 1 Not as much. 2 Only a little. 3 Not at all
17	I have a feeling that something awful is going to happen	Radio: 3 Yes, very much. 2 Yes, but not intense. 1 Yes, but not worrying. 0 Not at all
18	I can laugh and see the funny side of things	Radio: 0 As always. 1 A bit less. 2 Much less. 3 Not at all
19	My head is full of worries	Radio: 3 Almost all day. 2 Most of the day. 1 Sometimes. 0 Never
20	I feel happy	Radio: 3 Never. 2 Very seldom. 1 Sometimes. 0 Most of the day
21	I can sit still and relaxed	Radio: 0 Always. 1 Often. 2 Rarely. 3 Never
22	I feel slow and clumsy	Radio: 3 Most of the day. 2 Often. 1 Sometimes. 0 Never
23	I have an unpleasant “knots and tingling” feeling in my stomach	Radio: 0 Never. 1 Sometimes. 2 Often. 3 Very often
24	I have lost interest in my personal appearance	Radio: 3 Completely. 2 Neglect myself. 1 Maybe neglect. 0 As always
25	I feel restless, as if I cannot keep still	Radio: 3 Very much. 2 Quite a lot. 1 Not much. 0 Never
26	I look forward to things with pleasure	Radio: 0 As always. 1 A little less. 2 Much less. 3 Not at all
27	I suddenly feel panic or intense fear	Radio: 3 Very often. 2 Fairly often. 1 Rarely. 0 Never
28	I enjoy a good book, radio or TV programme	Radio: 0 Often. 1 Sometimes. 2 Rarely. 3 Almost never
29	ASRS-v1.1 instructions (last 6 months)	Descriptive text (no data captured)
30	How often do you struggle to finish the final details of a project?	Radio: 1 Never. 2 Rarely. 3 Sometimes. 4 Often. 5 Very often
31	How often do you have difficulty organizing tasks?	Radio (same scale as 30)
32	How often do you forget appointments or obligations?	Radio (same scale as 30)

33	When a task requires a lot of thought, how often do you delay starting?	Radio (same scale as 30)
34	How often do you fidget with hands or feet when you have to sit for long?	Radio (same scale as 30)
35	How often do you feel over-active as if driven by a motor?	Radio (same scale as 30)
35a	Impulsivity questionnaire items instructions	Descriptive text (no data captured)
36	I plan my tasks carefully	Radio, matrix: 0 Rarely/never. 1 Occasionally. 3 Often. 4 Always/almost always
37	I do things without thinking	Radio, matrix (same scale as 36)
38	I hardly ever take things to heart	Radio, matrix (same scale as 36)
39	My thoughts can race	Radio, matrix (same scale as 36)
40	I plan my trips in advance	Radio, matrix (same scale as 36)
41	I am a self-controlled person	Radio, matrix (same scale as 36)
42	I concentrate easily	Radio, matrix (same scale as 36)
43	I save money regularly	Radio, matrix (same scale as 36)
44	I find it hard to stay still for long periods	Radio, matrix (same scale as 36)
45	I think things through carefully	Radio, matrix (same scale as 36)
46	I plan for steady employment	Radio, matrix (same scale as 36)
47	I say things without thinking	Radio, matrix (same scale as 36)
48	I enjoy thinking about complex problems	Radio, matrix (same scale as 36)
49	I change jobs frequently	Radio, matrix (same scale as 36)
50	I act impulsively	Radio, matrix (same scale as 36)
51	I get bored solving problems in my head	Radio, matrix (same scale as 36)
52	I visit doctor and dentist regularly	Radio, matrix (same scale as 36)
53	I do things as soon as they occur to me	Radio, matrix (same scale as 36)
54	I am a person who thinks without distraction	Radio, matrix (same scale as 36)
55	I move house often	Radio, matrix (same scale as 36)
56	I buy things impulsively	Radio, matrix (same scale as 36)
57	I finish what I start	Radio, matrix (same scale as 36)
58	I walk and move quickly	Radio, matrix (same scale as 36)
59	I solve problems by experimenting	Radio, matrix (same scale as 36)
60	I spend more than I earn (cash or credit)	Radio, matrix (same scale as 36)
61	I speak quickly	Radio, matrix (same scale as 36)
62	I have strange thoughts while thinking	Radio, matrix (same scale as 36)
63	I am more interested in the present than the future	Radio, matrix (same scale as 36)
64	I feel restless in classes or lectures	Radio, matrix (same scale as 36)
65	I plan for the future	Radio, matrix (same scale as 36)

Field type definitions: “Radio” refers to a single-choice field (i.e. only one response is allowed); “Checkbox” allows multiple selections; “Text” refers to open-entry fields, sometimes with validation rules (e.g. date, integer); “Matrix” indicates grouped Likert-type items displayed in tabular format; “Descriptive” denotes non-response fields used to provide instructions or context. “Var” indicates the variable number as listed in the REDCap codebook.

Abbreviations: HIV: Human Immunodeficiency Virus; STI: Sexually Transmitted Infection; LGV: Lymphogranuloma Venereum; GHB: Gamma-Hydroxybutyrate; GFR/eGFR: Glomerular Filtration Rate / Estimated Glomerular Filtration Rate; CD4: Cluster of Differentiation 4 (T-cell subset); RNA: Ribonucleic Acid; ASRS: Adult ADHD Self-Report Scale; HADS: Hospital Anxiety and Depression Scale; SMAQ: Simplified Medication Adherence Questionnaire.