

Triggers of Change in Sexual Behavior Among People With HIV: The Swiss U = U Statement and COVID-19 Compared

Kalongo Hamusonde,^{1,2} Dunja Nicca,³ Huldrych F. Günthard,^{4,5} Marcel Stöckle,⁶ Katharine E. A. Darling,⁷ Alexandra Calmy,⁸ Enos Bernasconi,⁹ David Haerry,¹⁰ Patrick Schmid,³ Roger D. Kouyos,^{4,5} Andri Rauch,^{1,a} and Luisa Salazar-Vizcaya,^{1,a} 
 the Swiss HIV Cohort Study

¹Department of Infectious Diseases, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland; ²Graduate School of Health Sciences, University of Bern, Bern, Switzerland; ³Division of Infectious Diseases and Hospital Epidemiology, Cantonal Hospital St Gallen, St Gallen, Switzerland; ⁴Division of Infectious Diseases and Hospital Epidemiology, University Hospital Zurich, University of Zurich, Zurich, Switzerland; ⁵Institute of Medical Virology, University of Zurich, Zurich, Switzerland; ⁶Division of Infectious Diseases and Hospital Epidemiology, University Hospital Basel, University of Basel, Basel, Switzerland; ⁷Service of Infectious Diseases, University Hospital Lausanne, University of Lausanne, Lausanne, Switzerland; ⁸Division of Infectious Diseases, University Hospital Geneva, University of Geneva, Geneva, Switzerland; ⁹Division of Infectious Diseases, Ente Ospedaliero Cantonale, University of Southern Switzerland, Lugano, Switzerland; and ¹⁰Positive Council, Zurich, Switzerland

We assessed changes in sexual behavior among people with human immunodeficiency virus (HIV) over 20 years. Condom use with stable partners steadily declined from over 90% to 29% since the Swiss U = U statement, with similar trajectories between men who have sex with men (MSM) and heterosexuals. Occasional partnership remained higher among MSM compared to heterosexuals even during coronavirus disease 2019 (COVID-19) social distancing.

Keywords. HIV; MSM; Swiss statement; heterosexual; sexual behavior.

Sexual behavior differs across populations and adapts to changing factors intrinsic and external to the individual. Such changes have taken place among people with human immunodeficiency virus (PWH) over the last decades [1]. In the Swiss HIV Cohort Study (SHCS), the rates of self-reported condomless sex increased between 2008 and 2013. These increases were associated with the HIV status of the partner and antiretroviral

therapy (ART) use [2]. Endorsement of the undetectable = untransmissible (U = U) concept had an impact on sexual behavior among PWH [3]. In Switzerland, the Swiss Federal Commission for HIV/AIDS issued a statement (Swiss Statement) in 2008 that HIV is not transmitted sexually in PWH taking ART, with suppressed HIV RNA for at least 6 months and in the absence of other sexually transmitted diseases (STDs) [4]. Since then, studies have contributed evidence that culminated in the validation and worldwide establishment of the U = U concept, which further expanded its implications for sexual behavior among PWH [5]. Another circumstance likely to impact sexual behavior originated at the beginning of the coronavirus disease 2019 (COVID-19) pandemic in Switzerland, when the federal government introduced in March 2020 stringent measures including social distancing to limit the risk of COVID-19 transmission [6].

This study investigates the impact of 2 external factors (termed “triggers” herein) which might influence sexual behavior: (1) the Swiss U = U statement (“trigger of relief”), and (2) the COVID-19 social distancing (“trigger of restriction”). For this purpose, we investigated over 20 years of long-term trajectories in condom use and occasional partnership among PWH in the SHCS.

METHODS

The SHCS (www.shcs.ch) is an ongoing, nationally representative cohort study of PWH. Clinical, behavioral, and laboratory data are collected at study registration and biannually thereafter [7]. All centers’ local ethical committees approved the cohort study and all patients provided written informed consent.

We included SHCS participants who self-identified their likely route of HIV infection as either men who have sex with men (MSM) or heterosexual (HET). The analyses included data on consistent condom use and occasional partnership between the years 2000 and 2022. For analysis on condom use trajectories, we included persons registered before the year 2008. For the analysis on occasional partnership trajectories, we included persons registered before the year 2020. Patient representatives were involved in the interpretation and presentation of the study results.

At study registration and at each follow-up visit, persons were asked the following questions: (1) Did you have a stable partner in last 6 months? (2) If yes, did you have sex with your stable partner? (3) If yes, did you use condoms with your stable partner? (4) What is the HIV status of your stable partner? (5) Did you have an occasional partner in last 6 months? (6) Did you use condoms with your occasional partner?

Received 22 August 2022; editorial decision 15 November 2022; accepted 17 November 2022; published online 21 November 2022

^aA. R. and L. S.-V. contributed equally.

Correspondence: K. Hamusonde, Msc, Bern University Hospital, Inselspital, Universitätsklinik für Infektiologie, Personalhaus 6, Bern 3010, Switzerland (kalongo.hamusonde@insel.ch).

The Journal of Infectious Diseases® 2023;227:407–11

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We analyzed trajectories of 4 variables: (1) consistent condom use with HIV-negative stable partner, (2) consistent condom use with HIV-positive stable partner, (3) occasional partnership, and (4) consistent condom use with occasional partner. We calculated trajectories using behavioral matrices [8] for each person at study registration and biannually thereafter. We estimated the rate of change of the trajectories 1 year following the triggers between MSM and HET (1 year after the trigger of relief, 2008–2009; 1 year after the trigger of restriction, 2020–2021).

Syphilis screening has been routinely performed in the SHCS since 2005. We calculated syphilis incidence over the study period and defined a syphilis episode as a newly positive *Treponema pallidum* hemagglutinin or particle agglutination test or a venereal disease research laboratory (VDRL) titer of more than 1:8 and more than 4-fold VDRL increase from last VDRL titer.

RESULTS

Trajectories of condom use were assessed among 2212 MSM and 2417 HET. Trajectories of occasional partnership were assessed among 5617 MSM and 6356 HET. See [Supplementary Table 1](#) for patient characteristics.

Before the Swiss Statement, consistent condom use with HIV-negative stable partner was mean 95% (interquartile range [IQR], 94%–96%) among MSM and 89% (IQR, 88%–91%) among HET ([Figure 1A](#)). Following the Swiss Statement in 2008, condom use steadily declined from 94% to 30% in MSM and from 88% to 28% in HET. Consistent condom use with an HIV-positive stable partner decreased from 49% to 10% in MSM and 45% to 10% in HET following the Swiss Statement ([Figure 1C](#)). Consistent condom use with an occasional partner was frequent from 2000 to 2007: mean, 86% (IQR, 85%–87%) in MSM and 83% (IQR, 82%–85%) in HET and declined to 33% (IQR, 28%–37%) and 53% (IQR, 40%–66%) in 2021 ([Supplementary Figure 1](#)).

Between 2000 and 2019, the frequency of occasional partnership remained relatively stable before the COVID-19 restrictions and was higher in MSM compared to HET (mean, 43% [IQR, 41%–45%] vs 9% [IQR, 8%–11], respectively; [Figure 1E](#)). Following the implementation of the COVID-19 social distancing measures, occasional partnership declined from 45% and 8% in 2020 to 37% and 6% in 2021 in MSM and HET, respectively ([Figure 1E](#)). The trajectories in condom use did not change after the beginning of the COVID-19 pandemic ([Figure 1A](#)).

We observed differences in the rate of change between MSM and HET upon the triggers. One year after the Swiss Statement, HET had a more rapid change in the frequency of consistent condom use with an HIV-negative stable partner than MSM (–10% and –4%, respectively; [Figure 1B](#)). Conversely, the frequency of occasional partnership following COVID-19

declined more rapidly among MSM than HET (–8% compared to –2%; [Figure 1F](#)). Syphilis incidence among PWH in the SHCS increased from 14.8 in 2006 to 36.8 in 2017 per 1000 person years, with decreasing trends thereafter ([Supplementary Figure 2](#)).

DISCUSSION

Since the publication of the Swiss Statement in 2008, consistent condom use with an HIV-negative stable partner declined from over 90% to around 30% in 2021. Consistent condom use with an HIV-positive stable partner declined from over 50% to around 10%. The long-term trajectories in condom use were remarkably similar between MSM and HET. Consistent condom use with occasional partners declined following the Swiss Statement with a more pronounced decrease among MSM. Occasional partnership frequencies were consistently higher among MSM than HET with stable levels until the COVID-19 pandemic. Shortly after the onset of the COVID-19 pandemic, there was a marked decline in the frequency of occasional partnership among MSM.

In this study, we focused on 2 major external triggers that impact sexual behavior. The rate of change in the first year following the trigger differed between MSM and HET. The decline in condom use was faster in HET following the Swiss Statement while the decline in occasional partnership was faster for MSM following COVID-19. The Swiss Statement included a strong recommendation of an informed decision with regard to condom use between serodiscordant couples in stable relationships [4]. The Swiss Statement included a particular recommendation for heterosexual couples wishing to conceive. In clinical practice, the latter situation was frequently discussed between health care staff and patients shortly after the release of the Swiss Statement. With the improvement of quality of life and social integration among PWH, the Swiss Statement provided an opportunity for serodiscordant couples to conceive a child naturally without the fear of HIV transmission to their partner [4]. In this context, it is not surprising that the initial decrease in condom use following the release of the Swiss Statement was more pronounced among HET compared to MSM. While the decrease in consistent condom use after the Swiss Statement in the SHCS has been documented in previous studies before 2013 [2, 9], we demonstrate here a continuous decrease thereafter. The increasing evidence for the U = U concept, including the 2 large landmark studies PARTNER and HPTN-052, have further contributed to the decrease in condom use in serodiscordant partnerships [3, 5]. Furthermore, the recent increase in treatment and viral suppression rates (by the end of 2019, 96% of SHCS participants are virologically suppressed [7]), and the increase in the use of preexposure prophylaxis (PrEP) coupled with altruistic adherence to ART likely have contributed to this trend [10].

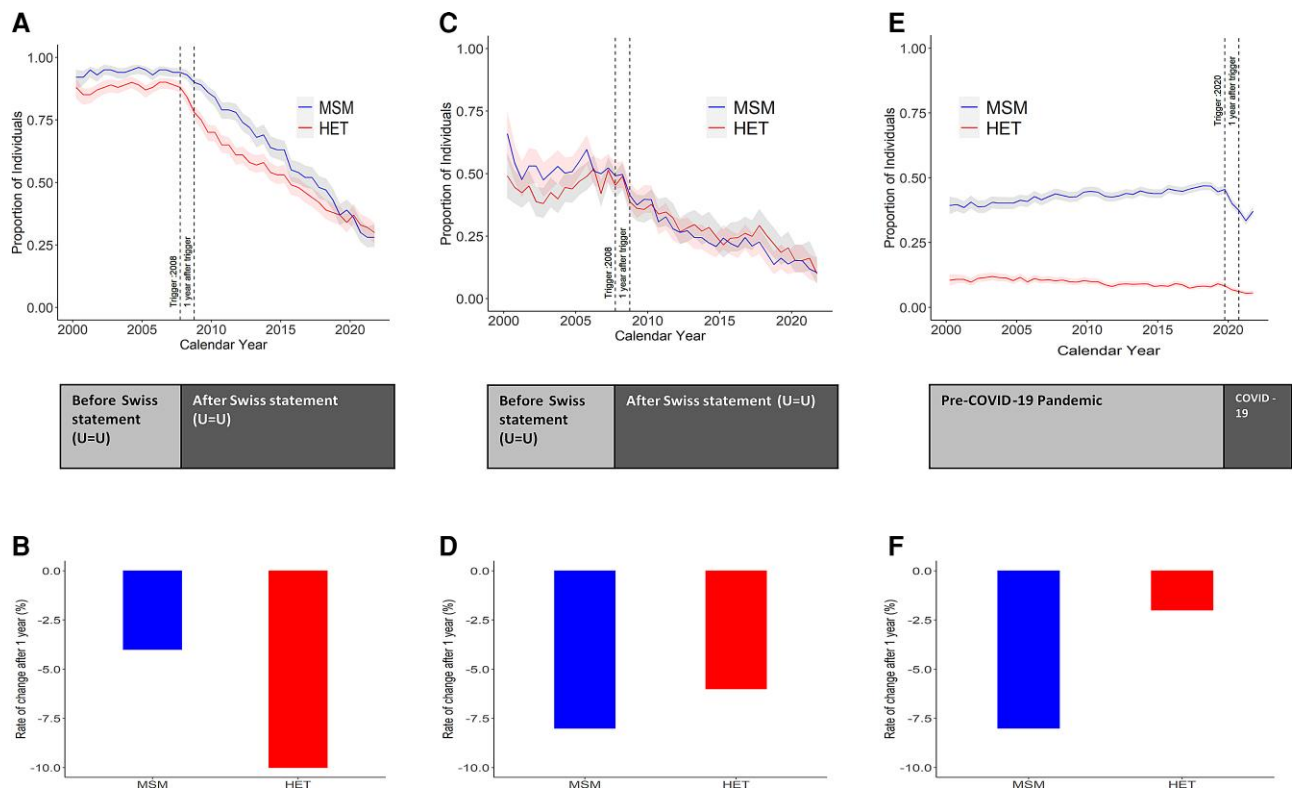


Figure 1. Trajectories and rate of change in consistent condom use and occasional partnership stratified by sexual orientation. *A*, Consistent condom use with HIV-negative stable partners in MSM and HET, registration year before 2008. *B*, Rate of change in consistent condom use with HIV-negative stable partner following the trigger. *C*, Consistent condom use with HIV-positive stable partners in MSM and HET, registration year before 2008. *D*, Rate of change in consistent condom use with HIV-positive stable partner following the trigger. *E*, Occasional partners in MSM and HET, registration year before 2020. *F*, Percent change in occasional sex partners following the trigger. Shaded region, 95% confidence intervals. Abbreviations: COVID-19, coronavirus disease 2019; HET, heterosexual; HIV, human immunodeficiency virus; MSM, men who have sex with men.

With regard to occasional partnership, the change in behavior among MSM is in line with previous studies showing a decline in occasional partners, associated with the fear of severe COVID-19 and an increase in online sex practices [11]. Although the large majority of health facilities providing PrEP remained open during the COVID-19 pandemic in Switzerland, PrEP interruptions or fewer opportunities for STD testing during the COVID-19 lockdown might have contributed to a decrease in sex with an occasional partner [12].

Unlike condom use among MSM and HET, which decreased steadily over the study period, syphilis incidence stabilized in 2014 and decreased in COVID-19 times when the frequency of occasional partners also decreased. While claiming causation in this case is out of the scope of this article, this observation is consistent with previous studies that underscored occasional sexual partnership regardless of condom use a key risk factor for syphilis transmission [13, 14].

Our study is among the largest investigations of long-term trajectories in sexual behavior among PWH. We assessed the impact of major factors influencing sexual behavior in a large representative cohort study over 20 years in both MSM and

HET. Some limitations should be noted. First, the sexual behavior data used in this analysis are solely based on self-reports to health care staff, hence social desirability biases are likely. Secondly, due to the recency of the pandemic, long-term trajectories following the COVID-19 restrictions cannot yet be analyzed. Finally, we cannot claim causality of the Swiss Statement and the decrease in condomless sex as other factors including the increase in treatment rates and availability of PrEP likely influenced sexual behavior.

CONCLUSION

Condom use with stable partner has steadily declined in the SHCS since the endorsement of the Swiss Statement. Overall, the decline in consistent condom use has been remarkably similar between MSM and HET without a noticeable impact of the COVID-19 pandemic. The proportion of PWH with occasional partner has remained stable over 20 years until the COVID-19 social distancing measures were introduced in 2020. Thereafter, the frequency of occasional partnership declined in both MSM and HET but remained considerably higher in

MSM. Behavior changes 1 year following the Swiss Statement and the COVID-19 social distancing measures differed between MSM and HET. Overall, external triggers of relief and restriction had a marked impact on sexual behavior among PWH.

Supplementary Data

Supplementary materials are available at *The Journal of Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader, the posted materials are not copy-edited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

Notes

Acknowledgments. The authors thank all patients, physicians, and nurses associated with the participating cohorts. The data were gathered by the 5 Swiss University Hospitals, 2 Cantonal Hospitals, 15 affiliated hospitals, and 36 private physicians (listed in <http://www.shcs.ch/180-health-care-providers>).

Members of the Swiss HIV Cohort Study (SHCS). I. Abela, K. Aebi-Popp, A. Anagnostopoulos, M. Battegay, E. Bernasconi, D. L. Braun, H. C. Bucher, A. Calmy, M. Cavassini, A. Ciuffi, G. Dollenmaier, M. Egger, L. Elzi, J. Fehr, J. Fellay, H. Furrer, C. A. Fux, H. F. Günthard (President of the SHCS), A. Hachfeld, D. Haerry (deputy of Positive Council), B. Hasse, H. H. Hirsch, M. Hoffmann, I. Hösli, M. Huber, D. Jackson-Perry (patient representatives), C. R. Kahlert (Chairman of the Mother and Child Substudy), L. Kaiser, O. Keiser, T. Klimkait, R. D. Kouyos, H. Kovari, K. Kusejko (Head of Data Centre), N. Labhardt, K. Leuzinger, B. Martinez de Tejada, C. Marzolini, K. J. Metzner, N. Müller, J. Nemeth, D. Nicca, J. Notter, P. Paioni, G. Pantaleo, M. Perreau, A. Rauch (Chairman of the Scientific Board), L. Salazar-Vizcaya, P. Schmid, R. Speck, M. Stöckle (Chairman of the Clinical and Laboratory Committee), P. Tarr, A. Trkola, G. Wandeler, M. Weisser, and S. Yerly.

Financial support. This work was supported by the Swiss National Science Foundation within the framework of the Swiss HIV Cohort Study (grant numbers 201369 and 324730_179567); and by the SHCS Research Foundation. Funding to pay the Open Access publication charges for this article was provided by Swiss National Science Foundation within the framework of the Swiss HIV Cohort Study (grant numbers 201369 and 324730_179567); and by the SHCS Research Foundation.

Potential conflicts of interest. K. E. A. D.'s institution has received research funding unrelated to this publication from Gilead; and offered expert testimony for MSD. A. R. reports support to his institution for advisory boards and/or travel grants from MSD, Gilead Sciences, Pfizer, and Abbvie; and an investigator initiated trial grant from Gilead Sciences. All

remuneration went to his home institution and not to A. R. personally, and all remuneration was provided outside the submitted work. H. F. G. has received unrestricted research grants from Gilead Sciences; fees for data and safety monitoring board membership from Merck; consulting/advisory board membership fees from Gilead Sciences, Merck, Johnson and Johnson, Novartis, and ViiV Healthcare; and grants from the Swiss National Science Foundation, the Yvonne Jacob Foundation, and National Institutes of Health. The institution of E. B. has received grants from the Swiss National Science Foundation; consulting/advisory board membership fees from Gilead Sciences, Merck Sharp and Dohme, ViiV Healthcare, Pfizer, and Lilly; and travel grants from Gilead Sciences, ViiV Healthcare, Pfizer, and Abbvie. All other authors report no potential conflicts.

All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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