Antiretroviral pre-exposure prophylaxis awareness, experience and acceptance among men who have sex with men in southwest Switzerland

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Abstract

Objectives
Antiretroviral pre-exposure prophylaxis (PrEP) against HIV acquisition has been shown to be safe and effective in populations at risk of HIV acquisition. We examined PrEP awareness, experience and acceptance among men who have sex with men (MSM) in southwest Switzerland.

Methods
Between 1st June 2011 and 31st August 2012, individuals attending 1) MSM screening clinics (Checkpoint Geneva) and 2) meeting areas were invited to complete an anonymous questionnaire covering sexual practices and PrEP awareness, experience and interest in participating in future PrEP trials.

Results
Of 918 men approached, 654 (71%) agreed to participate, the majority (536/654, 82%) enrolled via Checkpoint. Most participants (512/654, 78%) were homosexual; 21/654 (3.2%) disclosed being HIV-positive; 140/654 (21%) had unknown HIV status. Unprotected anal intercourse (UAI) with a partner of different or unknown HIV status (non-serosorting) was practised by 49% of participants during the preceding year, more by participants of positive / unknown HIV status than by those negative / undisclosed status (68% vs 43%, P<0.001). Awareness of PrEP was reported in 42% (very aware in 17% and slightly aware in 25%); Checkpoint participants were more aware than those from other venues (47% versus 16%, P<0.001). PrEP experience was low (1.5%); 20% expressed interest in participating in future PrEP trials.

Conclusions
This is the first study exploring MSM PrEP awareness in Switzerland. Although overall awareness was 42%, interest in participating in future PrEP trials was low, against high frequencies of UAI and non-serosorting. If interest in using PrEP in practice is similar, alternative measures to curb HIV transmission are required in this population.

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Short communication

Antiretroviral pre-exposure prophylaxis (PrEP) has been shown to be safe and effective in specific populations at substantial risk of HIV acquisition, including sexually-active men who have sex with men (MSM) (iPrEx Study 1), heterosexual men and women 2,3 and adult injecting drug users 4. PrEP as a daily oral fixed-dose combination of tenofovir disoproxil fumarate 300mg and emtricitabine 200mg (Truvada) has been endorsed for use in the United States 5, and was made available in Switzerland in January 2016 on prescription and without reimbursement 6.

Little is known regarding PrEP awareness in Switzerland. In the Swiss cantons of Geneva and Vaud, southwest Switzerland, HIV incidence figures are among the highest in the country, with up to 12-16 new positive tests per 100,000 inhabitants in 2012 7; MSM accounted for 45% of these new infections 8. Following the results of the iPrEx Study 1, we examined PrEP awareness, experience and acceptance among MSM in this region.

The study was approved by the Ethical Commission of the Canton of Vaud (approval number 71/11) and consisted of a questionnaire-based survey conducted between 1st June 2011 and 31st August 2012. Trained field workers recruited individuals from 1) Checkpoint Geneva, a health centre for MSM providing counselling and screening for sexually transmitted infections (STIs), and 2) targeted meeting places, both indoor (saunas, sex clubs) and outdoor (cruising areas and Pride event).

Questionnaires, completed anonymously under field-worker supervision, covered demographic information, sexual preference, HIV status and testing history, STI history, practice of unprotected anal intercourse (UAI) and partner number in the preceding twelve months. Participants were asked if they were aware of a prophylactic treatment taken before exposure to HIV (response options: ‘very aware’, ‘slightly aware’ and ‘unaware’), if they had ever taken antiretroviral therapy (ART) to protect themselves against HIV acquisition before sex (response options: ‘yes’ and ‘no’), and if they would agree to participating in a clinical trial examining the protective efficacy of ART taken before potential HIV exposure (response options: ‘yes’ and ‘no’).

Continuous and categorical data were analysed using Student’s t-test and the Chi squared or Fisher’s exact test, respectively, using Microsoft Excel 2008 (Microsoft Corporation, Redmond, WA, USA). The percentage of individuals recruited of those approached was calculated but individuals declining to participate were not assessed.

Of 918 men approached, 654 (71%) agreed to participate, the majority of whom (536/654, 82%) were enrolled via Checkpoint Geneva (Table 1). Median participant age was 33 years (inter-quartile range 27-41 years) and 78% identified themselves as homosexual (Table 1). Of all participants, 21 (3.2%) disclosed being HIV positive, 72 (11%) had undergone recent STI treatment and 357 (55%) practised UAI. UAI without sero-sorting was reported by 76% of HIV-positive participants and was more common among individuals of positive or unknown HIV status than those of negative or undisclosed status (68% versus 43%, P<0.001).

Regarding PrEP, 110 (17%) were very aware and 164 (25%) slightly aware. Awareness was significantly higher among Checkpoint participants than those recruited from meeting places (47% versus 16%, P<0.001). There was no association with HIV status (P=0.57), STI screening history (P>0.9), UAI without sero-sorting (P=0.57) or partner number (P>0.9). Previous use of ART to protect against HIV was infrequent (10/654, 1.5%) and reported only among Checkpoint participants. There was no association with HIV status (P=0.06), STI screening history (P=0.76), UAI in the preceding 12 months (P=0.62), UAI without
### Table 1: Participant characteristics according to recruitment site.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Checkpoint</th>
<th>Saunas</th>
<th>Other venues a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approached, n</td>
<td>918</td>
<td>665</td>
<td>165</td>
<td>88</td>
</tr>
<tr>
<td>Participating, n (%) b</td>
<td>654 (71)</td>
<td>536 (81)</td>
<td>86 (52)</td>
<td>32 (36)</td>
</tr>
<tr>
<td>Median age, years (range)</td>
<td>33 (16-80)</td>
<td>33 (16-80)</td>
<td>33 (17-69)</td>
<td>34 (24-61)</td>
</tr>
<tr>
<td>Nationality, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swiss</td>
<td>347 (53)</td>
<td>294 (55)</td>
<td>37 (43)</td>
<td>16 (50)</td>
</tr>
<tr>
<td>Neighbouring countries c</td>
<td>139 (21)</td>
<td>103 (19)</td>
<td>27 (31)</td>
<td>9 (28)</td>
</tr>
<tr>
<td>Sexual preference, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homosexual</td>
<td>512 (78)</td>
<td>422 (79)</td>
<td>60 (70)</td>
<td>30 (94)</td>
</tr>
<tr>
<td>Bisexual</td>
<td>140 (21)</td>
<td>112 (21)</td>
<td>26 (30)</td>
<td>2 (6.3)</td>
</tr>
<tr>
<td>Missing data</td>
<td>2 (0.003)</td>
<td>2 (0.004)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>HIV status, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV positive</td>
<td>21 (3.2)</td>
<td>14 (2.6)</td>
<td>2 (2.3)</td>
<td>5 (16)</td>
</tr>
<tr>
<td>HIV negative</td>
<td>431 (66)</td>
<td>336 (63)</td>
<td>74 (86)</td>
<td>21 (66)</td>
</tr>
<tr>
<td>Unknown</td>
<td>140 (21)</td>
<td>127 (24)</td>
<td>9 (11)</td>
<td>4 (13)</td>
</tr>
<tr>
<td>Undisclosed</td>
<td>62 (9.5)</td>
<td>59 (11)</td>
<td>1 (1.2)</td>
<td>2 (6.3)</td>
</tr>
<tr>
<td>HIV testing history d</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tested in last 12 months, n (%)</td>
<td>414 (65)</td>
<td>340 (63)</td>
<td>57 (66)</td>
<td>17 (53)</td>
</tr>
<tr>
<td>STI screen in last 12 months, n (%)</td>
<td>337 (52)</td>
<td>273 (51)</td>
<td>46 (54)</td>
<td>18 (56)</td>
</tr>
<tr>
<td>STI treated in last 12 months, n (%)</td>
<td>72 (11)</td>
<td>53 (9.9)</td>
<td>15 (17)</td>
<td>4 (13)</td>
</tr>
<tr>
<td>UAI practised, n (%)</td>
<td>357 (55)</td>
<td>296 (55)</td>
<td>41 (48)</td>
<td>20 (63)</td>
</tr>
<tr>
<td>UAI without sero-sorting, n (%)</td>
<td>321 (49)</td>
<td>280 (52)</td>
<td>24 (28)</td>
<td>17 (53)</td>
</tr>
<tr>
<td>Median partner number e, n (range)</td>
<td>5 (0-400)</td>
<td>5 (0-160)</td>
<td>7 (0-241)*</td>
<td>10 (0-400)*</td>
</tr>
<tr>
<td>Zero partners in last 12 months, n (%)</td>
<td>107 (16)</td>
<td>97 (18)</td>
<td>8 (9.3)</td>
<td>2 (6.3)</td>
</tr>
<tr>
<td>Aware of PrEP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very aware, n (%)</td>
<td>110 (17)</td>
<td>103 (19)*</td>
<td>4 (4.7)</td>
<td>3 (9.4)</td>
</tr>
<tr>
<td>Slightly aware, n (%)</td>
<td>164 (25)</td>
<td>152 (28)*</td>
<td>9 (11)</td>
<td>3 (9.4)</td>
</tr>
<tr>
<td>Previous PrEP experience</td>
<td>10 (1.5)</td>
<td>10 (0.9)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Agree to participate in PrEP trial</td>
<td>132 (20)</td>
<td>119 (22)</td>
<td>8 (9.3)</td>
<td>5 (16)</td>
</tr>
</tbody>
</table>

a Other venues = sex clubs, cruising areas and Pride event;  
b All subsequent percentages are calculated taking participant number, not number approached, as the denominator;  
c French, German and Italian;  
d In participants of non-positive HIV status, n=633;  
e Partner number referred to the number of sexual partners in the last 12 months, whether intercourse was protected or unprotected. *P<0.001. Abbreviations: STI, sexually transmitted infection; UAI, unprotected anal intercourse; PrEP, pre-exposure prophylaxis.
sero-sorting ($P>0.9$) or partner number ($P>0.9$). Finally, only 20% of participants wished to participate in a future PrEP trial. Interest was higher among individuals reporting UAI without sero-sorting (26% versus 15%, $P=0.02$). There was no association with STI screening history ($P=0.05$), UAI in the preceding 12 months ($P=0.17$) or partner number ($P>0.9$).

In this group of predominantly HIV-negative, European MSM, we observed that 42% had some PrEP awareness but PrEP experience was very low. Only 20% (132/654) were interested in participating in a future PrEP trial, against 59% (360/633) potentially eligible for PrEP (non-HIV-positive and reporting UAI and/or a recent STI diagnosis).

The low PrEP acceptance we observed might be related to the then non-endorsement by the Swiss federal office of public health, drug costs, and the timing of the study. Our survey was conducted between six and eighteen months after the publication of the iPrEx Study\(^1\). An internet-based survey conducted during the month post-publication of iPrEx\(^9\) showed PrEP awareness of 19% among American MSM, similar to our figure of 17% for participants ‘very aware’ of PrEP but lower than our figure of 42% for those with some awareness (‘very aware’ plus ‘slightly aware’). More recent studies in France\(^10\) and Portugal\(^11\) report MSM PrEP awareness of 41-42%.

Between 2012 and 2014, two multi-centre trials were conducted among high-risk MSM using either daily (PROUD\(^12\)) or on-demand (IPERGAY\(^13\)) PrEP. Both studies, presented at the 2015 Conference on Retroviruses and Opportunistic Infections (CROI)\(^12,13\), describe a relative reduction in HIV incidence of 86%. It is possible that PrEP awareness and acceptance would be greater were we to survey our population now, particularly if the question on acceptance were to refer to PrEP use in practice rather than within a clinical trial. Indeed, a multi-centre study of PrEP acceptance recently reported enrolment of 60.5% of 1069 eligible MSM and transgender women who were offered up to 48 weeks of tenofovir/emtricitabine as PrEP in the United States\(^14\).

This study has limitations. Selection bias is possible, as the majority of participants were recruited from Checkpoint rather than from meeting venues, and this might have increased PrEP awareness and experience. We have no information regarding the MSM approached but not recruited, so it is not possible to quantify potential selection bias. Finally, as described above, the timing of the study in relation to subsequently published PrEP data may have led to awareness and acceptance figures which are not currently valid.

In conclusion, we observed 42% PrEP awareness and low acceptance among MSM in Switzerland after the iPrEx study, against high frequencies of UAI and UAI without sero-sorting. In the light of new data on the efficacy of daily and intermittent PrEP in high-risk MSM, PrEP acceptance in practice, as opposed to trial participation, may grow. In the meantime, and while PrEP costs are charged to the individual, measures to prevent HIV acquisition such as condom use, regular HIV screening and immediate access to ART still need to be promoted in Switzerland.

**Competing Interests**

None declared

**Acknowledgements**

We express our sincere gratitude to the team at Checkpoint Geneva for recruiting participants for this study, from Checkpoint and other venues, and for conducting all the questionnaires.
Appendix 1: Translated questionnaire

Patient code:_________________  Age:______
Nationality__________ Canton of residence __________

Sexual preference  ☐ homosexual ☐ bisexual

What is your HIV status?
☐ positive  ☐ negative  ☐ unknown  ☐ I don't wish to answer

Date of last HIV test (month/year): ................../ ...........

In the last 12 months, have you unprotected sex at least once with a partner of either different HIV status to yourself or unknown status?
☐ yes  ☐ no

In the last 12 months, have you been screened for sexually transmitted infections? .........times

In the last 12 months, have you been diagnosed as having a sexually transmitted infection?
☐ yes  ☐ no

If yes, which one(s) from the list below?

- Urethral gonorrhoea ☐
- Anal gonorrhoea ☐
- Oral gonorrhoea ☐
- Chlamydia infection ☐
- Syphilis ☐
- Hepatitis A ☐
- Hepatitis B ☐
- Hepatitis C ☐
- Genital herpes ☐
- Genital warts ☐
- Lymphogranuloma venereum (LGV) ☐
- Other: which? ☐

Do you have unprotected anal sex?
☐ yes  ☐ no  ☐ active  ☐ passive

In a stable relationship ☐ yes ☐ no ☐ sometimes
Casual partner ☐ yes ☐ no ☐ sometimes
Anonymous partner ☐ yes ☐ no ☐ sometimes

Number of partners in the last 12 months? ______
With unprotected anal sex?________

The following questions concern prophylaxis prior to exposure to HIV infection:

Are you aware of the possibility of a prophylactic treatment taken before exposure to the HIV virus:

☐ very aware  ☐ slightly aware  ☐ unaware

Have you ever taken treatment to protect yourself against HIV infection before having sex?
☐ yes  ☐ no

Would you agree to taking part in a clinical study which examines the effectiveness of treatments protecting against HIV infection which are taken before having sex?
☐ yes  ☐ no

We sincerely thank you for your participation. The person who provided this questionnaire is available for any questions you may have. Please return the questionnaire to this person.

In completing this questionnaire, you accept that the data are treated anonymously for research purposes. Following analysis, the results will be passed on via CheckPoint.

References


12. McCormack S, Dunn, S. Pragmatic Open-Label Randomised Trial of Preexposure Prophylaxis: The PROUD Study. Conference on Retroviruses and Opportunistic Infections (CROI); 2015; Seattle, USA.
