

# Qualitative Assessment of Barriers and Facilitators of Access to HIV Testing Among Men Who Have Sex with Men in China

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## Abstract

Diagnosis of HIV is the entry point into the continuum of HIV care; a well-recognized necessary condition for the ultimate prevention of onward transmission. In China, HIV testing rates among men who have sex with men (MSM) are low compared to other high risk subgroups, yet experiences with HIV testing among MSM in China are not well understood. To address this gap and prepare for intervention development to promote HIV testing and rapid linkage to treatment, six focus groups (FGs) were conducted with MSM in Beijing (40 HIV-positive MSM participated in one of four FGs and 20 HIV-negative or status unknown MSM participated in one of two FGs). Major themes reported as challenges to HIV testing included stigma and discrimination related to HIV and homosexuality, limited HIV knowledge, inconvenient clinic times, not knowing where to get a free test, fear of positive diagnosis or nosocomial infection, perceived low service quality, and concerns/doubts about HIV services. Key facilitators included compensation, peer support, professionalism, comfortable testing locations, rapid testing, referral and support after diagnosis, heightened sense of risk through engagement in high-risk behaviors, sense of responsibility to protect self, family and partner support, and publicity via social media. Themes and recommendations were generally consistent across HIV-positive and negative/status unknown groups, although examples of enacted stigma were more prevalent in the HIV-positive groups. Findings from our study provide policy suggestions for how to bolster current HIV prevention intervention efforts to enhance ‘test-and-treat’ strategies for Chinese MSM.

## Introduction

**H**IV PREVENTION INTERVENTION PROGRAMS encourage individuals at high HIV risk to test regularly for HIV. People who are aware of their positive HIV status often decrease behaviors that risk onward transmission and lead to entry into HIV care and access to antiretroviral therapy (ART).<sup>1–4</sup> While learning of one’s HIV positive status can lead to multiple public health and individual health benefits,<sup>5–10</sup> and marks the onset of a host of potential engagement strategies,<sup>11–13</sup> it is also a notoriously difficult process that individuals ‘feel’ as frightening, life-changing, and, in the

immediate, resoundingly negative. An inherent challenge in promoting HIV testing uptake is positioning testing and the potential negative event of learning one has HIV against the numerous benefits of learning one’s status as early as possible. In order to do this, a highly nuanced understanding of the social and individual experiences of HIV testing and beliefs about potential outcomes of testing is needed.

In China, sexual contact has surpassed injection drug use in contributing to new HIV infections in the past years,<sup>14</sup> particularly among men who have sex with men (MSM).<sup>15–17</sup> From 2001 to 2011, HIV prevalence among MSM increased by 4.5-fold, from 1.4% to 6.3%,<sup>18–22</sup> with the annual increase

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estimated at 1.1%.<sup>23,24</sup> Specific to Beijing, it has been projected that HIV prevalence will increase from 7.8% in 2010 to 21.4% in 2020 under the scenario of current standards for HIV prevention interventions.<sup>25</sup> The pressing need to control the HIV epidemic among MSM has prompted the Chinese government to recently escalate HIV prevention interventions among MSM,<sup>26</sup> particularly focused on increasing rates of HIV testing.

A meta-analysis of 54 independent studies suggested that only 47% of Chinese MSM had tested for HIV during their lifetimes, and 38% had tested during the past 12 months.<sup>6</sup> Several studies have highlighted stigma, cost, poor communication, and fear of HIV-positive results as potential psychological and structural factors associated with poor HIV testing uptake.<sup>8,27–29</sup> A more in-depth understanding of experiences around testing and their potential contribution to uptake or avoidance of regular HIV testing is still needed, however, to guide high-impact structural and service-level changes to HIV testing services. The goal of this study was to explore the barriers and facilitators to access and uptake of HIV testing among Chinese MSM using qualitative methods to allow for greater exploration of lived experiences with testing in Beijing China.<sup>30</sup>

## Methods

### Study design

This qualitative study was part of an NIH-funded HIV intervention project ‘Multi-component HIV Intervention Packages for Chinese MSM’ conducted in 2011 to advise the intervention development process. Semi-structured focus group guides inquired about knowledge, beliefs, attitudes, and practices regarding HIV testing and, for HIV-positive FGs, experiences with being diagnosed positive and subsequent and current experiences with linking and engaging in HIV care.

The study protocol was reviewed and approved by institutional review boards of Vanderbilt University and the National Center for STD/AIDS Control and Prevention (NCAIDS) at China Center for Disease Control and Prevention (China CDC).

### Participant recruitment

The participants were recruited through convenience sampling with assistance from the Chaoyang Chinese AIDS Volunteer Group (CCAVG), a community-based organization in Beijing, China, that serves the gay community. Eligibility criteria for participation in the focus groups included: age of 18 years or older, self-report as MSM or transgender woman, living in Beijing, willing to provide demographic information, willing to report HIV status, and able/willing to provide written consent. Interested individuals were offered participation in either one of the HIV-positive groups or HIV-negative/status unknown groups based on their self-reported HIV status.

### Data collection

FGs were led by study team members trained in facilitation of focus groups using semi-structured guides, with each facilitator accompanied by one note-taker who monitored the group process, the recording, and provided assistance when needed. All participants were asked to complete a brief paper

survey prior to the start of the FG discussions that included age, marital status, education, occupation, HIV status, whether or not participant was registered as a Beijing resident (*‘hukou’*).

HIV-positive and HIV-negative/status unknown groups had different IRB approved FG guides to prompt discourse. For HIV-positive groups, the interview guide included items targeting participant experiences with HIV testing prior to diagnosis, and with being diagnosed HIV positive, the process through which they approached and entered HIV care, and recommendations for improvements in HIV testing and care delivery services.

For HIV-negative/status unknown groups, the interview guide included items targeting current experiences with HIV testing, frequency and location of testing, aspects of testing services that were beneficial and challenging, perceptions of HIV risk and ‘need’ for testing, and recommendations for changes in testing services that would improve reach and add value to HIV testing, personally and among MSM in Beijing more generally. The current study focused on discourse identifying barriers to HIV testing and facilitators of HIV testing, as experienced by FG participants or recommended by them as potential improvement in services. (<http://globalhealth.vanderbilt.edu/research/mp3/>)

All discussions were digitally recorded, transcribed in the original language (Mandarin), and then English translation was embedded within the transcripts.

### Data analysis

Socio-demographic data were summarized for sample description. The research team reviewed the transcripts in English (KRA), Mandarin (YL), or both (HZQ), iteratively identifying main themes that emerged from FG items inquiring about barriers to testing, strategies that facilitate testing, recommendations for HIV testing services, and “other” discourse that could guide intervention development but fell outside of the previous thematic areas. Two investigators (YL, HZQ) separately reviewed the text segments within each of the four categories to identify subthemes, and any discrepancies identified during this process were resolved through discussion and consensus. The current work focused on barriers and facilitators to HIV-testing. Following standard guidelines for qualitative data analysis, representative quotes for each sub-theme were identified.<sup>31–34</sup>

## Results

### Socio-demographic characteristics of study participants

Six focus groups (FGs) of approximately 1.5 h each were conducted, including 40 HIV-positive MSM distributed across four separate FGs (11, 10, 10, and 9 participants, respectively) and 20 HIV-negative or status unknown MSM distributed evenly across two separate FGs. Four participants in the negative/status unknown group reported never having tested for HIV and thus ‘status unknown’, while others in these groups based their report of HIV-status on test results previously obtained. None of our participants self-identified as transgender woman.

The median age of all participants was 30.1 years [interquartile range (IQR), 19–52]. The majority of participants

TABLE 1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF MSM IN BEIJING, CHINA

| Characteristic                      | Total (N=60), n (%) | HIV infection status   |                        |
|-------------------------------------|---------------------|------------------------|------------------------|
|                                     |                     | Positive (N=40), n (%) | Negative (N=20), n (%) |
| Age, year                           |                     |                        |                        |
| Median (IQR <sup>a</sup> )          | 30.1 (19–52)        | 29 (26–33.5)           | 26.5 (24–34.5)         |
| Marital status                      |                     |                        |                        |
| Currently married                   | 7 (11.7)            | 4 (10.0)               | 3 (15.0)               |
| Single or divorced                  | 53 (88.3)           | 36 (90.0)              | 17 (85.0)              |
| Education (year of schooling)       |                     |                        |                        |
| College or above (>12)              | 39 (65.0)           | 32 (80.0)              | 7 (35.0)               |
| High school (10–12)                 | 12 (20.0)           | 6 (15.0)               | 6 (30.0)               |
| Junior middle school or lower (<10) | 9 (15.0)            | 2 (5.0)                | 7 (35.0)               |
| Employment                          |                     |                        |                        |
| Employed                            | 54 (90.0)           | 37 (92.5)              | 17 (85.0)              |
| Student                             | 2 (3.3)             | 1 (2.5)                | 1 (5.0)                |
| Unemployed or retired               | 4 (6.7)             | 2 (5.0)                | 2 (10.0)               |
| Beijing residency ( <i>Hukou</i> )  |                     |                        |                        |
| Yes                                 | 10 (16.7)           | 8 (20.0)               | 2 (10.0)               |
| No                                  | 50 (83.3)           | 32 (80.0)              | 18 (90.0)              |

<sup>a</sup>IQR, interquartile range.

were unmarried (88.3%), did not have registered Beijing residency (83%), had a college education (65.0%), and were currently employed (90.0%). Compared to HIV-negative/status unknown men, HIV-positive men were older and more educated, and were more likely to be single or divorced, currently employed, and a registered Beijing ‘*hukou*’ resident (Table 1).

**Barriers to HIV testing**

Eight themes emerged around challenges to HIV testing. Four of these were expressed by both HIV-negative FGD and in reflections of HIV-positive FGD participants on their experiences with HIV testing: (1) Lack of HIV knowledge or any sense of potentially being at risk for HIV; (2) Inconvenient HIV testing clinic times; (3) Fear of nosocomial infection by attending HIV clinics; and (4) Not knowing where to get a free test. In addition, HIV-negative/status unknown MSM reported two additional barriers: (5) Fear of having a positive diagnosis; and (6) Skepticism. HIV-positive MSM also described two unique barriers: (7) Low quality of service; and (8) HIV stigma and discrimination (Table 2).

Lack of HIV knowledge and sense of not being at risk. A common reason for not engaging in HIV testing centered on limited knowledge of HIV, transmission, infection, and presence in one’s community.

*At the beginning, I have never heard about this disease, so I had no idea what an HIV test is. I was just not familiar with this.* (22-year-old, single, non-Beijing resident, HIV-negative)

*I was quite ignorant about this disease. I thought HIV is similar to cancer; someone who is infected will just die in hospital within a few months. At that time, I never heard about a HIV-positive friend around me and never heard about a person who died of it. So I think it is quite far away from me. So it was all because of my ignorance.* (27-year-old, single, non-Beijing resident, HIV-positive)

False optimism also appeared to factor into HIV testing decisions. Some participants believed that HIV infection was a

small probability event, and combined with cultural beliefs about negative events occurring as punishment for transgressions of self or family members, HIV infection was considered impossible. Factors such as luck and HIV infecting only lower income individuals created a strong sense of invulnerability. Inaccurate understanding of HIV transmission and infection dynamics appeared to fuel inaccurate convictions (heuristics).

*I feel like I am a lucky dog and very confident that I will not ‘win the lottery’. It is something on Mars that is far away from me. So I don’t use testing.* (30-year-old, currently employed, single, non-Beijing resident, HIV-positive)

*They felt confident of themselves that they wouldn’t be infected. They put themselves in a higher position so that they feel they will not be infected. He is the leader of the company. Then, he is better off. The people around him are all from*

TABLE 2. PERCEIVED BARRIERS AND FACILITATORS FOR HIV TESTING AMONG 60 MSM IN BEIJING, CHINA

| Barriers  | Facilitators                                      |
|---|---|
| Lack of HIV knowledge and sense of not being at risk <sup>a</sup> | Compensation <sup>a</sup>                         |
| Inconvenient clinic time <sup>a</sup>                             | Peer referral and support <sup>a</sup>            |
| Fear of nosocomial infection <sup>a</sup>                         | Professionalism <sup>a</sup>                      |
| Not knowing where to get a free test <sup>a</sup>                 | Testing location and environment <sup>a</sup>     |
| Fear of having a positive diagnosis <sup>b</sup>                  | Publicity via social media <sup>a</sup>           |
| Skepticism <sup>b</sup>   | High-risk behavior <sup>b</sup>                   |
| Low quality of service <sup>c</sup>                               | Sense of responsibility <sup>b</sup>              |
| HIV stigma and discrimination <sup>c</sup>                        | Rapid HIV testing <sup>c</sup>                    |
|   | Standardized support after diagnosis <sup>c</sup> |

<sup>a</sup>Expressed by both HIV-positive and HIV-negative FGD participants.

<sup>b</sup>Exclusively expressed by HIV-negative FGD participants.

<sup>c</sup>Exclusively expressed by HIV-positive FGD participants.

higher class. The only one that will be infected is from the lower class. So he thought he did not need to test. (39-year-old, currently unemployed, divorced, non-Beijing resident, HIV-negative)

**Inconvenient clinic time.** The operational time of general hospitals, specialized hospitals, or CDC clinics offering HIV testing appeared to conflict with work schedules of many participants. Work schedules typically included morning through evening shifts, Monday through Friday, which was the same schedule of many testing sites. Participants discussed not being able to leave work or ask permission to leave for HIV testing. Discourse concerning fears of stigmatization and of disclosing of sexual identity indicated that conversations with employers involving HIV prevention would be generally avoided.

... And if you do use it frequently, colleagues may ask, 'Why do you always go to the hospital? What's wrong with you?' ... If you go to hospital on Friday afternoons from time to time, it is impossible for you to make up different excuses. (32-year-old, currently employed, single, non-Beijing resident, HIV-positive)

These hospitals and clinics usually do not offer HIV testing on weekends.

... As they don't work on weekends. For me, I leave my job (during weekdays), not go to work, in order to go tested? It is impossible. (34-year-old, currently employed, divorced, non-Beijing resident, HIV-negative)

**Fear of nosocomial infection.** In China, provider-based HIV testing sites used blood draw to collect samples for lab test for HIV. Quite a few of participants did not take a test because they were afraid of being infected during the blood draw. This was particularly the case when HIV testing was offered at STD/HIV specialized clinics or hospitals that also treat individuals living with HIV.

Some people think that their medical instruments are not clean, such as the needles. Once a friend described his symptoms to me, I told him maybe he was infected with HIV and I suggested him go to somewhere to have testing. He said he might be infected by those needles. He said he just could not trust them. (27-year-old, currently employed, single, non-Beijing resident, HIV-positive)

I am a little worried. That is to say that I wasn't infected with the HIV virus originally, but might get infected through the test. I feel this, this is the obstacle in my heart, I am afraid of the same needles is being used for others and me. Because all MSM come here to get a test, there is HIV in this place... and other high-risk groups. (38-year-old, currently employed, married, non-Beijing resident, HIV-negative)

**Not knowing where to get a free test.** Although almost all participants could name one or two places where they could go for an HIV test, some did not know where to get a free test. Testing cost was a major factor for some MSM. One participant living with HIV recalled leaving a testing site because of cost:

I didn't know there was free test. I went to Friendship Hospital or Chang'an Hospital and they wanted to charge me 50 yuans (about 8 US dollars) on the HIV test. I didn't like that, so I left. (29-year-old, currently unemployed, single, non-Beijing resident, HIV-positive)

I felt I really wanted to get a [free] test, but I always didn't know where there was such a test that any organization could give us. (28-year-old, currently unemployed, single, non-Beijing resident, HIV-negative)

**Fear of having a positive diagnosis.** Specific to HIV-negative/status unknown FGs, participants discussed fear of having a positive HIV diagnosis as a potent deterrent. Anticipated negative consequences of such a diagnosis included losing one's job, family, friends, and partners. Fears expressed in discourse across the HIV-negative/status unknown groups are exemplified by one participant's anticipation of multiple negative outcomes to receiving a positive diagnosis:

Another reason [not to test for HIV] is that I am worried about the test result turns out to be positive. If I am HIV-positive, I will probably lose my friends, partners, and the reputation I have, and so many other things that are important to me. So I do not want to face that reality. (35-year-old, currently employed, single, non-Beijing resident, HIV-negative)

**Skepticism.** Among the MSM HIV-negative/status unknown participants, discussion suggested that some participants had a strong distrust in the medical system, technology, and the staff. This general sentiment is well characterized in one participants comment that:

I do not trust the accuracy rate... and the results are often exaggerated by the doctors... You know... some disease control centers usually told us that our results were quite serious. Actually, the results were not that serious at all. The testing services and those people just wanted to make money. Just don't trust them. (39-year-old, currently employed, divorced, non-Beijing resident, HIV-negative)

**Low quality of service.** MSM living with HIV uniquely noted low service quality in their reflections of experiences with HIV testing. Long wait times and complicated procedures during and after HIV testing were recalled as problematic. More specifically, they felt the process was burdensome, the staff were short-handed, and the length of time for completing an information questionnaire that typically accompanies testing was overwhelming. Moreover, the significant delay some participants reported between HIV test and receipt of results created frustration.

I think the testing process should be simplified. When I took a test in Beijing, I first had to wait in a queue for 2 hours, and then filled out the difficult 10-page questionnaires before the staff drew my blood. I spent a whole afternoon. Then I waited for another week for the testing result. Ridiculous! (23-year-old, student, single, non-Beijing resident, HIV-positive)

In addition, participants complained that some staff propelled confusion and stigma. They discussed feeling they were not provided with useful information or recommendations, nor did they feel connected or cared-for in a way they lamented could have made a significant impact.

A girl [female healthcare worker] came to me and asked me to come to her office. She said bluntly 'you are HIV positive'. For me, she was like the messenger from hell. And I think she could tell me in a more gentle and friendly way, which would make it easier for me to accept it. She just informed me that and did not give me any professional advice about what should I do afterwards. (37-year-old, currently employed, single, non-Beijing resident, HIV-positive)

HIV stigma and discrimination. Also a theme noted predominantly among participants living with HIV involved what was described as experienced (enacted) stigma. Participants discussed stigma and discrimination from healthcare professionals. Experiences described ranged substantially, but consistent themes of negative judgment and shaming emerged.

*... The doctor said to me: 'You are a HIV carrier. How did you contract HIV?' I said through condomless sex with a man, and he scolded me for my 'misbehaviors'. I really thought it's unacceptable, because he is a director and professional. How could he say like that? (43-year-old, currently unemployed, married, Beijing resident, HIV-positive)*

Experienced and anticipated stigma and discrimination appeared to negatively impact HIV testing uptake.

*In China, if you let someone choose between cancer and HIV, they would definitely choose the former one instead of the latter one, because it is too shameful to have HIV. So I just don't want to get tested and know it anyway. (26-year-old, currently employed, single, Beijing resident, HIV-positive)*

### Facilitators of HIV testing

Participants discussed a number of factors that facilitated HIV testing or could facilitate testing if adopted by service providers. These factors spanned financial, structural, or individual sources, and were generally reflective of the following themes: (1) compensation; (2) peer referral and support; (3) professionalism; (4) convenience testing location and comfortable environment; and (5) publicity via social media. HIV-negative participants reported additional factors: (6) high risk behavior; and (7) sense of responsibility. HIV-positive participants also reported two additional factors that facilitated or would facilitate HIV testing: (8) rapid testing; and (9) standardized support after diagnosis (Table 2).

**Compensation.** Some programs offered in and around Beijing incentivized testing. Focus group members noted that receipt of compensation for HIV testing as supportive of taking time from employment to get tested. A participant living with HIV recalled his frequent use of HIV testing as related to compensation.

*They gave you a compensation for the loss of working time every time and transportation fees, so I was very happy to come back and get tested. And if government could provide monetary support for MSM to take a test, it would also be better...and I also like the free condoms, lubricant and educational materials they provided for free. I am willing to go. (41-year-old currently unemployed, unmarried, non-Beijing resident, HIV-positive)*

In addition, universal free testing or monetary support to compensate the charge by any for-profit hospitals were seen as beneficial.

*Free testing is very nice and I will get tested if I don't pay for that. (27-year-old currently unemployed, single, non-Beijing resident, HIV-negative)*

**Peer referral and support.** Participant discourse suggested that HIV testing would be more attractive if peers introduced the testing site. Peer referral was noted as potentially increasing one's trust in testing clinic.

*Passing from mouth to mouth, introducing each other among friends, for example, if I knew that there was good place to test, and then I could tell you. By telling each other among friends, probably...because of introducing among friends, the initiative of willing to go would be stronger. (24-year-old, currently employed, single, non-Beijing resident, HIV-negative)*

Peer support and accompaniment was also seen as potentially helping individuals to feel more comfortable and less anxious during HIV testing. A participant living with HIV noted that MSM who had been through the experience could provide support and encouragement to uninfected peers.

*Like I just said, let an infected person to bring him to do HIV testing...He has experience to cope with the negative feelings...This is a very efficient way to do peer-match up for the motivation to take HIV testing. (31-year-old, currently employed, single, non-Beijing resident, HIV-positive)*

**Professionalism.** While stigma and shaming deterred testing, participants found high levels of professionalism of the healthcare workers to be a facilitator. HIV-related expertise, medical skills, and welcoming attitudes towards the patients at some sites were discussed.

*When I went there every time, the staff there were all very warm to me...as soon as you arrived, they would smile to you naturally...which eliminated your worries...They usually asked what assistance you needed or what information you wanted, and then they told you what kinds of tests you should take. After these, they offered you proper psychology counseling, in order to check out whether you had pressure from your work recently and your life...And this is an authoritative institution...so I had no worries for going there several times. (45-year-old, currently employed, single, non-Beijing resident, HIV-negative)*

Participants reported that they were more inclined to visit the specialized institutions with good reputations in HIV care services.

*HIV infection is a big health problem. So I think...we need to go to specialized hospitals and have some special medical staff to do the testing for us. General hospitals might not be a good option. (38-year-old, currently employed, single, non-Beijing resident, HIV-positive)*

**Testing location and environment.** Two aspects of geographic location of test sites were noted. First, participants suggested that more testing clinics should be made available near gay venues or close to transportation transit terminals. One participant said:

*If HIV testing could be arranged by organizations near some convenient locations...that we usually visit...or close to bus/metro station, which will for sure enhance the testing activity, and we would be impelled to participate. (24-year-old, currently employed, single, non-Beijing resident, HIV-negative)*

Second, participants felt that testing locations that best protect their privacy were preferable. Several participants suggested that medical staff should be sent to local gay organizations to provide HIV testing during gay community events (e.g., at awareness events) or gathering locations (e.g., song bars, bathhouses, bars, pubs, parks, etc.) instead of only offering testing in hospital settings or CDC clinics.

*We feel uncomfortable when we enter hospital or CDC. And what if we met an acquaintance? However, I would feel much better for us to, uh, go to a hotel or entertainment facility to take a test. I tried it once and liked it. This is just advice about the location. (28-year-old, currently employed, single, Beijing resident, HIV-positive)*

*Because they organize the test activities every month or several months, they could tell everyone to go to sing together...so during singing, they could arrange a testing activity then everyone would go to take a test...if there is an activity like this regularly...I will go and take part in. (24-year-old, currently employed, single, non-Beijing resident, HIV-positive)*

**Publicity via social media.** Participants thought that publicizing testing information via social media could effectively promote HIV testing among Chinese MSM. From this discourse, themes for actively addressing stigma and discrimination, as well as using technology (websites, messaging), emerged. The use of TV shows, radio, and Internet to advertise against the discrimination against HIV and MSM was suggested.

*Government should support social media to correct the false impressions left with MSM and HIV through different platforms. This will be the most efficient way to let people know HIV and MSM and decrease discrimination against it. Then it will make MSM more confident to take the test. (21-year-old, student, single, non-Beijing resident, HIV-positive)*

Participants suggested that more educational materials on gay websites and periodic expert talks on media should be made available to increase HIV knowledge and awareness.

*I think publicity via social media is the most important. There has been little publicity on HIV. We should attach more importance to it! Many people who haven't yet been infected with HIV don't use testing and those who have already been infected but still don't use testing. That is due to lack of publicity in every single fact related to HIV. (27-year-old, currently employed, single, non-Beijing resident, HIV-positive)*

Some participants endorsed using email, cell phone messages, or an instant messaging technology widely used in China called 'QQ' to send reminders for HIV testing. Further, participants suggested that the texts should not use sensitive words like 'gay' and 'HIV' but rather more subtle language. The frequency of sending such messages was suggested to be monthly.

*It will be a plus to send phone message or QQ messages, telling people when and where and what kind of test will be available...but all the messages should not include sensitive words such as 'gay' and 'HIV'...Or just vague words such as checkup or test. Do not send too frequently, once a month will be fine. (26-year-old, currently employed, single, non-Beijing resident, HIV-negative)*

**High-risk behaviors.** Among participants who were HIV-negative and reported having at least one HIV test, they reported that the impetus for testing was because they had recently engaged in something that was perceived as 'high-risk' (e.g., condomless sex) and were worried that they may have been infected. One participant said:

*I...definitely really wanted to take an exam (HIV testing), because I had [condomless sex with a man], after that, I felt uneasy on my mind...I heard from others about his test...I felt*

*I really wanted to get a test to find out. (38-year-old, currently employed, married, non-Beijing resident, HIV-negative)*

**Sense of responsibility.** Among HIV-negative/status unknown participants, a sense of responsibility for oneself and others provided an internal motivator for HIV testing. When participants were asked about their willingness to test for HIV for the purpose of protection, especially in terms of protecting their regular partner, the answer was almost 100% agreement. One participant responded:

*I went to get a test, I felt very happy...I felt I should protect him [his partner]...for my own responsibility. And we should be responsible for our own health, the family and the society. Just under the situation of not being infected, I feel really relieved. We should cultivate this kind of sense. (33-year-old, currently employed, married, Beijing resident, HIV-negative)*

**Rapid HIV testing.** HIV-positive participants discussed the value of rapid HIV testing (at home or regular facilities), particularly in the context of discussions about long wait times for testing or receipt of results. One participant said:

*(With rapid testing), you can have a fast test and get the result right away, no matter where you take it. The reason why many people are unwilling to do the testing is that they have to wait for one or more days [to get the result]. They are too tortured by waiting to bear it. The testing I did gave me result immediately. If it's free from waiting, I think people will be willing to do it and get the result as soon as possible. I believe it would be very helpful if there were such programs in Beijing. (25-year-old, currently employed, single, non-Beijing resident, HIV-positive)*

**Standardized support after diagnosis.** Some participants without a testing experience were concerned with being 'abandoned' if they were diagnosed positive; while some HIV-positive participants recalled their experiences of receiving post-test counseling and follow-up care and recognized post-test support as a very important facilitator. They suggested that post-test support from government, medical institutions and healthcare providers should be made available in all settings. One participant said:

*Many people will feel anxious after knowing a positive result if there is no post-testing service and support. And they may conceal themselves from treatment. Then problems will occur. So it will be very helpful to boost HIV testing if the institution or government could provide follow-up care and support for those who are newly diagnosed. (39-year-old, currently employed, single, Beijing resident, HIV-positive)*

## Discussion

To date, much of the research on HIV testing among MSM has focused on the quantitative measurement of HIV testing rates. Evidence from qualitative in-depth assessment of the perspectives from MSM is sparse, yet provides substantial opportunity to better understand lived experiences with HIV-testing and identify potential areas in which services could be improved. Our study used focus group data to qualitatively examine experiences around HIV testing among HIV-positive and HIV-negative/status unknown Chinese MSM. Our findings are consistent with those from studies in other countries where HIV stigma, social discrimination, and

perceived low HIV risk create barriers to HIV testing uptake;<sup>35–37</sup> and recent high risk behaviors (e.g., condomless anal sex), free and rapid testing techniques encourage testing.<sup>36,38,39</sup> Specific to work conducted to date with MSM in China,<sup>3,29,30,40–42</sup> our findings similarly identify stigma and a poor understanding of HIV and transmission dynamics as a major factors in both testing as well as linkage and retention in HIV-care.

The FG discussions with HIV-positive and HIV-negative/status unknown MSM in Beijing identified the following challenges to uptake and regular use of HIV testing: low levels of accurate HIV knowledge, perceptions of being at low or no risk for HIV infection, not knowing about free testing sites, HIV and homosexuality stigma and discrimination, and fear of HIV diagnosis as barriers to testing. Additionally, participants noted a number of experienced or recommended facilitators, including accurate risk perception, financial compensation (and free testing), rapid HIV testing, friendly attitude of healthcare workers (professionalism), peer support, and commitment to protection of self and partner.

Content identified in our work that are less well represented in the previous literature include perceptions that testing required a substantial time commitment, difficulties in negotiating taking time from work to get tested because of testing site hours of operation, fear of nosocomial infection as a result of getting tested, specific examples of poor treatment at service sites, and skepticism over testing and medical care more generally. These factors, presently considered as value-reducing, can alternatively be considered as potential avenues for intervention that could increase value of HIV-testing is addressed. Discourse among the FG participants suggested optimizing testing opportunities with evening and weekend hours, locations yoked to MSM centered events and venues, mobilizing testing “by and for” MSM by using trained peers, providing standardized support after diagnosis, and launching active social media campaigns targeting de-stigmatization of HIV testing and of HIV more generally.

Discourse among HIV-positive and HIV-negative/status unknown FGs suggested an interplay between the themes identified, such that the barriers and facilitators identified do not operate in isolation. Specifically, low levels of accurate information about HIV combined with a strong sense of stigma around HIV limited open discussions about HIV, fueled considerable misinformation about HIV and HIV testing. Beliefs about invulnerability or ‘catching’ HIV from testing sites that also treat individuals living with HIV remain largely unchallenged when individuals actively avoid discussions about HIV. There is a clear role for education campaigns and de-stigmatization strategies and policies as potent approaches to increasing rates of HIV testing by influencing open discourse about HIV and access to accurate information. Similarly, the structural barriers identified served to propel a sense of stigma by making testing something foreign, sterile and unwelcoming. Structural barriers, such as testing site hours, poor treatment (e.g., discrimination), and costs of testing are areas that could be monitored for quality, targeted with tailored training programs, and addressed through careful policy planning to increase ease of access and greater cultural humility towards MSM. Moreover, given that accurate information is a prerequisite in a number of HIV prevention social behavioral models (e.g.,

Information-Motivation-Behavioral Skills (IMB) model), efforts to educate community members and healthcare providers serving MSM communities may produce substantial gains in raising awareness about HIV testing and HIV more generally.

Social media emerged as novel and important venues for raising awareness around HIV testing. China has experienced an explosion in available e-technologies in the past several years, with use of social media applications and platforms (e-mails, short message via cell phone, QQ, WeChat™, Grindr™, etc.) becoming ubiquitous in gay communities for socialization and seeking sexual partners. While this may in fact increase risks for HIV infection through access to a larger pool of partners; it also may build community, increase discourse around issues pressing the gay community (such as HIV), and ultimately facilitate prevention awareness and strategies.

To date, the impact of social network connectivity remains unclear for MSM in China. That MSM in this region appear highly willing to use such e-technology for HIV prevention suggests strong potential for leveraging social media to target ‘hidden’ populations.<sup>43</sup> Social media may be optimal platforms for the dissemination of information through short HIV education tutorials, alerts for enhancing HIV awareness, messaging on HIV testing benefits, or reminders for regular HIV testing. As suggested by our focus group participants, use of traditional media (television advertisement and campaigns, or radio broadcasting) could also play an essential role in reducing widespread HIV stigma and insensitivity to MSM.

There are several limitations to this qualitative study that contextualize our findings. First, convenience sampling was used to recruit MSM participants who were living in Beijing, thus findings from our study may not be generalizable non-metropolitan areas in China or other communities. Second, HIV-positive MSM in this study were older, more educated, and more likely to be residents of Beijing, compared to participants in the HIV-negative/status unknown FGs.

Differences in demography may have contributed to our finding some themes that were uniquely discussed in the HIV-positive and HIV-negative/status unknown groups. We cannot fully attribute HIV-status as the causal reason for the observed differences, as these may have been driven by the demographic differences in the HIV-positive group (e.g., being older). We do note, however, that most themes were discussed in each FG.

Third, as with most qualitative explorations using focus group methodology, we cannot disentangle effects of group processes from the discourse. Thus, themes that appeared strongly relevant in groups may have greater or lesser relevance in individual interviews. This similarly applies to themes that did not emerge. We also included groups of individuals living with HIV and their insights on HIV-testing are necessarily flavored by the emotional experience of being diagnosed positive. For the groups of HIV-negative/status unknown MSM, their insights were mixed between their recollections of experiences and intentions towards testing. While this contextualizes findings, it is appropriate to focus on perceptions and allow for recall biases as these are exactly what HIV testing uptake interventions must work to address.

Despite these limitations, our study is one of the very few studies that qualitatively explored experiences around HIV

testing among Chinese MSM. Furthermore, our study assessed barriers and facilitators to HIV testing among both HIV-positive (who all had experiences with testing) and HIV-negative/status unknown MSM (who had mixed experiences with ever having tested). The heterogeneity in experiences helped to provide a rich description of factors that could be leveraged or addressed by HIV testing uptake interventions.

Mobilizing people to test for HIV is a critical step in addressing HIV epidemics, and is a first step in progression through the HIV care continuum among Chinese MSM. This requires a high level systematic understanding of the experiences, beliefs, and influential factors promoting, or deterring, HIV testing. Our study identified structural and social factors that work against and towards uptake of HIV testing. Longitudinal work is needed to evaluate the relative influence of identified factors in objectively measured HIV testing, and, importantly, changes in HIV testing resulting from changes in policy and practices in 'test-and-treat' efforts among Chinese MSM.<sup>4</sup>

### Acknowledgments

We appreciate the staff at Xicheng and Chaoyang District Center for Disease Control and Prevention and Chaoyang Chinese AIDS Volunteer Group for their assistance in conducting focus group discussions. We would also like to thank study participants for their support and participation in this study.

This research was supported by the National Institute of Allergy and Infectious Diseases of the National Institutes of Health under Award Numbers R01AI094562 and R34AI091446.

### Author Disclosure Statement

No competing financial interests exist among authors and the participating institutions.

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