Decentralized STD Testing Among Men Who Have Sex With Men in South China -- a Qualitative Analysis to Inform Sexual Health Services

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Abstract:

**Background:** Health services for men who have sex with men (MSM) are inadequate around the world. HIV and syphilis test uptake remain suboptimal among MSM in China and many other regions. To inform the development of more comprehensive sexually transmitted disease (STD) testing programs among MSM, we collected descriptive data on MSM testing practices and preferences.

**Methods:** MSM in two large urban Chinese cities were recruited through community-based organizations to participate in semi-structured interviews. We purposively sampled MSM across a range of sociodemographic characteristics and testing history, and assessed preferences for HIV and syphilis testing in the context of facilitators and barriers to testing and previous testing experiences. Each interview transcript was coded and thematically analyzed using Atlas.ti 7.0.

**Results:** 35 MSM were interviewed. Confidentiality and privacy were the most important factors influencing participants’ decisions about whether and where to test. Many men described feeling discriminated against when testing at hospitals or government testing centers. Men preferred rapid testing (results available within 30 minutes) compared to conventional tests where results take several hours or days to return. MSM described concerns about quality and accuracy of rapid tests offered in decentralized settings such as community-based organizations. Preferred service provider characteristics included: MSM-friendly, non-discriminatory, and medically trained professionals. Preferred service center environments included: convenient but discrete location, MSM-friendly atmosphere, and clean/standard medical facilities.

**Conclusion:** Our data highlight the need for MSM HIV/STD testing services that are confidential and inclusive of MSM. Rapid testing in decentralized settings provides an opportunity to reach individuals who have not been tested before, but must be accompanied by quality assurance systems and technical competence. Further implementation research must evaluate decentralized STD testing pilot programs for MSM and continue building capacity for MSM-focused sexual health services.
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Glossary of Abbreviations:

MSM – men who have sex with men
CBO – community based organization
HIV – human immunodeficiency virus
STD – sexually transmitted disease
SAR – Special Administrative Region
CDC – Center for Disease Control
Section 1: Introduction

Despite a tremendous change in the general HIV landscape within the recent decades, HIV is still a severe and pervasive issue on the global health stage with disproportionate impact among men who have sex with men (MSM). Worldwide, MSM face unique health care challenges exacerbated by persistent stigmatization and discrimination. In certain countries, law and policies are in place that discriminate individuals based on sexual orientation and/or gender identity. Additionally when law and policies are in place to prevent discrimination, many MSM experience remarkable obstacles when attempting to have those laws or policies upheld. Following UNAIDS’s 2012 newly established priority on MSM health services and the Institute of Medicine’s 2011 report on the lesbian, gay, bisexual and transgender health, renewed focus and efforts have been placed on expanding research among MSM. Sexual health is a particularly significant issue because MSM face a disproportionate burden of HIV and other sexually transmitted diseases (STDs). Comprehensive reviews on the burden of HIV among MSM have showed that infection rates have been increasing in many different countries including Thailand and China. A systematic review of the literature reported that MSM are 19 times more likely to have HIV compared to the general population and a population-representative study from the United States found that MSM had higher HIV-associated mortality compared to the general male population. Although some high-income countries now have well-developed MSM sexual health services, MSM remain under-served in many low- and middle-income countries where cultural, political and economic contexts limit HIV/STD surveillance and health programs.

In China, recent government efforts have expanded HIV/STD surveillance, but sexual health service uptake among MSM remains low. An estimated 50% of MSM in China have never tested for HIV and as many as 87% of HIV-positive MSM do not know their infection status. Sexually transmitted co-infection prevalence rates are also high among MSM in China while the HIV epidemic in China has accelerated over the past decade. The overall national Chinese HIV prevalence among MSM was 1.3% from 2003-2004, 2.4% from 2005-2006, and 4.7% from 2007-2008. Additionally, syphilis prevalence among MSM also increased from 6.8% from 2003-2004 to 10.4% from 2005-2006 and 13.5% from 2007-2008. Uncertainty of where to test, stigma, and fear of discrimination prevent many MSM from testing.
A small qualitative study that conducted focus groups among MSM in China showed major barriers to testing included gay- and HIV-related stigma and discrimination, relationship type and partner characteristics, low perception of risk or threat, perceptions that HIV is incurable or equates a death sentence, concerns of confidentiality, unawareness of free testing, and name-based testing. In addition, many testing staff in China are inadequately trained to engage and retain MSM in care. A significant proportion of MSM in China do not return for their screening test results or confirmatory tests which are often unavailable until one to three days after testing. With a higher burden of disease and greater onward transmission risk, it is critical to reevaluate HIV testing access and uptake among MSM.

Decentralized health care services are evolving to better serve the needs of MSM. Sexual health services are expanding in settings outside of conventional clinics, and can be tailored to reach high-risk MSM. A study in France showed that testing provided at community-based organizations attracted MSM who were less recently tested for HIV and who exhibited greater HIV-associated risks. Advancements in point-of-care test technologies are pushing STD tests out of hospital-based clinics and into the community. Point-of-care testing focuses on convenient and immediate medical testing for patients at an expanded range of care settings rather than necessitating testing to be done in a hospital setting. These organizations can offer greater flexibility in test environment, location, and hours of operation. Point-of-care diagnostic tests have been developed for HIV, syphilis, and Hepatitis C. HIV point-of-care testing is generally used as screening tests with sensitivity in excess of 99%. Most commonly used screening tests are ELISAs which can detect both HIV-1 and HIV-2. Although studies among MSM in high-income countries have shown that point-of-care tests are preferred over conventional tests, point-of-care testing among MSM in China has not been adequately assessed.

A better understanding of MSM test preferences can increase test uptake and service utilization. This study aims to expand our understanding of decentralized MSM sexual health services in South China, a region with an estimated HIV prevalence of 5% and syphilis prevalence of 17% among MSM. We focus on HIV and syphilis testing because point-of-care tests are available in China for these infections. This study investigates MSM preferences for HIV and syphilis testing in order to enhance MSM sexual health services.
A brief report of this work has been previously submitted for publication and is currently under review.

Section 2: Methods

Adult MSM were recruited from two major cities, Guangzhou and Hong Kong. Guangzhou and Hong Kong are two major urban centers located in South China. Guangzhou is the third most populous city in mainland China with an estimated 11,971,429 people from a 2013 census. Guangzhou is also the capital of the Guangdong province and serves as an important national transportation hub and trading port. Hong Kong is located 90 miles southeast of Guangzhou is home to 7,234,000 inhabitants according to a 2014 estimate. Hong Kong is designated as a Special Administrative Region (SAR) of the People’s Republic of China which makes it an autonomous territory under the sovereignty of China. Participants were recruited through several different venues. Participants were recruited at government-sponsored facilities such as provincial hospitals and health clinics, community-based organizations that served as a center for MSM community and services, and online through a popular MSM-centered website. We sought to capture a wide range of MSM testing experiences and preferences to gain a spectrum of insight. Thus, we used purposive sampling to recruit men who represented a variety of HIV and syphilis lifetime testing histories, ages, socioeconomic groups, sexual self-identity, and marital status. Purposive sampling is a type of non-probability sampling technique that allows the selection of study participants to be based on researcher judgment.

We used qualitative methods because of limited existing data on decentralized point-of-care testing to guide a quantitative approach. We performed a search of the literature in PubMed, Social Science Research Network, the Cochrane Library, JSTOR, Social Edge, EconLit, and PsycInfo and did not find any publications of similar studies. We conducted semi-structured one-on-one interviews using an interview guide that included the following core topics related to HIV/syphilis testing: testing experiences and preferences, stigma associated with testing, facilitators and barriers to testing, and perceptions and experiences with MSM-focused
organizations and services (See supplemental materials: Interview guides). The number of interviews needed to reach thematic saturation was estimated based on the focused nature of our research questions around HIV and syphilis testing preferences, and the need to sufficiently describe variation in patterns of MSM testing behavior. We used a qualitative content analysis approach that is commonly used to analyze text data. Qualitative content analysis focuses on the characteristics of language as communication with attention to the content or contextual meaning of the text. The goal of content analysis is “to provide knowledge and understanding of the phenomenon under study.”

Interviews were conducted at a convenient, private location and time of the participants’ choice and recorded with participant permission. All interviews were conducted within the building of a MSM-focused community based organization testing (CBO). If participants did not elect to have the interview recorded, the participant was asked permission to take notes of interviewee responses. Interview length ranged from 30 minutes to 75 minutes depending on participant responsiveness to question asked from the interview guide. Participants were interviewed in Mandarin, Cantonese, or English. Participants were offered either a calling card or shopping card worth approximately 9 USD as remuneration. Participants were reminded that the information gathered from the interview would not be dispersed to the public and that their privacy would be protected. Interviews were transcribed and translated by native Cantonese and Mandarin speakers recruited from local universities, and then checked for accuracy and quality by separate bilingual study personnel.

We used a Framework Analysis to analyze both a priori and emergent themes. Framework Analysis is a qualitative data analysis method developed by the National Centre for Social Research in the United Kingdom. A Framework Analysis aids in organizing and managing data collected from our semi-structured interviews through summarization, which results in a matrix output that allows for theme analysis. Based on these themes, the research team developed a codebook that included a list of thematic codes, code definitions, and example interview quotes. Two coders used this codebook with Atlas.ti 7.0 qualitative data analysis software to attach codes to relevant blocks of texts, and a third analyst then reviewed inter-coder consistency. The
advantage of a Framework Analysis is an analytic process that is systematic, comprehensive, and transparent.

There are no direct translations of the concept terms “gay-friendly,” “MSM-friendly,” or “MSM-tailored” in Mandarin or Cantonese. During interviews, men most commonly described these concepts as “for people like us” or by providing examples from their experiences. For simplicity, we use the term “MSM-friendly” to loosely describe services, providers, and testing environments that have been designed to be inclusive of MSM or exclusively for MSM.

This study was approved by the Institutional Review Boards of the Guangdong Provincial STD Control Center, the London School of Hygiene and Tropical Medicine, the University of North Carolina at Chapel Hill, and Harvard Medical School.

Section 3: Results

A total of 35 MSM were interviewed (Table 1). Participants ranged in age from 18 to 48 years old, with the majority of men between 26 and 40 years old. The majority reported current employment (24/35), and most had completed high school (33/35). Twenty-eight MSM identified as gay, four as bisexual, and three as not sure or not reported. A majority of interviewees had tested multiple times for HIV or syphilis, with 21 MSM reporting testing more than once in the past, seven had just undertaken their first test, and seven had never tested.

Participants had tested in several locations that could be divided into three broad groups: hospital and government-based CDC clinic testing; stand-alone MSM-focused community based organization testing; and hybrid MSM-focused CBO testing centers that were supported by trained clinical staff from area hospitals or government offices. Men described what they felt were the most important determinants of their decisions about whether and where to get HIV/syphilis testing (Table 2). These included factors related to test type, test service providers, and testing environment. Patient confidentiality and privacy was an overarching theme most
commonly cited by participants, followed by specific characteristics of service providers and test locations, and factors related to test type. Below we describe each of these themes in detail.

Rapid test services
Most MSM preferred rapid HIV and syphilis tests compared with conventional laboratory-based tests. Aside from knowing results within 30 minutes as compared to hours or days, MSM also cited other advantages to rapid tests including decreased anxiety over results and increased confidentiality. One man stated:

My first thought [after testing] was… nervousness? But now they have those rapid test kits, so I think it’s okay, because you don’t have to wait for a week or so, so the nervous period can be shortened… I think the rapid test is very helpful, because you know the result in 10 to 15 minutes. (#30, age 39, multiple-time tester)

Rapid testing also enables the possibility of self-testing, allowing men to take tests alone on their own terms with or without supervision. The option of self-testing may facilitate testing among men who are reluctant to attend testing centers:

I guess I would self-test. I can do the testing myself, it’s much more private… Maybe I won’t go to test [at a testing facility] unless I have some symptoms or illness. (#21, age 26, never tested)

However, some men described a trade-off between knowing results earlier and a decrease in test accuracy:

Well I believe there are some errors for rapid tests, which everyone knows. And when I do the test, I will tell the staff that I know it has errors. But for regular testing, I will definitely do [the rapid testing]. (#07, age 33, multiple-time tester)

A: I’d choose to buy a test on the Internet.
Q: Do you think them as good as tests in the hospital?
A: Right, that’s what I’m worried about. I wouldn’t be here getting tested if I wasn’t worried about the quality of the online test. (#08, age 34, multiple-time tester)

Test service providers

Men preferred test service providers that offered MSM-tailored counseling and testing. Many participants commented that they felt discriminated against by service providers within the formal medical system such as hospital and government testing centers. A number of men described experiencing stigma against MSM and stigma related to HIV testing among service providers, which discouraged them from future test taking:

In a hospital… you will be asked which clinic you want to go to when registering, and the staff is likely to know that you are there for STD testing… Depending on the type of nurses, some who are more conservative might not speak to you in a pleasant way. (#31, age 27, multiple-time tester)

Several MSM also reported feeling discriminated against or uncomfortable disclosing their sexual identity to clinic staff in formal medical settings:

I felt discrimination from all kinds of people at other places…like the CDC…The way they spoke to me and the way they looked at me. (#10, age 27, multiple-time tester)

I mean if you go to the normal medical center, you cannot talk about your real reason to do the test. You may hide the true reason, that you had sex with a man. [At an MSM-tailored service provider] You just tell your true story… Yes, I mean they can provide better service and treat this kind of people [MSM] better. (#13, age 33, multiple-time tester)

MSM stated that many hospital or government clinics lacked adequate staff training for providing MSM-specific care. Additionally, men did not trust these providers to protect their confidentiality.
I think that their medical staff [at government testing centers], even though they are professional, they don't have good attitudes. Apart from that, I tend to wonder if they would disclose [information] recklessly. Therefore I worry. (#29, age 21, multiple-time tester)

Test service environments
Closely related to preferences around service providers, participants also described specific preferences for test environments and facilities. Men reported that some clinic services lacked sufficient protocols to protect patient confidentiality, and described several aspects of testing facilities that could promote confidentiality, such as location and anonymous testing services. This response was typical of men’s complaints about testing facility practices:

We have had the experience of seeing doctors with [other] patients, and this is a real case, where the hospital uses a broadcasting system to call patients’ names when one’s turn is coming. (#07, age 33, multiple-time tester)

Men also preferred test facilities that allowed anonymous testing. Participants universally preferred to leave pseudonyms or phone numbers when registering for testing:

I think in the hospital my privacy was not as well protected as in here [MSM community-based organization]. [At the hospital] I must show my identity card or other certificates. But here, I can just write down my phone number. Nothing more is required. (#03, age 27, multiple-time tester)

Although men expressed concerns about privacy and others seeing them walking into a testing service, they also wanted a testing location to be convenient. One man described this dilemma:

If it is in a remote area, few people will know who went into the testing venue. A place in a downtown area may be bad for patients’ privacy, since you might be seen going into this building. (Laughter) But it may be good for promoting testing, because I think
there’re still many people who don’t know where to do such tests. (#04, age 21, multiple-time tester)

Most men preferred testing environments that were relaxed and gay-friendly:

The first factor [in choosing where to test] is atmosphere. An atmosphere like what we are having now, relaxed and informal. I don’t regard it as a test; instead I view it as a process of self-understanding. (#02, age 24, multiple-time tester)

I think gay-friendly is the most important thing - and I can talk to people, you know, talk to you. You can’t find this service in the hospital. (#05, age 29, first time tester)

Many participants also highlighted the importance of supportive counselling services provided at MSM-focused testing centers. One participant stated:

When you have blood drawn [at this MSM-focused organization], there is a volunteer who comes and talks to you. You can consult a lot of things with him or her, which makes you feel good and comfortable, so that you may get tested here again in the future. (#07, age 33, multiple-time tester)

Although a number of men stressed the importance of an “informal” or relaxed environment, a clean, professional atmosphere was also important:

Personally I like to be clean. I think if a center...If a testing center is very messy, you will feel very uncomfortable and you will never want to come back. (#12, age 28, multiple-time tester)

I did HIV detection at a large-scale hospital, so it had poor facilities that had been left in a really primitive state! (#07, age 33, multiple-time tester)
Along with a professional atmosphere, several men spoke of the need for test facilities to have official recognition:

They [CBOs] are not official, or recognized by law… so, I can’t really truly trust them, although maybe they can help me anyway… I just trust the official places, official organizations. I think they provide me with all the standard and good services. I trust them. (#02, age 24, multiple-time tester)

HIV testing is now being increasingly offered as point-of-care, venue-based testing where MSM socialize and find sexual partners. Decentralized testing strategies can increase case detection among MSM and other high-risk population groups by testing in non-clinic settings. In our sample, men expressed concern regarding the professionalism of decentralized, venue-based testing:

I would maybe go to entertainment venues [for testing]… If they have testing, they must be supported by some professional organization, and not just the gay bar itself, so I’m most concerned about it being professional. (#22, age 28, never tested)

Section 4: Discussion, Limitations, Conclusions, and Suggestions for Future Work

Multi-level factors related to available testing technologies, service providers, and testing environments contribute to HIV/STD testing behaviors among MSM in South China. Stigma, discrimination, and fear were overarching deterrents many men in our study faced in accessing sexual health services. Additionally, a recent study evaluating sexual health clinical services for MSM in the Guangdong Province of China showed that sexual clinical services for MSM are inadequate. In recent years, MSM-targeted STD testing services have been piloted in major Chinese cities, a critical step toward enhancing sexual health services. Decentralized testing is increasingly common in several regions, but little research has focused on decentralized MSM testing in China. Much of the STD testing literature in China focuses on clinic-based populations more willing to test, without attention to point-of-care testing. Our research
extends this literature by qualitatively describing a variety of MSM testing behaviors and preferences, including experiences from tested and untested MSM, and rapid testing.

Men in our sample preferred rapid testing compared to conventional tests, but also voiced concerns about test quality assurance and accuracy. Rapid tests allow expansion of decentralized testing beyond clinics that require onsite laboratories. This not only allows the ability to provide testing separated from large general hospitals due to a decrease in overhead costs, but the lower cost also allows for a larger number of clinics to be expanded. Men in our sample described additional advantages of decentralized testing such as decreased anxiety compared to waiting more than 24 hours for a conventional laboratory test, increased convenience of single visit testing compared to returning to a laboratory to obtain results and greater confidentiality because the results of the test are exposed to fewer parties. Studies in high-income nations such as the United States and Australia also suggest that expanding decentralized testing services among MSM may increase test uptake. However, our findings also suggest that some men have reservations about test accuracy and quality in decentralized settings such as CBOs, bathhouses, saunas and bars. Research from low-income countries has shown that decentralized HIV testing may increase false positive testing. Rapid test quality assessment algorithms and training programs have been developed, and their implementation is imperative in ensuring test quality in decentralized settings.

Ensuring confidentiality is critical for expanding HIV/STD testing among MSM in China and globally. In our study, privacy concerns surrounded both the stigma of HIV/STD testing itself, and the implication of HIV/STD testing for disclosure of men’s sexual orientation. Many MSM in China protect their sexual identity from their families, friends, and coworkers due to the fear of discrimination. This is evidenced by that fact that participants in our study identified themselves as gay but were married to a female spouse. HIV testing itself in selected settings could be perceived as a form of disclosure. Our qualitative data reflected these concerns as several MSM described previous testing experiences in which their personal information—such as name, reason for seeking medical care, and test results—was publicly revealed. Self-testing offers one potential decentralized testing strategy that could address concerns regarding confidentiality and privacy. Self-testing minimizes the parties involved with personal health
information and provides added convenience to the test-taker. However, self-testing is not without drawbacks. Self-testing dissociates test results from critical aspects of disease and test result education, as well as relationships with trained medical personnel. Additionally, self-testers have more limited access to emotional support and follow-up provided by designated testing centers. However, men in our sample expressed interest in self-testing, but the feasibility of this testing strategy has not been examined in China. Further research should be conducted to quantitatively evaluate the diagnostic capabilities of commercially-available self-testing kits to properly examine the option. Self-testing kits are a developing field in the world of HIV/STD testing and it is to be expected that the quality of the testing kits will improve as manufacturers further develop their products.

Our data highlight the importance of developing MSM-friendly testing and sexual health services. These services will require additional clinical training (e.g. anal and laryngeal swabs; tailored diagnostic interviewing for MSM); sensitivity training (e.g. anti-stigma, anti-discrimination for HIV and sexual orientation); MSM-tailored counseling and testing messages, MSM-relevant risk reduction strategies, and a clean, professional testing environment. A cross-sectional study of STD clinics in South China found that only 32% reported that any staff were trained about MSM sexual health, 27% reported having proctoscopes available, 27% reported having male condoms and lubricants, 14% reported having pamphlets designed for MSM, and 22% reported having performed a rectal smear in the past six months. This problem is common in many low- and middle-income nations where HIV/STD services for MSM are under-supported. MSM-friendly clinical training and more active engagement with MSM communities can facilitate test uptake and assuage concerns about confidentiality and stigma.

Our study has several limitations. Homosexuality remains a sensitive issue in China, and MSM may have been reluctant to discuss certain topics including their motivations for testing as related to HIV/STD high-risk behaviors. We partnered with several CBOs and pilot tested our questions in order to build rapport and elicit honest responses. Men’s willingness to share negative evaluations of their testing experiences and descriptions of irregular testing suggest that participants felt comfortable in these interview settings. However, it should still be noted that participants had not met the interviewer previously which may have affected the candidness of
responses. We attempted to convey our partnership with the MSM-friendly CBO to create a sense of trust, however that may have affected honest responses that could have been critical of the CBO. Additionally, our qualitative data was not designed to infer relationships between MSM stated testing preferences and testing behaviors. The functionality of our semi-structured interview did not attempt to delineate that information. Further implementation research is needed to gauge how stated preferences are related to testing practices.

This study aimed to recruit a diverse cohort of participants in order to gain a broad spectrum of responses, however the culture, stigma, and state of HIV/STD testing and homosexuality is distinct between the cities of Guangzhou and Hong Kong. Despite the fact that both cities are under the sovereignty of the People’s Republic of China, Hong Kong is designated as a SAR which provides Hong Kong with a high degree of autonomy. Lesbian, gay, bisexual, and transgender people are more widely tolerated and accepted in Hong Kong compared to areas within mainland China according to the participants from both cities. The decrease in social stigma and fear of discrimination undoubtedly affects a person’s ability and barrier to HIV/STD testing. Because the data from this study is combined from participants from both Guangzhou and Hong Kong, it may not be generalizable throughout South China due to distinct differences in governments under the SAR legislature.

The number of participants recruited for this study provided a wide range of responses from MSM who have tested for HIV/STDs more than once, first-time testers, and non-testers, but the sample size is limited for specific types of MSM. 21 of 35 participants reported testing more than once in the past however only 7 participants reported being first-time testers and 7 participants reported never being tested. Recruiting additional participants who are first-time testers and non-testers would provide extremely valuable information that could help target interventions to promote initiation of testing behavior. Understandingly, these types of participants are more difficult to recruit compared to multiple-time testers because MSM who have approached the healthcare system to receive testing presumably have overcome certain barriers to testing that non-testers have not. Further work will be necessary to gain a more comprehensive scope of sexual health among MSM in South China.
In 2010, China launched a comprehensive national syphilis control plan that aims to increase organizational capacity for testing. Although STD testing services in China have increased in recent years, our qualitative research found that many conventional testing services are still poorly suited to the unique needs of MSM populations. Further research is warranted to inform how MSM-focused decentralized testing services can be implemented to expand testing, linkage, and retention in care.

Further work that can be conducted on decentralized testing services include self-testing options for STDs. Self-testing options provide an opportunity to significantly reduce stigma and fear of discrimination surrounding centralized testing options. Further work can focus on assessing MSM knowledge of self-tests availability, reliability, and practicality. Self-testing options are a promising avenue to take additional steps forward in making HIV/STD testing more widespread among the MSM community. To our knowledge, no qualitative or quantitative study has been conducted to inform self-testing sexual health services among MSM. Such information would be useful to further develop decentralized testing options that are MSM-friendly.

Addressing HIV/STD testing stigma and fear of discrimination must be addressed on a systemic level. China has progressed in recent decades in this area of interest. The Chinese government has focused on increased awareness and tolerance of LGBT people, but there is much work to be done. The participants of this study lack trust in government-run organizations which will hinder the reduction of spread of HIV/STD among MSM. Without systemic changes in the perception of HIV/STD and homosexuality, we may continue to see suboptimal health care provided for MSM in Southern China.
List of References:


Tables and Figures:

Table 1: Demographic characteristics of MSM study participants in two Southern Chinese cities

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</tr>
<tr>
<td>Engaged/Married</td>
<td>5 (14%)</td>
</tr>
<tr>
<td>Not reported/unknown*</td>
<td>1 (3%)</td>
</tr>
</tbody>
</table>
Table 2: Most commonly cited factors among MSM for HIV/syphilis test taking

<table>
<thead>
<tr>
<th>Factors in test decision</th>
<th>No. of MSM cited</th>
<th>Sample quotations from MSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidentiality/Privacy</td>
<td>14</td>
<td>I will make a phone call to find out… if I need to give private information such as ID card number, phone number, address, or real name. If they have anonymous testing, I will trust it and test, for there is no information to leak. (#07, age 33, MTT)</td>
</tr>
<tr>
<td>Convenience (location, hours)</td>
<td>11</td>
<td>I think confidentiality still comes first… After all, personal data is a rather sensitive topic for homosexuals. (#29, age 23, MTT)</td>
</tr>
<tr>
<td>Gay-friendly service provider</td>
<td>7</td>
<td>Some of those places were too close to my home that there are cases I would be spotted entering those organizations. And some of them was too far away that I don't want to go. (#03, age 27, MTT)</td>
</tr>
<tr>
<td>Environment (friendly, clean, quiet)</td>
<td>7</td>
<td>The most important factor is whether the test site is convenience… location, opening hours, and whether it is gay friendly. And whether I have friends who have been there before, who has been tested before. (#30, age 39, MTT)</td>
</tr>
<tr>
<td>Professionalism /staff attitude</td>
<td>7</td>
<td>The first thing I thought was that the organization is designed for homosexual, so it should be more reliable. (#07, age 33, MTT)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The environment includes the people, the eye contact, the smile and the feeling of the room of the place (#10, age 27, MTT)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In fact, it’s MSM friendly here [MSM-tailored testing center]. I knew about this place from a gay website. Many men on there recommended this place and said it treated us nicely. I feel more relaxed here (#06, age 21, MTT)</td>
</tr>
<tr>
<td>Test quality and safety</td>
<td>5</td>
<td>The most important thing is cleanliness! …If a testing center is very messy, you will feel very uncomfortable and you will never want to come back. (#12, age 28, MTT) Since I has experienced of quarreling with the nurse when doing physical examination, as well as HIV detection, I really care about the attitude of staff (#07, age 33, MTT) [The most important factor] is the accuracy of the test, and the test quality and sanitation. (#15, age 23, NT) I will choose accuracy [as the most important factor]. Yes. And also safety. I’m afraid that if there are some operation mistakes that will result in infection, since there’re so many people having test here. (#04, age 21, MTT) Safety, which means hygiene… I’m afraid that their instruments and needles are unsafe. (#06, age 21, MTT) The advantage of rapid tests is that you get to know your results quicker, and so you won't be worrying for too long… So I thought to myself, with its rapidness of results, quick tests are actually much more convenient. (#29, age 23, MTT)</td>
</tr>
</tbody>
</table>

| Rapid testing | 4 | |

Abbreviations: MTT = Multiple-time tester, FTT = First-time tester, NT = never tested
Appendices:

Interview Guide

Community-Based Organization Capacity
1. How do you learn about this community-based organization?
2. Could you tell me about your experiences with HIV/syphilis testing? Experiences with this community-based organization?
3. Why did you choose this community-based organization?
4. Do you access services from more than one MSM community-based organization? If yes, describe other organizations.
5. Could you talk about the reputation about the MSM community-based organizations in Hong Kong/Guangzhou? Which is the most trusted MSM community-based organization in Hong Kong/Guangzhou?

Sexual Orientation
6. Some people think of sexuality as a range or spectrum and everyone describes their own sexuality differently.
   a) How would you describe your sexuality?
   b) Who have you told about your sexuality?
   c) What was their response?

HIV and Syphilis Needs
7. What is your first thought when you think about HIV/syphilis testing?
8. Where would you prefer to get HIV/syphilis testing? (Hospital, CBO, gay bar, gay sauna, etc.)
9. Where would you prefer to get other sexual health services (e.g. treatment, physical exams)?
10. Do you think that some clinics or hospitals are more gay-friendly than others?

Behavioral Intentions and Behavior
11. Where have you gone for HIV/STI testing in the past? (note all locations if tested multiple times)
Multi-time testers only:
11a. When you were deciding where to go for testing, how did you make the decision about where to go?
a) Do you remember how you were feeling at those times? Can you describe your testing experiences? How did that compare to your testing experience today?
12a. What are your concerns about going to get tested in the future?

First-time testers only:
11b. Today was your first time having an HIV/syphilis test.
a) How did you make the decision about coming here for testing?
b) Can you describe how you were feeling before you came in for the test?
c) How was your testing experience today?
d) How did your experience compare to your expectations?
12b. What are your concerns about going to get tested again in the future?

Never testers only:
11c. You mentioned earlier that you have never had an HIV/syphilis test.
a) What are some of your concerns about having an HIV/syphilis test?
b) What are your future plans for HIV/syphilis testing?

Facilitators and Barriers to Testing
12. What would make it easier for you to visit clinical versus non-clinical sites for HIV/syphilis testing?
13. What would make it difficult for you to visit clinical versus non-clinical sites for HIV/syphilis testing?
14. To you, what is the most important thing about an HIV/testing site? (e.g. cost, environment, confidentiality, convenience, MSM-friendly, etc.)
15. In your current situation, what do you think your risk is for getting HIV or syphilis? Why?

STD Risk Factors
16. When you are together with your partner/boyfriend, what is your current situation for using condoms?
a) [Use or not use response] How do you make the decision about whether or not to use condoms?
b) [If they use them] Where do you generally get condoms?
c) [If they use them] What do you think about getting free condoms versus buying them yourself?

Opinions of Others (ask subject about their peer, manager, family member, friend)

17. Who would most influence your decision to get tested for HIV or STIs? Why?
18. Who would most influence your decision to attend a clinic? Why?

“Face” and STI Testing

19. Do you think you would lose face by going to a clinic for HIV/syphilis testing?
20. Do you think you would lose face by having a positive HIV or syphilis test?

Stigma Around HIV/AIDS and Syphilis

21. If you found out that you had HIV or syphilis, who would be the people you tell or talk to?
   Why would you tell those people but not others?
22. How would your family and friends react if you were diagnosed with HIV or syphilis?

Health Communication

23. How do you feel about the HIV/STI doctors you have met in the past?
24. Do you trust HIV/STI doctors? Do you trust some doctors more than others?
25. How do you feel about the confidentiality of HIV/STI testing results?
26. Do you worry that STI doctors will allow others to know the results of your STI test results
   and HIV test results?
27. Do you trust the validity of HIV or syphilis tests?

Financing

28. Have you ever had to pay for HIV/STI testing? If yes, where did you have to pay? What did you think of this cost?
29. Has there ever been a time when you wanted/needed sexual health services but could not pay for them? Please describe.

30. How do you think other MSM you know would feel about paying for testing?

**Marketing**

31. Can you describe the MSM social scene in Hong Kong/Guangzhou?

32. Do you participate in the MSM social scene (gay bars, gay saunas)?

33. Do you buy products or services that are targeted at MSM?

34. Do you read MSM-focused magazines [Dim Sum], websites [Friday], or social media groups?

35. If an advertisement selling a product depicts MSM life, does that make you more or less willing to buy it?

**Demographics**

36. What is your age?

37. What is your ethnicity?

38. What is your education background?

39. What is your employment?

40. What is your marital status?

41. Are you from Hong Kong/Guangzhou? If not, where are you from?
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This project is expanded from an article under review by a peer-review journal. Other research team members have contributed to this project including first authors Cedric Bien and Kathryn Muessig. I have been listed as a second author. I lead the development of this project, performed all data collection, assisted with data analysis in coordination with other researchers and experts trained in qualitative analysis, and contributed to writing this article. To fulfill the requirements of the Harvard Medical School scholarly project requirements, I have expanded to this article.