Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

_____ _____

Ashika Bhan Date

Willingness to Use Alternative HIV Prevention Methods among Internet-Using Men Who Have Sex with Men in Brazil: Implications for Pre-Exposure Prophylaxis and Home HIV Testing

By

Ashika Devi Bhan
Master of Public Health

Global Epidemiology

_____

Patrick S. Sullivan, DVM, PhD
Faculty Thesis Advisor

Willingness to Use Alternative HIV Prevention Methods among Internet-Using Men Who Have Sex with Men in Brazil: Implications for Pre-Exposure Prophylaxis and Home HIV Testing

By

Ashika Devi Bhan

Bachelor of Arts
Willamette University
2008

Faculty Thesis Advisor: Patrick S. Sullivan, DVM, PhD

An abstract of
a thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Global Epidemiology
2012

Abstract

Willingness to Use Alternative HIV Prevention Methods among Internet-Using Men Who Have Sex with Men in Brazil: Implications for Pre-Exposure Prophylaxis and Home HIV Testing

By Ashika Devi Bhan

Background: The HIV/AIDS epidemic in Brazil remains concentrated in populations with high vulnerability to infection, including men who have sex with men (MSM). This indicates an urgent need to develop alternative HIV prevention strategies. Pre-exposure prophylaxis (PrEP) and home HIV test kits are two promising approaches that can be utilized in an optimal comprehensive HIV prevention package targeted toward MSM.

Objective: The purpose of this study was to assess willingness to use PrEP and home HIV testing and their associated factors among MSM in Brazil, and to evaluate knowledge of and attitudes toward these alternative HIV prevention methods.

Methods: Data were collected through an online men's health survey conducted in April 2011 and targeted toward MSM in Brazil. The primary outcomes measured were likelihood of using PrEP and likelihood of using home HIV test kits. Logistic regression was used to model participant characteristics with each outcome in bivariate and multivariate analyses.

Results: Overall willingness to use PrEP and home HIV test kits among MSM was high: 67% were extremely or very likely to take PrEP, and 90% agreed that they would be likely to use home HIV tests. Only 22% had previously heard of PrEP. MSM who were aware of PrEP were more willing to use it compared with men who were unaware (OR = 1.7, 95% CI: 1.04-2.6), and these odds increased with age. Men who had anal sex recently also had increased odds of being willing to use PrEP (OR = 3.1, 95% CI: 1.1-8.3). The only significant predictor of probable home HIV test use was age (P = 0.04). MSM reported overall high willingness to use at-home testing under various hypothetical situations ($P < 0.05$).

Conclusions: MSM in Brazil are likely to use PrEP and home HIV testing as alternative methods of HIV prevention. Additional research is needed to determine the optimal components of a tailored HIV prevention package utilizing a combination of interventions for MSM and other high-risk populations.

Willingness to Use Alternative HIV Prevention Methods among Internet-Using Men Who Have Sex with Men in Brazil: Implications for Pre-Exposure Prophylaxis and Home HIV Testing

By

Ashika Devi Bhan

Bachelor of Arts
Willamette University
2008

Faculty Thesis Advisor: Patrick S. Sullivan, DVM, PhD

A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Global Epidemiology
2012

TABLE OF CONTENTS

LIST OF TABLES

BACKGROUND

Despite recent developments in treatment and prevention strategies for HIV/AIDS, approximately 7,000 new infections occur each day, 50,000 occur each week, and 2.7 million occur each year worldwide (1). Since the beginning of the epidemic, HIV incidence has been concentrated in men who have sex with men (MSM), and still remains high among this group. Studies among MSM in the Western world have shown an incidence of 2.5% each year (2). Similar studies in developing countries show an incidence of 5-8% each year (3). Additional strategies to prevent HIV infection among MSM are therefore urgently needed globally.

In Latin America, the HIV epidemic remains generally stable, yet transmission continues to occur among those practicing high risk behaviors, including MSM, particularly those with limited access to HIV prevention interventions, treatment, care, and support services (4). The epidemic has been concentrated in Brazil, where nearly one-third of all persons living with HIV/AIDS in Latin America reside (5). In 2009, HIV prevalence in Brazil was 0.5%, with approximately 660,000 inhabitants living with the disease (6), and 25,000 new cases reported annually (7). Although the epidemic has largely stabilized, prevalence and incidence continue to increase in Northeastern Brazil and among vulnerable populations such as MSM (6).

For many years, AIDS cases among MSM represented a majority of the total number of reported cases in Brazil (8). Thus, MSM were most severely affected during the early years of the epidemic (1980-1990), when homosexual and bisexual men accounted for 76% of reported cases (9). However, there has been a shift in the epidemiological features of the AIDS epidemic in Brazil since then. The 1990s witnessed a decrease in this group along with a proportional increase of cases in heterosexuals (8). In 1999, homosexual and bisexual men

represented only 24% of cases nationally (9), and in 2001, MSM transmission accounted for 18.5% (10).

Still, in some regions of Brazil, HIV/AIDS among MSM remains high. Among such vulnerable subgroups, HIV prevalence rates are close to 5% or greater (5). In 2004, AIDS incidence among MSM in Brazil was 226.5 cases per 100,000 MSM compared with 19.5 cases per 100,000 people in the general population (5). In the Northeast Region, AIDS cases among MSM represent a considerably high proportion, with approximately 50% of all cases reported in recent years (8). For example, in Ceará, a state located in the same region, sexual contact with MSM continues to be the most important means of HIV transmission (9).

Recognizing the severity of this epidemic, Brazil effectively responded and has become a global leader in the fight against HIV/AIDS (5). The Brazilian National AIDS Program is widely recognized as the leading example of an integrated HIV/AIDS prevention, care, and treatment program in a developing country (11). Since the 1980s, Brazil has implemented HIV education and prevention campaigns, including nationwide condom distribution and HIV testing, as well as campaigns targeting vulnerable populations such as MSM. The country also has one of the developing world's largest AIDS treatment programs. Since 1996, Brazil has provided free universal access to HAART for HIV/AIDS patients (despite World Bank objections). These accomplishments have dramatically reduced AIDS-related morbidity and mortality rates in the country (6).

Brazil's emphasis on prevention in addition to treatment has helped keep the epidemic relatively stable. However, thirty years after the onset of the HIV epidemic, it is clear that reliance on current prevention methods is inadequate in stopping the spread of HIV. Behavioral interventions have not been able to contain the epidemic, and historically

available biomedical approaches have had disappointing results (12). Constraints in these strategies include low acceptance of condoms, circumcision, and testing, low awareness of vulnerability, and more emphasis on treatment (1). Other than male circumcision, there is currently no proven biomedical intervention to prevent HIV transmission through sexual exposure (13), and circumcision is unlikely to be impactful in MSM epidemics. There is therefore an urgent need to develop alternative prevention methods. Currently, there are several new biomedical approaches in different stages of development: topical microbicides, vaccines, post-exposure prophylaxis (PEP), and pre-exposure prophylaxis (PrEP) (14, 15).

PrEP

Of these new approaches, pre-exposure prophylaxis seems especially promising. PrEP involves HIV-negative individuals regularly taking HIV antiretroviral medications (ARVs) before potential HIV exposure as a means to reduce or prevent the risk of infection (in contrast to PEP, which involves taking ARVs after exposure) (12, 16, 17). The concept of using ARVs as a preventive method has been tested and proven successful in studies on PEP and mother-to-child transmission as well as in animal models, all of which have shown significant reductions in risk of HIV transmission (1, 18, 19). For example, PEP in health care workers immediately after accidental HIV exposure is common and can prevent 80% of infections due to needle accidents (17). However, the safety and efficacy of PrEP have not been established in humans.

To evaluate these aspects of PrEP, a multinational study called the Pre-Exposure Prophylaxis Initiative (iPrEX) was conducted at eleven sites in six countries, namely Brazil, Ecuador, Peru, South Africa, Thailand and the United States (20). Several of these studies

have focused on MSM populations, including an efficacy study of ARVs among MSM in Brazil (21). In the randomized, double-blind, placebo-controlled clinical PrEP trial, once-daily oral ARVs—tenofovir (TDF) and emtricitabine (FTC)—were administered to consenting HIV-uninfected men and male-to-female transgender adults (age ≥18 years) who have sex with men and engaged in high-risk sexual behaviors during the preceding 6 months (1, 20). The results of the trial showed that TDF plus FTC taken as PrEP is safe and partially effective in reducing HIV infection among MSM, decreasing the risk of infection by 44%, and 74% among those with greater adherence to the daily regimen (22, 23). PrEP will likely not be completely efficacious for prevention, but mathematical modeling suggests that even a partially effective medication may lead to significant reductions in HIV incidence (24).

As the iPrEx clinical trials establish the efficacy and safety of PrEP, other research is investigating the awareness and acceptability of PrEP among potential users. Such research is important in that it may aid in the development of initiatives and approaches that address the particular needs, interests, and concerns of target populations, including MSM (14). The availability of PrEP will not necessarily lead to its adoption; without sufficient uptake, even the most efficacious medication will have little impact in reducing HIV transmission (22). The success of PrEP will depend on behavioral variables such as intentions (i.e. likelihood) to use it, acceptability, and adherence (25). It is therefore essential to understand potential users' knowledge of PrEP as well as willingness and motives for its use. Research on the factors associated with both the knowledge and use of PrEP among MSM populations is needed to guide more effective risk reduction interventions.

Among MSM, awareness of PrEP and willingness to use it remain unclear. Few studies have explored the demographic, social, and behavioral issues associated with PrEP adoption

and use, and few have focused on predictors of intentions to use PrEP in the future (25). Those that have been conducted have focused on PrEP knowledge, attitudes, and potential use among MSM (14, 19, 25), surveying MSM to gain a better understanding of these issues. One study found that 25% of men were aware of PrEP, and factors associated with awareness include age, affluence, and high-risk sexual behavior (26). Studies in the U.S. found an overall modest knowledge of PrEP (12). The extent of PrEP use among MSM is limited, although anecdotal reports indicate that some medical providers have prescribed PrEP to high-risk patients. Liu et al. found that less than 1% of HIV-negative MSM had ever used PrEP (19), and only 16% reported awareness of it (25). There are no published studies that examine PrEP acceptability among non-U.S. populations, who account for 96% of those living with HIV worldwide (12). As PrEP trials are underway in Brazil, information regarding its acceptability and potential impact on HIV risk behavior is needed to plan effective intervention approaches.

The effectiveness of PrEP will not only depend on its acceptability, adoption, and sustainability, but also its role in being part of a comprehensive HIV prevention strategy that includes behavioral, biomedical, and structural elements to maximize impact (22). This prevention package should include support services such as HIV testing and behavioral interventions to support adherence and reduce risk behaviors (24). There has been a growing shift in HIV prevention toward combination approaches. PrEP will be more effective in reducing HIV infection among MSM as part of an integrated strategy in which MSM are provided with regular monitoring of HIV status and ongoing risk reduction and medication adherence counseling (20).

Home Testing

An important element of such a comprehensive HIV prevention strategy that includes PrEP is HIV testing. In order to effectively make use of PrEP, the serostatus of potential users needs to be known, as well as the serostatus of their partners. The interaction between the two is related to risk of acquiring HIV infection. Regular testing can therefore target HIV-uninfected individuals who could benefit from PrEP as well as minimize the risk of HIV-infected individuals transmitting the virus. The considerable benefits of regular testing and early diagnosis have been well established, especially among MSM (27). However, many at risk for infection do not seek testing, and many who do test do not return for their results (28). Guidelines recommend that MSM test for HIV at least every year, yet many test infrequently or have never tested at all, especially those less than 25 years of age. As a result, many HIV-positive MSM may be diagnosed late (27). In Brazil, only about 20% of the sexually active population has been tested for HIV, as compared with about half of U.S. citizens 15-44 years of age. In addition, approximately one-third of HIV-infected Brazilians are aware of their status, compared to 75% in the U.S. (7).

Although HIV testing is an important HIV prevention activity, apparent barriers to testing exist among MSM, despite advances in both testing and treatment. New testing options and expanded methods of disease management have not been accompanied by a dramatic rise in testing by high-risk populations (28). Various reasons contribute to the unwillingness of MSM to partake in HIV testing (4, 27, 29). Newer testing alternatives have been developed that aim to increase HIV testing rates, including home HIV test kits. These kits, sold over-the-counter (OTC), enable users to collect a sample for testing without visiting a test site or a clinician's office, offering them convenience and anonymity. In the U.S.,

several alternative HIV tests and collection methods are commercially available: a home HIV-1 test system (Home Access®, Home Access Corporation), an oral mucosal transudate collection kit (OraSure®, OraSure Technologies, Inc.), a rapid HIV-1/2 antibody test using finger-stick whole blood specimens (OraQuick®, OraSure Technologies, Inc.), an HIV-1 urine antibody enzyme immunoassay test (Calypte™ HIV-1 Urine EIA, Calypte Biomedical Corporation), and a rapid, single-use diagnostic system for HIV-1 (SUDS®, Abbott Laboratories) (30, 31).

Whether MSM and other populations at risk for HIV will use at-home HIV test kits remains to be seen. Information on the potential use of kits among MSM may help determine the efficacy of these kits and predict HIV test uptake. A better understanding of the underlying factors that facilitate or impede home HIV test uptake among MSM is therefore needed (28). Increasing our knowledge of these factors can allow us to maximize the potential benefits of home test kits and better anticipate the effect of new HIV testing methods on testing decisions (32).

PUMA

Home testing and PrEP are but two of the several promising HIV prevention strategies that are being evaluated, and it is clear that much research needs to be done for each of these strategies. One intervention will most likely not be adequately effective to function as a complete prevention strategy. It is therefore important to assess which package or combination of interventions such as PrEP and home testing will most effectively reduce HIV incidence among MSM in Brazil. To do this, it is essential to explore individual and community awareness of and attitudes toward preventive technologies prior to any

widespread promotion of them (13).

The Prevention Umbrella for MSM in the Americas (PUMA) project aims to accomplish these objectives by selecting interventions likely to have the greatest impact on high-risk HIV-negative MSM in North and South America (United States, Peru, and Brazil), and then obtaining community input on components of an HIV prevention package in order to build an efficacy trial of a menu-based package (21). Specifically, the objectives of the project are to: determine the best components of a biomedical and behavioral HIV prevention package for MSM and assess its impact on HIV incidence; develop a menu-based prevention package that will optimize adherence and minimize risk compensation; evaluate the safety and efficacy of the package through a randomized controlled clinical trial; and determine the acceptability and feasibility of the proposed package and clinical trial among MSM. During the final stage of the project, a complete package of combined HIV prevention approaches will be available to test in 4,000-5,000 MSM in North and South America (21).

The PUMA project will therefore not only develop an optimal HIV prevention package for MSM in Brazil and the Americas but also design a clinical study to evaluate the safety and efficacy of this combination of interventions (21). In this way, PUMA will evaluate the best methods to combine and deliver a package of interventions that will have the greatest impact on decreasing HIV infection rates among MSM in Brazil. Because the PUMA approach requires participants to choose from a menu of options to tailor a prevention method (i.e. PrEP or home testing) to their individual needs, input from Brazilian MSM communities about the individual strategies and the overall package is critical for the project's success.

Objectives

Accordingly, the purpose of this study was to assess knowledge of and attitudes toward potential HIV prevention strategies, specifically PrEP and home testing, and examine acceptability of and willingness to use these strategies among MSM in Brazil. The study also examined the factors (demographics and risk behaviors) associated with willingness and unwillingness of MSM to utilize these preventive methods. Understanding the demographic and behavioral predictors of willingness to use PrEP and home test kits will help determine whether PrEP and home testing would be adopted by MSM in Brazil, and specify the optimal components of an HIV prevention package for this population.

METHODS

Data Collection

A cross-sectional online survey (Men's Health Survey) was conducted among an Internet-using sample of Brazilian MSM between April 14, 2011 and April 25, 2011. A total of 790 participants were recruited for the survey through banner advertisements placed on Facebook targeted towards men who indicated they were interested in men on their Facebook profile. Once men clicked on the banner advertisement, they were taken to the beginning of the survey. The survey was programmed and administered through SurveyGizmo. Participation in the survey was voluntary, and no financial or material incentives were provided. No personal identifying information or Internet Protocol (IP) address was collected from participants.

Men first answered questions to determine eligibility. Eligibility criteria included being male and at least 18 years of age. Once eligibility was determined, men completed an online informed consent waver. The informed consent was provided electronically in the survey, and participants were given access to a portable document format (PDF) file of the informed consent to print and keep for their own records. Participants were asked to click to agree to the consent. Those who consented were then led to start the survey. Men who indicated never having had sex with a man in their lifetime were skipped to the end of the questionnaire. After the 12-day recruitment period, 683 MSM remained in the sample for analysis.

Measures

Participants were questioned about their demographic information, use of the Internet and other technologies and for what purposes, medication use, recent sexual risk behaviors

(e.g. engaging in anal sex), HIV testing history and test results, sexual partners, knowledge of and interest in using certain HIV prevention interventions (under varying circumstances), specifically PrEP and home test kits, and reasons for unwillingness to utilize these interventions. Demographic information included age, race/ethnicity, education level, state of residence, employment status, health insurance, and sexual orientation. Participants were also asked about specific hypothetical scenarios to examine under which conditions they were more likely to use PrEP and at-home testing.

The primary outcomes measured were likelihood of using PrEP and likelihood of using home test kits. For PrEP, participants were provided with a brief description of pre-exposure prophylaxis and asked to rate the degree to which they were likely to use PrEP for preventing HIV infection: "extremely likely", "very likely", "moderately likely", "slightly likely", or "not likely at all". They were also asked whether they, prior to the survey, had heard of the results of a recent study that showed that PrEP was effective in reducing HIV infection by 44% when taken daily for MSM. Their response served as a measure of awareness of PrEP: "yes" or "no". Strong intention to use PrEP was defined as responding "extremely likely" or "very likely" to the respective question. Due to the purpose of PrEP, men who reported being HIV-positive were excluded from the analysis.

For home testing, willingness to take an anonymous home HIV test was assessed by providing a brief description of the test and then asking participants to describe their likelihood of using a home HIV antibody test kit by rating their degree of agreement with various statements: "strongly agree", "agree", "disagree", or "strongly disagree". Willingness to use home testing was assessed with the following statement: "I would like to use a home HIV test, and would test myself regularly". Respondents were also asked, assuming they

were participating in an HIV prevention program that required frequent testing, whether they would consider performing home testing under various conditions. Their response choices were given as: “definitely would”, “possibly would”, “probably would not”, or “definitely would not”. Because this analysis focused on individuals who are likely to use HIV testing services, men who reported being HIV-positive were excluded.

Statistical Analysis

Data analysis was approved by the Emory University Institutional Review Board. All statistical analyses were conducted using Statistical Analysis Software (SAS) version 9.3 (SAS Institute, Inc., Cary, NC, USA). Before conducting any analysis, the data were checked for any missing or implausible values, which were then corrected or removed. For the descriptive, univariate analysis, socio-demographic and behavioral characteristics of the study population (predictor variables), as well as willingness to use PrEP and home HIV testing (outcome variables), were presented using frequencies and percentages for all variables of interest, all of which were categorical.

Bivariate analysis examined frequencies between each predictor variable and the outcome variables, which were reported as frequencies and percentages. In other words, the distribution of each independent variable by willingness to use PrEP and by likelihood to use home testing was assessed. For analyses of willingness to use PrEP, a three-level outcome was used: “extremely likely” or “very likely”, “moderately likely”, and “slightly likely” or “not likely at all.” For analyses of home testing intentions, the likelihood of utilizing at-home test kits was dichotomized: “strongly agree” and “agree” indicated respondents were likely, and “strongly disagree” and “disagree” signified they were unlikely. In analyzing whether

MSM would consider home testing under various conditions, responses were dichotomized as well: “definitely would” and “possibly would” designated agreement, and “probably would not” or “definitely would not” denoted disagreement. Chi-square tests of independence examined the relationship between overall willingness to use home HIV test kits and the hypothetical situations under which MSM would or would not use home testing.

Bivariate logistic regression analyses examined associations between each predictor variable and each outcome variable, reported as crude odds ratios (OR) with 95% confidence intervals (CI). After verifying the assumptions for regression analyses, logistic regression was used to obtain ORs and CIs, which were calculated versus referent groups. Several variables were included in the analyses because of their known or predicted associations with PrEP attitudes and HIV testing behaviors in MSM. These included age (13, 28, 32), race/ethnicity (18, 28, 32, 33, 34), education (25, 32, 33), anal sex (1, 18, 33), and testing history (32, 34). Estimated logit plots for continuous independent variables of interest (i.e. age) were analyzed to determine whether categorical or dichotomous variables would be more appropriate. Based on this evaluation, age was divided into four groups, which provided the most informative ORs from among several possible categorizations that were examined.

Because responses for each outcome variable were collected as an ordinal variable—using ordered levels of likelihood such as “extremely likely”, “very likely”, etc. for willingness to use PrEP and “strongly agree”, “agree”, etc. for home testing—ordinal logistic regression was used in bivariate and multivariate regression analysis if the proportional odds assumption for conducting ordinal logistic regression was met. The Score test was used to determine whether the assumption was satisfied. When it was not met, data were

dichotomized for both outcomes, and binary logistic regression was used: men who were extremely or very likely to use PrEP were compared with men who were moderately likely, slightly likely, or not likely at all (providing conservative estimates of intentions to use PrEP), and men who strongly agreed or agreed that they would like to use a home HIV test were compared with men who strongly disagreed or disagreed.

Once the associations between the outcome measures and various predictor variables were assessed using bivariate logistic regression, predictors that were significantly associated with each outcome were then considered for inclusion in multivariate models to assess their independent effects on each outcome. Variables with a P-value <0.05 or with at least one categorical level with a P-value <0.05 in the bivariate models were considered statistically significant and included in the initial multivariable model. The socio-demographic characteristics of age, race/ethnicity, and education were also included in the multivariate models, regardless of the results from the bivariate analysis. Multivariate analysis was not conducted for the second outcome, likelihood of using home HIV tests, as determined by the bivariate regression analysis.

For the first outcome, likelihood of PrEP use, multivariable logistic regression analysis was used to calculate adjusted odds ratios (aOR) and 95% CIs. Interaction assessment was conducted using a likelihood ratio test to compare the initial model, which contained all significant variables from the bivariate regression analysis as well as the control variables of age, race/ethnicity, and education, with a model containing all possible interactions between these variables. Significant interaction among the variables was indicated. Backward elimination was then used to remove statistically non-significant variables and determine which variables were significantly associated with the outcome, leading to a final model. The

final model controlled for age, race/ethnicity, and education, regardless of their significance in the previous models.

Potential interactions and possible confounding effects among the predictor variables were also explored in the final model for likelihood of using PrEP. Predictor variables that remained in the model after backward elimination were considered for two-way interactions between variables. Meaningful confounding of retained covariates was defined as having ≥10% change in the adjusted ORs. In addition, because there were multiple indicators of willingness to use PrEP, multicollinearity among these variables was assessed. Collinearity diagnostics were conducted using a SAS macro (obtained from David Kleinbaum, Emory University, Atlanta, GA), using a condition index (CNI) of greater than 30 as an indication of collinearity. The predictors in the final model were therefore identified through modeling that satisfied both parsimony and goodness of fit, and adjusted for the socio-demographic characteristics of age, race/ethnicity, and education.

RESULTS

Demographics, Behavioral Characteristics, and Attitudes Toward PrEP and Home Testing

Of the 790 participants who began the survey, 754 were eligible to be included in the study population: the others were ineligible due to non-male gender, age <18 years, and never having sex. For bivariate and multivariate analysis, 683 were included: those who did not consent, did not complete the survey, or were HIV-positive were excluded. Table 1 summarizes the demographic and behavioral characteristics of the MSM included in the analyses, as well as their attitudes toward the HIV prevention strategies of interest, PrEP and home testing. Most respondents were less than 30 years of age; the mean was 28 years. A majority also classified their race/ethnicity as Branco (56%) or Pardo (23%). Participants were well educated overall, with 64% having at least some college. Most were employed (69%) and had health insurance of some kind (82%). Respondents resided in various states in Brazil, but the regions most represented were São Paulo (41%) and Rio de Janeiro (14%) (data not shown in table).

A large majority of the study population identified themselves as homosexual (84%). Of those who responded whether or not they ever had anal sex, 88% said yes. A similar proportion (85%) disclosed that they engaged in anal sex in the past 12 months, and 49% replied that they had anal sex within the last week. Of the 316 men who knew the HIV status of their last partner, 90% said it was HIV-negative. Most MSM who responded whether they had ever been tested for HIV had been (71%); 80% had a negative HIV result. A minority were tested within the past 12 months (29%). Many of these men (55%) were tested at a medical doctor's office or center for HIV counseling and testing (data not shown in table). Fewer MSM tested on a regular basis (45%) than those who did not. Yet most strongly agreed

(63%) or agreed (27%) that they would be likely to use at-home HIV test kits and would test regularly.

Of participants who answered questions about PrEP and the results of the PrEP trials, considerably more men had not heard of PrEP (78%) than those who had (22%). Most MSM were not currently taking any medication (63%). Yet 68% stated that they would be extremely likely or very likely to take PrEP, while 16% were moderately likely and only 16% were slightly likely or not likely at all. In addition, 77% agreed that the pills used for PrEP should be made available.

Predictors of Likelihood of PrEP Use

Table 2 shows results from the bivariate and multivariate analyses of factors associated with willingness to use PrEP for HIV prevention, reported by crude and adjusted odds ratios for factors included in the logistic regression models. In the bivariate analysis, the proportional odds assumption was met in most cases. It was not satisfied for the following predictors: sexual orientation, having anal sex ever, and awareness of PrEP. Significant predictors of probable PrEP use included having anal sex recently (last week) (OR = 1.7, 95% CI: 1.2-2.3, P = 0.0012) and having previously heard of PrEP (OR = 1.7, 95% CI: 1.04-2.6, P = 0.03). Both of these factors were therefore related to being more likely to use PrEP. Likelihood of PrEP use was not significantly associated with other socio-demographic and behavioral characteristics including age, race/ethnicity, educational level, employment status, sexual orientation, and testing history. Although the differences in the distribution of age, race/ethnicity, and education by willingness to use PrEP were not significant, these variables were retained in multivariate models because they are known to be associated with the

outcome.

For multivariate analysis, the proportional odds assumption was not met using the five-level or three-level categorization of the outcome, so binary logistic regression was used. Interaction assessment indicated that significant interaction among the variables in the models existed ($P < 0.05$). It was determined that this interaction was between age and PrEP awareness. Meaningful confounding of retained covariates was not indicated. At the end of the modeling process, the predictors found to be significant were: recent anal sex and awareness of PrEP. The final multivariate model therefore included: recent anal sex and awareness of PrEP (predictor variables); age, race/ethnicity, and education (control variables); and interaction between age and PrEP awareness (interaction variable). No collinearity was detected in this model.

In the multivariate model examining the association between the set of significant bivariate predictors and reported likelihood of PrEP use, adjusting for age, race/ethnicity, and education, the significant predictors of probable future PrEP use were the same as in the bivariate analysis: having recent anal sex and having heard of PrEP. The OR associated with recent anal sex (OR = 3.1, 95% CI: 1.1-8.3, P = 0.03) was nearly twice as large in the multivariable analysis. Recent anal sex was therefore still related to increased likelihood of using PrEP, only to a greater degree. Based on the interaction between age and awareness of PrEP, MSM who had heard of PrEP were more likely to express willingness to use it compared with MSM who had not heard of it for all age groups, except those age 18-24 (OR = 0.7, 95% CI: 0.4-1.4). The odds increased with age: the highest odds of willingness to use PrEP were for MSM ≥40 (OR = 6.7, 95% CI: 1.3-34.5), followed by MSM age 30-39 (OR = 3.7, 95% CI: 1.2-11.6), and MSM age 25-29 (OR = 2.5, 95% CI: 0.8-8.2). The unadjusted

odds ratios for the interaction revealed a similar trend. As in the bivariate models, age, race/ethnicity, and education were not significantly associated with willingness to use PrEP.

Predictors of Likelihood of Home HIV Test Use

Results from bivariate analyses of factors associated with willingness to take a home HIV test and testing regularly are shown in Table 3, reported as odds ratios and 95% confidence intervals. Ordinal logistic regression was not used for this outcome because the proportional odds assumption was violated. The outcome measure was therefore dichotomized into likely and not likely. The only statistically significant predictor of probable home test use was age (P = 0.04), so multivariate analysis was not conducted for this outcome. Compared to MSM age 18-24, those age 25-29 had decreased odds of being willing to take such a test (OR = 0.3, 95% CI: 0.1-0.7), as did men age 30-39 (OR = 0.4, 95% CI: 0.1-0.95). Likelihood of home test use was not significantly associated with other socio-demographic and behavioral characteristics such as race/ethnicity, education, employment status, sexual orientation, recent anal sex, and testing history. However, for several factors, including sexual orientation, ever being tested for HIV, and time since most recent HIV test, missing values decreased the sample size and resulted in statistics that could not be accurately calculated.

Table 4 shows participant willingness to use home HIV test kits under certain hypothetical situations. Overall, MSM reported high willingness to use at-home testing under prescribed conditions ($P < 0.05$ for all scenarios). For example, 93% of men reported that they would like to use a home HIV test if they had a sexual encounter that made them think they could have become infected, and 84% stated they would like to use a home HIV test if

the cost was substantially lower than the cost of getting tested by a medical provider. In addition, 71% disagreed with the statement that they would not like to use a home HIV test because they would be concerned that they might not fully understand the results, and 79% disagreed that they would not use a home HIV test because they would be concerned about getting a positive test result while alone. However, there were scenarios in which agreement and disagreement among MSM were more comparable: 45% would not use at-home tests because they were concerned that they would not be as accurate as those in a health care facility, and 43% would not use them because they preferred the counseling that would be provided by a professional.

DISCUSSION

In this study, the likelihood of using PrEP and home HIV testing methods to prevent HIV transmission, as well as potential demographic and behavioral correlates of these prevention measures, were examined among Internet-using MSM in Brazil. A large majority (over 80%) were at least moderately likely to take PrEP or use home HIV test kits. These results indicate that such prevention methods would be adopted by MSM in Brazil and may be effectively utilized in efforts to reduce HIV infection among this group, or at least be acceptable measures that can be evaluated once MSM have adopted them. Although factors such as race/ethnicity, education, and testing history were not associated with willingness of MSM to use these methods, significant correlates were found: previous knowledge of PrEP and recent anal sex were related to increased likelihood of PrEP use, and age was associated with likelihood of at-home test use. This suggests that certain groups of men are more likely to agree to use these preventive methods and can be targeted in HIV prevention initiatives.

PrEP

Assuming that PrEP was at least 44% effective in preventing HIV transmission, approximately two-thirds of MSM reported that they would be very likely to use PrEP if it were to become available. Those who said they would be likely did not differ from those who were not likely for most demographic and behavioral factors. This high willingness to take PrEP was demonstrated in other studies as well. For example, Liu et al. found that approximately two-thirds of gay/bisexual men would be willing to take a daily ARV if it were proven safe and effective (19). Golub et al. had similar findings, only the high-risk MSM in their sample reported likeliness to use PrEP if it were at least 80% effective (18).

As expected, MSM who had previously heard of PrEP were more likely to use it compared to those who were unaware of PrEP. In other words, awareness of PrEP was associated with increased willingness to use it. This association has not been determined in previous studies. Although only a fraction (22%) of men had heard of PrEP, a majority reported strong likelihood of using it, and those who had heard of it were 65% more likely to consider its use than those who had no prior knowledge. This likelihood of PrEP use among MSM who were aware of PrEP also appeared to increase with age. Previous studies have not found any such association with age, although one found that men older than 35 years were less likely to report future PrEP use (19). The association found in the current study may be explained by the sample size, which was smaller for older age groups, creating bias away from the null and overestimating the odds ratios among these groups. In addition, as age increased, a larger proportion of men had previous knowledge of PrEP within each group, which may have played a role in the interaction between PrEP awareness and age. Whether the association between these factors and the outcome was a result of the sample size or the fact that older men are indeed more knowledgeable about PrEP is unclear.

The relatively low level of PrEP awareness among participants in this study was consistent with similarly low levels of knowledge in other studies (14, 18, 19, 22, 25), although it should be noted that some of these studies were conducted during the earlier stages of PrEP research. However, as corroborated by other findings, the potential for uptake of PrEP seemed feasible despite the unfamiliarity of MSM with this prevention method. In a study by Mimiaga et al., many MSM (74%) expressed an interest in using PrEP after learning about its potential. In fact, those with lower educational achievement and with a lack of knowledge about PrEP were more open to using it once they had information suggesting its

potential effectiveness (25).

These results are important in that they indicate MSM in Brazil have little experience with PrEP, but have considerable interest in using it when informed about it. The findings emphasize the need to educate MSM about PrEP in order to increase awareness and consequently enhance their acceptability and uptake of this prevention method. However, care must be taken in communicating information about PrEP to MSM and other at-risk populations to ensure correct and appropriate PrEP knowledge and use. One study found that 35% of MSM who had heard of PrEP reported that their source of information was the media or friends (25), suggesting that careful, accurate, and up-to-date reporting is needed to optimize proper use and understanding among MSM. In addition, because demographic factors such as race/ethnicity and education were not found to be associated with likelihood of PrEP use, educational messages should be customized to present information on PrEP in a manner that is easily accessible for MSM of diverse backgrounds. These results will be useful for those who have the opportunity to shape the way in which PrEP is initially described to high-risk populations as interventions to increase awareness and acceptability of PrEP are being implemented.

The other factor that was associated with willingness to use PrEP was having anal sex within the last week. MSM who reported recent anal sex were more likely to indicate that they would use PrEP compared with their lower risk counterparts. Similar findings have been established in other research: Liu et al. determined that men practicing risky behaviors such as unprotected anal intercourse (UAI) were more likely to both know about PrEP and anticipate using it if it were safe and effective (19). In an Australian study, willingness to participate in PrEP trials was higher among those who reported UAI with HIV-positive

partners (13). It should be noted that these studies specifically examined unprotected anal sex, whereas the current study broadly investigated anal sex (the Men's Health Survey did not distinguish between the two in the data analyzed for this study). However, it can be assumed that MSM who recently had anal sex most likely engage in this activity frequently and are at higher risk than those who do not practice anal sex as often. These findings therefore suggest that higher risk MSM are more willing to use PrEP and would be a suitable target population for PrEP use.

However, concerns have been raised that widespread availability of PrEP could lead to increased risky behaviors due to unrealistic feelings of protection against HIV infection among users and to substitution of traditional risk reduction approaches—a phenomenon known as behavioral disinhibition and risk compensation (17, 18, 22, 25). According to these models, PrEP use may result in lower perceptions of risk and diminished motivations to engage in risk reduction strategies such as condom use (12, 35). Although the current study did not examine this, Golub et al. observed that 36% of participants reported they would be likely to decrease condom use while on PrEP. They also found that the most important correlates of PrEP use intentions were arousal barriers to condom use and risk perception motivations for condom use (18). Such increases in high-risk behavior may undermine the beneficial effect PrEP may have in reducing HIV transmission. However, the results of another study revealed that MSM in Brazil still reported high prevalence of condom use after antiretroviral therapy became widely available (10), which is encouraging. Past studies have also shown that risk reduction counseling combined with PrEP decreases high-risk behavior (18, 35). This accentuates the importance of combining PrEP with other interventions, including home HIV testing, that target factors most relevant to high-risk groups such as

MSM.

Home Testing

Of MSM in this study who responded to questions about their likelihood to use a home HIV antibody test kit, a great majority (90%) agreed that they would be likely to use home HIV testing and would test regularly. This high willingness to use at-home tests has been illustrated in other research as well. In an MSM study by Sharma et al., only one-fifth of the total study population was not willing to take a free anonymous home HIV test (34). Spielberg et al. found that most participants were more willing to test for HIV in general if offered a rapid HIV test with same-day results, an oral fluid test, a urine-based assay, a home specimen collection kit, or a home self-test, rather than traditional serum testing (28). Another study observed that, compared with MSM who have never tested for HIV (NTMSM) and who were unlikely to test in the next year, proportionally more NTMSM who were likely to test reported strong intentions to use an over-the-counter rapid test if it were available (27). It was also found in stratified analysis that no socio-demographic or risk variables were consistently associated with strong intentions to use a rapid test across intentions to test in the upcoming year (27).

Similarly, in the current study, MSM who were willing to use home HIV tests did not differ from those who were not likely for nearly all demographic and behavioral factors, with the exception of age: men age 25 and older had decreased odds of being willing to take such a test compared to younger men. This association has not been found in other studies, and may be a result of differences in risk behaviors between age groups. Younger men (age 18-24) may be more likely to engage in behaviors such as unprotected anal sex that would

increase their risk of HIV infection, and thus increase their willingness to test for HIV via home testing. Apart from age, it was expected that other (behavioral) factors would be correlated with likelihood of at-home test use, particularly sexual risk behaviors and testing history. A history of risk exposure has been demonstrated to play a significant role in decisions to seek HIV testing among MSM (28). For example, engaging in UAI with a male partner in the past 12 months has been associated with increased willingness to test (34). Other findings illustrated that HIV testing levels were highest in men who reported having UAI in the past 6 months (36). Such conclusions were not found in the current study.

This investigation also was not able to examine previous knowledge of home HIV test kits among MSM, as was done for PrEP (the survey did not include any questions regarding awareness of these kits). However, data from other research on this predictor do exist. In most of these studies, overall awareness (and use) of these tests were limited (28), with only about half of participants having some knowledge of kits or alternative test modalities prior to the survey (30, 32). Knowledge of kits was lower among participants who have not been tested, have low income and less education, and who are of color, indicating that a significant proportion of groups increasingly at risk for HIV infection are unaware of kits as a testing option (32). These previous studies, however, were conducted nearly ten years ago; current awareness of alternative testing methods has most likely changed since then and should be explored.

A number of internal and external factors that determine likelihood of using home HIV testing under different circumstances were also identified in this study. The majority of MSM would like to use a home HIV test if they had a sexual encounter that made them think they could have become infected and if the cost was lower than getting tested by a medical

provider. MSM were also likely to use home testing because it would offer them more privacy than being tested in a health care facility and because they would use it to test their partners. Thus, higher risk perceptions, lower cost, privacy, and ability to test others were factors that would motivate MSM to utilize home test kits. In other studies, main reasons for using alternative HIV testing methods were similar (28, 30, 37). In addition to privacy, convenience and quicker results were also frequently reported reasons among MSM. Spielberg et al. observed that clients were more positive about home self-test kits than home specimen collection kits because of the increased anonymity and rapid results that self-test kits provide. In fact, among MSM, having an anonymous testing option was the most important factor to facilitate testing in general (28).

Conditions under which MSM would not be willing to use home HIV testing were also examined. A large majority of respondents appeared to not be concerned about a possible inability to fully understand the results, getting an HIV-positive result while being alone, or the possibility that their partners might not want to have sex with them after they suggest testing. The lack of concern about testing positive contradicts other findings indicating that fear of receiving a positive result and its consequences is an important barrier to HIV testing (4, 27, 28, 34, 38). However, many MSM (though not a majority) stated that they would not like to use a home HIV test out of concern over its accuracy, and also because they would prefer the counseling provided by a professional. Both apprehension regarding accuracy and preference for counseling are corroborated in other studies (30, 32). Uncertainty about accuracy was the most common reason for unwillingness to take a home test in an investigation by Sharma et al. (34). This was consistent with results from the HIV Testing Survey (HITS) asking MSM and other high-risk groups about reasons for not using home

collection kits, which also found that respondents desired “face-to-face counseling” (30).

Through information as provided in this study on the willingness of MSM to utilize at-home HIV testing, targeted test promotion efforts can be made to increase knowledge and uptake of these new methods of HIV testing, which is a cornerstone of HIV prevention. It has been shown that alternative HIV test approaches have the potential to be highly accepted among MSM in Brazil, across many different subgroups. Most men did not express any reservations that would prevent them from utilizing these tests and seemed to favor using them under certain conditions. The few concerns that some men did have can be addressed relatively easily. For instance, uncertainties about accuracy can be assuaged by educating MSM on the evidence-based reliability of home test kits. It has been demonstrated that, although collection methods and specimens used vary, the standard blood draw test, home collection kit, oral test, and rapid test all have a sensitivity and specificity greater than 99% (30). The concern among MSM is therefore most likely attributable to lack of knowledge about home testing performance, indicating a need for increased education. However, interventions that clarify accuracy may not be sufficient, as men also preferred the in-person counseling provided by traditional testing programs. Therefore, interventions may only be effective when coupled with counseling options and other available testing services.

Such interventions can have a significant impact in Brazil, especially considering the current efforts of the Ministry of Health’s National HIV/AIDS, STI and Viral Hepatitis Department (DN). One of the main priorities of its new National Plan to Combat STDs and the AIDS Epidemic among high-risk populations is to expand HIV counseling and testing services (5). In collaboration with USAID/Brazil, the Ministry is encouraging MSM and other high-risk groups to seek testing and is expanding its strategies by offering alternative

rapid testing and counseling options. It has also developed innovative approaches in reaching out to its target population through the use of novel information and communication technologies (5). The effectiveness of these prevention efforts remains to be seen, yet thus far they have shown promise.

Combination Prevention

Although widespread adoption of either PrEP or home HIV testing among MSM would likely have a significant impact in reducing HIV transmission, these two strategies are complementary and their effect would be magnified if combined in an HIV prevention package. The most effective means to control the HIV epidemic, not only among MSM in Brazil but among many at-risk populations worldwide, will most likely utilize a combination of biomedical, behavioral, and structural approaches. Determining which interventions should be part of this package is therefore a key step in developing an optimal HIV prevention package, which is one of the goals of the PUMA project. PrEP and home test kits are only two of the possible options that can be included in this multicomponent package.

PrEP in particular needs to be used in conjunction with existing preventive strategies rather than replacing them. It is important to remember that PrEP was shown to be only partially effective, and therefore should be delivered as part of a comprehensive toolkit of prevention services (1). One must also consider adherence, adverse effects, behavioral disinhibition/risk compensation, and serostatus/seroconversion, indicating that PrEP should be accompanied by monitoring of adherence and risk behaviors, safety screening, and HIV testing. For the latter, home testing may be effectively used. This complementary association between PrEP and home testing can also be utilized to increase awareness and knowledge of

these methods: individuals who are using PrEP can be educated about home test kits, and those who get tested can be informed about PrEP. In fact, one study found that having been tested for HIV was associated with a greater likelihood of being aware of PrEP (26). The counseling and HIV prevention education that should supplement HIV testing can be used as an opportunity to inform MSM of these alternative options.

Limitations

The findings of this analysis are subject to several important limitations. First, the results may not be generalizable to all Internet-using MSM or to the general MSM population in Brazil. Participants were self-selected and therefore may be more interested in participating in HIV prevention interventions than the general MSM population. Any recruitment bias cannot be assessed because the number and characteristics of MSM who observed banner advertisements and who decided not to participate are unknown. Because the survey was restricted to an Internet-based sample, the findings may not be generalizable to non-Internet-using MSM as well.

Second, the study relied on self-reported data, which can lead to misclassification bias as the reported information from participants cannot be verified. The sensitive nature of some of the questions may have caused participants to inaccurately disclose their risk behaviors or HIV status, resulting in possible misclassification of individuals to a lower-level risk group. However, given that the survey did not have any incentives and was self-administered online (as opposed to in person or over the phone), false reporting is likely to be minimal. Misclassification could have also occurred through recall bias, as respondents were required to answer many questions based on memory. It is difficult to predict any resulting bias from

these sources.

Third, because an anonymous Internet-based survey was used, individuals may have participated more than once, resulting in duplicate entries from the same user. It was not possible to use cookies or IP addresses to identify such duplicate entries. However, repeat participation was most likely uncommon considering participants were not provided incentives for their time. In addition, they only entered the survey by clicking on the banner advertisement displayed on their Facebook page, and the probability of this banner being displayed more than once was low. Moreover, multiple surveys could not be taken from the same IP address, so participants could not take the survey more than once unless they changed their IP address or completed the survey from another computer. The short 12-day period of recruitment most likely also prevented repeat participation.

Fourth, because the survey was cross-sectional, identified correlates of intentions to use PrEP or home testing may not be causal. In addition, it is possible that reported willingness might overestimate actual behavior, especially as the survey did not include information such as the cost of PrEP or home test kits, which might have influenced participants' responses. Furthermore, much of the data in the study represents responses to hypothetical scenarios and may not generalize to actual behavior, and also cannot be used to draw conclusions about causal relationships. Furthermore, it is important to note that intentions do not always translate into actions. For instance, cross-sectional surveys conducted during the period when home collection kits were being introduced and when they were widely available showed that although 19% of respondents intended to use home collection kits, only 1% reported actual use (32). Although a high willingness to use PrEP and home HIV testing may not guarantee increased uptake of these methods, analyses that evaluate intent to use in the future is

supported by the Theory of Reasoned Action/Planned Behavior (25). This theory has demonstrated that intentions are a proximal predictor of health behavior, and has been validated among diverse populations, including MSM (25).

Future Directions

Despite the above limitations, the current study has provided a deeper understanding of the knowledge and attitudes that MSM in Brazil have towards alternative HIV prevention strategies, particularly PrEP and at-home HIV testing. This analysis has not only expanded previous knowledge on these subjects but has also provided an examination that is current, which is much needed considering that these strategies are relatively new and in the early stages of implementation. These findings will also be useful in determining the best components of a biomedical and behavioral HIV prevention package for MSM. However, much remains to be done. Future interventions should include accurate information about PrEP and home testing tailored to MSM. Efforts should examine how to maximize the effectiveness of PrEP and home testing, which involves combination with other interventions to efficiently reduce HIV incidence in MSM and other at-risk populations. Once this optimal HIV prevention package is developed, its impact on HIV incidence among MSM needs to be assessed. Then the safety and efficacy of the package must be evaluated through clinical trials. The acceptability and feasibility of the proposed package and clinical trial should be evaluated as well.

A considerable amount of quantitative and qualitative research still needs to be conducted on PrEP. Studies are currently underway examining its safety and efficacy in diverse populations of MSM worldwide. Once the safety and efficacy of PrEP is determined,

it can be considered for use by other high-risk groups, including serodiscordant couples, sex workers, and injection drug users. Future investigations will also need to focus on the impact of PrEP on sexual risk perception and behavior, and should emphasize the development of interventions to not only minimize risk compensation but also maximize medication adherence. Monitoring of possible negative effects of PrEP will also be required, including adverse drug reactions and antiretroviral resistance. Intermittent antiretroviral pre-exposure prophylaxis (iPrEP) can be explored as well, in which MSM take doses of chemoprophylaxis at varying time intervals prior to sexual activity rather than daily, which may reduce costs, decrease pill burden, and reduce toxicity and side effects (3).

Once proof of PrEP safety and efficacy has been established, the deliverability of PrEP needs to be assessed. With its potential benefits come challenges to its implementation, adoption, and sustainability. Efforts can be focused on maximizing the cost-effectiveness of PrEP, which includes analysis of market acceptability of PrEP in various target populations. An assessment of the resources necessary for optimal delivery of PrEP is also needed—human, infrastructure, and financial (16). The design of this research should begin while clinical trials are in progress in order to understand the challenges and opportunities of PrEP and create strategies with the highest probability of success. In addition, local and regional considerations, including social and cultural attitudes and customs, should be considered when determining deliverability to each target population (16).

After PrEP and home HIV test kits become widely available, research can be conducted on predictors of actual use of these strategies instead of likelihood of use. Additional research is needed specifically on the features of these products that may enhance uptake among MSM. Efforts should also concentrate on developing the best modalities for expanding

knowledge of PrEP and home testing and promoting appropriate use of these methods among MSM. Exploring new technologies to disseminate such information and prevention interventions is another area that merits further research. Such a comprehensive evaluation of PrEP and at-home HIV testing will allow an objective measure of the benefits of these new alternative approaches to reduce HIV transmission among MSM and other high-risk populations.

Conclusion

The findings presented in this study demonstrate that MSM in Brazil, a group at high risk for HIV infection, would be willing to use PrEP and home HIV testing as alternative methods of HIV prevention. PrEP is an emerging biomedical intervention that has the potential to substantially reduce the risk of HIV infection among MSM and other high-risk individuals. Home HIV test kits are an advancement of an established strategy for prevention and early treatment: HIV testing. It is essential to examine willingness to utilize these prevention strategies, as well as associated factors, among MSM in relation to their attitudes and behaviors in order to design more effective interventions that incorporate promising new prevention technologies. Before these technologies can be used, increased awareness and acceptability of them among MSM must occur. These methods also need to be combined with other preventive interventions in order to maximize their impact. Biomedical or behavioral approaches alone have not been able to control the HIV/AIDS epidemic; both need to be included in primary prevention.

As the data in this analysis suggest, it may be acceptable to include PrEP and home HIV testing as part of such preventive strategies. If these alternative methods are promoted and

adapted well, they could significantly reduce HIV transmission among MSM in Brazil. With its concentrated epidemic, Brazil would be a suitable site to evaluate the implementation of these new prevention technologies. Such strategies are needed as HIV remains prevalent and continues to spread among MSM and other at-risk groups at concerning rates, despite Brazil's significant progress in controlling its transmission. This ongoing epidemic suggests a need to assess which interventions are effective and which are not, and to use this information to develop an optimal, tailored prevention package consisting of a combination of interventions. Such novel, holistic approaches may finally halt the unmitigated spread of HIV not only among MSM in Brazil but other high-risk populations worldwide.

REFERENCES

1. Naswa S, Marfatia Y. Pre-exposure prophylaxis of HIV. *Indian J Sexual Transm Dis AIDS*. 2011;32(1):1–8.
2. Stall R, Duran L, Wisniewski SR, et al. Running in place: implications of HIV incidence estimates among urban men who have sex with men in the United States and other industrialized countries. *AIDS Behav*. 2009;13(4):615–629.
3. van Griensven F, Thienkrua W, Sukwicha W, et al. Sex frequency and sex planning among men who have sex with men in Bangkok, Thailand: implications for pre- and post-exposure prophylaxis against HIV infection. *J Int AIDS Soc*. 2010;13(1):13.
4. Blas MM, Alva IE, Cabello R, et al. Risk behaviors and reasons for not getting tested for HIV among men who have sex with men: an online survey in Peru. *PLoS One*. 2011;6(11):e27334.
5. USAID. USAID Brazil HIV/AIDS Health Profile. 2010. (http://www.usaid.gov/our_work/global_health/aids/Countries/lac/brazil.pdf).
6. Nunn AS, da Fonseca EM, Bastos FI, et al. AIDS treatment in Brazil: impacts and challenges. *Health Aff (Millwood)*. 2009;28(4):1103–1113.
7. Okie S. Fighting HIV—lessons from Brazil. *N Engl J Med*. 2006;354(19):1977–1981.
8. Gondim RC, Kerr LR, Werneck GL, et al. Risky sexual practices among men who have sex with men in Northeast Brazil: results from four sequential surveys. *Cad Saude Publica*. 2009;25(6):1390–1398.
9. Kerr-Pontes LR, Gondim R, Mota RS, et al. Self-reported sexual behaviour and HIV risk taking among men who have sex with men in Fortaleza, Brazil. *AIDS*. 1999;13(6):709–717.

10. Bacon O, Pecoraro ML, Galvão J, et al. HIV/AIDS in Brazil. Country AIDS Policy Analysis Project. University of California San Francisco: AIDS Policy Research Center; 2004. 1–73. (http://ari.ucsf.edu/programs/policy/countries/Brazil.pdf).
11. Berkman A, Garcia J, Muñoz-Laboy M, et al. A critical analysis of the Brazilian response to HIV/AIDS: lessons learned for controlling and mitigating the epidemic in developing countries. *Am J Public Health*. 2005;95(7):1162–1172.
12. Galea JT, Kinsler JJ, Salazar X, et al. Acceptability of pre-exposure prophylaxis as an HIV prevention strategy: barriers and facilitators to pre-exposure prophylaxis uptake among at risk Peruvian populations. *Int J STD AIDS*. 2011;22(5):256–262.
13. Poynten IM, Jin F, Prestage GP, et al. Attitudes towards new HIV biomedical prevention technologies among a cohort of HIV-negative gay men in Sydney, Australia. *HIV Med*. 2010;11(4):282–288.
14. Nodin N, Carballo-Diéguez A, Ventuneac AM, et al. Knowledge and acceptability of alternative HIV prevention bio-medical products among MSM who bareback. *AIDS Care*. 2008;20(1):106–115.
15. Underhill K, Operario D, Skeer M, et al. Packaging PrEP to prevent HIV: an integrated framework to plan for pre-exposure prophylaxis implementation in clinical practice. *JAIDS*. 2010;55(1):8–13.
16. Kim S, Becker S, Dieffenbach C, et al. Planning for pre-exposure prophylaxis to prevent HIV transmission: challenges and opportunities. *J Int AIDS Soc*. 2010;13(1):24.
17. Vissers DC, Voeten HA, Nagelkerke NJ, et al. The impact of pre-exposure prophylaxis (PrEP) on HIV epidemics in Africa and India: a simulation study. *PLoS ONE*. 2008;3(5):e2077.

18. Golub SA, Kowalczyk W, Weinberger CL, et al. Preexposure prophylaxis and predicted condom use among high-risk men who have sex with men. *JAIDS*. 2010;54(5):548–555.
19. Liu AY, Kittredge PV, Vittinghoff E, et al. Limited knowledge and use of HIV post- and pre-exposure prophylaxis among gay and bisexual men. *JAIDS*. 2008;47(2):241–247.
20. Centers for Disease Control and Prevention. Interim guidance: preexposure prophylaxis for the prevention of HIV infection in men who have sex with men. *J Am Med Assoc*. 2011;305(11):1089–1091.
21. Buchbinder S, Liu A. Pre-exposure prophylaxis and the promise of combination prevention approaches. *AIDS Behav*. 2011;15:72–79.
22. Brooks RA, Kaplan RL, Lieber E, et al. Motivators, concerns, and barriers to adoption of preexposure prophylaxis for HIV prevention among gay and bisexual men in HIV-serodiscordant male relationships. *AIDS Care*. 2011;23(9):1136–1145.
23. Grant RM, Lama JR, Anderson PL, et al. Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. *N Engl J Med*. 2010;363(27):2587–2599.
24. Underhill K, Operario D, Mimiaga MJ, et al. Implementation science of pre-exposure prophylaxis: preparing for public use. *Curr HIV/AIDS Rep*. 2010;7(4):210–219.
25. Mimiaga MJ, Case P, Johnson CV, et al. Preexposure antiretroviral prophylaxis attitudes in high-risk Boston area men who report having sex with men: limited knowledge and experience but potential for increased utilization after education. *JAIDS*. 2009;50(1):77–83.
26. Mehta SA, Silvera R, Bernstein K, et al. Awareness of postexposure HIV prophylaxis in high-risk men who have sex with men in New York City. *Sex Transm Infect*. 2011;87: 344–348.

27. MacKellar DA, Hou SI, Whalen CC, et al. Reasons for not HIV testing, testing intentions, and potential use of an over-the-counter rapid HIV test in an internet sample of men who have sex with men who have never tested for HIV. *Sex Transm Dis*. 2011;38(5):419–428.
28. Spielberg F, Kurth A, Gorbach PM, et al. Moving from apprehension to action: HIV counseling and testing preferences in three at-risk populations. *AIDS Educ Prev*. 2001;13(6):524–540.
29. Centers for Disease Control and Prevention. Human Immunodeficiency Virus (HIV) risk, prevention, and testing behaviors—United States, national HIV behavioral surveillance system: men who have sex with men, November 2003–April 2005. *MMWR*. 2006;55(SS-6):1–16.
30. Greensides DR, Berkelman R, Lansky A, et al. Alternative HIV testing methods among populations at high risk for HIV infection. *Public Health Rep*. 2003;118(6):531–539.
31. Ventuneac A, Carballo-Diéguez A, Leu CS, et al. Use of a rapid HIV home test to screen sexual partners: an evaluation of its possible use and relative risk. *AIDS Behav*. 2009;13(4):731–737.
32. Colfax GN, Lehman JS, Bindman AB, et al. What happened to home HIV test collection kits? Intent to use kits, actual use, and barriers to use among persons at risk for HIV infection. *AIDS Care*. 2002;14(5):675–682.
33. Hooper S, Rosser BR, Horvath KJ, et al. An online needs assessment of a virtual community: what men who use the internet to seek sex with men want in Internet-based HIV prevention. *AIDS Behav*. 2008;12(6):867–875.
34. Sharma A, Sullivan PS, Khosropour CM. Willingness to take a free anonymous home

HIV test and associated factors among Internet-using men who have sex with men. *J Int Assoc Physicians AIDS Care (Chic)*. 2011;10(6):357–364.

35. Guest G, Shattuck D, Johnson L, et al. Changes in sexual risk behavior among participants in a PrEP HIV prevention trial. *Sex Transm Dis*. 2008;35(12):1002–1008.
36. Jin FY, Prestage G, Law MG, et al. Predictors of recent HIV testing in homosexual men in Australia. *HIV Medicine*. 2002;3:271–276.
37. Spielberg F, Critchlow C, Vittinghoff E, et al. Home collection for frequent HIV testing: acceptability of oral fluids, dried blood spots and telephone results. *AIDS*. 2000;14:1819–1828.
38. Stephenson R, Sullivan PS, Salazar L, et al. Attitudes towards couples-based HIV testing among MSM in three US cities. *AIDS Behav*. 2011;15:S80–S87.

TABLES

Table 1. Demographic and behavioral characteristics of 790* men who have sex with men (MSM) who participated in the online PUMA survey, Brazil, April 2011.

Characteristic	n	%
Age (years)†		
<18	26	3
18-24	349	44
25-29	137	17
30-39	168	21
≥40	110	14
Race/ethnicity		
Branco	422	56
Preto	51	7
Amarelo	11	2
Pardo	173	23
Indígena	5	1
Multiracial	70	9
Other	15	2
Education		
College, post graduate, or professional school	222	30
Some college, Associate's degree, and/or technical school	256	34
High school or GED	213	28
Less than high school or GED	66	9
Employment		
Yes	515	69
No	232	31
Health insurance		
Plano de saúde particular	317	42
SUS	252	34
Other	49	7
None	127	17
Sexual orientation		
Homosexual	636	84
Heterosexual	79	11
Bisexual	23	3
Unsure	10	1
Other	6	1
Anal sex ever		
Yes	60	88
No	8	12
Anal sex in past 12 months		
Yes	240	85
No	47	15
Anal sex last week		
Yes	305	49
No	320	51

Table 1, continued

Characteristic	n	%
HIV status of last partner		
HIV-negative	285	90
HIV-positive	31	10
Ever HIV tested		
Yes	444	71
No	170	27
HIV test result‡		
Negative	355	80
Positive	72	17
Unknown	8	2
Time since most recent HIV test		
Within past 6 months	26	5
Within past 7-12 months	117	24
More than 12 months ago	185	37
Never tested	170	34
Tested on regular basis		
True	166	45
False	202	55
Awareness of PrEP		
Yes	120	22
No	432	78
Currently taking medication		
Yes	232	37
No	392	63
Agree if pills should be available		
Yes	418	77
No	128	23
Likely to take PrEP		
Extremely likely	244	44
Very likely	127	23
Moderately likely	90	16
Slightly likely	52	10
Not likely at all	36	7
Likely to use home HIV test and would test regularly		
Strongly agree	224	63
Agree	95	27
Disagree	22	6
Strongly disagree	15	4

PUMA: Prevention Umbrella for MSM in the Americas

* Numbers may not add to total because of missing data or participant responses of do not know or prefer not to respond.

† Age: mean (SD) = 28 (10.4), range: 13-100.

‡ Negative includes 3 indeterminate. Unknown includes 8 who did not receive results.

Table 2. Associations between demographic and behavioral factors and likelihood of using pre-exposure prophylaxis (PrEP) among 549* HIV-negative men who have sex with men (MSM) who participated in the online PUMA survey, Brazil, April 2011.

	Extremely or Very Likely to Use PrEP n (%)	Moderately Likely to Use PrEP n (%)	Slightly Likely or Not Likely to Use PrEP n (%)	OR (95% CI)	Adjusted OR† (95% CI)
Race/ethnicity‡					
Branco	211 (38)	46 (8)	56 (10)	Referent	Referent
Preto	25 (5)	5 (1)	2 (0.4)	1.7 (0.9-3.4)	1.5 (0.6-3.6)
Amarelo	4 (1)	3 (1)	1 (0.2)	0.8 (0.2-2.6)	0.4 (0.1-1.5)
Pardo	87 (16)	27 (5)	16 (3)	1.0 (0.7-1.5)	0.9 (0.6-1.4)
Indígena	3 (1)	1 (0.2)	0	0.9 (0.2-5.3)	1.1 (0.1-10.8)
Multiracial or other	41 (8)	8 (2)	13 (2)	0.9 (0.5-1.5)	0.8 (0.5-1.5)
Education‡					
High school, GED, or less	128 (23)	29 (5)	25 (5)	Referent	Referent
Some college, Associate's degree, and/or technical school	139 (25)	34 (6)	26 (5)	1.0 (0.7-1.4)	1.0 (0.6-1.6)
College, post graduate, or professional school	102 (19)	27 (5)	37 (7)	0.7 (0.5-1.1)	0.6 (0.4-1.0)
Employment					
No	108 (20)	29 (5)	32 (6)	Referent	—
Yes	259 (48)	58 (11)	56 (10)	1.2 (0.9-1.7)	—
Health insurance					
None	58 (11)	16 (3)	19 (4)	Referent	—
Plano de saúde particular	158 (29)	45 (8)	37 (7)	1.1 (0.7-1.7)	—
SUS	128 (24)	22 (4)	21 (4)	1.5 (0.9-2.4)	—
Other	24 (4)	5 (1)	10 (2)	1.0 (0.5-1.9)	—
Sexual orientation§					
Homosexual	355 (65)	87 (16)	83 (15)	Referent	—
Heterosexual	0	0	2 (0.4)	—	—
Bisexual	11 (2)	3 (1)	3 (1)	0.9 (0.3-2.4)	—
Unsure or other	4 (1)	0	0	—	—

Table 2, continued

	Extremely or Very Likely to Use PrEP n (%)	Moderately Likely to Use PrEP n (%)	Slightly Likely or Not Likely to Use PrEP n (%)	OR (95% CI)	Adjusted OR[†] (95% CI)
Currently taking medication					
No	244 (45)	63 (12)	65 (12)	Referent	—
Yes	126 (23)	27 (5)	23 (4)	1.3 (1.0-1.9)	—
Anal sex ever[§]					
No	3 (5)	0	3 (5)	Referent	—
Yes	29 (50)	12 (21)	11 (19)	1.3 (0.2-6.8)	—
Anal sex in past 12 months					
No	22 (8)	7 (3)	11 (4)	Referent	—
Yes	154 (54)	47 (17)	42 (15)	1.6 (0.9-2.9)	—
Anal sex last week					
No	179 (33)	54 (10)	52 (10)	Referent	Referent
Yes	192 (35)	36 (7)	35 (6)	**1.7 (1.2-2.3)**	**1.6 (1.1-2.3)**
HIV status of last partner					
HIV-negative	175 (63)	44 (16)	45 (16)	Referent	—
HIV-positive	8 (3)	2 (1)	2 (1)	1.2 (0.4-3.4)	—
Ever HIV tested					
No	116 (22)	26 (5)	27 (5)	Referent	—
Yes	249 (46)	62 (12)	57 (11)	1.2 (0.8-1.6)	—
Time since most recent HIV test					
Never tested	116 (24)	26 (5)	27 (6)	Referent	—
Within past 6 months	16 (3)	4 (1)	6 (1)	1.1 (0.5-2.3)	—
Within past 7-12 months	82 (17)	20 (4)	14 (3)	1.5 (1.0-2.3)	—
More than 12 months ago	125 (25)	29 (6)	28 (6)	1.1 (0.8-1.6)	—
2-way interactions					
Age and awareness of PrEP					

Table 2, continued

	Extremely or Very Likely to Use PrEP n (%)	Moderately Likely to Use PrEP n (%)	Slightly Likely or Not Likely to Use PrEP n (%)	OR (95% CI)	Adjusted OR† (95% CI)
Age (years)‡					
18-24	188 (34)	43 (8)	43 (8)	Referent	See interaction
25-29	66 (12)	19 (4)	14 (3)	1.0 (0.7-1.5)	See interaction
30-39	83 (15)	17 (3)	24 (4)	1.1 (0.8-1.7)	See interaction
≥40	34 (6)	11 (2)	7 (1)	0.8 (0.5-1.4)	See interaction
Awareness of PrEP§					
No	280 (51)	79 (14)	70 (13)	Referent	See interaction
Yes	90 (16)	11 (2)	18 (3)	**1.7 (1.04-2.6)**	See interaction
Interaction					
18-24					
Not aware of PrEP	155 (28)	37 (7)	30 (6)	Referent	Referent
Aware of PrEP	33 (6)	6 (1)	13 (2)	0.8 (0.4-1.3)	0.7 (0.4-1.4)
25-29					
Not aware of PrEP	47 (9)	18 (3)	11 (2)	Referent	Referent
Aware of PrEP	18 (3)	1 (0.2)	3 (1)	**3.0 (1.2-7.8)**	2.5 (0.8-8.2)
30-39					
Not aware of PrEP	60 (11)	15 (3)	22 (4)	Referent	Referent
Aware of PrEP	23 (4)	2 (0.4)	2 (0.4)	**2.4 (1.04-5.7)**	**3.7 (1.2-11.6)**
≥40					
Not aware of PrEP	18 (3)	9 (2)	7 (1)	Referent	Referent
Aware of PrEP	16 (3)	2 (0.4)	0	**4.7 (1.5-14.2)**	**6.7 (1.3-34.5)**

PUMA: Prevention Umbrella for MSM in the Americas

Boldface = P < 0.05.

* Numbers may not add to total because of missing data or participant responses of do not know or prefer not to respond.

† Proportional odds assumption was not met using the 5-level categorization of the outcome. Outcome was reclassified into the three levels listed in the table.

‡ Adjusted for variable in the final model. All other non-significant variables were excluded in multivariate analysis.

§ Proportional odds assumption was not met for variable in bivariate logistic regression. Binary logistic regression model was used instead of ordinal logistic regression.

— Indicates that value could not be computed in bivariate analysis, or variable was excluded in multivariable modeling.

Table 3. Associations between demographic and behavioral factors and likelihood of using a home HIV test kit among 356* HIV-negative men who have sex with men (MSM) who participated in the online PUMA survey, Brazil, April 2011.

	Likely to use home HIV test and would test regularly		
	Yes	No	OR (95% CI)
	n (%)	n (%)	
Age (years)			
18-24	135 (38)	7 (2)	Referent
25-29	62 (17)	13 (4)	**0.3 (0.1-0.7)**
30-39	83 (23)	12 (3)	**0.4 (0.1-0.95)**
≥40	39 (11)	5 (1)	0.4 (0.1-1.4)
Race/ethnicity			
Branco	186 (52)	21 (6)	Referent
Preto	19 (5)	3 (1)	0.7 (0.2-2.6)
Amarelo	6 (2)	0	—
Pardo	74 (21)	5 (1)	1.7 (0.6-4.6)
Indígena	0	1 (0.3)	—
Multiracial or other	34 (10)	7 (2)	0.6 (0.2-1.4)
Education			
High school, GED, or less	85 (24)	9 (3)	Referent
Some college, Associate's degree, and/or technical school	120 (34)	13 (4)	1.0 (0.4-2.4)
College, post graduate, or professional school	113 (32)	15 (4)	0.8 (0.3-1.9)
Employment			
No	93 (27)	12 (3)	Referent
Yes	220 (63)	25 (7)	1.1(0.6-2.4)
Health insurance			
None	50 (14)	2 (1)	Referent
Plano de saúde particular	143 (41)	18 (5)	0.3 (0.1-1.4)
SUS	101 (29)	13 (4)	0.3 (0.1-1.4)
Other	22 (6)	3 (1)	0.3 (0.1-1.9)
Sexual orientation			
Homosexual	310 (87)	36 (10)	Referent
Heterosexual	0	0	—
Bisexual	7 (2)	0	—
Unsure or other	2 (1)	1 (0.3)	0.2 (0.02-2.6)
Anal sex ever			
No	3 (8)	0	Referent
Yes	30 (83)	3 (8)	—
Anal sex in past 12 months			
No	18 (11)	4 (2)	Referent
Yes	135 (79)	14 (8)	2.1 (0.6-7.2)
Anal sex last week			
No	154 (43)	18 (5)	Referent
Yes	165 (46)	19 (5)	1.0 (0.5-2.0)

Table 3, continued

	Likely to use home HIV test and would test regularly		
	Yes	No	OR (95% CI)
	n (%)	n (%)	
HIV status of last partner			
HIV-negative	175 (86)	17 (8)	Referent
HIV-positive	8 (4)	3 (2)	0.3 (0.1-1.1)
Ever HIV tested			
No	0	0	Referent
Yes	319 (90)	37 (10)	—
Time since most recent HIV test†			
Never tested	0	0	—
More than 12 months ago	160 (51)	18 (6)	Referent
Within past 7-12 months	100 (32)	12 (4)	0.9 (0.4-2.0)
Within past 6 months	21 (7)	3 (1)	0.8 (0.2-2.9)
Tested on regular basis			
False	179 (50)	19 (5)	Referent
True	140 (39)	18 (5)	0.8 (0.4-1.6)

PUMA: Prevention Umbrella for MSM in the Americas
Boldface = $P < 0.05$.
* Numbers may not add to total because of missing data or participant responses of do not know or prefer not to respond.
† Original reference category could not be used due to insufficient data.
— Indicates that value could not be computed.

Table 4. Willingness to use home HIV test kits given specific hypothetical situations among 319* HIV-negative men who have sex with men (MSM) who participated in the online PUMA survey, Brazil, April 2011.

	Likely to Use Home HIV Test	
	Agree n (%)	Disagree n (%)
Would like to use a home HIV test if I had a sexual encounter that made me think that I could have become HIV infected	290 (93)	22 (7)
Would like to use a home HIV test if the cost was substantially lower than the cost of getting tested by a medical provider	264 (84)	49 (16)
Would like to use a home HIV test because it would offer me more privacy than being tested in a health care facility	238 (77)	72 (23)
Would like to use a home HIV test to screen all partners	209 (67)	105 (33)
Would like to use a home HIV test with partners I have sex with regularly in order to make decisions about whether we would engage in unprotected sex	207 (67)	101 (33)
Would like to use a home test with new partners in order to make decisions about whether we would engage in unprotected sex	179 (59)	126 (41)
Would not like to use a home HIV test because I would be concerned that I might not fully understand the results	91 (30)	217 (71)
Would not like to use a home HIV test because I would be concerned about getting an HIV positive test result while I was alone	63 (21)	243 (79)
Would not like to use a home HIV test because I would be concerned that it would not be as accurate as a test that I could get in a health care facility	140 (45)	169 (55)
Would not like to use a home HIV test because I would prefer the counseling that would be provided by a professional	131 (43)	174 (57)
Would not like to use a home HIV test to screen partners because I would be concerned that they might not want to have sex with me after I suggest that they test with me	81 (26)	226 (74)

PUMA: Prevention Umbrella for MSM in the Americas

$P < 0.05$ for all situations.

Significance was determined by chi-square tests of independence examining the relationship between overall willingness to use home HIV test kits and the hypothetical situations under which MSM would or would not use home testing.

* Numbers may not add to total because of missing data.

APPENDIX A:
Men's Health Survey

Pesquisa sobre a saúde masculina

Obrigado pelo seu interesse em nossa pesquisa. Favor rever as informações a seguir com calma.

1. Suas respostas são anônimas: não temos qualquer informação sobre quem é você além das questões que você responder.

2. Algumas perguntas são sobre temas delicados; você pode optar por não responder a qualquer pergunta que não lhe deixar confortável.

3. Se você tiver alguma dúvida ou sugestão, pode contactar o Pesquisador Responsável, o Dr. Patrick Sullivan, no pssulli@emory.edu ou o Dr. André Périssé (aperisse@ensp.fiocruz.br).

---

1. Qual é a sua idade? *

---

2. Qual é o seu sexo? *

- ○ Masculino
- ○ Feminino

---

5. Em qual o grupo racial que você se considera?

- ☐ Branco
- ☐ Preto
- ☐ Amarelo
- ☐ Pardo
- ☐ Indígena
- ☐ Multiracial
- ☐ Prefiro não responder
- ☐ Outros

6. Qual é o maior grau de escolaridade que você concluiu?

- ☐ Ensino superior ou pós-graduação completo
- ☐ Ensino superior incompleto e/ou Escola Técnica
- ☐ Segundo grau completo
- ☐ Segundo grau incompleto
- ☐ Primeiro grau completo
- ☐ Primeiro grau incompleto
- ☐ Nunca foi à escola
- ☐ Não sei

---

7. Em qual estado você mora?

- ○ Acre
- ○ Alagoas
- ○ Amapá
- ○ Amazonas
- ○ Bahia
- ○ Ceará
- ○ Distrito Federal
- ○ Espírito Santo
- ○ Goiás
- ○ Maranhão
- ○ Mato Grosso
- ○ Mato Grosso do Sul
- ○ Minas Gerais
- ○ Pará
- ○ Paraíba
- ○ Paraná

- Pernambuco
- Piauí
- Rio de Janeiro
- Rio Grande do Norte
- Rio Grande do Sul
- Rondônia
- Roraima
- Santa Catarina
- São Paulo
- Sergipe
- Tocantins

3. Você está empregado atualmente?

- Sim
- Não

4. Que tipo de seguro de saúde ou cobertura você tem atualmente?

- Plano de saúde particular
- SUS
- Outro seguro de saúde
- Não tenho seguro saúde
- Não sei

2. Qual é a sua orientação sexual?

- Homossexual/ Gay
- Heterossexual
- Bissexual
- Não sabe

- [ ] Outros:

Gostaríamos, agora, que você respondesse a algumas perguntas sobre seus relacionamentos.

4. Em toda a sua vida, você teve relações sexuais com:

- [ ] Somente mulheres
- [ ] Somente homens
- [ ] Homens e mulheres
- [ ] Eu nunca tive relações sexuais

Estamos interessados em identificar as melhores formas de comunicação com as comunidades sobre os meios de prevenção do HIV. As perguntas abaixo exploram como as pessoas usam telefones celulares e internet para comunicação.

10. Você tem, atualmente, um telefone móvel (celular) com o serviço ativado?

- [ ] Sim
- [ ] Não

Para responder as próximas perguntas, pense no seu telefone celular que você tem mais chance de usar para chamadas telefônicas ou mensagens de texto.

5. Que tipo de plano de serviço que você tem para este celular?

- [ ] Eu tenho uma conta pré-paga, onde posso comprar créditos e usá-los.
- [ ] Eu tenho um contrato de serviço onde eu pago uma conta de telefone para a empresa a cada mês pelo meu serviço
- [ ] Minha empresa paga o meu celular
- [ ] Não sei

6. Qual operadora de telefonia móvel (celular) que você usa?

- [ ] Claro

- ○ Vivo
- ○ Nextel
- ○ Oi
- ○ Tim
- ○ CTBC Telecom
- ○ Sercomtel
- ○ Aeiou
- ○ Eu não tenho um telefone celular para uso pessoal
- ○ Outros (favor especificar): _____

---

7. Quantas vezes, nos últimos 12 meses, o seu telefone ficou temporariamente desconectado?

- ○ Nunca
- ○ Uma vez
- ○ Duas vezes
- ○ 2 a 5 vezes
- ○ Mais de 5 vezes

---

6. Nos últimos 12 meses, você tem usado seu telefone celular para enviar ou receber mensagens de texto (SMS ou mensagens de texto)?

- ○ Sim
- ○ Não
- ○ Não sei

---

7. Você estaria disposto a receber mensagens de texto em seu telefone como parte de um estudo de pesquisa sobre o HIV, caso não lhe custe nada para receber as mensagens?

- ○ Sim
- ○ Não

- ○ Não sei

As perguntas abaixo se referem às diferentes maneiras que você pode fazer uso do seu computador ou telefone celular.

---

5. Eu normalmente acesso a internet (marque todas que se aplicam):

- ☐ No trabalho
- ☐ Na casa de um amigo
- ☐ Em um centro comunitário
- ☐ Em casa
- ☐ Na biblioteca
- ☐ Outros (favor especificar):
- ☐ Eu nunca acesso à internet

---

6. Abaixo está uma lista de algumas coisas que as pessoas fazem com seus computadores. Nos últimos 6 meses, quantas vezes você fez essas coisas?

	Todo dia	Algumas vezes por semana	Algumas vezes por mês	Menos de uma vez por mês	Nunca
Assistir a um vídeo de 3 minutos	○	○	○	○	○
Ouvir um podcast	○	○	○	○	○
Jogar jogos eletrônicos	○	○	○	○	○
Conhecer um novo amigo (não sexual)	○	○	○	○	○
Conhecer um novo parceiro sexual	○	○	○	○	○
Obter informações de saúde	○	○	○	○	○
Obter informações relacionadas com HIV ou DST	○	○	○	○	○
Utilizar um site de rede social ou clube (por exemplo, Facebook, Twitter,	○	○	○	○	○

etc)					
Receber uma mensagem instantânea	○	○	○	○	○

As perguntas abaixo se referem ao seu interesse em usar aplicativos que lidem com o HIV e saúde sexual.

5. Qual a probabilidade de você usar um site ou aplicativo para celular que permita a você:

	Muito provável	Provável	Improvável	Muito improvável
Ler sobre novas formas de prevenção ao HIV/DST?	○	○	○	○
Conversar com outro profissional de saúde sobre HIV ou DST?	○	○	○	○
Ouvir as histórias de homens que não têm HIV descrevendo como permanecem sexualmente saudáveis?	○	○	○	○
Ouvir as histórias de casais onde um dos parceiros tem HIV e o outro não para aprender como eles se mantêm sexualmente saudáveis?	○	○	○	○
Ouvir como casais conseguem realizar acordos bem-sucedidos sobre relações abertas?	○	○	○	○
Receber um lembrete de texto ou mensagem instantânea sobre uma atividade que eu precise fazer regularmente (por exemplo, como tomar um medicamento)?	○	○	○	○
Obter informações sobre as pessoas com quem tive sexo?	○	○	○	○
Encontrar um lugar para fazer o teste do HIV?	○	○	○	○

6. Por favor, marque cada um dos seguintes sites de redes online que você visita pelo menos uma vez por semana (marcar todas que se aplicam):

- [ ] Disponivel.com
- [ ] Uol (chat)
- [ ] Terra (chat)
- [ ] Allbears.com
- [ ] Orkut
- [ ] Twitter
- [ ] Skype
- [ ] Encounter
- [ ] FourSquare
- [ ] Gay.com
- [ ] MySpace
- [ ] Adam4Adam
- [ ] LinkedIn
- [ ] Facebook
- [ ] Tumblr
- [ ] DaddyHunt
- [ ] ManHunt
- [ ] Grindr
- [ ] Eu uso sites de rede menos de uma vez por semana
- [ ] Eu não uso sites de redes
- [ ] Outros sites:

7. Quais recursos você utiliza atualmente nos sites de redes sociais? (Marcar todas que se aplicam)

- [ ] Sala de bate-papos em tempo real

- [ ] Ler sobre as últimas pesquisas de saúde publicadas pelos especialistas
- [ ] Fóruns de Tópicos (Assuntos)/Discussões online
- [ ] Pergunte ao especialista
- [ ] Conversa privada com outro membro
- [ ] Pesquisa de membros com interesses/perfis semelhantes
- [ ] Eu não uso nenhum desses recursos

---

4. Alguma vez você já foi testado para HIV?

- ○ Sim
- ○ Não
- ○ Não sei

---

5. Em que ano você fez o seu teste mais recente de HIV?

- ○ 2011
- ○ 2010
- ○ 2009
- ○ 2008
- ○ 2007
- ○ 2006
- ○ 2005
- ○ 2004
- ○ 2003
- ○ 2002
- ○ 2001
- ○ 2000
- ○ 1999
- ○ 1998
- ○ 1997

- 1996
- 1995
- 1994
- 1993
- 1992
- 1991
- 1990 ou antes

---

2. Em que mês [question("value"), id="67"] foi o seu mais recente teste de HIV?

- Janeiro
- Fevereiro
- Março
- Abril
- Maio
- Junho
- Julho
- Agosto
- Setembro
- Outubro
- Novembro
- Dezembro
- Não me lembro em que mês

---

3. Quando você fez o teste [question("value"), id="68"], [question("value"), id="67"] ,onde este foi feito?

- Banco de Sangue/Centro de Plasma
- Centro de testagem e aconselhamento para o HIV
- Instituição correcional (cadeia ou prisão)

- ○ Programa de tratamento de dependência química
- ○ Serviço Militar
- ○ Em casa
- ○ Programa de extensão (prevenção) do HIV/AIDS na rua/Unidade movel
- ○ Clínica especializada em doenças sexualmente transmissíveis
- ○ Consultório médico particular
- ○ Unidades de atendimento de emergência
- ○ Centro comunitário de saúde/posto de saúde
- ○ Hospital (internação)
- ○ Outros: [ ]

4. Qual foi o resultado do seu anti-HIV mais recente em [question("value"), id="67"]?

- ○ Negativo
- ○ Positivo
- ○ Indeterminado/Inconclusivo
- ○ Não peguei os resultados do meu último teste de HIV
- ○ Prefiro não responder

2. Até que ponto você concorda com as seguintes afirmações?

	Concordo plenamente	Concordo	Discordo	Discordo plenamente
A Internet é um bom lugar para obter informações confiáveis sobre HIV e DST.	○	○	○	○
Conto com a Internet mais do que com o meu médico para obter informações sobre o HIV ou doenças sexualmente transmissíveis.	○	○	○	○

Eu discuto atualmente com um profissional de saúde ou aconselhador maneiras de reduzir meu risco de pegar HIV.	○	○	○	○
Procuro ouvir as histórias de homens que não têm HIV descrevendo como permanecem sexualmente saudáveis.	○	○	○	○
Procuro ouvir as histórias de casais onde um dos parceiros tem HIV e o outro não para aprender como eles se mantém sexualmente saudáveis.	○	○	○	○
Procuro ouvir as histórias de como os casais conseguem realizar acordos bem sucedidos sobre relacionamentos abertos.	○	○	○	○
Eu olharia publicações sobre HIV/DST usando o meu telefone celular ou computador sem me preocupar que outros pudessem descobrir.	○	○	○	○

As próximas perguntas servirão para saber se você tem mais chance de ter sexo anal em um determinado dia durante a semana. Esta informação irá nos ajudar a planejar o uso de estratégias de prevenção que não necessitem de uso diário, como uso de medicação para prevenir o HIV.

5. Durante a última semana, você fez sexo anal com um homem?

- ○ Sim
- ○ Não

As próximas perguntas serão sobre quaisquer medicações que você tome regularmente (diariamente ou algumas vezes por semana). Atualmente, o uso de uma medicação diária (uma pílula por dia) para prevenir o HIV está sendo testada. Suas respostas nos ajudarão a entender o grau de dificuldade que alguém possa

ter em tomar uma medicação para prevenir o HIV.

14. Você está atualmente tomando algum medicamento regularmente? Isto inclui os medicamentos receitados, medicamentos de venda livre, vitaminas e suplementos.

- ○ Sim
- ○ Não

15. Com que frequência este medicamentos estão prescritos ou recomendados para você tomar? Marcar todas as aplicáveis.

- ☐ Diariamente
- ☐ Algumas vezes por semana
- ☐ Algumas vezes por mês
- ☐ Menos de uma vez por mês

16. Que tipos de medicamentos foram prescritos ou recomendados para você tomar algumas vezes por semana (marque todas que se aplicam)?

- ☐ Vitaminas ou suplementos
- ☐ Medicamentos para a asma
- ☐ Analgésicos
- ☐ Antidepressivos ou medicamentos para o humor
- ☐ Antialérgicos
- ☐ Remédios para pressão arterial, colesterol elevado ou diabetes
- ☐ Outros (favor especificar): _____

Um estudo recente demonstrou que uma medicação anti-HIV foi efetiva em reduzir as infecções pelo HIV em 44% quando tomada diariamente por homens gays ou bissexuais. Gostaríamos de saber se você ouviu falar sobre estes resultados e como ele pode ser entendido por pessoas distintas.

5. Antes desta pesquisa, você já tinha ouvido falar sobre estes resultados?

- ○ Sim

- ○ Não

---

6. Este estudo mostrou que o comprimido reduziu a infecção pelo HIV em 44% nos homens que o tomaram. Se você fizesse parte deste estudo, o que você acha que esses resultados significariam para você? (marcar todas as aplicáveis)

- ☐ Se eu tiver relações sexuais 100 vezes sem camisinha, eu estarei protegido nos 44 primeiros momentos se eu tiver tomado o comprimido todos os dias.
- ☐ Eu vou estar protegido do HIV se eu tomar o comprimido diário 44% do tempo.
- ☐ Se eu tiver relações sexuais enquanto tomo o comprimido diário, minhas chances de contrair o HIV serão 44% menores do que se eu não tivesse tomado o comprimido.
- ☐ Se eu tomar uma dose dupla, eu vou estar protegido o tempo todo.
- ☐ Pode-se esperar que o comprimido diário evite 44% das infecções que ocorreriam em uma população se o comprimido não fosse tomado.
- ☐ Eu não sei o que isso significa
- ☐ Outros (favor especificar): _____

Abaixo você encontrará mais algumas perguntas sobre o estudo que demonstrou que uma medicação anti-HIV foi efetiva em 44% na redução das infecções pelo HIV quando tomada diariamente por homens gays e bissexuais.

---

7. Sabendo que, neste estudo, um comprimido diário reduziu as infecções pelo HIV em 44%, qual seria a sua probabilidade de tomar um comprimido para prevenir o HIV?

- ○ Extremamente provável
- ○ Muito provável
- ○ Moderadamente provável
- ○ Pouco provável
- ○ Improvável

---

8. Dado que o comprimido diário é 44% eficaz na prevenção do HIV, como isso poderia afetar o seu uso de preservativos (camisinha) se você tomasse o

comprimido?

- Eu não mudaria meu modo de usar o preservativo enquanto tomasse o comprimido diário
- Eu usaria mais frequentemente o preservativo enquanto tomasse o comprimido diário
- Eu usaria menos frequentemente o preservativo enquanto tomasse o comprimido diário
- Eu não tomaria o comprimido diário

---

9. Gradue o medo você teria de outras pessoas pensarem que você é positivo para o HIV se você estivesse tomando o comprimido?

- Apavorado
- Muito medo
- Medo moderado
- Um pouco de medo
- Não tenho medo nenhum

---

10. Você concorda ou discorda com a seguinte afirmação? "Com base nos resultados deste estudo, eu acho que um comprimido diário para prevenção do HIV deveria estar prontamente disponível para os homens que fazem sexo com homens e as mulheres transexuais, negativos para o HIV"

- Concordo
- Discordo

As próximas perguntas indagarão sobre seus pensamentos a respeito dos riscos de ter sexo anal sem preservativo (camisinha).

---

3. Por favor, responda às seguintes perguntas:

	Muito	Mais ou menos	Um pouco	Nada	N/A (Eu não faço sexo anal)

Se você fizesse sexo anal ativo sem preservativo, até que ponto você acha que estaria em risco de contrair o HIV?	○	○	○	○	○
Se você fizesse sexo anal passivo sem preservativo, até que ponto você acha que estaria em risco de contrair o HIV?	○	○	○	○	○
Se alguma outra pessoa na sua comunidade fizesse sexo anal ativo sem camisinha, até que ponto você acha que esta pessoa estaria em risco de contrair o HIV?	○	○	○	○	○
Se alguma outra pessoa na sua comunidade fizesse sexo anal passivo sem camisinha, até que ponto você acha que esta pessoa estaria em risco de contrair o HIV?	○	○	○	○	○
Se você fizesse sexo anal ativo sem camisinha, até que ponto isso iria lhe proporcionar prazer ou outros benefícios?	○	○	○	○	○
Se você fizesse sexo anal passivo sem camisinha, até que ponto isso iria lhe proporcionar prazer ou outros benefícios?	○	○	○	○	○
Em que medida você se sente pressionado por outras pessoas para fazer sexo anal sem preservativo?	○	○	○	○	○
Até que ponto alguém na sua comunidde pode evitar fazer sexo anal sem preservativo?	○	○	○	○	○

Como já mencionado anteriormente, foi demonstrado recentemente que uma pílula diária pode reduzir as infecções pelo HIV em 44% quando tomada por homens gays e bissexuais negativos para o HIV. Agora, responda as mesmas perguntas imaginando que você esteja tomando a pílula.

3. Imagine que você está tomando um comprimido que é 44% eficaz na prevenção de infecções, quando tomado por homens gays e bissexuais negativos para o HIV. Responda às seguintes questões ***supondo que você esteja tomando esse comprimido.***

	Muito	Mais ou menos	Um pouco	Nada	N/A (Eu não faço sexo anal)
Se você fizesse sexo anal ativo sem preservativo, até que ponto você acha que estaria em risco de contrair o HIV?	○	○	○	○	○
Se você fizesse sexo anal passivo sem preservativo, até que ponto você acha que estaria em risco de contrair o HIV?	○	○	○	○	○
Se alguma outra pessoa na sua comunidade fizesse sexo anal ativo sem camisinha, até que ponto você acha que esta pessoa estaria em risco de contrair o HIV?	○	○	○	○	○
Se alguma outra pessoa na sua comunidade fizesse sexo anal passivo sem camisinha, até que ponto você acha que esta pessoa estaria em risco de contrair o HIV?	○	○	○	○	○
Se você fizesse sexo anal ativo sem camisinha, até que ponto isso iria lhe proporcionar prazer ou outros benefícios?	○	○	○	○	○
Se você fizesse sexo anal passivo sem camisinha, até que ponto isso iria lhe proporcionar prazer ou outros benefícios?	○	○	○	○	○
Em que medida você se sente pressionado por outras pessoas para fazer sexo anal sem preservativo?	○	○	○	○	○
Até que ponto alguém na sua comunidade pode evitar fazer sexo anal sem preservativo?	○	○	○	○	○

9. Qual das seguintes opções descrevem o seu padrão de teste de HIV?

Marque cada opção como "Verdadeiro" se descrever bem você, "Falso" se não descrever seu uso atual de testagem para o HIV, e "N/A" se a resposta não se aplica a sua situação particular.

	Verdadeiro	Falso	N/A
Eu faço o teste se eu tiver tido relações sexuais sem preservativo com um parceiro infectado pelo HIV	○	○	○
Eu faço o teste se eu tiver tido relações sexuais sem preservativo com um parceiro que eu não tenha certeza sobre o status de HIV	○	○	○
Faço o teste se eu estou começando um relacionamento com um novo parceiro e queremos poder ter relações sexuais juntos sem preservativos.	○	○	○
Eu não tenho um plano de como fazer o teste do HIV	○	○	○

10. Eu faço o teste com regularidade, independentemente do que tenha feito sexualmente ou de relações específicas

- ○ Verdadeiro
- ○ Falso

11. Durante o ano passado, houve vezes em que você pensou em fazer o teste para o HIV, mas decidiu não fazer?

- ○ Sim
- ○ Não

12. Você e um parceiro fizeram o teste anti-HIV juntos no ano passado?

- ○ Sim
- ○ Não

4. Alguns tipos de estratégias de prevenção do HIV exigem testes frequentes de HIV. Se você estivesse participando de um programa de prevenção do HIV que exigisse testes frequentes de HIV, você consideraria fazer o teste em casa, se necessário:

	Definitivamente faria	Possivelmente faria	Provavelmente não faria	Definitivamente não faria

Que você fura o dedo para obter uma gota de sangue	○	○	○	○
Que você faz um swab na sua boca com um cotonete	○	○	○	○
Que você mesmo lê os resultados do teste	○	○	○	○
Que você envia o teste por correio e liga para saber o resultado	○	○	○	○

5. Várias empresas estão desenvolvendo kits que poderiam ser comprados e permitiriam a você mesmo fazer o teste de HIV em sua casa, com o resultado em menos de uma hora. O teste e o resultado seriam feitos em casa. Se esses kits de teste em casa estivessem disponíveis, por favor, responda às seguintes perguntas:

	Concordo	Concordo em parte	Não concordo nem discordo	Discordo em parte	Discordo
Eu preferiria testar em casa, em vez de numa clínica ou organização comunitária (ONG)	○	○	○	○	○
Eu preferiria testar numa clínica ou organização comunitária em vez de em casa	○	○	○	○	○

Eu usaria esses kits de teste para mim	○	○	○	○	○
Eu usaria esses kits de teste para mim e meu principal parceiro sexual (alguém com quem você está mais comprometido, isto é, alguém que você pode chamar de namorado, parceiro ou marido).	○	○	○	○	○
Eu usaria esses kits de teste para mim e para meus outros parceiros regulares	○	○	○	○	○
Eu usaria esses kits de teste para mim e para meus novos parceiros sexuais	○	○	○	○	○

6. Várias empresas estão desenvolvendo testes de HIV que podem ser realizados em casa. Descreva a probabilidade de você usar um kit de teste de HIV em casa marcando cada afirmativa na grade:

	Concordo plenamente	Concordo	Discordo	Discordo totalmente
Eu usaria o teste de HIV em casa, e faria o teste regularmente	○	○	○	○
Eu usaria o teste de HIV em casa se eu tivesse uma relação sexual que me fizesse pensar que eu poderia ter sido infectado pelo HIV	○	○	○	○
Eu usaria um teste de HIV em casa se o custo fosse significativamente menor que custo de fazer o teste no médico	○	○	○	○
Eu usaria um teste do HIV em casa porque iria me				

oferecer mais privacidade do que ser testado em uma unidade de saúde	○	○	○	○
Eu gostaria fazer o teste de HIV em casa para testar todos os parceiros	○	○	○	○
Eu gostaria de fazer o teste de HIV em casa com parceiros com os quais faço sexo com regularidade, a fim de tomar decisões sobre ter ou não relações sexuais desprotegidas	○	○	○	○
Eu gostaria de fazer o teste de HIV em casa com novos parceiros a fim de tomar decisões sobre ter ou não relações sexuais desprotegidas	○	○	○	○
Eu não gostaria fazer o teste de HIV em casa porque eu iria ficar preocupado de não entender completamente os resultados	○	○	○	○
Eu não faria o teste de HIV em casa, porque eu ficaria preocupado do resultado ser positivo e eu estar sozinho	○	○	○	○
Eu não faria o teste de HIV em casa porque eu ficaria preocupado de não ser tão preciso quanto um teste que eu faria em uma unidade de saúde	○	○	○	○
Eu não gostaria fazer o teste de HIV em casa porque eu preferiria o aconselhamento que seria feito por um profissional	○	○	○	○
Eu nunca faria o teste de HIV em casa para testar novos parceiros, porque eu não me sentiria à vontade fazendo isso	○	○	○	○
Eu nunca faria o teste de				

HIV em casa para testar parceiros porque eu não confiaria na precisão do teste	○	○	○	○
Eu nunca faria o teste de HIV em casa para testar parceiros porque eu ficaria preocupado que eles pudessem não querer fazer sexo comigo depois de eu sugerir que eles fizessem o teste comigo	○	○	○	○

Para cada frase sobre a discussão do status (exemplo, positivo ou negativo) de HIV, por favor marque a resposta que melhor descreva o que você geralmente tem feito nos últimos 12 meses.

6. Para quantos dos seus parceiros de sexo anal você informou sobre o seu status de HIV?

- ○ Todos os meus parceiros sexuais
- ○ Mais da metade, mas não todos os meus parceiros sexuais
- ○ Cerca de metade dos meus parceiros sexuais
- ○ Menos da metade, mas alguns dos meus parceiros sexuais
- ○ Nenhum dos meus parceiros sexuais

7. Quantos de seus parceiros de sexo anal informaram a você sobre o status de HIV deles?

- ○ Todos os meus parceiros sexuais
- ○ Mais da metade, mas não todos os meus parceiros sexuais
- ○ Cerca de metade dos meus parceiros sexuais
- ○ Menos da metade, mas alguns dos meus parceiros sexuais
- ○ Nenhum dos meus parceiros sexuais

8. Eu falo sobre o status do HIV com parceiros sexuais ....

	Verdadeiro	Falso	N/A

... só depois de eu conhecê-los e planejar vê-los por um longo tempo	○	○	○
... só se eles iniciarem a conversa	○	○	○
... se eu achar que seu status de HIV pode ser diferente do meu	○	○	○
... se eu achar que seu status de HIV é o mesmo que o meu	○	○	○
... se estivermos decidindo se queremos fazer sexo anal	○	○	○
... se estivermos decidindo quem será o ativo e quem será o passivo	○	○	○
... se estivermos decidindo se vamos ou não usar preservativo	○	○	○
... se o preservativo estourar	○	○	○
... se eles disserem o status de HIV no perfil deles na internet	○	○	○
... se eles não disserem o status de HIV no perfil deles na internet	○	○	○

9. Antes de fazer sexo anal com um parceiro novo pela primeira vez, quantas vezes você ....

	Sempre	A maior parte do tempo, mas nem sempre	Menos da metade do tempo	Nunca
pergunta seu status do HIV?	○	○	○	○
se ele for negativo para o HIV, pergunta quando ele fez o último teste?	○	○	○	○
se ele for negativo para o HIV, pergunta se ele teve relações sexuais sem preservativo nos últimos meses?	○	○	○	○
se ele for positivo para o HIV, pergunta se ele está em tratamento?	○	○	○	○
se ele for positivo para o HIV, pergunta qual é sua carga viral?	○	○	○	○
se ele for positivo para o HIV,				

pergunta quanto foi sua última contagem de células T?	○	○	○	○

Para cada frase sobre a discussão do status (exemplo, positivo ou negativo) de HIV, por favor marque a resposta que melhor descreva o que você geralmente tem feito nos últimos 12 meses.

7. Você fez sexo anal com um parceiro do sexo masculino nos últimos 12 meses?

- ○ Sim
- ○ Não

8. Eu falo sobre o status do HIV com parceiros sexuais ....

	Verdadeiro	Falso	N/A
... só depois de eu conhecê-los e planejar vê-los por um longo tempo	○	○	○
... só se eles iniciarem a conversa	○	○	○
... se eu achar que seu status de HIV pode ser diferente do meu	○	○	○
... se eu achar que seu status de HIV é o mesmo que o meu	○	○	○
... se estivermos decidindo se queremos fazer sexo anal	○	○	○
... se estivermos decidindo quem será o ativo e quem será o passivo	○	○	○
... se estivermos decidindo se vamos ou não usar preservativo	○	○	○
... se o preservativo estourar	○	○	○
... se eles disserem o status de HIV no perfil deles na internet	○	○	○
... se eles não disserem o status de HIV no perfil deles na internet	○	○	○

O Centro de Controle e Prevenção de Doenças dos EUA estima que mais de 30.000 homens que tem sexo com homens (HSH) nos EUA se tornem infectados pelo HIV a cada ano.

5. Se você pensar em um grupo médio de 100 homens que fazem sexo com homens

recém-infectados pelo HIV, quantos você acha que se infectaram:

☐ Com sexo anal receptivo/sendo passivo?

☐ Com sexo anal insertivo/sendo ativo?

☐ Com sexo oral receptivo/o pênis do parceiro na boca deles, com ejaculação?

☐ Com sexo oral insertivo/o pênis deles na boca do parceiro?

☐ Outros

0 out of 100 Total

6. Mais uma vez, se você pensar em um grupo médio de 100 homens que fazem sexo com homens recém-infectados pelo HIV, quantos você acha que se infectaram:

☐ com seu principal parceiro/marido/namorado?

☐ com seu(s) parceiro(s) sexual(is) regular(es), que não são o seu principal parceiro?

☐ com parceiro(s) sexual(is) casuais ou anônimo(s)?

☐ Outros:

0 out of 100 Total

7. De quem ou do que você depende para obter informações sobre o risco das diferentes práticas sexuais.

	Dependo muito disso	Dependo um pouco disso	Não dependo disso	Não se aplica
Namorado/companheiro	○	○	○	○
Outros parceiros sexuais	○	○	○	○
Amigos	○	○	○	○
Família	○	○	○	○
Profissional de saúde	○	○	○	○
Aconselhador para testes de HIV	○	○	○	○
Outro aconselhador	○	○	○	○
A mídia impressa (livros,	○	○	○	○

jornais, revistas)				
Internet				
Televisão				
Coluna de conselhos				
Pornografia				
Comunidade/Organizações				

Nas próximas telas vamos fazer algumas perguntas sobre o seu parceiro sexual mais recente do sexo masculino, ou seja, o último cara com quem você teve relações sexuais.

Para facilitar as perguntas, nós gostaríamos que você digitasse um apelido para este parceiro, não seu nome real, mas talvez suas iniciais, um apelido carinhoso que você tenha para ele, ou uma palavra que faça você lembrar de onde você o conheceu ou o que você mais goste nele.

3. Qual é o apelido do último homem com quem você teve relações sexuais?

seu parceiro sexual mais recen

Nós vamos fazer agora algumas perguntas sobre [question("value"), id="238"].

Algumas perguntas serão sobre [question("value"), id="238"] em geral e outras serão sobre seu relacionamento com [question("value"), id="238"].

9. Qual é a idade atual de [question("value"), id="238"]?

(Se você não tiver certeza da idade exata, escolha uma idade que você ache próxima)

- 19 ou mais jovem
- 20
- 21
- 22
- 23
- 24

- 25
- 26
- 27
- 28
- 29
- 30
- 31
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39
- 40
- 41
- 42
- 43
- 44
- 45
- 46
- 47
- 48
- 49
- 50
- 51
- 52

- 53
- 54
- 55
- 56
- 57
- 58
- 59
- 60
- 61
- 62
- 63
- 64
- 65
- 66
- 67
- 68
- 69
- 70
- 71
- 72
- 73
- 74
- 75
- 76
- 77
- 78
- 79

- 80
- 81
- 82
- 83
- 84
- 85
- 86
- 87
- 88
- 89
- 90
- 91
- 92
- 93
- 94
- 95
- 96
- 97
- 98
- 99
- 100
- Não sei

---

10. Qual é a raça de [question("value"), id="238"] (marque apenas uma opção)?

- Branco
- Preto
- Amarelo
- Pardo

- ○ Indígena
- ○ Mestiço
- ○ Não sei
- ○ Outros: _____

---

11. [question("value"), id="238"] é alguém por quem você se sente ou sentiu mais comprometido do que com outros (alguém que você poderia chamar de namorado, parceiro de vida ou marido)?

- ○ Sim
- ○ Não

---

12. [question("value"), id="238"] é um parceiro de troca (alguém com quem você tem relações sexuais em troca de dinheiro, drogas, alimentos ou qualquer outra coisa de valor)?

- ○ Sim
- ○ Não

---

13. Por favor, avalie a força de seu relacionamento com [question("value"), id="238"] numa escala de **1 (fraco) a 10 (forte):**

- ○ 1 (fraco)
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 (forte)

---

2. Em que ano você começou a ter relações sexuais com [question("value"), id="238"]?

- 2011
- 2010
- 2009
- 2008
- 2007
- 2006
- 2005
- 2004
- 2003
- 2002
- 2001
- 2000
- 1999
- 1998
- 1997
- 1996
- 1995
- 1994
- 1993
- 1992
- 1991
- 1990 ou antes

5. Você e [question("value"), id="238"] falaram sobre seu status de HIV e o status dele **antes de vocês terem a primeira relação sexual?**

- Sim

- ○ Não

---

2. Em que ano você teve a sua relação sexual **mais recente** com [question("value"), id="238"]?

- ○ 2011
- ○ 2010
- ○ 2009
- ○ 2008
- ○ 2007
- ○ 2006
- ○ 2005
- ○ 2004
- ○ 2003
- ○ 2002
- ○ 2001
- ○ 2000
- ○ 1999
- ○ 1998
- ○ 1997
- ○ 1996
- ○ 1995
- ○ 1994
- ○ 1993
- ○ 1992
- ○ 1991
- ○ 1990 ou antes

---

4. Que tipo de sexo vocês fizeram na última vez que você teve relações sexuais com [question("value"), id="238"]?

Marque **todos os tipos de sexo que você fez**

- ☐ Sexo oral (pênis na boca)
- ☐ Sexo anal (pênis na bunda)
- ☐ Masturbação mútua
- ☐ Sarro (esfregando-se um contra o outro)

Agora nós gostaríamos de lhe perguntar sobre **a última vez** que você fez sexo com [question("value"), id="238"].

---

8. A **última vez** que teve relações sexuais com [question("value"), id="238"], você fez sexo anal receptivo? (isso significa que você era o passivo)

- ○ Sim
- ○ Não
- ○ Não sei

---

9. A última vez que teve relações sexuais com [question("value"), id="238"], você fez sexo anal insertivo? (isso significa que você era o ativo)

- ○ Sim
- ○ Não
- ○ Não sei

---

4. A última vez que fez sexo oral com [question("value"), id="238"], marque qual dessas coisas aconteceu - ou ambas.

- ☐ Eu fiz boquete nele (o pênis dele estava na minha boca)
- ☐ Ele fez boquete em mim (meu pênis estava na boca dele)

Nós gostaríamos de fazer, a seguir, algumas perguntas sobre a situação na qual você e [question("value"), id="238"] tiveram a última relação sexual.

---

8. Onde você e [question("value"), id="238"] estavam da última vez que fizeram sexo?

- Na casa que divido com [question("value"), id="238"]
- Sex resort
- Parada de caminhão/área de descanso
- Banheiro público
- Festa ou rave
- Quarto de hotel Local
- Sex club/clube de sexo
- De férias em uma cidade diferente
- Minha casa
- Parque
- Casa do [question("value"), id="238"]
- Sauna
- Carro
- Vídeo locadora
- Outros, favor especificar: _____

9. A última vez que você teve relações sexuais com [question("value"), id="238"], você estava "alegre" ou bêbado?

- Sim
- Não
- Não sei

10. A última vez que você teve relações sexuais com [question("value"), id="238"], você estava doidão/colocado?

- Sim
- Não
- Não sei

11. A última vez que você teve relações sexuais com [question("value"), id="238"], você conhecia o seu status de HIV?

- ○ Sim
- ○ Não
- ○ Não sei

Esta página pergunta algumas coisas sobre a última vez que fez sexo com [question("value"), id="238"]. Lembre daquele momento e como você pode ter se sentido logo antes de fazer sexo. A seguir, leia as perguntas com atenção e marque todas que se apliquem à última vez que você fez sexo com [question("value"), id="238"].

---

6. Marque todas as afirmativas que se apliquem à última vez que você fez sexo com [question("value"), id="238"]:

- ☐ [question("value"),id="238"] não quis usar camisinha
- ☐ [question("value"),id="238"] estava muito, muito excitante e sensual
- ☐ Eu estava sozinho e deprimido e fiz sexo para me sentir bem
- ☐ Eu estava apaixonado por [question("value"), id="238"]
- ☐ Eu estava me sentindo muito, muito excitado e com tesão
- ☐ Eu confiei muito em [question("value"), id="238"]
- ☐ Eu tive que interromper o sexo para procurar camisinhas
- ☐ Eu achei que colocar a camisinha iria estragar um momento romântico, mágico
- ☐ Eu estava fazendo sexo em um lugar público e tinha medo de ser pego
- ☐ Eu queria me sentir realmente perto e ligado a [question("value"), id="238"]
- ☐ Eu estava fazendo sexo com um grupo de pessoas, e nenhuma delas estava usando camisinha
- ☐ Eu ou [question("value"), id="238"] estávamos tendo dificuldade de manter a ereção
- ☐ Eu estava com medo de perder [question("value"), id="238"]
- ☐ Eu realmente queria agradar [question("value"), id="238"]

- ☐ Eu estava em uma livraria/vídeo locadora, sex club, quarto escuro, ou sauna e estava me divertindo muito
- ☐ [question("value"), id="238"] me pediu para confiar nele
- ☐ Eu estava muito bêbado/doidão/colocado para lembrar
- ☐ Eu senti medo de [question("value"), id="238"] e não pude falar de preservativos
- ☐ Eu senti que [question("value"), id="238"] me abandonaria se eu pedisse para usar camisinha

---

7. Você já fez sexo anal alguma vez na vida (mesmo que tenha feito apenas uma vez)?

- ○ Sim
- ○ Não

Agora, pense na última vez que você fez sexo anal.

---

5. Pensando na última vez que fez sexo anal, você planejou/pretendeu ter relações sexuais naquele dia? Por planejar/ter intenção, quero dizer que você arranjou um encontro para fazer sexo, foi a um lugar onde você podia encontrar um parceiro sexual, ou arranjou tempo para ter relações sexuais com seu parceiro.

- ○ Sim
- ○ Não

---

6. Na última vez que fez sexo anal, você ou seu parceiro usaram camisinha?

- ○ ( ) Sim
- ○ ( ) Não

Obrigado pela disponibilidade de tempo em participar da nossa pesquisa. Infelizmente, você não é elegível para participar do estudo.

Se você tiver alguma dúvida ou sugestão, pode contatar o Pesquisador Responsável nos EUA (Dr. Patrick Sullivan da Universidade Emory em pssulli@emory.edu) ou o Pesquisador Responsável no Brasil (Dr. André Périssé da Escola Nacional de Saúde Pública Sergio Arouca/Fiocruz em

aperisse@ensp.fiocruz.br).

Para encontrar um local de teste de HIV perto de você, visite:

http://sistemas.aids.gov.br/fiquesabendo/

www.arco-iris.org.br/

www.hivtest.org

Para obter mais informações sobre o HIV visite, por favor:

www.aids.gov.br/

www.abiaids.org.br/hsh

www.cdc.gov/hiv

Caso contrário, você pode fechar seu navegador.

Obrigado por ter participado de nossa pesquisa. Sua resposta é muito importante para nós.

Se você tiver alguma dúvida ou sugestão, pode contatar o Pesquisador Responsável nos EUA (Dr. Patrick Sullivan da Universidade Emory em pssulli@emory.edu) ou o Pesquisador Responsável no Brasil (Dr. André Périssé da Escola Nacional de Saúde Pública Sergio Arouca/Fiocruz em aperisse@ensp.fiocruz.br).

Para encontrar um local de teste de HIV perto de você, visite:

http://sistemas.aids.gov.br/fiquesabendo/

www.arco-iris.org.br/

www.hivtest.org

Para obter mais informações sobre o HIV visite, por favor:

www.aids.gov.br/

www.abiaids.org.br/hsh

www.cdc.gov/hiv

Caso contrário, você pode fechar seu navegador.

APPENDIX B:
IRB Approval

EMORY UNIVERSITY

Institutional Review Board

TO: Patrick Sullivan, PhD DVM
Principal Investigator
Epidemiology

DATE: September 19, 2011

RE: **Notification of Amendment Approval**
AM2_IRB00047677
IRB00047677
Online health survey for U.S. men who have sex with men (MSM)

Thank you for submitting an amendment request. The Emory IRB reviewed and approved this amendment under the expedited review process on **9/19/2011**. This amendment includes the following:

Personnel Change only: Moving Robert Sineath to study Coordinator from Emory study staff; Adding Ashika Bhan as Emory study staff.

In future correspondence with the IRB about this study, please include the IRB file ID, the name of the Principal Investigator and the study title. Thank you.

Sincerely,

Donna Thomas
Administrative Assistant
This letter has been digitally signed

CC	Sineath	Robert	Public Health
	Tarver Jr.	Russell	Epidemiology

Emory University
1599 Clifton Road, 5th Floor - Atlanta, Georgia 30322
Tel: 404.712.0720 - Fax: 404.727.1358 - Email: irb@emory.edu - Web: http://www.irb.emory.edu/
An equal opportunity, affirmative action university