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Weina Xiang Date

LIKELINESS TO USE PRE-EXPOSURE PROPHYLAXIS AND NON-OCCUPATIONAL POST-EXPOSURE PROPHYLAXIS AMONG HIV-NEGATIVE MEN WHO HAVE SEX WITH MEN IN THE UNITED STATES

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An abstract of
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Abstract

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By Weina Xiang

The HIV epidemic continues to expand among men who have sex with men (MSM) since HIV was first discovered in the 1980s. Young and racial/ethnic minority MSM have been found to be disproportionately affected in recent years. To further understand characteristics associated with likeliness to use Pre-Exposure Prophylaxis (PrEP) and Non-occupational Post-Exposure Prophylaxis (nPEP) among HIV-negative MSM, 396 MSM were recruited via a banner advertisement on Facebook from June 6 to June 20, 2012. Participants were shown a video either on PrEP or nPEP and then asked about likeliness to utilize it. Among 197 MSM who were presented a video on PrEP, 51% reported they were very likely or likely to use PrEP. For nPEP, the majority (79%) of 199 MSM shown a video on nPEP reported they were very likely or likely to use nPEP as a HIV prevention method. No factors were found to be significantly associated with the likelihood of using nPEP. In univariate analysis, not currently having a main partner (OR 1.96, 95% CI=1.08-3.55, p=0.03) and having unprotected anal intercourse with at least one causal partner in the past 12 months (OR 3.19, 95% CI=1.49-6.82, p=0.003) were significantly associated with likeliness to use PrEP as a HIV prevention method. In multivariate analysis, no significant association was found for PrEP. Men aged 30 and older (OR 0.21, 95% CI=0.06-0.80, p=0.02) and men who had never tested for HIV (OR 0.29, 95% CI=0.10-0.80, p=0.02) were not likely to utilize nPEP. Our results show that MSM are very likely or likely to utilize PrEP or nPEP once they are well-educated about those methods. Although factors significantly associated with increased likelihood of using PrEP and nPEP were not identified in multivariate analyses, MSM who learn about PrEP and PEP may be likely to use these HIV prevention interventions. Biomedical methods are suggested to be packaged with current prevention strategies targeting MSM.

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CHAPTER I

Update on the HIV epidemic

The global HIV epidemic

By the end of 2011, it was estimated that 34 million people worldwide were living with HIV, according to a UNAIDS report on the global AIDS epidemic 2012 (1). The total number of new HIV infections in 2011 was 2.5 million. Globally, 1.7 million people died from AIDS-related causes in 2011. Wide variations in epidemic trends among different countries have been observed, though the global HIV prevalence seems to have been stabilizing since 2000 (1). Thus far, Sub-Saharan Africa remains the most heavily impacted region, accounting for a 69% share of all HIV infections. However, an alarming growth in the number of HIV infections has also been observed in some populous countries in other regions of the world, such as Indonesia, Philippines, and Sri Lanka. Almost 5 million people are living with HIV in South, South-East and East Asia combined (1).

Although the number of newly infected people and people dying from AIDS-related causes continued to decline in 2011, national epidemics continued to expand in many parts of the world. Huge disparities between these regions underscore the importance of continuing and strengthening HIV prevention efforts.

The HIV epidemic in the United States

The first AIDS case was reported in the United States in June 1981, and the number of cases and deaths among people with AIDS increased rapidly during the 1980s followed by substantial declines in new cases and deaths in the late 1990s (2). With the introduction of highly active antiretroviral therapy (HAART), AIDS diagnoses and

deaths have remained stable since 2000, with an average of 38,279 AIDS diagnoses and 17,489 deaths per year, respectively (3). Currently, the Centers for Disease Control and Prevention (CDC) estimates that more than 1.1 million people aged 13 years and older are living with HIV infection in the United States, and almost 1 in 5 (18.1%) are unaware of their infection (4). While the number of new HIV infections is down from its peak in the 1980s, estimates indicate that there have been approximately 50,000 new HIV infections annually in recent years (5).

In 2010, male-to-male sexual contact accounted for nearly two-thirds (63%) of all new infections and more than three-fourths (78%) of new HIV infections among males. Heterosexual sex accounted for 25% of new infections. New infections due to injection drug use have declined significantly over time and accounted for 8% of new infections in 2010 (5).

Gay, bisexual, and other men who have sex with men (MSM) of all races and ethnicities remain the population most profoundly affected by HIV. Although MSM comprise only about 2% of the population in the United States, MSM accounted for most new HIV infections (6). In 2010, the estimated number of new HIV infections among MSM was 29,800, a significant 12% increase from the number in 2008 and a 22% increase among young MSM aged 13-24 (5). A study in 20 major U.S. cities found that about 1 in 5 (18%) MSM is already living with HIV, with an even higher prevalence among Black/African American MSM, and many are unaware of their infection (7).

Racial and ethnic minorities have been disproportionately affected by HIV/AIDS since the beginning of the epidemic, and represent the majority of new HIV infections,

people living with HIV, and deaths among people with HIV (4, 8). Black/African Americans and Hispanics/Latinos account for a disproportionate share of new HIV infections, relative to their size in the U.S. population. Black/African Americans represented approximately 12% of the U.S. population, but accounted for an estimated 44% of new HIV infections in 2010. Hispanics/Latinos represented 16% of the population, but accounted for 21% of new HIV infections in 2010 (4, 5). Black/African Americans also have the highest rate of new HIV infections. In 2010, the rate of new HIV infections per 100,000 for Black/African Americans (68.9) was about 8 times that of Whites (8.7); Hispanics/Latinos (27.5) had a rate 3 times that of Whites (5). Unless the course of the epidemic changes, at some point in their lifetime, an estimated 1 in 16 Black/African American men and 1 in 32 Black/African American women will be diagnosed with HIV infection (9) . Black/African Americans accounted for about half (48%) of the deaths among people with an HIV diagnosis in 2010 (4). Survival after an AIDS diagnosis is lower for Black/African Americans than for most other racial/ethnic groups, and Black/African Americans have had the highest age-adjusted death rate due to HIV disease throughout most of the epidemic. HIV was the fourth leading cause of death for Black/African American men and women ages 25–44 in 2009, ranking higher than their respective counterparts in any other racial/ethnic group.

HIV transmission among MSM

MSM are men who engage in sexual activity with others of the same sex, regardless of their sexual identity. The acronym MSM, established in 1994 by Glick et al. (10), signaled the crystallization of a new concept (11) and began to be widely used by epidemiologists in public health discussions, especially in the context of HIV/AIDS.

As one UNAIDS (12) report noted, sex between men occurs in every culture and society, though its extent and public acknowledgement vary from place to place. In terms of HIV, sex between men is significant because it can involve anal sex, which when unprotected carries a very high risk. At least 5 to 10% of HIV infections worldwide are estimated to occur through sex between men, though this figure varies considerably between countries and regions. MSM have been the risk group predominantly impacted in North America, Western Europe and Australia since the first case of AIDS was reported in 1981 (13). MSM have continued to represent the risk group diagnosed most frequently with HIV infection in many high-income settings – including Canada, France, the United Kingdom, the United States and Australia. HIV epidemic trends are in decline except among MSM and this phenomenon was described as re-emergent epidemics in MSM among these countries (13). However, a recent study (14) indicates the HIV epidemic among MSM is expanding from industrial countries to develping countries in the world. Although incidence data are scarce in these countries – including Sub-Saharan Africa and the Caribbean, which has the highest HIV prevalence rate among MSM –the limited incidence data suggest the epidemic among MSM in developing countries is in a rapid expansion phases. Five-year cumulative incidence data from a cohort study of MSM in Bangkok, Thailand shows that over the course of 60 months, 23% of sexually active Thai MSM of all ages who participated in the study became infected with HIV (15). Even more alarming, 31% of MSM ages 18-21 became infected with HIV over the same time period. It should be noted that these new infections occurred in a country with good antiretroviral drug (ARV) access, where homosexuality is not criminalized, and where the heterosexual HIV epidemic is in decline. Despite decades of research and

community, medical, and public health efforts, high HIV prevalence and incidence burdens have been reported in MSM throughout the world (16).

MSM are more severely affected by HIV than any other group in the United States. According to a CDC report (4), in 2010, MSM accounted for 63% of all new HIV infections, and MSM with a history of injection drug use (MSM-IDU) accounted for an additional 3% of new infections. That same year, young MSM (aged 13-24 years) accounted for 72% of new HIV infections among all persons aged 13 to 24, and 30% of new infections among all MSM. At the end of 2010, an estimated 489,121 (56%) persons living with an HIV diagnosis in the United States were MSM or MSM-IDU. By the end of 2010, an estimated 302,148 MSM with an AIDS diagnosis had died in the United States since the beginning of the epidemic, representing 48% of all deaths of persons with an AIDS diagnosis. By race/ethnicity, Black/African American MSM bear the greatest disproportionate burden of HIV. Among all MSM, Black/African American MSM accounted for 10,600 (36%) estimated new HIV infections in 2010. Meanwhile, a 20% increase of new HIV infections was also observed among young Black/African American MSM, largely contributing to the 12% increase of new HIV infections among MSM overall from 2008 to 2010.

One of the reasons for the persistent epidemic among MSM is sexual risk behavior and insufficient levels of consistent condom use (1). Unprotected receptive anal sex is known as the sexual behavior that carries the highest risk for HIV acquisition (17). A UNAIDS report also pointed out that while a majority of surveyed men who have sex with men said that they used a condom during their last episode of sexual intercourse in 69 of 96 countries reporting, in only 13 of these countries did more than 75% do so (1).

In addition, HIV testing services in many countries may be under-utilized by MSM. The global AIDS epidemic report (1) indicates that the median proportion of MSM who received an HIV test in the last 12 months was 38% throughout 186 countries, with fewer than 1 in 3 men being tested in the past 12 months in South and South-East Asia and Western and Central Europe, where MSM play a substantial role in national epidemics. Even among MSM who tested positive for HIV, 44% didn't know they were infected (18). Among those infected, young MSM (aged 18 to 29 years; 63%) and racial/ethnic minority MSM (54%) were more likely to be unaware they had HIV. Persons who don't know they have HIV don't receive HIV-related medical care and can unknowingly infect others (18). In addition, homophobia, stigma, and discrimination can also put MSM at risk for multiple physical and mental health problems and affect whether MSM seek and are able to obtain high-quality health services. Negative attitudes about homosexuality can lead to rejection by friends and family, discriminatory acts, and bullying and violence. These dynamics may make it difficult for some MSM to be open about same-sex behaviors with others, which can increase stress, limit social support, and negatively affect health (18).

Highly Active Antiretroviral Therapy (HAART) in HIV prevention

The treatment of HIV/AIDS has evolved in the last 30 years since the beginning of the epidemic from no treatment to treatment with a single drug, to dual-drug therapy and, now, to highly active antiretroviral therapy (HAART). HAART is defined as treatment with at least three active antiretroviral medications (ARVs), often called the drug "cocktail" or triple-therapy. It affords us a potent way of suppressing viral replication in the blood while attempting to prevent the virus from rapidly developing

resistance to the individual ARVs. Suppressing viral replication with HAART allows the body time to rebuild its immune system and replenish the destroyed CD4 or T cells. HAART has been clearly shown to delay progression to AIDS and prolong life (19).

Pre-Exposure Prophylaxis (PrEP)

Pre-Exposure Prophylaxis (PrEP) (20) is a new HIV prevention method in which people who do not have HIV take a daily combination ARV pill to reduce their risk of becoming infected. Safety and efficacy for PrEP were demonstrated in two large, randomized, double-blind, placebo-controlled clinical trials. One showed it was effective in reducing the risk of HIV infection by 42% compared with placebo in 2,499 HIV-negative men or transgender women who have sex with men (21). The other study showed that it reduced the risk of becoming infected by 75% compared with placebo in 4,758 heterosexual couples where one partner was HIV-infected and the other was not (serodiscordant couples) (22).

The CDC published interim clinical guidance for physicians electing to provide PrEP for HIV prevention among MSM in January 2011. CDC guidance stressed the importance of targeting PrEP to MSM at very high risk for HIV acquisition; delivering PrEP as part of a comprehensive set of prevention services; providing counseling regarding risk reduction and the importance of PrEP medication adherence; ensuring MSM who are prescribed PrEP are confirmed to be HIV negative prior to use; and providing regular monitoring of HIV status, side effects, adherence, and risk behaviors.

In July, 2012, the Food and Drug Administration (FDA) approved the use of Truvada®, the first drug to be used for HIV prevention as PrEP after the 30-plus year

battle against the virus. It is regarded as a promising approach for controlling the emerging epidemic among MSM.

Non-occupational Post-Exposure Prophylaxis (nPEP)

The use of post-exposure prophylaxis following occupational exposure to HIV, now considered standard of care in many countries, is based on findings from a single, small, retrospective case-control study of HAART prophylaxis following needlestick exposure among US healthcare workers (23). Although a randomized, controlled trial of antiretroviral therapy (ART) prophylaxis following non-occupational HIV exposure is not feasible due to the prohibitive cost of enrolling the large sample size required to establish preventive benefit, related to the inefficiency of sexual transmission per exposure, the use of ART prophylaxis following non-occupational exposure is expanding worldwide, as reflected by the creation of the European Project on Non-Occupational Post-Exposure Prophylaxis for HIV (EURO-NONPEP) (24).

The efficacy of antiretroviral Post-Exposure Prophylaxis (PEP) against infection with HIV following occupational exposures has prompted the use of PEP after non-occupational exposures. Since 2005, it has been recommended by the U.S. Department of Health and Human Services to those who seek care <72 hours after non-occupational exposure to blood, genital secretions, or other potentially infectious body fluids of a person known to be HIV infected, when that exposure represents a substantial risk for transmission (25). Due to a lack of data from the clinical trial, it is not proved to be 100% effective in preventing HIV seroconversion and careful evaluation of the costs and benefis on a case-by-case basis is suggested.

It has been nearly 30 years since HIV was discovered. Currently, there is still no evidence that HIV infected patients can be cured. The U.S Department of Health and Human Services and CDC in the United States have developed and implemented various strategies targeting HIV prevention since the 1980s. However, there are still an annual increase of 50,000 new HIV infection. MSM accounted for nearly two-thirds of all new infections in 2010. Black/African Ameican MSM, especially young Black/African Ameican MSM, are the most heavily impacted subgroup. Obviously, current strategy including sexual health education and promoting safer sex behavior is not enough to combat HIV. We need to consider and develop other effective and affordable prevention strategy to contain the spread of HIV.

Many scientists have regarded PrEP as a promising approach for controlling the emerging epidemic among MSM. There are several studies looking into the accepatence of PrEP and barriers to using it as a HIV prevention method among MSM. A study (26) conducted in New York City found that overall 55.4% of MSM and transgender women reported willingness to use PrEP. It reported that the main barriers to PrEP use were health concerns, including both long-term impacts on health and short-term side effects, concerns about PrEP's impact on future drug resistance, and concerns that PrEP does not provide complete protection against HIV. The main facilitators to PrEP use were free access to PrEP, followed by access to support services such as regular HIV testing, sexual health care and monitoring, and access to one-on-one counseling. Another study (27) conducted in Boston also reported a high intention (74%) to use PreP among high-risk MSM and found education, income, side effects from taking PreP and free access were significant predictors of intention-to-use.

Compared with PrEP, nPEP is understudied in the United States. Questions on nPEP have been included in studies on PrEP to determine participants' awareness of either prevention method (28). To the author's knowledge, there is currently no single study investigating the likeliness to use nPEP among MSM in the United States. Further research should be conducted to determine if nPEP is an acceptable prevention intervention as well as PrEP among MSM in the United States. By comparing the differences in the characteristics and behaviors of MSM who are likely to use nPEP and PrEP, identification of subgroups for implementation of these HIV prevention interventions can be identified.

CHAPTER II

Weina Xiang

ABSTRACT

The HIV epidemic continues to expand among men who have sex with men (MSM) since HIV was first discovered in the 1980s. Young and racial/ethnic minority MSM have been found to be disproportionately affected in recent years. To further understand characteristics associated with likeliness to use Pre-Exposure Prophylaxis (PrEP) and Non-occupational Post-Exposure Prophylaxis (nPEP) among HIV-negative MSM, 396 MSM were recruited via a banner advertisement on Facebook from June 6 to June 20, 2012. Participants were shown a video either on PrEP or nPEP and then asked about likeliness to utilize it. Among 197 MSM who were presented a video on PrEP, 51% reported they were very likely or likely to use PrEP. For nPEP, the majority (79%) of 199 MSM shown a video on nPEP reported they were very likely or likely to use nPEP as a HIV prevention method. No factors were found to be significantly associated with the likelihood of using nPEP. In univariate analysis, not currently having a main partner (OR 1.96, 95% CI=1.08-3.55, p=0.03) and having unprotected anal intercourse with at least one causal partner in the past 12 months (OR 3.19, 95% CI=1.49-6.82, p=0.003) were significantly associated with likeliness to use PrEP as a HIV prevention method. In multivariate analysis, no significant association was found for PrEP. Men aged 30 and older (OR 0.21, 95% CI=0.06-0.80, p=0.02) and men who had never tested for HIV (OR 0.29, 95% CI=0.10-0.80, p=0.02) were not likely to utilize nPEP. Our results show that MSM are very likely or likely to utilize PrEP or nPEP once they are well-educated about those methods. Although factors significantly associated with increased likelihood of

using PrEP and nPEP were not identified in multivariate analyses, MSM who learn about PrEP and PEP may be likely to use these HIV prevention interventions. Biomedical methods are suggested to be packaged with current prevention strategies targeting MSM.

INTRODUCTION

By the end of 2011, it was estimated that 34 million people worldwide were living with HIV, according to the global AIDS epidemic 2012 (1). That same year, the total number of new HIV infections was 2.5 million, and 1.7 million people died from AIDS-related causes. Thus far, Sub-Saharan Africa remains the most heavily impacted region, accounting for a 69% share of all HIV infections.

In the United States, the Centers for Disease Control and Prevention (CDC) estimates that more than 1.1 million people aged 13 years and older are living with HIV infection, and almost 1 in 5 (18.1%) are unaware of their infection (4). While the number of new HIV infections is down from its peak in the 1980s, estimates indicate that there have been approximately 50,000 new HIV infections annually in recent years (5).

Gay, bisexual, and other men who have sex with men (MSM) of all races and ethnicities remain the population most profoundly affected by HIV. According to a CDC report (4), in 2010, MSM accounted for 63% of all new HIV infections, and MSM with a history of injection drug use (MSM-IDU) accounted for an additional 3% of new infections. That same year, young MSM (aged 13-24 years) accounted for 72% of new HIV infections among all persons aged 13 to 24, and 30% of new infections among all MSM. At the end of 2010, an estimated 489,121 (56%) persons living with an HIV diagnosis in the United States were MSM or MSM-IDU. By the end of 2010, an

estimated 302,148 MSM with an AIDS diagnosis had died in the United States since the beginning of the epidemic, representing 48% of all deaths of persons with an AIDS diagnosis. Among all the subgroups of MSM, Blacks/African Americans bear the greatest disproportionate burden of HIV. Among all MSM, Black/African American MSM accounted for an estimated 10,600 (36%) new HIV infections in 2010. Meanwhile, a 20% increase of new HIV infections was also observed among young Black/African American MSM, contributing to the 12% increase of new HIV infections among MSM overall from 2008 to 2010.

The treatment of HIV/AIDS has evolved in the last 30 years since the beginning of the epidemic from no treatment, to treatment with a single drug, to dual-drug therapy and now, to highly active antiretroviral therapy (HAART). HAART is defined as treatment with at least three active antiretroviral medications (ARVs) and often called the drug “cocktail” or triple-therapy. It affords us a potent way of suppressing viral replication in the blood while attempting to prevent the virus from rapidly developing resistance to the individual ARVs (19).

Truvada® has been available since 2004 as an HIV treatment drug. In July 2012, the Food and Drug Administration (FDA) approved the use of Truvada® (29), the first drug to be used for HIV prevention as Pre-Exposure Prophylaxis(PrEP). PrEP, a new prevention method for HIV-negative persons that involves taking daily Truvada to reduce the risk of HIV infection (5), is regarded as a promising approach for controlling the emerging epidemic among MSM (20). The safety and efficacy of PrEP were demonstrated in two large, randomized, double-blind, placebo-controlled clinical trials (21, 22). One showed it was effective in reducing the risk of HIV infection by 42%

compared with placebo in 2,499 HIV-negative men or transgender women who have sex with men (21). The other study showed that it reduced the risk of becoming infected by 75% compared with placebo in 4,758 heterosexual couples where one partner was HIV-infected and the other was not (serodiscordant couples) (22). The CDC published interim clinical guidance (30) for physicians electing to provide PrEP for HIV prevention among MSM in January 2011. CDC guidance stressed the importance of targeting PrEP to MSM at very high risk for HIV acquisition; delivering PrEP as part of a comprehensive set of prevention services; providing counseling regarding risk reduction and the importance of PrEP medication adherence; ensuring MSM who are prescribed PrEP are confirmed to be HIV negative prior to use; and providing regular monitoring of HIV status, side effects, adherence, and risk behaviors.

Since 2005, non-occupational antiretroviral Post-Exposure Prophylaxis (PEP) has been recommended by the U.S. Department of Health and Human Services to those who seek care <72 hours after non-occupational exposure to blood, genital secretions, or other potentially infectious body fluids of a person known to be HIV infected, when that exposure represents a substantial risk for transmission (25). The use of post-exposure prophylaxis following occupational exposure to HIV, now considered standard of care in many countries, is based on findings from a single, small, retrospective case-control study of antiretroviral therapy (ART) prophylaxis following needlestick exposure among US healthcare workers (23). The efficacy of antiretroviral Post-Exposure Prophylaxis (PEP) against infection with HIV following occupational exposures has prompted the use of PEP after non-occupational exposures. However, a randomized, controlled trial of ART prophylaxis following non-occupational HIV exposure is not feasible due to the

prohibitive cost of enrolling the large sample size required to establish preventive benefit. Since nPEP has not been proved to be 100% effective in preventing HIV seroconversion, careful evaluation of the costs and benefis on a case-by-case basis is suggested.

Although several studies have examined variables associated with likeliness to use PrEP and nPEP respectively (28, 31, 32), there is no single study comparing the differences in associated characteristics of MSM and likeliness to use these two methods in the United States. This study will help in understanding the similarities and differences in the demographic and behavioral characteristics of MSM who are likely to use PrEP and nPEP. Knowledge of the characteristics of MSM who are likely to use PrEP and nPEP will help to identify subpopulations in which to implement these interventions.

METHODS

Participant Population

Participants were recruited via banner advertisements on Facebook from June 6 to June 20, 2012 targeting men over the age of 18 living in the United States and indicating an interest in men on their profiles. Potential respondents who clicked on the banner advertisements were taken to an eligibility screener administered through SurveyGizmo. Eligibility criteria included male sex, 18 years of age or older, and having had sex with a man in a one's lifetime. Eligible respondents were then invited to complete the survey asking the participants for demographic information, as well as questions about risk factors for HIV. Of the 999 completed surveys, 35 (4%) were excluded because the respondent had only had sex with women in their lifetime, and 93 (9%) were excluded because the respondent reported never having sex. Since the analyses were examining

HIV prevention strategies aimed at HIV-negative MSM, the 68 participants (7%) who self-reported an HIV-positive status were also excluded from the analyses.

Randomization and prevention information

The 803 HIV negative MSM in the final sample were randomized into 8 groups using simple block stratification. Each randomized group received different video messages on various HIV prevention methods describing the cost, effectiveness, side effects, impact on sexual pleasure, and instructions for using the intervention. The randomized groups were shown 5-10 minute videos on the following HIV prevention interventions: (1) condoms only, (2) PrEP only, (3) nPEP only, (4) rectal microbicides only, (5) condoms and PrEP, (6) condoms and nPEP, (7) condoms and rectal microbicides, and (8) condoms, PrEP, nPEP and rectal microbicides. After seeing the video(s), the respondents were asked a series of questions about likeliness to use the prevention methods that they were shown. Likeliness questions were answered on a five-point scale from (1) very unlikely, (2) unlikely, (3) neither likely or unlikely, (4) likely, (5) very likely. For data analysis, the likeliness scale was further dichotomized into "likely" (very likely or likely) and " not likely" (neither likely or unlikely, unlikely, or very unlikely).

In this study, participants who were only presented videos on PrEP only or nPEP only are included.

Survey and Measures

Data was collected as part of a large hierarchical messaging study. Since no identifying information was collected, this study was considered and determined exempt from institutional review by the Emory University IRB. For survey instrument, please refer to appendix.

Demographic Information

The survey included demographic characteristics of participants including age, race/ethnicity, and education. Race/ethnicity included white, black, Hispanic, Asian and Native American categories, but was dichotomized into white and non-white for analysis. Education was defined as the highest level completed and was categorized as less than high school, high school or equivalent, and greater than high school.

HIV Testing and Risk Behavior

Participants were also asked about having ever been tested for HIV, their self-estimated risk for HIV infection on a scale of 1 to 10 (1 being no risk and 10 being very high risk), if they currently had a main partner (someone that they feel committee to above all others), number of partners they had unprotected anal intercourse (UAI) with in the past 12 months, and number of casual partners (someone who they do not feel committed to above all others) with whom they had UAI with in the past 12 months.

Statistical Analysis

Univariate descriptive statistics including frequency and percentage for categorical variables were computed. Univariate logistic regression was first applied to assess the association between sociodemographic and behavioral variables and the

outcome (i.e., likeliness to use PrEP or nPEP) and were reported using unadjusted odds ratios (OR) and 95% confidence intervals (CI). Multivariate logistic regression including all variables was then fitted to determine the joint influence of variables on the outcome using adjusted odds ratios (AOR) and 95% CIs. Statistical analyses were performed using SAS 9.3 statistical software (SAS Institute Inc., Cary, NC). A P value ≤ 0.05 (2-sided) was considered statistically significant.

RESULTS

One hundred ninety-seven men were asked about likeliness to use PrEP, and 199 were asked about likeliness to use nPEP. Sample size for analysis in this study is 396.

Characteristics of Study Participants

Demographic and behavioral characteristics overall, and for men who were asked about likeliness to use PrEP and nPEP are presented in Table 1. The mean age of the sample was 28 (SD: 12.3), and 61% were ≤24 years old. The majority of the sample was white (77%). Almost three quarters (74%) had greater than a high school education, and most respondents (96%) identified as homosexual (data not shown). Sixty-eight percent had ever been tested for HIV and 77% self-estimated to be at low risk for HIV infection. Almost half (49%) reported currently having a main partner. Over half (53%) reported having unprotected anal intercourse with at least one partner in the past 12 months and 23% reported having unprotected anal intercourse with at least one casual partner in the past 12 months.

Likeliness to use PrEP

Fitted univariate and multivariate logistic regression models of PrEP are presented in Table 2. Among 197 participants who were asked about likeliness to use PrEP after watching the video, almost half (51%) reported they were very likely or likely to use it as a HIV prevention method. In univariate logistic regression analysis, not currently having a main partner compared with those who currently have a main partner (OR 1.96, 95% CI=1.08-3.55, p=0.03) and report of UAI with at least one casual partner compared with no UAI (OR 3.19, 95% CI=1.49-6.82, p=0.003) was associated with the likelihood of using PrEP. In multivariate analysis, no significant association was found.

Likeliness to use nPEP

Fitted univariate and multivariate logistic regression models of nPEP are presented in Table 3. Among 199 participants who were asked about likeliness to use nPEP after watching the video, the majority (79%) reported they were very likely or likely to use it as a HIV prevention method. In univariate logistic regression analysis, no significant association was found. In multivariate analysis, men aged 30 and older compared with men aged 18-19 (OR 0.21, 95% CI=0.06-0.80, p=0.04), and men who had never tested for HIV compared with those who ever tested (OR 0.29, 95% CI=0.10-0.80, p=0.02) were not likely to utilize nPEP.

DISCUSSION

This study found that 51% participants were very likely or likely to use PrEP and 79% participants were very likely or likely to use nPEP as a HIV prevention method. This suggests MSM are likely to utilize PrEP and/or nPEP once they are well-educated about it. Given that the HIV epidemic continues to expand among MSM while trends in

incidence overall have stablized in the United States, both PrEP and nPEP should be carefully considered to be packaged along with condom use and risk behavior change. In multivariate analysis, older age and ever tested for HIV were found to significantly decrease the likeliness to use nPEP. However, no significant association was found for PrEP. Although age was not significantly associated with likeliness to use PrEP, in both PrEP and nPEP groups, men in younger age groups (18-19 an 20-24) had higher percentages of likeliness to use the intervention.

A study (33) conducted in London reported that MSM who have unprotected anal intercourse with a casual partner were more likely to consider future PrEP use. We found a similar result in univariate analysis but not in the multivariate analysis.

There are many studies (28, 34-37) that examine awareness of PrEP and/or nPEP but little research has been conducted on likeliness of MSM in the United States to use them as prevention methods. To the author's knowledge, there is no current research examining the factors associated with likeliness to use nPEP among MSM in the United States. This study begins to fill this gap, but further research needs to be done. The results have show that the propotion of participants who are likely to use nPEP versus PrEP is higher (79% vs 51%). Some subgroups of MSM reported to be more likely to utilize PrEP, including those who are between ages 20-24, non-white, self-estimated to be at high risk for HIV infection, do not have a main partner and have engaged in unprotected anal intercourse with one or more casual partners to with in the past 12 months. This information may help identify subgroups of MSM when preparing to promote the use of PrEP and nPEP.

There is also a need for increased awareness among MSM for both PrEP and nPEP. Studies (28) have shown that even among highly sexually active MSM in New York City, the awareness rate of nPEP or PrEP was only at 36%. While MSM in San Francisco had a slightly higher rate of awareness (47%), still fewer than half were aware of either method (34). One study (35) in Spain found that 34% of MSM were aware of nPEP and awareness was associated with having a university degree, the degree of interaction with gay culture, number of sex partners, and use of the internet as the main way of meeting partners.

It has been nearly 30 years since HIV was discovered. Currently, there is still no evidence showing that HIV infected patients can be cured. The U.S Department of Health and Human Services and CDC have developed and implemented various HIV prevention strategies since the 1980s. However, there is still an annual increase of 50,000 new HIV infections, with MSM accounting for nearly two-thirds of all new infections. Black/African American MSM, especially young Black/African Ameican MSM, are the most heavily impacted subgroup. Clearly, the current prevention strategy focusing on sexual health education and promoting safer sex behavior is not enough to combat HIV. We need to consider and develop other effective and affordable prevention strategies to contain the spread of HIV.

Many scientists are concerned about the increase in risky sex behavior once using PrEP or nPEP. However, several studies have shown that use of PrEP or nPEP does not lead to an increase in high risk sex behavior in MSM. In a behavioral intervention trial of 4,295 MSM (38), nPEP users had the same high risk sex behaviors after use of nPEP as they did prior to the trial. In another randomized trial of PrEP (39), overall indices of

behavioral risk declined or remained stable during follow-up compared with behavior prior to the trial. Since PrEP and nPEP have been shown to be effcacious in MSM and there is no risk compensation for these two methods, if certain groups of MSM are likely to use them as HIV prevention methods, these services should be made available to them.

This study had several limitations. First, we recruited our participants via an online social networking site, resulting in a very young (more than half were ≤24) and the majority of whom were white. This does not reflect the diversity of the population of HIV-negative MSM in the US. Second, survey participation was voluntary and participants could exit the survey anytime they wanted. This resulted in several surveys with incomplete data that did not contribute to certain analysis. Yet, this limitation also provides a strength that previous studies have demonstrated, that online data collection has the potential to limit social desirability bias and result in more honest and accurate responses (40, 41). Third, the sample size is relatively small. Since it is a pilot study with randomization, it is hard to detect significant differences with only 200 participants in a multivariate logistic model. Large scale-up research should be done to further confirm the results. Finally, for convenience of data analysis, outcome variables (likeliness to use PrEP and nPEP) were dichotomized based on literature review. This decision may decrease the power of detecting significance in the model. For future study, ordinal logistic regression models may be considered to avoid such an issue.

Our results show that MSM are very likely or likely to utilize PrEP or nPEP once they are well-educated about those methods. Although factors significantly associated with increased likelihood of using PrEP and nPEP were not identified in multivariate analyses, MSM who learn about PrEP and PEP may be likely to use these HIV

prevention interventions. Biomedical methods are suggested to be packaged with current prevention strategies targeting MSM

TABLES

Table 1. Characteristics of HIV-Negative MSM asked about likeliness to use PrEP or nPEP as a HIV prevention method from an internet-based survey, United States, 2012

	Eligible participants (n=396)		MSM who were asked about PrEP (n=197)		MSM who were asked about nPEP (n=199)	
	No.	(%)	No.	(%)	No.	(%)
Age (yr)						
18-19	90	(23%)	45	(23%)	45	(23%)
20-24	151	(38%)	71	(36%)	80	(40%)
25-29	42	(11%)	23	(12%)	19	(10%)
30+	113	(29%)	58	(29%)	55	(28%)
Race/Ethnicity						
White	303	(77%)	151	(77%)	152	(76%)
Non-white	93	(23%)	46	(23%)	47	(24%)
Education						
< High school	15	(4%)	7	(4%)	8	(4%)
High school diploma or GED	87	(22%)	37	(19%)	50	(25%)
> High school	292	(74%)	152	(77%)	140	(70%)
Ever tested for HIV						
Yes	269	(68%)	135	(69%)	134	(67%)
No	126	(32%)	61	(31%)	65	(33%)
Self-estimated risk for HIV infection[§]						
Low (1-3)	305	(77%)	158	(80%)	147	(74%)
Medium (4-7)	67	(17%)	27	(14%)	40	(20%)
High (8-10)	16	(4%)	8	(4%)	8	(4%)
Currently have main partner						
Yes	193	(49%)	96	(49%)	97	(49%)
No	201	(51%)	101	(51%)	100	(50%)
Number of partners had UAI with in the past 12 months						
0	176	(44%)	89	(45%)	87	(44%)
≥1	208	(53%)	102	(52%)	106	(53%)
Number of casual partners had UAI with in the past 12 months						
0	293	(74%)	147	(75%)	146	(73%)
≥1	92	(23%)	45	(23%)	47	(24%)

Abbreviations: MSM, Men who have sex with men; PrEP, Pre-Exposure Prophylaxis; nPEP, Non-occupational Post-Exposure Prophylaxis; UAI, Unprotected Anal Intercourse

[§] Participant was asked to rate own risk for contracting HIV based on current behavior on a scale of 1-10.

Table 2. Characteristics and behaviors associated with likeliness of HIV-negative men to use PrEP from an internet-based survey, United States, 2012 (n=197)

	Likely to use PrEP (n=100) No. (%)	Not likely to use PrEP (n=89) No. (%)	OR	(95%CI)	P-value	AOR	(95%CI)	P-value
Age (yr)					0.16			0.58
18-19	24 (24%)	20 (22%)	1.00			1.00		
20-24	43 (43%)	26 (29%)	1.36	(0.63 - 2.95)		1.32	(0.54 - 3.20)	
25-29	11 (11%)	11 (12%)	0.93	(0.33 - 2.64)		0.92	(0.29 - 2.93)	
30+	22 (22%)	32 (36%)	0.58	(0.26 - 1.31)		0.74	(0.29 - 1.91)	
Race/Ethnicity					0.13			0.18
White	73 (73%)	72 (81%)	1.00			1.00		
Non-white	27 (27%)	17 (19%)	1.73	(0.86 - 3.51)		1.75	(0.77 - 4.01)	
Education					0.14			0.11
< High school	2 (2%)	5 (6%)	1.00			1.00		
High school diploma or GED	23 (23%)	11 (12%)	4.72	(0.77 - 28.85)		5.56	(0.74 - 41.76)	
> High school	74 (74%)	73 (82%)	2.47	(0.46 - 13.36)		2.41	(0.37 - 15.54)	
Ever tested for HIV					0.94			0.78
Yes	69 (69%)	61 (69%)	1.00			1.00		
No	31 (31%)	28 (31%)	0.98	(0.52 - 1.82)		0.90	(0.44 - 1.85)	
Self-estimated risk for HIV infection [§]					0.09			0.52
Low (1-3)	76 (76%)	78 (88%)	1.00			1.00		
Medium (4-7)	19 (19%)	8 (9%)	2.61	(1.06 - 6.42)		1.77	(0.66 - 4.77)	
High (8-10)	5 (5%)	3 (3%)	1.96	(0.44 - 8.69)		0.95	(0.17 - 5.27)	
Currently have main partner					0.03			0.10
Yes	43 (43%)	51 (57%)	1.00			1.00		
No	57 (57%)	38 (43%)	1.96	(1.08 - 3.55)		1.85	(0.89 - 3.83)	
Number of partners had UAI with in the past 12 months					0.17			0.44
0	40 (40%)	44 (49%)	1.00			1.00		
≥1	58 (58%)	43 (48%)	1.51	(0.84 - 2.72)		1.38	(0.61 - 3.15)	
Number of casual partners had UAI with in the past 12 months					0.003			0.12
0	67 (67%)	74 (83%)	1.00			1.00		
≥1	31 (31%)	13 (15%)	3.19	(1.49 - 6.82)		2.21	(0.81 - 6.03)	

Abbreviations: MSM, Men who have sex with men; PrEP, Pre-Exposure Prophylaxis; UAI, Unprotected Anal Intercourse

[§] Participant was asked to rate own risk for contracting HIV based on current behavior on a scale of 1-10.

Table 3. Characteristics and behaviors associated with likeliness of HIV-negative men to use nPEP from an internet-based survey, United States, 2012 (n=199)

	Likely to use nPEP (n=157)	Not likely to use nPEP (n=37)	OR	(95%CI)	P-value	AOR	(95%CI)	P-value
	No. (%)	No. (%)						
Age (yr)					0.20			0.04
18-19	37 (24%)	8 (22%)	1.00			1.00		
20-24	68 (43%)	10 (27%)	1.48	(0.54 - 4.08)		0.93	(0.30 - 2.85)	
25-29	14 (9%)	5 (14%)	0.60	(0.17 - 2.16)		0.29	(0.06 - 1.45)	
30+	38 (24%)	14 (38%)	0.59	(0.22 - 1.57)		0.21	(0.06 - 0.80)	
Race/Ethnicity					0.86			0.82
White	121 (77%)	28 (76%)	1.00			1.00		
Non-white	36 (23%)	9 (24%)	0.93	(0.40 - 2.15)		0.89	(0.33 - 2.41)	
Education					0.41			0.75
< High school	5 (3%)	2 (5%)	1.00			1.00		
High school diploma or GED	37 (24%)	12 (32%)	1.23	(0.21 - 7.17)		0.73	(0.07 - 7.89)	
> High school	115 (73%)	23 (62%)	1.99	(0.36 - 10.88)		1.04	(0.10 - 10.95)	
Ever tested for HIV					0.28			0.02
Yes	108 (69%)	22 (59%)	1.00			1.00		
No	49 (31%)	15 (41%)	0.66	(0.32 - 1.39)		0.29	(0.10 - 0.80)	
Self-estimated risk for HIV infection [§]					0.08			0.25
Low (1-3)	122 (78%)	24 (65%)	1.00			1.00		
Medium (4-7)	31 (20%)	9 (24%)	0.69	(0.29 - 1.63)		0.76	(0.26 - 2.21)	
High (8-10)	4 (3%)	4 (11%)	0.20	(0.05 - 0.84)		0.21	(0.03 - 1.31)	
Currently have main partner					0.57			0.65
Yes	78 (50%)	16 (43%)	1.00			1.00		
No	79 (50%)	20 (54%)	0.81	(0.39 - 1.68)		0.81	(0.33 - 1.99)	
Number of partners had UAI with in the past 12 months					0.50			1.00
0	69 (44%)	14 (38%)	1.00			1.00		
≥1	84 (54%)	22 (59%)	0.78	(0.37 - 1.63)		1.00	(0.35 - 2.85)	
Number of casual partners had UAI with in the past 12 months					0.20			0.52
0	118 (75%)	24 (65%)	1.00			1.00		
≥1	35 (22%)	12 (32%)	0.59	(0.27 - 1.31)		0.67	(0.20 - 2.26)	

Abbreviations: MSM, Men who have sex with men; nPEP, Non-occupational Post-Exposure Prophylaxis; UAI, Unprotected Anal Intercourse

[§] Participant was asked to rate own risk for contracting HIV based on current behavior on a scale of 1-10.

CHAPTER III

STUDY IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS

This study showed that MSM are likely to utilize PrEP and nPEP. More studies need to be conducted to further confirm the result and make PrEP and nPEP available. Many studies have focused on awareness or knowledge of biomedical methods such as PrEP, nPEP or rectal microbicides. However, there is a gap between awareness and intention to use. More studies need to be conducted to determine likeliness to utilize both PrEP and nPEP among MSM in the United States.

In the future, it may be more productive to focus on the gap between likeliness to utilize and actual utilization once PrEP and nPEP are more widely available. It will be helpful if facilitators and barriers can be determined, and the ideal service delivery mechanisms can be identified. Some studies (21, 42) also found that poor adherence to PrEP may decrease the effectiveness. Inadvertent and or inconsistent use of nPEP in HIV infected individuals could be a major driver of ARV drug resistance. More studies need to be done to assess long term effects and cost-benefit for both PrEP and nPEP. Regular condom use and reduction in risky sexual behaviors must also be emphasized for persons using biomedical prevention interventions such as PrEP and nPEP. Online surveys are an effective way to reach MSM nationally and more cost-effective for researchers. How to assure the quality and credibility of online surveys and how to implement these surveys to obtain a more diverse sample need further consideration and investigation.

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APPENDIX

Men's Health Survey

Introduction, age, sex and race

Thank you for your interest in our survey. Please take note of the following information:

1. Your answers are anonymous: we don't have any information about who you are beyond the questions you answer.

2. Some questions are about sensitive topics; you can choose not to answer any question that you are not comfortable with.

3. If you have any questions or comments, you may contact the Principal Investigator, Dr. Patrick Sullivan, at PSSULLI@EMORY.EDU.

What is your age?*

_____

What is your sex?*

( ) Male

( ) Female

Sex partner types

We would now like to you to answer some questions about your relationships.

In your entire life, have you had sex with:*

( ) Only women

( ) Only men

( ) Both men and women

( ) I've never had sex

Race, education, residence

Do you consider yourself to be Hispanic or Latino?

( ) Yes

( ) No

( ) Don't Know

Which racial group do you consider yourself to be in? (Please check all that apply.)

[ ] Asian/Pacific Islander

[ ] Black/African-American

[ ] White/Caucasian

[ ] Native American/Alaska Native

[ ] Other

What is the highest grade in school you completed?

( ) College, post graduate, or professional school

( ) Some college, Associate's degree, and/or Technical school

( ) High school or GED

( ) Some high school

( ) Less than high school

( ) Never attended school

( ) Don't Know

Health Insurance

What kind of health insurance or coverage do you currently have?

[ ] Private health insurance or HMO

[ ] Medicaid

[ ] Medicare

[ ] Tricare/Champus

[ ] Veterans Administration coverage

[ ] No health insurance

[ ] Some other health insurance

[ ] Don't know

Orientation, knows gay/bi men

What is your sexual orientation?

( ) Homosexual/ Gay

( ) Heterosexual/ Straight

( ) Bisexual

( ) Unsure

( ) Other: _____

Ever tested for HIV and when

Have you ever been tested for HIV?

( ) Yes

( ) No

( ) Don't know

In what year did you was your most recent HIV test?

( ) 2012

( ) 2011

( ) 2010

( ) 2009

( ) 2008

( ) 2007

( ) 2006

( ) 2005

( ) 2004

( ) 2003

( ) 2002

( ) 2001

( ) 2000

( ) 1999

( ) 1998

( ) 1997

( ) 1996

( ) 1995

( ) 1994

( ) 1993

( ) 1992

( ) 1991

( ) 1990 or before

Date of last HIV test

In what month of [question("value"), id="337"] was your most recent HIV test?

( ) January

( ) February

( ) March

( ) April

( ) May

( ) June

( ) July

( ) August

( ) September

( ) October

( ) November

( ) December

( ) I don't remember which month

In what month of [question("value"), id="337"] was your most recent HIV test?

( ) January

( ) February

( ) March

( ) April

( ) May

( ) June

( ) I don't remember which month

Details of last HIV test

What was the result of your most recent HIV test in [question("value"), id="337"]?

( ) Negative

( ) Positive

( ) Indeterminant/Inconclusive

( ) Didn't get the results of my last HIV test

( ) Prefer not to Answer

Have you ever tested positive for HIV?

( ) Yes

( ) No

Are you currently on treatment for HIV?

( ) Yes

( ) No

New Page

On a scale of 1 to 10 with 1 being no risk and 10 being very high risk:

How would you rate your risk for contracting HIV based on your current behavior?

No Risk

( ) 1

( ) 2

( ) 3

( ) 4

( ) 5

( ) 6

( ) 7

( ) 8

( ) 9

( ) 10

Very High Risk

AI P12M

Have you had anal sex with a male partner in the past 12 months?

( ) Yes

( ) No

How many men have you had anal sex with in the past year?

_____

UAI P12M

Please ensure the number of main and casual partners you have had in the past year is less than [question("value"), id="671"], the total number of sex partners you have had in the past year.

Of these [question("value"), id="671"] men you had anal sex with in the past year, how many were:

_____main partners (someone you feel committed to above all others; you may call him your boyfriend, partner, husband, etc.)

_____casual partners (someone who you do not feel committed to above all others)

Please ensure the number of unprotected sex partners you have had in the past year is less than [question("value"), id="671"], the total number of sex partners you have had in the past year.

Of these [question("value"), id="671"] men you had anal sex with in the past year, how many did you have unprotected sex (without a condom) with in the past year?

_____

What type of partner was this man you had anal sex with in the past year?

( ) main partner (someone you feel committed to above all others; you may call him your boyfriend, partner, husband, etc.)

( ) casual partner (someone who you do not feel committed to above all others)

Did you have unprotected anal sex (sex without a condom) with this man?

( ) Yes

( ) No

UAI P12M Cont.

Please ensure the number of main and casual partners you have had in the past year is less than [question("value"), id="671"], the total number of sex partners you have had in the past year.

Of these [question("value"), id="672"] men you had unprotected anal sex with in the past year, how many were:

_____main partners (someone you feel committed to above all others; you may call him your boyfriend, partner, husband, etc.)

_____casual partners (someone who you do not feel committed to above all others)

What type of partner was this man you had unprotected anal sex with in the past year?

( ) Main partner (someone you feel committed to above all others; you may call him your boyfriend, partner, husband, etc.)

( ) Casual partner (someone who you do not feel committed to above all others)

Please ensure the total number of unprotected sex partners you have had in the past year adds up to [question("value"), id="672"], the total number of men you have had unprotected sex with in the past year.

Of these [question("value"), id="672"] men you had unprotected anal sex (without a condom) with in the past year, how many were:

_____HIV positive

_____HIV negative

_____I did not know his HIV status

What was the HIV status of the man you had unprotected sex with?

( ) HIV-negative

( ) HIV-positive

( ) I did not know his HIV status

Main Partner

Do you currently have a main partner?

A main partner is someone that you feel committed to above all others -- this is someone you might call your boyfriend, significant other, life partner, or husband.

( ) Yes

( ) No

Have you discussed your main partner's HIV status with him?

( ) Yes

( ) No

Has your main partner ever told you he is HIV-positive?

( ) Yes

( ) No

Is your main partner currently on treatment for HIV?

( ) Yes

( ) No

( ) Don't know

Main AI and UAI

Have you had anal sex with this main partner?

( ) Yes

( ) No

Have you had unprotected anal sex (without a condom) with this partner?

( ) Yes

( ) No

Condoms Video

The information contained in this these videos is intended for educational purposes only. You should not rely on this information as a substitute for, nor does it replace, your health-care professional or other personal medical attention. If you have any concerns about your health, you should always consult with a physician or other health-care professional.

Please watch the entire video before moving on to the next page.

PrEP Video

The information contained in this these videos is intended for educational purposes only. You should not rely on this information as a substitute for, nor does it replace, your health-care professional or other personal medical attention. If you have any concerns about your health, you should always consult with a physician or other health-care professional.

Please watch the entire video before moving on to the next page.

Please watch the entire video before moving on to the next page.

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nPEP Video

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nor does it replace, your health-care professional or other personal medical attention. If you have any concerns about your health, you should always consult with a physician or other health-care professional.

Please watch the entire video before moving on to the next page.

Rectal Microbicides Video

The information contained in this these videos is intended for educational purposes only. You should not rely on this information as a substitute for, nor does it replace, your health-care professional or other personal medical attention. If you have any concerns about your health, you should always consult with a physician or other health-care professional.

Please watch the entire video before moving on to the next page.

Condoms HIV+ Video

The information contained in this these videos is intended for educational purposes only. You should not rely on this information as a substitute for, nor does it replace, your health-care professional or other personal medical attention. If you have any concerns about your health, you should always consult with a physician or other health-care professional.

Please watch the entire video before moving on to the next page.

Early Treatment Video

The information contained in this these videos is intended for educational purposes only. You should not rely on this information as a substitute for, nor does it replace, your health-care professional or other personal medical attention. If you have any concerns about your health, you should always consult with a physician or other health-care professional.

Please watch the entire video before moving on to the next page.

Condoms

If you were having anal sex with a partner in the next 12 months, how likely would you be to use a condom (if you were the top) or persuade your partner to use a condom (if you were the bottom partner)?

( ) Very likely

( ) Somewhat likely

( ) Neither likely or unlikely

( ) Somewhat unlikely

( ) Very unlikely

How likely would you be to use a condom or try and persuade your partner to use a condom to prevent HIV while:

	Very likely	**Somewhat likely**	**Neither likely or unlikely**	**Somewhat unlikely**	**Very unlikely**
Having sex with a casual partner (someone you do not feel committed to)?	( )	( )	( )	( )	( )

Having sex with a main partner (someone you feel committed to, i.e. boyfriend, partner, husband, etc.)?	( )	( )	( )	( )	( )
Having sex with a partner whose HIV status you do not know?	( )	( )	( )	( )	( )
Having sex with someone who is HIV-positive?	( )	( )	( )	( )	( )

PrEP

If a doctor were to prescribe PrEP to you in the next 12 months based on your pattern of sexual risk, how likely would you be to use PrEP to prevent HIV?

( ) Very likely

( ) Somewhat likely

( ) Neither likely or unlikely

( ) Somewhat unlikely

( ) Very unlikely

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nPEP

If you were to have an exposure to HIV in the next 12 months, how likely would you be to use nPEP to prevent HIV?

( ) Very likely

( ) Somewhat likely

( ) Neither likely or unlikely

( ) Somewhat unlikely

( ) Very unlikely

Rectal Microbicides

If you were having anal sex with a partner in the next 12 months, how likely would you be to use rectal microbicides (if you were the bottom partner) or persuade your partner to use rectal microbicides (if you were the top partner)?

( ) Very likely

( ) Somewhat likely

( ) Neither likely or unlikely

( ) Somewhat unlikely

( ) Very unlikely

How likely would you be to use rectal microbicides to prevent HIV while:

	Very likely	**Somewhat likely**	**Neither likely or unlikely**	**Somewhat unlikely**	**Very unlikely**
Having sex with a casual partner (someone you do not feel	( )	( )	( )	( )	( )

committed to)?					
Having sex with a main partner (someone you feel committed to, i.e. boyfriend, partner, husband, etc.)?	( )	( )	( )	( )	( )
Having sex with a partner whose HIV status you do not know?	( )	( )	( )	( )	( )
Having sex with someone who is HIV-positive?	( )	( )	( )	( )	( )

Condoms: HIV +

If you were having anal sex with a partner in the next 12 months, how likely would you be to use a condom (if you were the top) or persuade your partner to use a condom (if you were the bottom partner)?

( ) Very likely

( ) Somewhat likely

( ) Neither likely or unlikely

( ) Somewhat unlikely

( ) Very unlikely

How likely would you be to use a condom or try and persuade your partner to use a condom to prevent HIV while:

	Very likely	**Somewhat likely**	**Neither likely or unlikely**	**Somewhat unlikely**	**Very unlikely**
Having sex with a casual partner (someone you do not feel committed to)?	( )	( )	( )	( )	( )
Having sex with a main partner (someone you feel committed to, i.e. boyfriend, partner, husband, etc.)?	( )	( )	( )	( )	( )
Having sex with a partner whose HIV status you do not know?	( )	( )	( )	( )	( )
Having sex with someone who is HIV-positive?	( )	( )	( )	( )	( )

Early Treatment

You mentioned that you are currently on treatment for HIV. When answering the following questions about HIV treatment, please imagine that you are not on treatment at the moment and think about how you would react to the following situations.

How likely would you be to take HIV treatment to prevent the spread of HIV to your partner:

	Very likely	**Somewhat likely**	**Neither likely or unlikely**	**Somewhat unlikely**	**Very unlikely**
If there were NO benefit to your health?	( )	( )	( )	( )	( )
If there were also a benefit to your health?	( )	( )	( )	( )	( )

Express Testing

We would now like to ask you a few questions about HIV testing.

HIV testing is usually combined with education and prevention counseling, requiring 30-45 minutes to complete.

Imagine that you could use an "express" HIV testing service, taking about 10 minutes, that functioned in this way. You would enter your contact information in a computer, and an HIV tester would collect a drop of blood from your finger. You could ask to receive your HIV test result by text message, email, or by checking with a confidential PIN number on the internet. If your test for HIV turned out to be positive, your result would be returned by phone or in person by an HIV counselor.

If this "express" HIV testing service were available, how likely would you be to use the service to test for HIV in the next 12 months?

( ) Very likely

( ) Somewhat likely

( ) Neither likely or unlikely

( ) Somewhat unlikely

( ) Very unlikely

Which of the following are reasons that you would not be likely use the express testing service?

[ ] Want/need the prevention counseling

[ ] Worried about privacy of getting results by text message or email

[ ] I have questions about HIV that I want to be able to ask of a counselor

[ ] I want to get the result of my test before I leave the testing location

[ ] I don't test for HIV at all, so I would not use an express service either

[ ] I worry that a test done on a drop of blood from my finger would not be accurate

[ ] I don't want to share by cell phone number or email with the testing staff

Which of the following are reasons that you would likely use the express testing service?

[ ] Don't want/need the prevention counseling

[ ] To save time

[ ] I test for HIV often, and don't want prevention counseling every time

[ ] I don't like waiting to receive the result on the day that I test

[ ] I don't like talking with a counselor about what risks for HIV I have had

[ ] Would make it easier to test more often for HIV

Express Testing: Would Not use

You mentioned more than one reason that you would not be likely to use the express testing service. Which of these is the main reason that you would not be likely to use the service?

Express Testing: Would Use

You mentioned more than one reason that you would be likely to use the express testing service. Which of these is the main reason that you would be likely to use the service?

How likely would you be to use an "express" testing service that was offered in the following places?

	Very likely	**Somewhat likely**	**Neither likely or unlikely**	**Somewhat unlikely**	**Very unlikely**
Grocery store	[ ]	[ ]	[ ]	[ ]	[ ]
Bar/Dance Club	[ ]	[ ]	[ ]	[ ]	[ ]
Shopping mall	[ ]	[ ]	[ ]	[ ]	[ ]
Gay pride event	[ ]	[ ]	[ ]	[ ]	[ ]
Neighborhood festival	[ ]	[ ]	[ ]	[ ]	[ ]

Where are some other places that you would like to see this service if it became available?

Condoms: DB 1

Please answer the following questions about condom use.

Compared to having sex with a condom, having sex WITHOUT a condom:

	Strongly agree	**Agree**	**Not sure**	**Disagree**	**Strongly disagree**
is more	( )	( )	( )	( )	( )

dangerous for contracting HIV/AIDS and other sexually transmitted diseases (STD's).					
is more irresponsible.	( )	( )	( )	( )	( )
is more spontaneous.	( )	( )	( )	( )	( )
is more thrilling and exciting.	( )	( )	( )	( )	( )
feels better physically.	( )	( )	( )	( )	( )
is more pleasurable.	( )	( )	( )	( )	( )
makes me feel more connected to my partner.	( )	( )	( )	( )	( )

Condoms: DB 2

Copy of Please answer the following questions about condom use.

Compared to having sex without a condom, having sex WITH a condom:

	Strongly agree	**Agree**	**Not sure**	**Disagree**	**Strongly disagree**
interrupts the spontaneity of sexual activity.	( )	( )	( )	( )	( )
a condom is more messy and disgusting.	( )	( )	( )	( )	( )
is more of a hassle.	( )	( )	( )	( )	( )

is more expensive.	( )	( )	( )	( )	( )
feels more unnatural.	( )	( )	( )	( )	( )
makes me feel more responsible.	( )	( )	( )	( )	( )
prevents HIV/AIDS and STDs.	( )	( )	( )	( )	( )
is more of a sign of love for my partner.	( )	( )	( )	( )	( )

Thank You!

Thank you for taking our survey. Your response is very important to us.

If you have questions or comments, you may contact the Principal Investigator, Dr. Patrick Sullivan of Emory University, at PSSULLI@EMORY.EDU

To find an HIV testing location near you, please visit:

www.hivtest.org

To get more information about HIV, please visit:

www.cdc.gov/hiv

Otherwise, you can close your browser.
