Perceived Barriers to Participation in HIV Vaccine Trials among Eligible Men Who Have Sex with Men

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ABSTRACT

Background: Enrollment of participants is a vital step in the conduct of clinical trials to test candidate HIV vaccines. In order to efficiently enroll participants in vaccine trials, there is a need for investigators to adequately understand and address concerns or perceived barriers of potential participants.

Methods: Between December 2010 and March 2011, HIV Vaccine Trials Network (HVTN) carried out a mixed methods study among men who have sex with men (MSM) with the aim to better understand their attitudes towards getting involved in biomedical HIV prevention research. This study was a supplement to HVTN505, a phase IIb vaccine trial recruiting MSM in the US. Data collection among MSM included a survey with 1,835 respondents and six focus group discussions with a total of 62 participants in six cities in the US (Boston, Denver, Chicago, New York, Houston and Los Angeles).

Results: Of 324 survey respondents that were asked to rate their willingness to participate in an HIV vaccine trial on a four-point scale (very, somewhat, not sure and not at all willing), only 70 (21.6%) cited "very willing". Among those who did not cite "very willing", perceived side effects of vaccination (78%), perceived risk of iatrogenic HIV infection from vaccination (42%) and Vaccine-induced HIV Seropositivity (VISP) (37%) emerged as their topmost three barriers to participation. Reassurance about vaccine safety and more information about HIV vaccine research emerged as the two most important possible motivators for the respondents not very willing.

Focus group participants cited barriers similar to those indicated by survey respondents. They expressed concern about not having sufficient information about the potential side effects of study vaccines, were skeptical that study participants could not be infected with HIV from study vaccines, and cited several physical, social and financial concerns regarding VISP.

Conclusion: Focusing efforts on increasing awareness among MSM (especially most at risk groups i.e. African Americans and Latinos) regarding HIV vaccine research might increase willingness. Explaining key vaccine trial concepts to communities might dispel perceived barriers and misconceptions about HIV vaccine trials.

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ABBREVIATIONS

AIDS - Acquired Immune Deficiency Syndrome

HIV - Human Immunodeficiency Virus

HVTN- HIV Vaccine Trials Network

MSM - Men who have Sex with Men

NIMH-National Institute of Mental Health

VISP - Vaccine-Induced HIV Seropositivity

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INTRODUCTION

The Global AIDS epidemic

Since 1981, when Acquired Immunodeficiency Syndrome (AIDS) was first diagnosed in California and New York City,[1] the global Human Immunodeficiency Virus (HIV) and AIDS pandemic has caused 60 million infections. [2] Researchers estimate that more than 25 million persons have died of AIDS worldwide, and 33 million are currently living with HIV infection. [2] Although the incidence has declined in many countries, it is stable or increasing in others.[1]

Global response to the HIV and AIDS pandemic

The scientific community has made tremendous progress in basic and clinical research regarding HIV and AIDS, and in the implementation of prevention and treatment programs to control the pandemic.[2] Researchers now understands the biology of the virus and its pathogenesis. The infection can now be rapidly diagnosed and its replication suppressed with antiretroviral therapy.[2] In many parts of the developed world, near elimination of mother-to-child transmission has been achieved, whereas in many developing countries the incidence of this transmission is reducing.[1]

In spite of these advances, ending the three decade old pandemic poses enormous challenges. Even though these numbers are falling, about 2.5 million new cases of HIV infections and 1.7 million deaths are reported each year.[3]

Currently available preventive methods such as awareness campaigns, voluntary counseling and testing, use of condoms, and antiretroviral therapy all have limitations.[4] The infection continues to spread among adolescent women in Southern Africa, young MSM in the Americas and injection drug users in Asia and Eastern Europe.[5] Diffenbach & Fauci highlighted the fact that "for every 2 persons who begin ART, 5 persons become newly infected."[2] Thus, as we continue in the fourth decade since the first case of AIDS was announced, it is evident that we need new methods for controlling HIV infection including the development of a safe and effective HIV vaccine.

HIV vaccine trials and enrollment of study participants

Since 1987, more than 10, 000 participants have been enrolled in at least 65 phase I/II clinical trials to test not less than 35 vaccine candidates.[6] While it is generally believed that HIV vaccine research is likely to continue for many years to come, conducting future trials will require enrolling thousands of diverse study volunteers who will need to consider both benefits and risks to participation. [7] In order to improve efficiency and diversity in recruiting participants for future trials, investigators will need to adequately understand and address concerns or perceived barriers of would-be-participants.[8]

Barriers to participation reported in literature

Several participation barriers have been reported in the literature. Dhalla and Poole[9] via a systematic review classified barriers to participation according to: (1) the locus of the barrier[a] - personal or social, (2) the nature of the barrier[b] - risk or cost, and (3) misconceptions[c] (see table 1).

Category	Barriers
Personal risk	Vaccine side effect
	Becoming antibody positive
	Distrust of institutions
	Not having enough information about vaccines
Social risk	Discrimination, stigma
	May be seen as having HIV/AIDS
	Subjective norms-beliefs and (dis)approval of others
	Effect on marriage
Personal Cost	Logistical factors e.g. time, inconvenience, transport cost
	Trial procedures e.g. repeated vaccine injections, frequent blood draws
	Requirements to avoid/delay pregnancy
Social Cost	Family commitment
Misconceptions	Contracting HIV from vaccine
	Violation of confidentiality

Table 1: Examples of participation barriers in HIV vaccine trials reported in literature.[9]

[a] Some barriers exist within an individual's life, personally or socially.[9]
[b] "Risk" indicates barriers that potentially may occur in an HIV vaccine trial, while "cost" indicates barriers that will definitely occur in relation to an HIV vaccine trial.[9]
[c] Misconception refers to a highly unlikely or impossible outcome of participation.[9]

One perceived barrier to participation in HIV vaccine trials that is of growing interest and for which limited data exist in the literature is Vaccine-induced HIV Seropositivity (VISP). Therefore, we highlight key issues regarding VISP in the following sections.

Vaccine-induced HIV Seropositivity

VISP is a term used to describe the situation in which a person who has received an HIV vaccine construct (usually during clinical trials to test the candidate vaccine) receives a positive serologic test result for HIV even though the person has not been infected with HIV.[6, 10-14] This occurs because many of these products contain HIV genes and proteins and induce the body to produce antibodies against the virus.[6, 10-12] Most commonly used HIV diagnostic tests are serologic tests[11] that detect those antibodies to HIV irrespective of whether they result from the infection or non-infectious HIV components.

In order to fully grasp the concept of VISP, some key features of HIV infection are worth mentioning: (1) To date, there is no cure for HIV infection; (2) Infection with HIV causes antibodies to HIV to develop in the body; (3) People who are not infected with HIV do not, normally, have antibodies to HIV; (4) Since no-one is cured of HIV infection, there is a concordance between current HIV infection and having antibodies to HIV. Hence, having antibodies to HIV implies HIV infection[d]; (5) VISP is an exception to this logic.

[d] This is true for HIV but not for many other infectious disease (e.g. measles, hepatitis A etc.) where a person may continue to have antibodies long after they have recovered from the infection.

VISP in HIV vaccine trials

Since 1987, thousands of study volunteers have participated in clinical trials of preventive HIV vaccines.[6] Many of these participants received immunizations of candidate HIV vaccines which are made up of multiple viral proteins that could elicit an antibody response detectable by standard serologic tests.[6, 10-14] Because the antibodies induced by these vaccine constructs constitute those that are mostly detected by commonly used HIV screening tests,[2] trial participants undergoing HIV screening outside of trial sites[e] could test positive for HIV antibodies, and could be misclassified as being HIV infected, even though they are not infected. Results from previous studies have shown that the occurrence of VISP varies greatly with the type and dose of the vaccine constructs administered, duration of time since last immunization, and the type of serologic test used.[10] For instance, Cooper et al reported a 41.7% prevalence of VISP among 2,176 HIV uninfected trial participants who received HIV vaccine constructs in 25 phase one and 2 phase two trials conducted by HVTN clinical trial sites in nine countries between 2000 and 2010.[12] As researchers develop new candidate vaccines with increased immunogenicity, VISP becomes more likely in vaccinees because a higher proportion of vaccinees is expected to respond to the vaccine immunologically, responses are expected to have higher titers and will be elicited against a greater number of viral antigens.

[e] Trial sites test for antibodies to viral antigens not in the vaccine or for HIV viral RNA.

VISP, risk of misclassification of participants, and measures to reduce this risk.

The occurrence of VISP in participants of HIV vaccine trials has potential psychological, social and medical implications. HIV negative recipients of candidate HIV vaccines are at increased risk of being misclassified as HIV infected if post-trial HIV antibody test, done outside trial sites, has a positive result. Depending on the HIV associated sequences used in the candidate vaccine, not only may the antibody test be positive but the Western blot may also be difficult to interpret.[12] Limited data exist regarding the prevalence of these misleading results.[10]

Misdiagnosed individuals may be subjected to unnecessary anxiety or be extremely worried if confirmatory testing is not performed or does not accurately represent their true infection status.[9,10,] Furthermore, they may be excluded in taking part in blood donations. Second, owing to the persistent stigma that still surrounds HIV/AIDS, misclassified HIV candidate vaccine recipients may be exposed to social harms such as stigmatization and discrimination from others (friends, family, colleagues, community, general public).[7,10, 11] They could also experience international travel restrictions,[10,11] problems obtaining health or life insurance,[7,10,11] denial of employment or exclusion from joining the military. Finally, detection of VISP, resulting from obtaining HIV test outside trial sites during the course of participation in HIV vaccine trials may lead to unblinding of a participant's immunization status.[10] They might assume that they received the vaccine product and if they believe that the product is protective ,they might increase their sexual risk behaviors.

In order to reduce the risk of the misclassification and its attendant consequences mentioned above, participants in HIV vaccine trials are strongly encouraged to perform post-trial HIV tests at trial sites.[19] Efforts are also being intensified to reduce the stigma and discrimination associated with HIV/AIDS through community education.

VISP and its perception as a barrier to participation in HIV vaccine trials

The persistent stigma associated with HIV/AIDS and the likelihood of becoming a victim of social harm should a participant's false positive HIV test result be misinterpreted as HIV infection is most likely to influence how VISP is or will be perceived by potential HIV vaccine trial participants. Furthermore, misinformation and /or lack of information regarding vaccine trial concepts, VISP and measures put in place to mitigate misclassifying vaccinees are likely to further worsen attitudes and perceptions and, consequently, create greater barriers towards participation in HIV vaccine trials.

The participation of MSM and other high risk groups is important to HIV vaccine research

There are two important reasons why MSM participation in HIV vaccine trials is important. First, MSM are the hardest hit by HIV infection of all domestic US populations.[15]They account for about half of people living with HIV/AIDS in the US and about 6 out of every 10 of all new HIV infections.[15] Furthermore, the rate of new infections among young black and Hispanic MSM is reported to be increasing rapidly.[15]Thus, MSM

forms a very important group that requires new methods for HIV prevention including the development of an HIV vaccine.

Second, HIV vaccine trials are conducted in three phases. Phase I trials include small numbers of low-risk participants and test the safety of the candidate vaccine.[16] Phase II trials are carried out with larger number of participants with varying degrees of risk to better characterize the safety and test for the immunogenicity of the vaccine.[16] Phase III trials involve thousands of volunteers at high risk of infection and aim to determine the efficacy of the candidate vaccine.[16] These high risk individuals include individuals who report high risk behaviors as well as populations with high prevalence of HIV (i.e. MSM, commercial sex workers, and intravenous drug users). With a number of Phase IIB/ III HIV vaccine trials being planned, this subpopulation of high risk individuals, no doubt, form a very important category of potential volunteers to HIV vaccine trials.

METHODOLOGY

This is a mixed methods study and a secondary analysis of data gathered by HVTN through an NIMH supplemental grant (3U01AI068614-04S1) awarded in 2010. Data include a survey with 1,835 MSM and six focus group discussions with a total of 62 participants in six locations in the US including Boston, Denver, Chicago, Houston, Los Angeles and New York. Data was collected to identify perceived barriers and possible motivators to participation in HIV vaccine trials among uninfected, circumcised men and male-to-female transgender persons who have sex with men. The primary aim of the study was to better understand health behaviors; attitudes, beliefs and perceptions about getting

involved in biomedical HIV prevention research to inform efforts in recruitment, engagement and retention of study volunteers in trials.

Study Setting

Six study cities were chosen for this research (New York, Denver, Houston, Los Angeles, Boston and Chicago). These cities have well organized communities of MSM. They were also selected for geographic differences – NY and Boston representing more of Northeast, Houston representing South, Denver and Chicago representing Mountain and Midwest regions respectively and Los Angeles representing West Coast. All have MSM populations that carry the weight of HIV infection in the city.

City	Survey	Focus groups
Boston	301	6
Chicago	314	8
Denver	300	6
Houston	309	11
Los Angeles	308	15
New York	303	16

Table 2: **Distribution of MSM who took part in the study by city.**

Selection Criteria

A total of 1800 higher-risk HIV-uninfected MSM in six cities were recruited to complete the surveys. Study eligibility was defined so that the sample might reflect MSM who were more likely to be eligible for the HVTN 505 study. Eligibility was restricted to persons assigned male sex at birth, currently residing in one of the six cities, aged 18-49, self-reported HIV negative status. Higher-risk MSM was defined as follows: (a) unprotected anal intercourse with one or more males or male-to-female transgender partners in the

past 6 months, or (b) any anal intercourse with two or more males or male-to-female transgender partners in the past 6 months. This definition excluded MSM reporting sexual activity with only one HIV-uninfected male partner of 12 months or longer.

Subject recruitment

Multiple recruitment approaches were used to achieve a target sample of 300 MSM in each of six study cities. Effort was made to select a sample with a racial and ethnic composition that approximately reflects the distribution of MSM aggregated across the 6 cities. Recruitment was primarily conducted via the Internet, although 10% of the target estimate was reserved for 'traditional' (offline) recruitment through venues and referrals in each city to include MSM who do not frequently use the Internet. Online respondents were recruited via two social websites targeted to MSM, and one general social network website. Online methods include passive recruitment via banner ads and active recruitment via direct emails to potentially eligible men. The study was promoted as a 'Men's Health Survey', and interested persons were directed to an online screening instrument to determine eligibility. Eligible respondents were then permitted to complete the full survey online. Roughly 52% of online contacts were deemed ineligible, and 35% of contacts did not complete the screener or the survey. Automatic and periodic manual quality assurance mechanisms were adopted to safeguard against repeat responders. Online survey completers received $50.00 in the form of an online gift certificate redeemable from multiple merchants.

Recruitment of the 10% offline sample was conducted through a combination of passive recruitment techniques such as advertisements in regular and alternative newspapers, transit ads, and palm cards distributed at bars and restaurants serving MSM, as well as through participant referrals. Offline contacts were directed to call a 1-800 number or to send a 1-word text message to a 5-digit number. Calls, voicemails, and text messages to these numbers were answered by a group of five individuals trained in a written screening protocol. Following a brief explanation of the study, potential survey respondents were screened for eligibility. Screeners included quality assurance checks to reduce likelihood of repeat respondents or respondents having answered the online survey. Eligible respondents were provided an appointment at a local and accessible rental space where self-administered surveys were conducted.

Offline survey completers were encouraged to recruit friends to contact the study call line (referrals). All offline surveys were conducted over two consecutive days within each city. Offline survey completers received $75.00 in the form of an American Express gift card. Data collection activities were conducted between December 2010 and March 2011. A total of 1835 eligible MSM completed the survey, with city subtotals ranging from 300 to 314 respondents. The survey was administered in both English and Spanish.

Data collection

Participants were asked to indicate their awareness and/or previous participation in biomedical HIV prevention research (including HIV vaccine trials and pre-exposure prophylaxis trial). A subset of MSM who had never participated in these trials, but were

aware of ongoing trials in their respective cities (see figure 1), were asked to rate their willingness to participate in an HIV vaccine trial on a four-point scale: very, somewhat, not sure and not at all willing. Those who did not cite "very willing" (i.e. somewhat, not sure, not at all) were asked to cite possible participation barriers and motivators. Other information collected included: demographic information, sexual risk behavior, sources of information about research and other possible predictors of willingness.

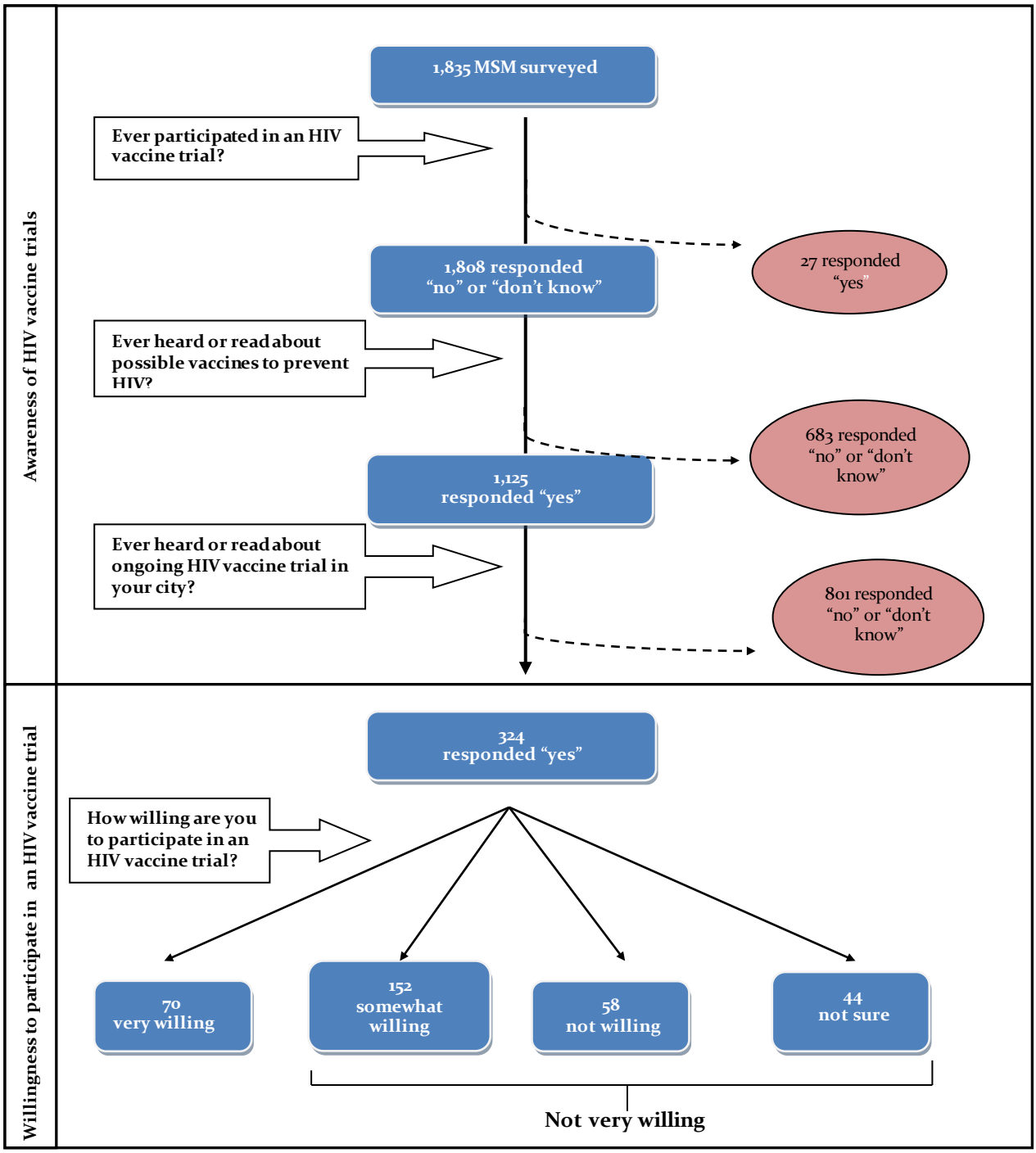

Figure 1: **A flow chart showing how the 324 MSM who rated their willingness to participate in an HIV vaccine trial were derived.**

Data analysis

Between June and December 2012, a secondary analysis of this data was performed with the objective of identifying perceived barriers and motivators to participation in HIV vaccine trials. We specifically aimed at answering the following research questions:

1. What proportion of MSM, among those surveyed, was very willing/ not very willing to participate in an HIV vaccine trial?
2. What were the characteristics that distinguish these two groups?
3. Among respondents who did not cite "very willing", what were their most common concerns?
4. What were the most common motivators cited by "not very willing" participants.
5. Do focus group participants share similar concerns as those surveyed and what constitute these concerns?

We dichotomized willingness outcome into: very willing and not very willing and used Chi-square test of significance to assess the significance of several predictors (e.g. age, race, income, sources of information about research) and other categorical variables.

Focus group discussions: Recruitment, Data collection and analysis

A focus group discussion was conducted at each of the six study sites with participants ranging from 6 to 16 per group (N= 62) during the same period in which the survey was administered. Participants were recruited through venue based sampling method using the same selection criteria as that used for the survey. Each focus group took about ninety minutes, was conducted in English and was digitally recorded. A facilitator, assisted by a

co-facilitator who took notes on other key details of the discussion not captured in the recorder, coordinated the discussion. Each participant completed a brief anonymous sociodemographic survey and at the end of the discussion received a $75 gift card.

Data was collected using a semi-structured focus group interview guide. The focus groups began with open-ended questions regarding participant's attitudes towards participating in research in general. Thereafter the facilitator elicited the motivators and barriers to participation in HIV vaccine research and, lastly, their impressions of several recruitment and engagement strategies.

The digital recordings were transcribed into scripts verbatim. Several readings of the transcripts were performed independently by three investigators and major themes were identified and coded. The investigators then met to harmonize their codes. The transcripts were then loaded into Atlas.ti6 and converted into rich text formats containing quotations from the transcripts with assigned codes.

Ethical considerations

The study protocol was approved by Fred Hutchinson Cancer Research Center Institutional Review Board (IR# 4950). Survey respondents, after going through initial screening questions to determine their eligibility, gave an implied consent by proceeding with the full survey. In a similar vein, before the commencement of focus group discussions, participants gave their verbal consent after a script (highlighting the purpose of the study, risks and benefits of participation, and issues of privacy and confidentiality) was read to the group.

RESULTS

Participants' characteristics

Between December 2010 and March 2011, a total of 1,835 and 62 eligible MSM took part in the Men's Health survey and focus group discussions respectively. Their ages ranged between 18 and 49 years. They were predominantly white, and were mostly homosexual. We observe a 9.9% and 12.3% higher proportion of MSM of white origin and currently residing in Boston respectively (p values < 0.01), when we compared the demographic characteristics of the entire study sample for the survey with the subset of respondents who rated their willingness to participate in HIV vaccine trials.

The focus groups had a much higher proportion of: (1) 40-49 age-group (p value < 0.01), (2) unemployed participants (p value < 0.01), and (3) participants with annual income less than $30,000 (p value = 0.18) when compared to their counterparts who took part in the survey. Table 3 below summarizes participants' characteristics.

Awareness of HIV vaccine trials

Participants were asked if they had ever participated in a clinical trial to test HIV vaccine. Of the 1,835 MSM who took part in the survey, 27(1.5%) had participated in a clinical trial to test HIV vaccine, while 1,799 (98%) had not. Of the 1,799 (98%) who had not participated, 1,125(61.3%) had read or heard about possible vaccines to prevent HIV. When this group of MSM who were aware of possible vaccines to prevent HIV was further

questioned about their awareness of ongoing clinical trials to test new HIV vaccines in their respective cities, only 324 (17.7%) answered in the affirmative.

Characteristics	Survey		Focus groups
Age	**N= 1,835**	**N=324**	**N=62**
18-24	417 (22.7%)	63 (19.4%)	7 (11.3%)
25-29	422 (23.0%)	70 (21.6%)	11 (17.7%)
30-39	548 (29.9%)	105 (32.4%)	18 (29.0%)
40-49	448 (24.4%)	86 (26.5%)	26 (41.9%)
Race/Ethnicity			
African American/Black	258 (14.1%)	34 (10.5%)	19 (32.7%)
Latino/Latina/Hispanic	385 (20.9%)	62 (19.1%)	8 (13.8%)
White	951 (51.8%)	200 (61.7%)	29 (50.0%)
Other[1]	241 (13.1%)	16 (4.9%)	2 (3.4%)
City			
Boston	301 (16.4%)	93 (28.7%)	6 (9.6%)
Chicago	314 (17.1%)	44 (13.6%)	8 (12.9%)
Denver	300 (16.3%)	56 (17.3%)	6 (9.6%)
Houston	309 (16.8%)	43 (13.3%)	11 (17.7%)
Los Angeles	308 (16.8%)	30 (9.3%)	15 (24.1%)
New York	303 (16.5%)	58 (17.9%)	16 (25.8%)
Sexual orientation			
Gay or Homosexual	1,532 (83.5%)	289 (89.2%)	50 (80.6%)
Bisexual	239 (13.0%)	28 (8.6%)	9 (14.5%)
Other[2]	64 (3.5%)	7 (2.2%)	3 (4.8%)
Annual Income (in $1,000)			
<$5	122 (6.7%)	22 (6.8%)	7 (11.4%)
$5-14.9	314 (17.1%)	49 (15.1%)	15 (24.7%)
$15-29.9	398 (21.7%)	68 (20.9%)	17 (27.8%)
$30-49.9	381 (20.8%)	67 (20.7%)	12 (19.7%)
$50≥	501 (27.3%)	102 (31.5%)	10 (16.4%)
Others[3]	116 (6.3%)	16 (4.9%)	-
Employment status			
Full time	973 (53.0%)	168 (51.9%)	12 (20.7%)
Part time	328 (17.8%)	69 (21.3%)	28 (48.3%)
Unemployed	188 (10.2%)	36 (11.1%)	18 (31.0%)

Table 3: **Socio-demographic characteristics of participants in the survey and focus group discussions**.[1]This include Asians (112), other ethnic minorities (48) and those who decline to state their ethnicity (13). [2] This category includes straight, two-spirited, genderqueer, and transgender groups. [3] This category includes those who do not know or declined to state their income.

Willingness to participate in an HIV vaccine clinical trial

The 324 respondents who were aware of ongoing HIV vaccine trials were asked to rate their willingness to participate in such trials. In this subset, 70(21.6%) were very willing;

152(46.9%) were somewhat willing; 58(17.9%) were not willing; 44(13.5%) were indecisive (see figure 1). It should be noted that those who indicated some level of willingness in participating in an HIV vaccine trial make up a bit above two-thirds (68.5%) of the 324 MSM that responded to the question.

Several focus group participants, similarly, expressed their willingness to participate in an HIV vaccine trial. They made several remarks ranging from general expressions of interest such as:

I don't mind, I'd try it (Boston)

I'm down (Boston)

But it's something that I'd definitely thought about doing. I just haven't had an opportunity like this… (Boston)

to stating specific reasons for wanting to participate:

And if I can contribute to it and it will do some good in somebody's life and it doesn't harm me, then why not. It's very easy for me to come here for two hours and if somebody gets helped, then it's all the better for it. (Boston)

…the positive side of participating in a vaccine trial is that the only way that we can get through this from a treatment stand-point is by people participating in the trials. I'd like to help if I could. So the advantages is, is, the greater social good. (Boston)

Just the fact that ya know, participating is something that could possibly enable future generations to not even have to be affected by HIV. (Chicago)

Predictors of willingness

We explored several distinguishing characteristics between MSM that were very willing and those that were not very willing to participate in an HIV vaccine trial. From our analysis, we observe that MSM that were very willing to participate in an HIV vaccine trial were also more likely to: (1) trust their local clinical research institutions to protect them

Variables (N=324)	How willing are you to participate in an HIV vaccine trial?		P values
	Very willing (n=70)	Not very willing (n=254)	
Age			0.15
18-24	16 (23%)	47 (19%)	
25-29	16 (23%)	54 (21%)	
30-39	15 (21%)	90 (35%)	
40-49	23 (33%)	63 (25%)	
Race			0.69
African American/Black	7 (10%)	27 (11%)	
Latino/Latina/Hispanic	11 (16%)	51 (21%)	
White	44 (66%)	156 (64%)	
Others	5 (7%)	11 (4%)	
Annual income (in $1,000)			0.06
<$5	4 (6%)	18 (8%)	
$5-14.9	14 (21%)	35 (15%)	
$15-29.9	22 (32%)	46 (19%)	
$30-49.9	13 (19%)	54 (22%)	
$50 ≥	15 (22%)	87 (36%)	
I trust my local clinical research institutions to protect me from harm if I participated in their HIV clinical trials			0.01*
Agree	65 (97%)	204 (86%)	
Disagree	2 (3%)	33 (14%)	
I feel like clinical research institutions care more about profit than the health of community members			0.85
Agree	22 (32%)	77 (34%)	
Disagree	46 (68%)	152 (66%)	
Local clinical research institutions ask for thoughts and ideas from community residents			0.07
Agree	38 (81%)	124 (67%)	
Disagree	9 (11%)	61 (33%)	
If I participated in a clinical research study, my friends would think I had lots of unprotected or 'risky' sex			0.03*
Agree	15 (23%)	92 (38%)	
Disagree	49 (77%)	147 (62%)	
There is a big need for an HIV vaccine			0.64
Agree	68 (22%)	235 (78%)	
Disagree	2 (17%)	10 (83%)	
There is a very little chance of finding an HIV vaccine that will work			0.08
Agree	10 (15%)	58 (25%)	
Disagree	56 (85%)	171 (75%)	
If I participated in an HIV vaccine trial, I would feel comfortable telling my friends about it			<0.01*
Agree	60 (86%)	156 (64%)	
Disagree	10 (14%)	88 (38%)	
I worry that my privacy would be invaded in an HIV vaccine trial			<0.01*
Agree	10 (14%)	104 (43%)	
Disagree	60 (86%)	138 (54%)	
I can prevent the spread of HIV by participating in an HIV vaccine trial			<0.01*
Agree	55 (26%)	158 (74%)	
Disagree	4 (7%)	52 (93%)	
There should be more information about HIV vaccine trials			0.62
Agree	68 (98.5%)	241 (97.5%)	
Disagree	1 (1.5%)	6 (2.5%)	
MSM's source of information about research			0.97
Provider/recruiter	16 (25%)	57 (24%)	
Media	49 (75%)	176 (76%)	

Table 4**: Characteristics that predict MSM's willingness to participate in an HIV vaccine trial.** Significant P values are asterisked.

from harm if they participated in such trial (P value = 0.01); (2) feel comfortable telling their friends about it, believe they can prevent the spread of HIV and were less likely to worry that their privacy would be invaded (P values =< 0.01).

Participation barriers

These refer to a large collection of psychological factors that may dissuade someone from participating in a vaccine trial.[8] 254 survey respondents who were not very willing to participate in an HIV vaccine trial were asked to cite reasons for not wanting to join such trial. Reasons cited by respondents are shown in table 5 below. We focus our analysis on the topmost three.

N=254		
Reasons for not wanting to join an HIV vaccine trial	**n**	**%**
I worry about side-effects	197	78
I am afraid of getting HIV from the vaccine	106	42
I am afraid that I will test positive for HIV if I take the vaccine (VISP)	94	37
The vaccine may not protect me from HIV	81	32
I don't have time to join a research study	50	20
I don't like getting shots	43	17
I am afraid people will think I am risky if I take the vaccine	43	17
I do not trust the researcher	36	14
Others[1]	47	19

Table 5**: Reasons for not wanting to join an HIV vaccine trial.** [1]This category includes those who stated that they were not at risk of getting HIV- (12), those who stated other barriers not listed above - (25), and the remainder represents those who declined comment.

It is important to note that participants cited multiple reasons for not wanting to join an HIV vaccine trial. Figure 2 illustrates the relationship between the topmost three barriers cited by participants.

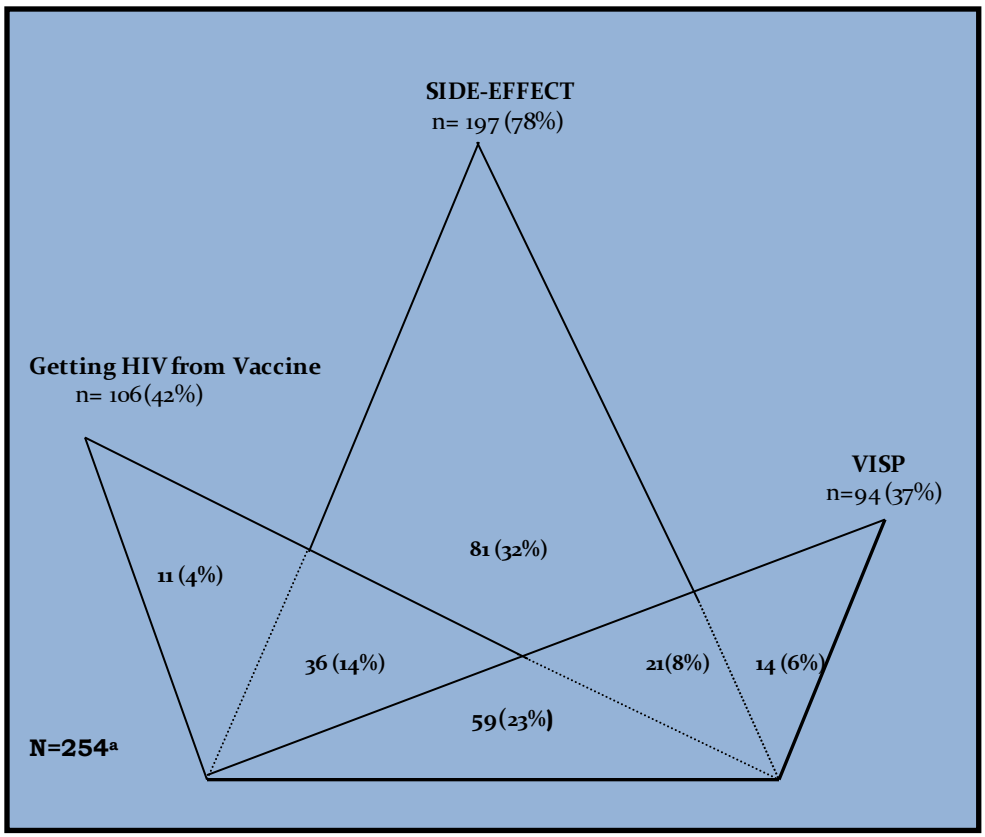

Figure 2: **Relationship between the topmost three participation barriers cited by survey respondents.** The area of each triangle corresponds to the total number of respondents that fall under each category -HIV (106), side-effects (197), and VISP (94). 59(23%) of respondents expressed concerns for all the three participation barriers; 21(8%) for both VISP and side effects of vaccination; 36 (14%) for both side effects of vaccination and getting HIV from vaccine and 33 (13%) for both getting HIV from vaccine and VISP (not shown).

At this juncture, we would like to elucidate the key issues raised during the focus group discussions regarding these top three perceived barriers to participation.

Perceived vaccine side effect

Participants were generally concerned about not having sufficient information regarding the potential side effects of vaccination and made several comments such as:

You have absolutely no idea what, how it is going to affect your body. (Denver)

As long as it don't keep me crippled, get my knuckles like this. (Boston)

...I mean cancer is another thing that would be a concern, don't you think? By injecting into our bodies the things we don't know synthetically what it is going to do long-term. I mean we thought for a long time saccharine was going to be cancer related. Who's to say that this HIV vaccine doesn't cause cancer twenty years down the line...(Houston)

Others mentioned certain perceived side effect of vaccination that is of concern. One

participant stated:

I would just be afraid of the side effects. Just ya know hair loss or kinda some kind of epilepsy or just ya know... (Los Angeles)

...what if like down the road like one day I'm gonna let my hair grow usually, obviously I'm not letting it but ya know what if it just starts falling without me shaving it off. I rather just stay healthy. (Los Angeles)

Perceived risk of acquiring HIV from vaccination

Some participants expressed skepticism about the fact that candidate vaccines being

tested at trial sites do not infect study participants with HIV. They made remark such as:

I couldn't quite comprehend how you'd test an HIV vaccine without exposing someone to HIV. (Chicago)

... I see the signs out and it says there's a test happening whatever and you cannot contract HIV from this and I'm always wondering like, how? (Chicago)
I mean you can't get HIV from the vaccination. Again, we are going to question, how do they know that? And why, okay, if there's no possible concern if the HIV negative person can catch it, then why is there an age cap? Why, at forty-five, do they say wait a minute, you're not eligible anymore because...your immune system is dropping down where oh, wait, there is that possibility. (Houston)

...You have to have guinea pigs in order to make progress and to come up with a cure but that is asking a lot of somebody to risk becoming HIV positive so they can be one of the first guinea pigs to sell people down the road after them but I mean, you know, that's a thought. I don't know how many people would be willing to do that. I mean, maybe, if somebody thought that they were going to be HIV positive and it was inevitable, then you know. (Denver)

VISP

Concerns held by MSM regarding VISP can be grouped into the following themes: (1) physical concerns; (2) social concerns; (3) financial concerns; and (4) concerns as regards confirmatory test.

Physical concerns

A participant expressed anxiety about possible long-term side effect of having HIV antibodies:

how would having the antibody in my blood, even though I'd be negative, I'd still have the antibody in my blood, how would that actually affect my body in the next 30 years. (Los Angeles)

Another participant fears he could become ill, stating:

....that you get this vaccine and I know that antibodies, they can actually, if you get tested on the outside of this study, it can actually show up as a false positive. The fact that I don't get sick, I haven't been sick... haven't been, haven't even had a common cold in about ten years, has me concerned that this would actually turn over that. (Denver)

One participant expressed his concern about the possible psychological trauma of having a positive test result to HIV:

And, like, who wants to go through that mental anguish, you doing something good, putting yourself through vaccine trial and then all of a sudden when you do get tested, oh, your test came back positive. You know how, nobody know how that is going to affect you mentally. (New York)

Social risks

Participants expressed concerns about perceived social impacts of VISP. One participant stated the possibility of being denied employment or medical insurance:

Employers cannot hire you or give you medical insurance for pre-existing conditions...Like one of my friends, he, gorgeous, gorgeous guy, he got hired by El Al Airlines which is based out of Dubai and they give you HIV tests and he was positive and they said sorry, we don't

want you…God, if, if my blood showed up this positive you know, for the rest of my life, I think that creates problems with careers; whether you are changing jobs, changing underwriters, changing insurers. (Los Angeles)

Financial risks

Participants also expressed dismay about the perceived cost of getting a confirmatory test for HIV for those who participate in HIV vaccine trials:

And, I think it is a real shame that the people who most need those tests, may not have it for them unless they pay $200 a pop and wait two weeks. (Houston)

I would consider participating if I had an iron-clad agreement that they will pay for my HIV test for the rest of my life and here's the money set aside in a trust, I mean, but I don't see that happening and I, you know, I don't know. (Houston)

…you will never be able to get an instant read on your HIV status and you will have to go pay a couple of hundred bucks to your doctor or use our magic card that they talked about…I think that is a big deterrent. (Houston)

Concerns regarding confirmatory testing

Participants expressed various concerns about getting a confirmatory test that will show their true HIV status should they participate in HIV vaccine trials. One participant expressed his concern about the possibility of a delay in getting confirmatory test result:

The whole thing of having to take a Western blot… Because a Western blot is a two week test. I mean, that is two weeks of inactivity…I mean, I don't want two weeks of inactivity. (Houston)

Others expressed worries of having to pay for confirmatory test:

I don't go to my private doctor whenever I want an HIV test, I just, I mean, I get them free… To my friends, other gay men that I am friends with, we take this test all the time. And to suddenly have that removed from you, that access to information, right? I think is a huge problem in any protocol where they are going to develop a vaccine… (Houston)

Other participants raised the issue of long-term accessibility of trial sites or the possibility of getting medical services when the perceived side effects of vaccination occur:

Ya know, this clinical trial maybe last for 10 years and then 20 years from now I might get some side effects of it oh, where's the…look in my phone book, oh, they're gone (Los Angeles)

Possible motivators for MSM

We asked the 254 MSM that fall under the not-very-willing category to indicate what could possibly increase their interest in joining an HIV vaccine trial. In the table 6, we compare the responses among respondents who cited the three main concerns to participation.

What would increase your interest in joining an HIV vaccine trial?	Concerned about vaccine side-effects (N=197)	n (%)	Concerned about getting HIV from vaccine (N=106)	n (%)	Concerned about VISP (N=94)	n (%)
1	If I knew the vaccine was safe	155(77%)	If I knew the vaccine was safe	94(89%)	If I knew the vaccine was safe	75(79%)
2	If I had more information	124(63%)	If I had more information	76(72%)	If I had more information	64(68%)
3	If I knew the vaccine had a good chance of working	110(56%)	If I knew the vaccine had a good chance of working	58(55%)	If I knew the vaccine had a good chance of working	55(59%)
4	If I knew it would help other people avoid getting HIV	91 (46%)	If I knew it would help other people avoid getting HIV	49(46%)	If I knew it would help other people avoid getting HIV	45(48%)
5	If I got paid to participate	85(43%)	If I got paid to participate	48(45%)	If I got paid to participate	44(47%)
6	If it would help researchers find new ways to fight HIV	84(43%)	If it would help researchers find new ways to fight HIV	43(41%)	If it would help researchers find new ways to fight HIV	41(44%)
7	If I knew who was conducting the study	66(34%)	If I knew who was conducting the study	42(40%)	If I knew who was conducting the study	37(39%)
8	If I knew someone in the study	64(32%)	If I knew someone in the study	34(32%)	If I knew someone in the study	29(31%)
9	If my health care provider suggested I participate	58(29%)	If my health care provider suggested I participate	31(29%)	If my health care provider suggested I participate	27(28%)

Table 6: Possible motivators for MSM not very willing to participate in an HIV vaccine trial.

We observe the following: (1) participants considered reassurance about vaccine safety, more information about HIV vaccine research and reassurance about vaccine efficacy as topmost three motivators; (2) There was no difference in the order in which potential motivators were listed by respondents citing different barriers to trial participation.

DISCUSSION

Several studies have been conducted regarding willingness to participate and perceived barriers in HIV vaccine trials among high-risk groups both within and outside the US. This study focuses on willingness to participate in a hypothetical HIV vaccine trial among the MSM population within the US, who do not have previous vaccine trial experience, with selection criteria tailored to represent the MSM who met the eligibility criteria for the HVTN 505 study.

We observe that MSM of white origin and MSM who reside in Boston (see table 3) were much more aware of HIV vaccine research than their counterparts of other races and residing in other study cities. Since it is important that HIV vaccine trial participants reflect the demographics of the epidemic, awareness campaigns need to focus more on the most-at-risk populations, most especially, African Americans and the Latinos that account for 40% and 18% of AIDS cases respectively.[17]

It is important to note that sociodemographic factors such race, age and income did not predict willingness in this study. However, attitudes and perceptions did. MSM that were very willing to participate in an HIV vaccine trial were also more likely to: (1) trust their local clinical research institutions to protect them from harm if they participated in such trials (P value = 0.01); (2) feel comfortable telling their friends about it, believe they can prevent the spread of HIV and be less likely to worry that their privacy would be invaded (P values =< 0.01) (see table 4). It is, therefore, important that awareness campaigns be focused on influencing attitudes and perceptions about HIV vaccine trials.

Providing more information about key trial concepts to potential participants might improve attitudes and perceptions, and therefore, increase willingness. However, Koblin et al[18] reported that an increase in knowledge in vaccine trial concepts was associated with becoming not willing, particularly among MSM with low knowledge levels. Most participants in this study (98.5% of those very willing and 97.5 % of those not very willing) generally agreed that there is need for more information about HIV vaccine research (see table 4). When those who were not very willing to participate in an HIV vaccine trial were asked to state what would increase their willingness, reassurance about vaccine safety and more information about HIV vaccine research were cited as the most common and second most common motivating factors respectively (see table 6).

More information about key trial concepts is also likely to dispel perceived barriers to participation, misconceptions and myths about HIV vaccine research. These perceived barriers are more likely to be due to misinformation or lack of information about HIV vaccine research. Interestingly, the same key facilitators were named by groups of MSM reporting different primary barriers to study participation. Figure 3 illustrates the possible connection between lack of information, misinformation and perceived barriers to participation in HIV vaccine trials cited by respondents.

Key concerns to participation cited by participants in this study, including concerns about vaccine side effects, perceived risk of getting HIV from vaccination and VISP have, notably, been cited in several studies that reported barriers to participation in HIV vaccine trials.[20] This points out the fact that these perceived barriers are widespread among potential trials participants. It is, therefore, imperative that the root causes of these

concerns be investigated and more efforts should be focused on addressing these issues. Regarding perceived vaccine side effects, we noted that focus group participants' concerns were centered on either not having adequate information about the potential side effects of HIV study vaccines or they were concerned with certain perceived or imagined side effects. Thus, it is important that potential side effects of study vaccines be adequately discussed with potential study volunteers before enrollment in to trials. With regards to participants' concerns about getting HIV from study vaccines and VISP, Fincham et al argued that the probable lack of understanding of the science of how vaccines operate, or thoughts about the possibility that scientists are wrong about the inability of candidate HIV vaccines to cause HIV infection, may be major contributing factors.[21] As advocated by Fincham et al, these hypotheses need to be tested in future research.

One key feature of this study is that it identifies possible motivators among participants who already indicated they were not very willing to join a trial. Therefore, we anticipate that our findings will enhance efforts in recruitment and help researchers in planning appropriate interventions targeted towards potential study volunteers who may not be willing to join a trial.

Limitations

Expression of hypothetical willingness to participate in an HIV vaccine trial does not necessarily translate in to actual participation. Results found by Buchbinder et al[8] showed that 29% of those who had previously stated that they would definitely be willing to participate in a future phase 2 trial refused enrollment when that trial commenced, as did

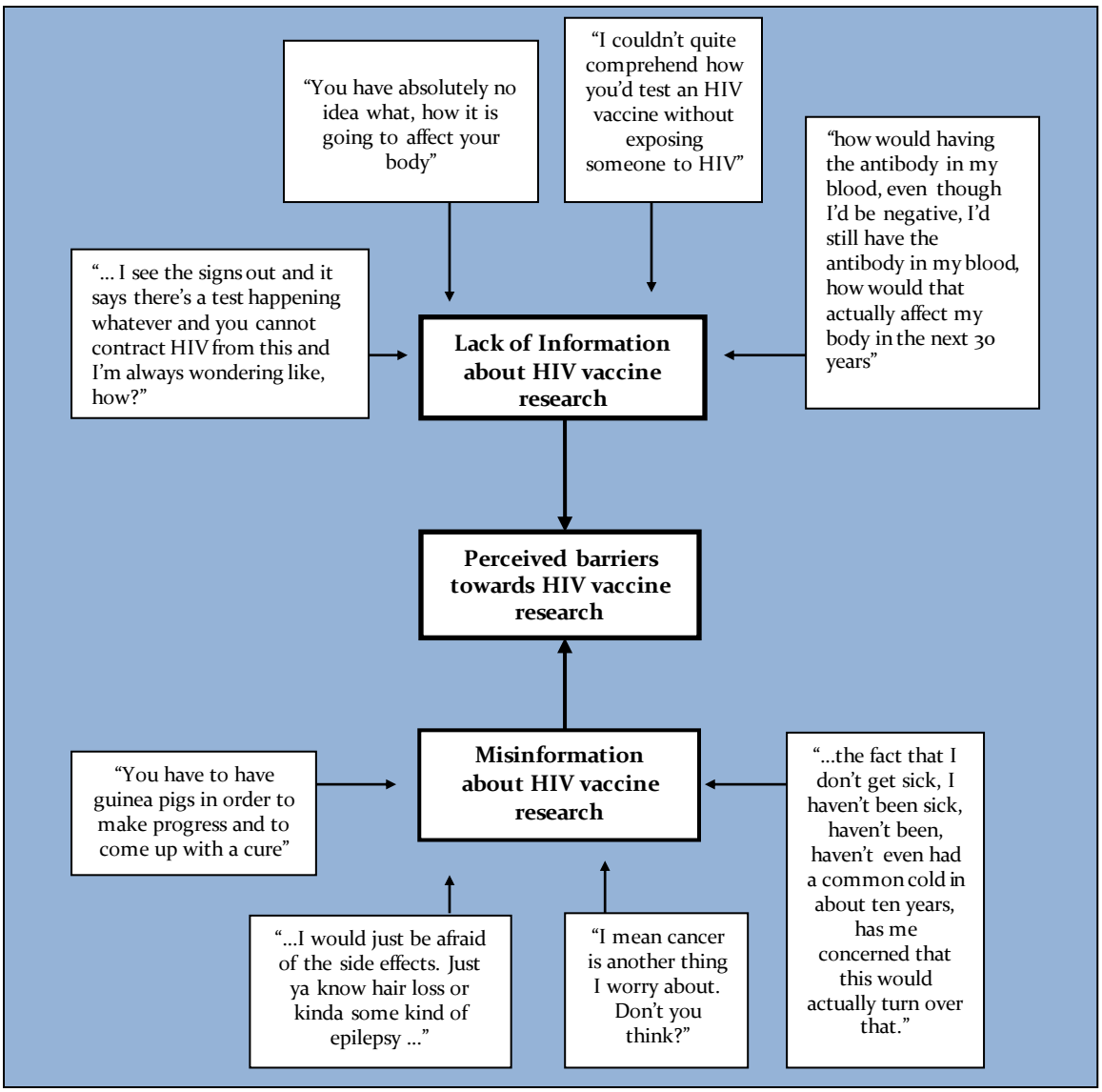

Figure 3: **Flow chart showing possible connection between lack of information, misinformation and perceived barriers to participation in an HIV vaccine trial.** The quotes in the boxes represent some of the responses from focus group discussions.

nearly half of those who stated that they would probably be willing to participate. Numerous factors may determine whether those who signified interest will eventually participate in trials. Hence, it cannot be ascertained whether all those who expressed willingness in this study will eventually participate.

Lastly, the cross-sectional nature of the study limits the ability of the study to establish causality. Only associations can be drawn.

Conclusion

We found that MSM participating in this study cited a wide range of barriers to participation in HIV vaccine trials. These barriers included perceived side effects of vaccine, perceived risk of getting HIV from vaccination and VISP. However, men participating in focus groups and the survey identified the same three primary motivators for HIV vaccine trial participation. These motivators included reassurance about vaccine safety, more information about HIV vaccine research and reassurance about vaccine efficacy. These findings demonstrate the need to ensure that potential participants understand certain basic concepts about HIV vaccine trials before recruitment. Ensuring understanding of these key concepts may assist in reducing concerns about participation, and consequently enhance not only recruitment, but also retention of study volunteers in trials.

Specifically, participants should be aware of : (1) the pathway for vaccine development and licensing; (2) key concepts employed in clinical trials to test candidate vaccines such as randomization and blinding of participants; and (3) and issues regarding safety, efficacy and adverse reactions of study vaccines before enrollment into trials. For instance, awareness of the phases of vaccine development, and of concepts such as randomization and blinding employed in clinical trials is most likely to help potential participants better understand why the efficacy of candidate HIV vaccines cannot be ascertained until they are tested in clinical trials. Safety concerns are also likely to be allayed if potential

participants are well informed about scientific efforts towards ensuring safety of study vaccines. To this end, we recommend that these key concepts be included in recruitment materials. Potential study volunteers may also benefit from short training modules that teach these trial concepts before they are recruited into trials.

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APPENDIX 1

Fred Hutchinson HVTN 505 Project Survey

John Snow, Inc. (JSI), a leading public health research company, and the HIV Vaccine Trials Network (HVTN), a global research HIV vaccine network, are conducting a survey among men who have sex with men (MSM) to understand more about their health behavior and their feelings about getting involved in biomedical HIV prevention research. In addition to asking questions about HIV vaccine research, the survey will ask you about new prevention methods, about your HIV risk and personal behavior.

If you are interested in taking part in the survey, you will be asked an initial set of 10 questions. Based on your answers to these 10 questions, you may or may not be eligible to participate in the survey. If you are eligible, you will then be asked if you want to continue and take the entire survey.

If you decide to participate in taking the survey, you will be asked to read and acknowledge some important information about this survey. Your answers are anonymous and you can skip over any question that makes you feel uncomfortable. It should take approximately 30 minutes to answer the survey questions. Once you have completed the survey, you will receive a $50 gift certificate to thank you for your participation.

At the end of the survey, you will be asked if you are interested in learning more about HIV vaccine research. If you answer yes, you will be taken to a different computer screen that will ask you for your name and contact information. Your name and contact information will not be linked to your survey answers.

We thank you for taking the time to participate in this survey.

S1. What sex were you assigned at birth? (Check one)
- Male
- Female
- Decline to state

S2. What is your sex or gender? (Check all that apply)
- Male
- Female
- Transgender
- Other (please specify)
- Decline to state

S3. Do you currently live in [city]?
- Yes
- No

S4. How old are you?
- Under 18 years old
- 18-24 years old
- 25-29 years old
- 30-39 years old
- 40-49 years old
- 50 years old or older

S5. What was the result of your most recent HIV test?
- Never tested
- Negative

- Positive
- Indeterminate
- Didn't get results

The next set of questions is about sexual behavior. The time of reference for these questions is the past 6 months. Although some of these questions are of a personal nature, please try to answer as honestly as you can. Remember you do NOT have to answer questions you feel uncomfortable answering and your answers are ALWAYS confidential.

S6. In the prior 6 months, how many men or transgender women (individuals who were born biologically male and live their lives to varying degrees as female) have you had insertive or receptive anal sex with?

_____ Number of partners

S7. With how many of those X# male or transgender partner(s) that you had anal sex (Anal sex refers to either insertive or receptive penetration between one partner's penis and the other's anus) with, did you always use condoms every time?

_____Number of partners

S8. Does that mean that with X# male or transgender partner(s) you didn't use condoms every time?

- Yes
- No

S9. Of those X# partner(s) who you didn't use condoms with every time, how many told you that they were HIV negative before you had sex with them the first time?

_____Number of partners

S10. Have you ever participated in a trial to test an HIV vaccine?

- Yes
- No
- Don't know

Thank you for answering these questions. You are eligible to take the survey. Can we continue onto the survey now?

- Yes, I would like to take the survey
- No, I would not like to take the survey

We would like to find out a little more about you.

1. What is your race or ethnicity? (Check all that apply)

- African American/black
- Asian
- Latino/Latina/Hispanic
- Native Hawaiian or Other Pacific Islander
- Native American/Alaskan Native
- White
- Other
- Decline to state

2. How do you think about your income?
    - Monthly earnings
    - Yearly earnings

3. What was your monthly income last year from all sources (work, general assistance (GA), Medicaid, etc) before taxes?
    - 0 to 417
    - 418 to 833
    - 834 to 1250
    - 1251 to 1667
    - 1668 to 2500
    - 2501 to 3333
    - 3334 to 4167
    - 4168 to 6250
    - 6251 or more
    - × Don't know
    - Decline to state

3. What was your yearly income last year from all sources (work, general assistance (GA), Medicaid, etc) before taxes?
    - 0 to 4,999
    - 5,000 to 9,999
    - 10,000 to 14,999
    - 15,000 to 19,999
    - 20,000 to 29,999
    - 30,000 to 39,999
    - 40,000 to 49,999
    - 50,000 to 74,999
    - 75,000 or more
    - × Don't know
    - Decline to state

4. How would you describe your current work situation? (Check all that apply)
    - Full time paid job (>30 hours/week)
    - Part time paid job (<30 hours/week)
    - Home duties/child care
    - Full time student
    - Part time student
    - Voluntary/charitable work
    - Have a job, but not at work due to extended illness, family leave, furlough or strike
    - Disabled
    - Unemployed for less than one year
    - Unemployed for more than one year
    - Self-employed/Consultant/Contractor
    - Other

5. Do you think of yourself as:
    - Straight or heterosexual
    - Gay or homosexual
    - Bisexual

- Two-spirited
- Genderqueer
- Transgender
- Other (please specify)

22. We would like to hear your impression of clinical research. Please tell us how strongly you agree or disagree with the following statements, even if you are not familiar with [HVTN 505 site]. (Options are: Strongly agree, agree, disagree, strongly disagree, don't know/no opinion).

a. I trust my local clinical research institutions to protect me from harm if I participated in their HIV clinical trials.

b. I trust my local clinical research institutions to inform me if experimental vaccines or drugs are potentially harmful.

c. I feel like clinical research institutions care more about profit than the health of community members.

d. Clinical research institutions in my area keep residents informed of new HIV prevention developments.

e. Local HIV clinical research institutions ask for thoughts and ideas from community residents.

f. Local HIV clinical research institutions respect the concerns of community residents.

Clinical trials are underway that test new methods of fighting HIV. One method being tested is an HIV vaccine. Like other vaccines, an HIV vaccine would involve an injection given to HIV negative men and women. The vaccine is designed to increase his or her body's defenses and ability to fight an HIV infection.

23. Have you ever participated in a clinical trial to test an HIV vaccine?
- No
- Yes
- Don't know

24. Have you ever read or heard about possible vaccines to prevent HIV?
- No
- Yes
- Don't know

25. What have you read or heard about possible vaccines to prevent HIV?

26. From what sources have you received information about possible vaccines to prevent HIV? (Check all that apply)
- From a friend, family member or acquaintance
- From a health care provider (e.g. doctor, nurse, etc)
- In a newspaper or magazine
- From a study recruiter who asked me to participate in the vaccine study
- From another survey
- On the Internet

- From a billboard or flyer
- Other (please specify)
- I have never heard or read anything about a vaccine to prevent HIV

27. Clinical trials to test a new HIV vaccine are being conducted in this city. Have you heard or read anything about the current vaccine trials?
- No
- Yes
- Don't know

28. How did you hear about the trials being conducted here? (Check all that apply)
- From a friend, family member or acquaintance
- From a health care provider (e.g. doctor, nurse, etc)
- In a newspaper or magazine
- From a study recruiter who asked me to participate in the vaccine study
- From another survey
- On the Internet
- From a billboard or flyer
- Other (please specify)
- I have never heard or read anything about a vaccine to prevent HIV

29. How interested are you in participating in an HIV vaccine clinical trial?
- Not interested at all
- Somewhat interested
- Very interested
- Not sure

30. Which of the following best describes your reason(s) for *wanting* to join an HIV vaccine trial? (Check all that apply)
- I want to support HIV research
- I think we can find a cure to HIV
- I think we are close to finding an HIV vaccine that works
- I want to help people avoid getting HIV
- I want to stop worrying about HIV
- I would feel good about myself
- People in my life would want me to join an HIV vaccine study
- I want to help end the HIV epidemic
- I heard that research studies pay participants well
- I want to find new ways to protect myself from getting HIV
- Other (please specify)
- Decline to state/Not applicable

31. Which of the following best describes your reason(s) for *not wanting* to join an HIV vaccine trial? (Check all that apply)
- I do not trust researchers
- I worry about side effects
- I am not at risk of getting HIV
- The vaccine may not protect me from HIV
- I am afraid of getting HIV from the vaccine
- I am afraid that I will test positive for HIV if I take the vaccine
- I don't like getting shots

- I am afraid people will think I am 'risky' if I take the vaccine
- I don't have time to join a research study
- Other (please specify)
- Decline to state/Not applicable

32. What would increase your interest in joining an HIV vaccine trial? (Check all that apply)
    - If I had more information
    - If I knew the vaccine was safe
    - If I knew someone in the study
    - If I got paid to participate
    - If I knew who was conducting the study
    - If my health care provider suggested I participate
    - If a friend or family member suggested I participate
    - If I knew the vaccine had a good chance of working
    - If I knew it would help other people avoid getting HIV
    - If it would help researchers find new ways to fight HIV
    - If it wasn't such a big time commitment
    - If I could perform most of the trial online / through my cell phone and by mail (i.e. fill out surveys/get medication through the mail)
    - Decline to state/Not applicable

APPENDIX 2

HVTN 505 Supplement: MSM Focus Group Topic Guide

As participants arrive, we give them each a blank consent form. We introduce ourselves and show them where the snacks and drinks are. We chat a little until everyone arrives. Facilitator invites everyone to sit down at the table and gives everyone directions to the bathroom.

Introduction

> "Welcome, and thanks for coming. You already know that today we're going to discuss HIV vaccine research and the MSM community. Our research group is interesting in developing materials and resources that would improve MSM participation in HIV vaccine research. Therefore, we want to hear from you about attitudes and perceptions of HIV vaccine research. We also want to know about what you think might be done to increase MSM participation. I'm here to listen, ask questions, and make sure everyone has a chance to talk. My co-worker will take care of the taping and will take notes.

The first thing we have to do is go through the HVTNs informed consent process, so _____ is going to read the consent form aloud and then you will be given a chance to come into the next room so that I may answer any questions you might have." After all your questions are answered if you decide to participate in today's focus group _____ will ask you to give verbal consent indicating that you agree to participate in today's group.

Consent

Co-facilitator reads the consent form aloud and then directs them one by one into the Facilitator's office. S/he will also say to the participants:

> "While you are waiting for your turn to ask questions, please help yourself to drinks and snacks. This would also be a good time to go to the bathroom."

After all participants have had the opportunity to ask questions, the facilitator will ask you to complete a questionnaire about your race, gender identity, sexual orientation, income, and educational level. Please remember do not put your name on this paper. If you do not wish to answer any question you do not have to do so. After all questionnaires have been returned to the facilitator, we will continue on to the discussion. You are free to leave the focus group at any time.

Introductions

Introduce yourself and the co-facilitator and then say... I'm going to ask each of you to introduce yourself to the group. Please only give a first name. Also the name you choose to introduce yourself does not need to be your name. You can introduce yourself using any first name you choose. Then have participants introduced themselves.

Ground Rules

"Now I want to go over a few guidelines for the group discussion.

1. What we say in the group should stay here – keep it confidential.
2. One person talks at a time.
3. Feel free to respond to another group member, not just to my questions. You can follow up on what someone has said, agree or disagree, or give an example. I might call on you if you're not saying much, or ask you to give others a chance.
4. We'll be talking some about sex, which can be a sensitive topic. It's OK to talk about anything at all here. We really want to hear from you. But to protect your privacy, don't talk about your own experiences, keep things general.
5. We want to hear a lot of different perspectives, so as a group we have to respect everyone's point of view. Everyone won't agree, but we want to hear from everybody. There are no wrong answers! We want to ensure a safe environment where individuals speak openly so remember that everyone's opinion and experience is valuable!
6. Use only first names during the focus group session.
7. Feel free to get up from the table at any time. You may want to get more snacks, go to the restroom or just take a break or a stretch. We will have a scheduled bathroom break about halfway through.
8. Please turn off all pagers and cell phones or place them on silence.

Are there any ground rules that we should add to these? Can everybody work with these guidelines?"

While we are aware that not everyone identifies as "gay" we will be using that word during this focus group to discuss you or others.

Before turning on the tape recorder say...
"Before I turn on the tape recorder does anyone have questions? "
Answer any questions or if no questions say...
"Now I'm going to turn on the tape recorder, is that OK?"
Wait to hear a verbal yes

*****TURN TAPE RECORDER ON NOW*****

Domain I: Research Participation

1. We'd like to open by asking you why you decided to participate in our focus group tonight.

2. What health-related research studies or clinical trials have you heard of recently? [Results are written on board]

(If group identifies some studies or trials, ask the following probes):

   a. Where did you hear about them?
   b. Have you participated in any of these studies or trials?
   c. Why or why not?
   d. Was there anything you especially liked about participating?
   e. Was there anything that made it hard to participate?
   f. Was there anything that made you feel nervous about participating?

3. Have you ever talked to your friends or people you are in close contact with about participating in any of these research studies or clinical trials? [refer to items written on board]
   a. What kind of research?
   b. With whom?
   c. Why did you talk to them
   d. If no: how important would your friends' opinions be in you deciding whether or not to participate in any of the studies mentioned by others in the room?

4. Has your doctor or health care provider ever talked with you about participating in a research study or clinical trial?
    a. What type of research has your provider recommended that you participate in?
    b. What has s/he told you?
    c. Have you taken any action as a result of that conversation?
    d. If no: how important would your doctor or provider's opinion be in you deciding whether or not to participate in any of the studies mentioned by others in the room?

Domain II: HIV Vaccine Research

5. What are some of the good or positive things you have heard about HIV vaccine trials?

6. How would you feel about participating in an HIV vaccine trial?
    a. What are reasons you would?
    b. What are reasons you would not?

7. What would encourage you to participate in an HIV vaccine trial?
    a. Financial compensation? How much?
    b. HIV/STI testing
    c. Transportation.
    d. Friend doing it
    e. It would protect me/others from HIV

Thank you so much for your time and participation today.

Note: turn tape recorder off.

APPENDIX 3

Code book

Themes	Subthemes	Description
Participation facilitators		Factors that encourage study volunteers participating in an HIV vaccine trial
	Provider	Health care provider provided research information and facilitated participation
	Cost versus benefit	Perceived benefits of participating outweighs the cost
	safety	Desire to be safe from HIV infection facilitated participation
	Trial procedures	Procedures such as free medical check-ups, HIV testing facilitated participation
	altruism	Desire to help prevent and/or find a cure to HIV infection facilitated participation
	Information	Quest for information about HIV vaccine research facilitated participation
	compensation	Desire to be compensated facilitated participation
	Risk behavior	Desire to quit behaviors that promote HIV infection
Participation barriers		Factors that deter study volunteers participating in an HIV vaccine trial.
	Provider	Health care provider discourages participation
	convenience	Inability to make out time, transportation cost etc deters participation
	VISP	Fear of testing positive to HIV after taking study vaccine
	Cost versus benefit	Perceived cost of participating outweighs the benefits
	safety	fear of contracting HIV infection from study vaccines deters participation
	Side effects	Fear of vaccine side effects
	Efficacy	Perception of vaccine as inefficacious
	Trial procedures	Procedures such as repeated injections and frequent blood draws deter participation
Concerns-behavior		Concerns about trial participation promoting risk behaviors
Social impact		Perceived social consequences of trial participation
Vaccine perspectives		General perspectives about vaccines
General vaccine attitudes		General perspective about HIV vaccine

		research
Willingness		Positive attitudes and perceptions towards participation in HIV vaccine trials
Sources of information		Sources of research information
	provider	Health care provider provided research information to study volunteer
	advertisement	Study obtained research information via advertisement
HIV		Issues regarding HIV infection
Awareness-knowledge		Issues regarding participants' awareness and knowledge of HIV vaccine research