Published in final edited form as:

Vaccine. 2008 February 6; 26(6): 762–768. doi:10.1016/j.vaccine.2007.11.091.

Willingness of Chinese injection drug users to participate in HIV vaccine trials

Lu Yin^a, Yuanzhi Zhang^b, Han-Zhu Qian^c, Baoling Rui^d, Lijiang Zhang^d, Junling Zhu^a, Yongsheng Guan^d, Yunxia Wang^d, Qingchun Li^a, Yuhua Ruan^{a,*}, and Yiming Shao^a

^a State Key Laboratory for Infectious Disease Prevention and Control, National Center for AIDS/STD Control and Prevention (NCAIDS), Chinese Center for Disease Control and Prevention (China CDC), 27 Nanwei Road, Xuanwu District, Beijing 100050, China

^b Xinjiang Uigur Autonomous Region Center for Disease Control and Prevention, Urumqi, China

^c Institute for Global Health and Vanderbilt Epidemiology Center, Vanderbilt University School of Medicine, Nashville, TN, USA

^d Urumqi Municipal Center for Disease Control and Prevention, Urumqi, China

Summary

Background—Chinese injection drug users (IDUs) may be a proper candidate population for HIV vaccine trials.

Objective—To evaluate willingness to participate (WTP) in HIV vaccine trials among Chinese IDUs.

Methods—Questionnaire interviews were completed among 401 IDUs in Urumqi City in northwestern China in 2005.

Results—Overall 74.3% of participants said that they would be definitely willing to participate in HIV vaccine trials, 17.7% were probably willing, 6.2% were probably not willing, and remaining 1.8% were definitely not willing to join. Multivariate logistic regression analysis demonstrated that WTP was positively associated with having ever had sex with a drug use partner (adjusted odds ratio [AOR]: 1.8; 95% confidence interval [CI]: 1.04, 3.2), sharing needle and syringe with a new drug use partner in the past 3 months (AOR: 3.8; 95% CI: 1.2, 11.7), perceived family support for participation (AOR: 7.4; 95% CI: 4.3, 12.7), and perceived vaccine protection against HIV infection (AOR: 16.1; 95% CI: 3.7, 70.8), and was negatively associated with perceived risk of social stigma and isolation for participation (AOR: 0.3; 95% CI: 0.2, 0.5).

Conclusions—The stated WTP in hypothetical HIV vaccine trials was high among Chinese IDUs. Further studies are needed to evaluate actual enrollment into the trials.

Keywords

Willingness to participate; HIV vaccine; Clinical trial; Injection drug users; China

*Corresponding author. Tel.: +86 10 63012643; fax: +86 10 63012643. yh_ruan@sohu.com (Y. Ruan).

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

Conflict of interest statement: Poster abstract was presented at the AIDS Vaccine 2007 Conference, August 20–23, Seattle, WA, USA.

Introduction

More than two decades into AIDS epidemic, the epidemic is still gaining rapid spread momentum in many parts of the world in spite of continuing prevention efforts [1]. The best long-term hope to effectively contain the pandemic may lie in availability of safe and effective preventive HIV vaccines. One of key steps to this goal is to conduct clinical trials to test the efficacy of candidate vaccines among high risk populations who are willing to participate in the trials.

China is one of numerous developing countries that have been involved in HIV vaccine trials since the beginning of the efforts in the 1990s [2]. Currently several Chinese vaccine candidates with all the selected genes matched with the epidemic strains are under development and two of them have been approved for phase I clinical trials by the State Food and Drug Administration (SFDA). One regimen was developed by Changchun Baike Biological Medicine Company using DNA priming and MVA boost with env and gag-pol of CRF_B/C as inserts. This vaccine was tested in a phase I trial in Guangxi during March 2005 and July 2006, in which 49 volunteers participated and no severe side effect was reported. This vaccine has been approved for undergoing a phase II trial [3]. Another regimen was developed by the National Center for AIDS/STD Control and Prevention using DNA priming and rVV tiantan boost with env and gag-pol of CRF07_B/C as inserts. This vaccine has been approved by SFDA for a phase I trial, and volunteer recruitment in Beijing has started in November 2007 [4]. These trials are conducted among healthy volunteers, and eventually candidate vaccines will be tested among high risk populations for efficacy.

Involving injection drug users (IDUs) in HIV vaccine clinical trials in China is particularly essential. First, though HIV prevalence rates vary among some Chinese high risk populations such as sex workers [5–7], men who have sex with men [8–10] and former plasma donors [11–12], incidence is low or lacking [13], only IDUs cohorts in southwestern and northwestern Chinese provinces such as Sichuan, Guangxi and Xinjiang have shown high HIV incidence rates from 3.1 to 8.8% and moderate 12-month retention rates from 70 to 93% [14–16]. Typically, a cohort with <2% HIV seroincidence and <90% 1-year retention is considered inappropriate for phase III vaccine trials, because in this situation the sample size required would be too large for an effect to be shown. Second, the diverse HIV clades have been observed among China IDUs [17–18], and would allow testing the protective effects of preventive candidate vaccines against these clades. Third, IDUs are the largest contributor among several high risk populations for the cumulative and new cases of HIV/AIDS in China [19–20], and therefore IDUs could potentially be the most beneficiary group when effective preventive vaccines are available. However, there is no data about the willingness to participate (WTP) in HIV vaccine trials among Chinese IDUs. This study is to evaluate WTP and its predictors in this population.

Methods

Study design and study population

This cross-sectional study was conducted among IDUs in Urumqi of Xinjiang's capital City in northwestern China from April to June 2005. Xinjiang has reported the second largest number of HIV/AIDS cases among 31 provinces in mainland China, and about three quarters of HIV/AIDS cases in Xinjiang are contributable to injection drug use. Participants were recruited in the downtown of Urumqi City either through direct contacts by the outreach workers or through peer referrals. A small financial incentive was given to participants who successfully referred peers to the study. Those who were 18 years or older, had injected drugs at least once in the last 3 months, and were willing to provide informed consent, were eligible for enrollment in this study. After written informed consent was obtained, participants were

given brief introduction about what is HIV vaccine and what is clinical trial; then, a structured questionnaire interview was conducted by a trained interviewer. HIV voluntary counseling and testing and referral services for harm reduction were offered to all study participants. The study protocol and informed consent were approved by the institutional review board of the National Center for AIDS/STD Control and Prevention of the Chinese Center for Disease Control and Prevention.

Data collection

Questionnaire interviews collected the following data: demographic characteristics (e.g., age, sex, ethnicity, years of education, employment status, marital status, owning a house or apartment), drug use practices in the past 3 months (frequency of injecting drugs, needle and syringe sharing, and sharing drugs with new partners), and sexual behaviors (any unprotected sex with regular sex partner or casual sex partner(s) in last month, and any sexual partners who were drug users).

The questionnaire also includes a list of statements about willingness to participate (WTP) in hypothetical HIV vaccine trials, and motivators/perceived benefits and barriers/perceived risks to participate. For example, one statement about perceived benefit was phrased like this: “I would get free HIV counseling and testing if I participate in a HIV vaccine trial.” Answers to most of these questions were “yes” or “no”.

WTP was assessed on a four-point scale designed to reflect Chinese language usage. Literal translation for each item and the English equivalent are as follows:

- “I am definitely willing to participate” [definitely];
- “I want to participate but let me think about it” [probably];
- “I do not want to participate but would think about it” [probably not];
- “I am not at all willing to participate” [definitely not].

Data analysis

Questionnaire data were double-entered and compared using EpiData software (The EpiData Association Odense, Denmark). Then the data were converted and analyzed using Statistical Analysis System (SAS Institute Inc., Cary, NC, USA). Preliminary analyses showed that 74.3% (298/401) were definitely willing to participate, 17.7% (71/401) were probably willing, 6.2% (25/401) were probably not willing, and 1.8% (7/401) were definitely not willing to participate. Therefore, the outcome variable was dichotomized so that there were plenty of subjects in each category for comparison: willingness to participate (WTP) if the answer was “definitely willing”, or non-willingness to participate (non-WTP) if the answer was others. Univariate analyses including chi-square test, Fisher’s exact test and Wilcoxon two-sample test were performed to evaluate associations of WTP with demographic characteristics, drug use and sexual behaviors, and potential risks and benefits surrounding participation in HIV vaccine clinical trials. Variables significant at a level of $P = 0.1$ were fitted in a multivariate logistic regression model to estimate the factors associated with WTP, and only the factors significant at a level of 0.05 (two-tailed) were reported.

Results

Demographic characteristics

A total of 401 IDUs consented and completed the survey. The median age was 30 years (interquartile range: 26–33); 88.3% were males. The mean annual income was 10,432 Chinese Ruan (RMB, 1 dollar $\approx$ 8.2 RMB in 2005) while the national average was 18,405 RMB. About

one quarter of participants was Han majority ethnics and 70% were Uigur minority ethnics. Education distribution was 2.5% illiteracy, 19.2% primary school, 41.6% junior high school, and 36.6% senior high school; 61.8% were unemployed; 55.4% were single. Nearly half (49.1%) of participants were living with their parents and 30.7% owned a house/apartment. 36.9% of WTP and 35.0% of non-WTP were HIV positive. Among these demographic variables, only age was associated with WTP at the significant level of 0.1, and WTP participants were 1-year older than non-WTP participants (Table 1).

Drug use and sexual behaviors

The average period of having injected drugs was 5 years. In the past 3 months, 64.3% injected drugs daily, 19.2% shared needles and syringes and 11% shared with new partners. About 39% of participants had ever had sex with a drug use partner; 39.4% had unprotected sex with a regular partner and 20.9% with a casual partner in the last 30 days. Frequency of injecting drugs, sharing needles with a new partner, and having ever had sex with a drug use partner were associated with WTP at the significant level of 0.1 (Table 2).

Willingness to participate (WTP) and perceived benefits and risks

Nearly three quarters (74.3%, 298/401) of participants said they were definitely willing to participate in HIV vaccine trials. Overall, about two thirds (64.6%) said their family would support them to participate, and the percentage was higher among WTP (76.2%) than non-WTP participants (31.1%) (Table 3).

Almost all participants reported that they wish scientists to develop an effective vaccine and wish to contribute to the control and prevention of AIDS. Regarding perceived personal benefits to participate in HIV vaccine trials, over 98% said they could obtain updated information about HIV/AIDS, free HIV counseling and testing, incentive for participation, and they would be more motivated to avoid risky behaviors. Ninety-nine percent of WTP and 88% of non-WTP participants said they might have protection against HIV infection for receiving a HIV vaccine (Table 3).

Higher percent of non-WTP participants said “yes” than WTP group to five statements regarding perceived risks to participate: “people may think I am at high risk for HIV,” “people may think I am infected with HIV,” “people may refuse to have sex with me,” “people may avoid social contact with me,” and “HIV vaccine may cause health problems.” There were no statistically significant differences in the responses to other three health risk statements between WTP and non-WTP groups (Table 3).

Factor associated with WTP

One demographic, three behavioral, and seven perceived benefit/risk variables were statistically significant in univariate analyses and therefore were included in the stepwise multivariate logistic regression analysis and five variables remained in the final model (Table 4). WTP was positively associated with having ever had sex with a drug use partner (adjusted odds ratio [AOR]: 1.8; 95% confidence interval [CI]: 1.04, 3.2), sharing needle and syringe with a new drug use partner in the past 3 months (AOR: 3.8; 95% CI: 1.2, 11.7), perceived family support for participation (AOR: 7.4; 95% CI: 4.3, 12.7), and perceived vaccine protection against HIV infection (AOR: 16.1; 95% CI: 3.7, 70.8), and was negatively associated with perceived risk of social stigma and isolation for participation (AOR: 0.3; 95% CI: 0.2, 0.5) (Table 4).

Discussion

A high proportion (74%) of IDUs in Urumqi City in northwestern China showed a definite willingness to participate in hypothetical HIV vaccine trials in our study. This percentage is higher than other studies among IDUs in both Asian and western countries [21–22]. Besides IDUs, men who have sex with men (MSM) and women at heterosexual risk have also been most involved in HIV vaccine trials. In all populations, those with high risks were more willing to participate in HIV vaccine trials than those with low risks [23].

Motivators to HIV vaccine trial participation may include altruism, higher education level, and perceived exposure to HIV, protection against HIV infection, free insurance and/or medical care and monetary incentives [22–24]. Barriers include fear of vaccine-induced HIV infection, uncertainty about vaccine efficacy, mistrust to government or research institute, vaccine-induced HIV seropositivity, and associated stigma and discrimination [22–24]. Our study showed several similar motivators and barriers. In Chinese culture, family tie is strong. Drug users are often living with their families and they are not ostracized by their families just because of their “stigmatized” drug use behaviors. This may explain that family support was a motivator for WTP. Perceived protection against HIV infection was also associated with WTP; 99% of WTP participants and 88% of non-WTP said they might have protection against HIV infection by receiving a HIV vaccine. However, the protective effect of any available HIV candidate vaccines is still uncertain; the high response rates in both groups may reflect insufficient information in relation to the experimental characteristics of the hypothetical vaccine. Like in other Asian studies [21], social relationship and fear of the exclusion of community were found to be independent predictors for WTP in our study sample. It is suggested that efforts should be made to increase awareness of the importance and reduce the stigma of participating in HIV vaccine trials among both high-risk groups, who are potential vaccine trial participants, and general population whose attitudes may affect participants’ decision.

HIV vaccine trials require the participation of individuals at high risk of infection. Some researchers argued that IDUs might not be good candidates for vaccine trials due to their high chance of loss of follow-up [25]. However, the Asia’s first randomized, double-blind, placebo-controlled efficacy trial of AIDSVAX B/E (VaxGen) had attained 90.1% retention of 3-year follow-ups among IDUs in Thailand, though the trial found the vaccine did not prevent HIV-1 infection or delay HIV-1 disease progression [26]. Our study and the previous sero-incidence study [14] suggested IDUs in Urumqi City have the characteristics of being a good vaccine trial population: high levels of risk behaviors and HIV incidence, good retention rate, and high WTP.

However, any studies investigating attitudes and behaviors based on interviewing may be limited by social desirability bias, and our study has no exception. Social desirability bias might lead to overestimation of WTP in our study sample. In addition, our study evaluated the stated WTP toward hypothetical vaccine trials. There may be a gap between stated WTP and actual enrollment decision, though limited data have shown a positive association between them [27]. More studies are needed to evaluate actual enrollment into HIV vaccine trials among Chinese IDUs.

Acknowledgments

This study was supported by grants from the National Natural Science Foundation of China (10501052), the Ministry of Health of China (WA2003-13) and the Ministry of Science and Technology of China (2004BA719A0). HZQ received support from the Vanderbilt-UAB AIDS International Training and Research Program grant 3D43 TW001035 from the Fogarty International Center, National Institutes of Health, USA.

References

1. UNAIDS. UNAIDS/WHO AIDS Epidemic Update: December 2006. [accessed October 1, 2007]. Available at: <http://www.unaids.org>
2. Esparza J, Osmanov S, Pattou-Markovic C, Toure C, Chang ML, Nixon S. Past, present and future of HIV vaccine trials in developing countries. *Vaccine* 2002;20(15):1897–8. [PubMed: 11983240]
3. Phase I clinical trial of self-developed HIV vaccine has been gotten along successfully in China. <http://www.99aids.com/info/1950-1.htm>
4. New development in the field of China AIDS research—HIV vaccine trial on phase I would be conducted next year. <http://www.ahinfo.gov.cn/docs09/xinwen/kjwz/kj/kj0312/kj12022.htm>
5. Ruan Y, Cao X, Qian HZ, Zhang L, Qin G, Jiang Z, et al. Syphilis among female sex workers in southwestern China: potential for HIV transmission. *Sex Transm Dis* 2006;33(12):719–23. [PubMed: 16708055]
6. Chen XS, Yin YP, Liang GJ, Gong XD, Li HS, Pomeroy G, et al. Sexually transmitted infections among female sex workers in Yunnan, China. *AIDS Patient Care STDS* 2005;19(12):853–60. [PubMed: 16375618]
7. Ding Y, Detels R, Zhao Z, Zhu Y, Zhu G, Zhang B, et al. HIV infection and sexually transmitted diseases in female commercial sex workers in China. *J Acquir Immune Defic Syndr* 2005;38(3):314–9. [PubMed: 15735451]
8. Zhang D, Bi P, Lv F, Zhang J, Hiller JE. Changes in HIV prevalence and sexual behavior among men who have sex with men in a northern Chinese city: 2002–2006. *J Infect* 2007;55(5):456–63. [PubMed: 17714786]
9. Ma X, Zhang Q, He X, Sun W, Yue H, Chen S, et al. Trends in prevalence of HIV, syphilis, hepatitis C, hepatitis B, and sexual risk behavior among men who have sex with men. Results of 3 consecutive respondent-driven sampling surveys in Beijing, 2004 through 2006. *J Acquir Immune Defic Syndr* 2007;45(5):581–7. [PubMed: 17577125]
10. Ruan Y, Li D, Li X, Qian HZ, Shi W, Zhang X, et al. Relationship between syphilis and HIV infections among men who have sex with men in Beijing, China. *Sex Transm Dis* 2007;34(8):592–7. [PubMed: 17325622]
11. Qian HZ, Vermund SH, Kaslow RA, Coffey CS, Chamot E, Yang Z, et al. Co-infection with HIV and hepatitis C virus in former plasma/blood donors: challenge for patient care in rural China. *AIDS* 2006;20(10):1429–35. [PubMed: 16791018]
12. Ji G, Detels R, Wu Z, Yin Y. Correlates of HIV infection among former blood/plasma donors in rural China. *AIDS* 2006;20(4):585–91. [PubMed: 16470123]
13. Tian LG, Ma ZE, Ruan YH, Cao XY, Huang JP, Wang DR, et al. Incidence rates of human immunodeficiency virus and syphilis as well as the rate of retention in a 6-month follow-up study of female sex workers in areas with heavy drug use in Xichang of Sichuan province, China. *Zhonghua Liu Xing Bing Xue Za Zhi* 2006;27(11):939–42. [PubMed: 17402192]
14. Zhang Y, Shan H, Trizzino J, Ruan Y, Beauchamp G, Masse B, et al. HIV incidence, retention rate, and baseline predictors of HIV incidence and retention in a prospective cohort study of injection drug users in Xinjiang, China. *Int J Infect Dis* 2007;11(4):318–23. [PubMed: 17321184]
15. Wei L, Chen J, Rodolph M, Beauchamp G, Masse B, Li R, et al. HIV incidence, retention, and changes of high-risk behaviors among rural injection drug users in Guangxi, China. *Subst Abuse* 2006;27(4):53–61.
16. Ruan Y, Qin G, Liu S, Qian H, Zhang L, Zhou F, et al. HIV incidence and factors contributed to retention in a 12-month follow-up study of injection drug users in Sichuan Province, China. *J Acquir Immune Defic Syndr* 2005;39(4):459–63. [PubMed: 16010170]
17. Li XJ, Kusagawa S, Xia X, Yang C, Wang Q, Yokota Y, et al. Molecular epidemiology of the heterosexual HIV-1 transmission in Kunming, Yunnan Province of China suggests origin from the local IDU epidemic. *AIDS Res Hum Retroviruses* 2005;21(11):977–80. [PubMed: 16386117]
18. Piyasirisilp S, McCutchan FE, Carr JK, Sanders-Buell E, Liu W, Chen J, et al. A recent outbreak of human immunodeficiency virus type 1 infection in southern China was initiated by two highly homogeneous, geographically separated strains, circulating recombinant form AE and a novel BC recombinant. *J Virol* 2000;74(23):11286–95. [PubMed: 11070028]

19. Lu F, Wang N, Wu Z, Sun X, Rehnstrom J, Poundstone K, et al. Estimating the number of people at risk for and living with HIV in China in 2005: methods and results. *Sex Transm Infect* 2006;82(Suppl 3):iii87–91. [PubMed: 16735299]
20. Qian H, Vermund SH, Wang N. Risk of HIV/AIDS in China: subpopulations of special importance. *Sex Transm Infect* 2005;81(6):442–7. [PubMed: 16326842]
21. MacQueen KM, Vanichseni S, Kitayaporn D, Lin LS, Buavirat A, Naiwatanakul T, et al. Willingness of injection drug users to participate in an HIV vaccine efficacy trial in Bangkok, Thailand. *J Acquir Immune Defic Syndr* 1999;21(3):243–51. [PubMed: 10421249]
22. Golub ET, Purvis LA, Sapun M, Safaeian M, Beyrer C, Vlahov D, et al. Changes in willingness to participate in HIV vaccine trials among HIV-negative injection drug users. *AIDS Behav* 2005;9(3):301–9. [PubMed: 16088366]
23. Dhalla S, Woods R, Strathdee SA, Patrick DM, Hogg RS. HIV vaccine preparedness studies in the organization for economic co-operation and development (OECD) countries. *AIDS Care* 2007 :1–10.[Epub ahead of print]
24. Strauss RP, Sengupta S, Kegeles S, McLellan E, Metzger D, Eyre S, et al. Willingness to volunteer in future preventive HIV vaccine trials: issues and perspectives from three U.S. communities. *J Acquir Immune Defic Syndr* 2001;26(1):63–71. [PubMed: 11176270]
25. Woratanarat T. Global HIV cohort studies among injecting drug users and future vaccine trials. *J Med Assoc Thai* 2006;89(7):1064–79. [PubMed: 16881444]
26. Pitisuttithum P, Gilbert P, Gurwith M, Heyward W, Martin M, van Griensven F, et al. Randomized, double-blind, placebo-controlled efficacy trial of a bivalent recombinant glycoprotein 120 HIV-1 vaccine among injection drug users in Bangkok, Thailand. *J Infect Dis* 2006;194(12):1661–71. [PubMed: 17109337]
27. Halpern SD, Metzger DS, Berlin JA, Ubel PA. Who will enroll? Predicting participation in a phase II AIDS vaccine trial. *J Acquir Immune Defic Syndr* 2001;27(3):281–8. [PubMed: 11464149]

Table 1

Association between sociodemographic characteristics and willingness to participate (WTP) in HIV vaccine trials

Variable	WTP (<i>n</i> = 298, %)	Non-WTP (<i>n</i> = 103, %)	<i>P</i> value
Sex			0.28
Male	87.2	91.3	
Median age (IQR)	30 (26–34)	29 (26–32)	0.09
Median income (IQR) RMB	6000 (0–11000)	5000 (0–10000)	0.31
Ethnic			0.98
Uigur	69.8	69.9	
Senior high school education (10th grade or above)			0.31
Yes	35.2	40.8	
Unemployed			0.87
Yes	62.1	61.2	
Married or cohabited			0.33
Yes	25.2	20.4	
Owing a house or living with parents			0.36
Yes	80.9	76.7	

Table 2

Association between drug use and sexual risk taking and willingness to participate (WTP) in HIV vaccine trials

Variable	WTP (<i>n</i> = 298, %)	Non-WTP (<i>n</i> = 103, %)	<i>P</i> value
Frequency of drug injection in the past 3 months			0.01
≥ 7 times/week	68.1	53.4	
Sharing needle and syringe with any drug users in the past 3 months			0.16
Yes	20.8	14.6	
Sharing needle and syringe with a new drug use partner in the past 3 months			0.01
Yes	13.4	3.9	
Having unprotected sex with a regular partner in the last 30 days			0.71
Yes	39.9	37.9	
Having unprotected sex with a casual partner in the last 30 days			0.90
Yes	20.8	21.4	
Having ever had sex with a partner who was a drug user			0.02
Yes	42.3	29.1	

Table 3

Association between perceived benefit/risk and willingness to participate (WTP) in HIV vaccine trials

Statement	WTP (<i>n</i> = 298, %)	Non-WTP (<i>n</i> = 103, %)	<i>P</i> value
Family would support me to participate in HIV vaccine trials			<0.01
Yes	76.2	31.1	
Social benefits			
Wish scientists develop an effective vaccine			0.26
Yes	100	99.0	
Wish to contribute to the control and prevention of AIDS			
Yes	100	99.0	0.26
Personal benefits			
Update information about HIV/AIDS			1.00
Yes	98.3	98.1	
Free HIV counseling and testing			0.43
Yes	98.3	97.1	
Incentive for participation			0.26
Yes	99.3	98.1	
Motivation to avoid risky behaviors			0.68
Yes	98.0	99.0	
Protection against HIV infection			<0.01
Yes	99.0	88.4	
Social risks			
People may think I'm at high risk for HIV			<0.01
Yes	40.6	67.0	
People may think I'm infected with HIV			<0.01
Yes	37.9	62.1	
People may refuse to have sex with me			<0.01
Yes	37.6	59.2	
People may avoid social contact with me			<0.01
Yes	37.6	66.0	
Health risks			
Vaccine probably does not work			0.52
Yes	73.5	76.7	
Vaccine may cause health problems			<0.01
Yes	55.4	70.9	
Develop a false positive HIV test			0.55
Yes	74.8	71.8	
Weaken the body's ability to fight off HIV			0.53
Yes	53.7	57.3	

Table 4

Multivariate logistic regression analysis of factors associated with willingness to participate (WTP) in HIV vaccine trials

Factors	Adjusted odds ratio (95% confidence interval)	P value
Having ever had sex with a partner who was a drug user		0.04
No	1.0	
Yes	1.8 (1.04, 3.2)	
Sharing needle and syringe with a new drug use partner in the past 3 months		0.02
No	1.0	
Yes	3.7 (1.2, 11.7)	
Family would support me to participate in HIV vaccine trials		<0.01
No	1.0	
Yes	7.4 (4.3, 12.7)	
(Vaccine may provide) Protection against HIV infection		<0.01
No	1.0	
Yes	16.1 (3.7, 70.8)	
People may avoid social contact with me		<0.01
No	1.0	
Yes	0.3 (0.2, 0.5)	