Husband’s Willingness-to-Pay for HIV and Syphilis Screening at Antenatal Care Clinic under the Thai Universal Coverage Scheme

Orawan Anunsittichai  
Chulalongkorn University Faculty of Medicine

Krit Pongpirul (✉️ doctorkrit@gmail.com)  
Chulalongkorn University Faculty of Medicine  https://orcid.org/0000-0003-3818-9761

Thanyawee Puthanakit  
Chulalongkorn University Faculty of Medicine

Koranit Roowicha  
Chulalongkorn University Faculty of Medicine

Jirarat Kaewprasert  
Chulalongkorn University Faculty of Medicine

Wipapom Natalie Songtaweesin  
Chulalongkorn University Faculty of Medicine

Surasith Chaithongwongwattana  
Chulalongkorn University Faculty of Medicine

Research article

**Keywords:** Willingness to pay, sexually transmitted infection, antenatal care

**Posted Date:** October 30th, 2019

**DOI:** https://doi.org/10.21203/rs.2.10818/v2

**License:** ☕️ This work is licensed under a Creative Commons Attribution 4.0 International License.  
[Read Full License](https://creativecommons.org/licenses/by/4.0/)

**Version of Record:** A version of this preprint was published at BMC Public Health on April 10th, 2020. See the published version at https://doi.org/10.1186/s12889-020-08613-9.
Abstract

Background Screening for sexually transmitted infection (STI) especially HIV as early detection and treatment have been financially supported under the Thai Universal Coverage (UC) scheme since 2009 (THB140 for HIV). However, the implementation has not been evidence-based, strategic risk-based, nor economically evaluated whereas husbands who accompanied the pregnant women are likely to have a lower risk than those who did not come along. This study is aimed to explore the husband’s willingness-to-pay (WTP) for his HIV and syphilis screenings at the antenatal care (ANC) clinic of a tertiary hospital in Thailand. Methods A survey of 200 randomly selected husbands of pregnant women was conducted at King Chulalongkorn Memorial Hospital from April to June 2018. A pilot study using an open-ended question was conducted to estimate the WTP for HIV and syphilis screening tests. Then, two contingent valuation methods (bidding and payment scale) were performed for the final WTP assessments, using the mean WTP identified from the pilot study as a starting WTP with 1/4 SD step-up/down. Results During the study period, 597 pregnant women received their first ANC. Of 368 accompanying husbands, 200 were enrolled in the study. Their median age was 31 (IQR 27-36) years old and 67% had a first child. Eighty-eight percent of the participants were willing to test for the STIs. Based on the bidding method, WTP for HIV and syphilis screening tests were US$14.5 (IQR 12.4-14.5) and US$9.7 (IQR 10-12), respectively. The payment scale method suggested approximately three-quarters of the price. Conclusions The husbands who accompanied their pregnant wives to the ANC clinic showed positive behaviors according to the propitious selection theory. They tend to cooperate well with STI testing and are willing to pay at least two times the price of the STI screening tests. The financial support to promote STI screenings should be reconsidered to cover other groups with higher sexual behavior risks and less WTP.

Introduction

Sexually Transmitted Infections (STIs) including HIV and syphilis are major public health burdens worldwide. The Joint United Nations Programme on HIV/AIDS (UNAIDS) reported 36.9 million people living with HIV, of which 180,000 were children aged 0 to 14 years old who were newly infected in 2017.\(^1\) In 2016, the prevalence of maternal syphilis was 0.69% worldwide which caused congenital syphilis rates of 473 per 100,000 live births.\(^2\) In Thailand, the prevalence of maternal syphilis was increasing from 0.1 in 2015 to 0.2 in 2017.\(^3\) To eliminate mother-to-child transmission (MTCT) both of HIV and syphilis, STIs screening test at antenatal care clinic (ANC) is recommended to detected newly infection and refer to received early treatment.

The World Health Organization (WHO) has set specific goals for eliminating MTCT; HIV by 2020, syphilis by 2030 and ending AIDS as a public health threat by 2030. To achieve these goals, the Couple HIV Test and Counseling (CHCT) program should be promoted at ANC to find incidental infections and promote early treatment. UNAIDS estimates that US$26.2 billion will be required for the global HIV response in 2020\(^4\) whereas funding for the HIV response in low- and middle-income countries have come from
domestic sources rather than international funding. This is due to the fact that high-income countries have reduced funding for the HIV response with a 7% decrease reported between 2015 and 2016\(^4\). Because funding for HIV tends to be decreasing, the willingness-to-pay (WTP) for STI screening tests should be explored as evidence for policymaker if out of pocket planning is needed.

Among late-presenting pregnant women to ANC, incidental HIV infections during pregnancy and poor antiretroviral therapy (ART) adherence have been reported as high-risk for MTCT in Thailand.\(^5\) By providing treatment using three-drug regimens and HIV-1 integrase inhibitors among incidental HIV infections during pregnancy which have a high maternal viral load, HIV transmission rates can be reduced from 9.0% to 3.5\(^6\). As a result of many interventions to eliminate MTCT in Thailand, the prevalence of HIV among pregnant women decreased from 2% in the 1990s to 0.6% in 2015. In 2016, WHO announced Thailand to be the first country in Asia-Pacific to achieve a decrease of MTCT to below 2\%.\(^9\)

In Thailand, although more than 98% of pregnant women received STI screening tests during ANC services,\(^7\) the CHCT program piloted in 2009 achieve uptake of only 39\%.\(^8\) Since then, the National Health Security Office (NHSO) has supported the CHTC program by covering expenses for Thai pregnant women and their husbands to receive HIV screening tests during ANC services.\(^10\) This policy has not been evidence-based, strategic risk-based, or passed any economic evaluation, particularly among husbands accompanying their pregnant wives. According to propitious selection theory, people who have positive health behaviors such as smoking avoidance, seat-belt use while driving, and receiving annual health check-ups are more likely to obtain health insurance and tend to have higher WTP for their healthcare services than those who do not.\(^11\) Likewise, husbands accompanying their pregnant wives are therefore likely to have lower risk and are more willing to pay for their health care services. In order to increase the uptake of CHTC while financially sustaining the MTCT elimination programs, policymakers should consider economic evaluation evidence and potential budget impact for the most efficient use of the limited resource.

For the economic evaluation, WTP has been adopted by health economists who were concerned with identifying prospective public valuations of health care interventions, and the applications of the technique in this context have proliferated.\(^12\) WTP for STI screenings has been explored among various population groups but not among husbands who accompanied the pregnant women (Table 1). Results show that the subject had the willingness to pay for their STI screening tests.

As evidence of WTP for STI screening tests among husbands of pregnant women in the setting of ANC service is limited, this study is aimed to explore the husband’s WTP for STI screening tests and to determine potential barriers for STI screenings among accompanying husbands at ANC clinic of a large tertiary hospital in Bangkok, Thailand.

**Methods**
This study was conducted at an ANC clinic of King Chulalongkorn Memorial Hospital, Bangkok, Thailand. It was approved by the Institutional Review Board of the Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand (IRB No.028/61). It was registered to the Thai Clinical Trials Registry (TCTR20180307003).

In March 2018, a pilot study was conducted among 50 conveniently sampled husbands of pregnant women using an open-ended questionnaire to determine the starting WTP prices for HIV and syphilis screening tests. While the hospital prices of HIV testing was US$4.5 or 140 Thai Baht (US$1 = 31 Thai Baht) and that of syphilis testing was US$3.2 or 100 Thai Baht; the survey revealed the starting WTP prices of US$14.5 (SD 281.7) and US$9.7 (SD 270.8) for HIV and syphilis screening tests, respectively. We, therefore, selected pay scales using the mean prices revealed from the pilot study and stepped up or down by ¼SD (US$2.2) for the next phase.

Data collection

The questionnaire administered contained three sections. The first section obtained demographics information including age, educational level, and a number of children. The second section obtained the history of HIV and/or syphilis screening tested and knowledge of HIV prevention using five questions from the United Nations General Assembly Special Session on HIV/AIDS (UNGASS) (Score 0-3, low; 3-4, moderate; 5, high). The third section asked about the willingness to test and the WTP for HIV and syphilis screening tests. We used face-to-face interviews to obtain information in the questionnaire. Then, the husbands received blood drawn for HIV and syphilis screening tests; free of charge for HIV and US$3.2 (100 Thai Baht) for an optional syphilis screening tests.

At the first ANC visit, all husbands accompanying their pregnant wives were invited to participate in the study and informed about the ANC service process. After we obtained written informed consent from the participants, they were allocated into two groups of WTP methods—payment scale or bidding—randomly assigned by date (payment scale on odds day and bidding on even day).

For the payment scale method, the range of WTP price for HIV screening test was US$3.2 to US$25.8 (100 to 800 Thai Baht) whereas that of syphilis was US$2.5 to US$18.7 (77.5 to 579.7 Thai Baht). The husbands were informed of all available WTP options prior to choosing the price that they were willing to pay for the tests.

For the bidding method, given the starting WTP prices were US$14.5 (450 Thai Baht) and US$9.7 (300 Thai Baht) for HIV and syphilis screening tests, respectively, with a US$2.2 (70 Thai Baht) variance up to the maximum step, 5th step for HIV and 4th step for syphilis (Figure 1 and Figure 2).

Sample size estimation
The sample size of this study was calculated from the finite population mean formula.\textsuperscript{13} We estimated the sample size by using the value gained from the pilot study, population size (N) was 188, standard deviation (\(\sigma\)) 282, error (d) 0.1 and alpha (\(\alpha\)) 0.5; at least 188 subjects were anticipated. To elicit WTP for STI screening tests using the two methods, 200 subjects were enrolled in the study by convenience sampling and randomly separated into two equal method groups.

\textit{Statistical analysis}

Interval variables including the WTP prices were analyzed by using the median (interquartile range, IQR) whereas categorical variables including number of husbands who were willing to receive STI screening tests were analyzed by using percentages. The odd ratio was used to assess the association between an independent categorical variable and the willing to get STI test. SPSS version 22 was used to analyze the data and statistical significance was set at \( P<0.05 \).

\textbf{Results}

From April to June 2018, 597 pregnant women came to the first ANC care service, 368 husbands (62\%) accompanied them. Of these, 200 husbands were enrolled in the study. Demographics data of the participants were shown in Table 2. The median (IQR) age was 31 (27-36) years old, 67\% of the husbands reported that this ANC visit was for their wife's first pregnancy, 44\% had been tested for STIs and 40\% of husbands had university-level education.

\textit{WTP for HIV and Syphilis Testings}

Based on the bidding method, the husbands were willing to pay US$14.5 (12.3-14.5) for HIV and US$9.7 (9.7-11.4) for syphilis screening tests, respectively. The payment scale method suggested lower WTP for both: US$10 (5.5-14.5) and US$7.4 (5.2-9.7), respectively (Table 3). Husbands who had never had a previous child compared to husbands who had at least one child were willing to pay more for both HIV (95\% CI; 20.14, 107.93) and syphilis (95\% CI; 14.57, 86.45) screening tests. Husbands with a university-level education were more willing than those with high school/diplomas to pay more for both HIV (95\% CI; 10.22, 94.95) and syphilis (95\% CI; 17.05, 85.87).

\textit{Willingness to Test for STIs}

Among the husbands who accompanied the pregnant women, 88.0\% were willing to test for STIs. Of 24 unwilling husbands, 17 husbands were already tested recently, four husbands preferred to test at other health care services, two husbands thought they had no risk, and one husband was fearful of a needle. Husbands who had been tested for STIs were significantly more willing to test than those had never had (odds ratio 4.8; 95\% CI; 1.8, 13.1). Husbands who had had at least one child were willing to test more than those who had never had a child (odds ratio 0.8; 95\% CI; 0.3, 2.1). Husbands with a university-level education were less willing to have STI screening tests than those with lower educational levels (odds
ratio 0.8; 95% CI; 0.3, 1.8). Husbands with higher knowledge scores were more willing to have STI screening tests than those with less than high knowledge scores (odds ratio 1.6; 95% CI; 0.7, 3.7).

Discussion

To our knowledge, this is the first study to determine WTP for STI screening tests among husbands accompanying their pregnant wives at ANC clinic whereas other studies have explored this among men who have sex with men, commercial sex workers, as well as voluntary counseling and testing clients as shown in Table 1. Three contingent valuation methods have commonly been used to find the WTP price for STI screening tests. The payment scale method suggested a lower cost while the open-ended and bidding methods suggested similar WTP prices for STI screening tests. Husbands who accompanied their pregnant wives at the ANC clinic of our institution showed the WTP at least two times of the hospital price for STI screening tests.

In our study, based on the bidding method, the husbands were willing to pay US$14.5 and US$9.7 for HIV and syphilis screening tests, respectively while the payment scale method suggested lower WTP for both (US$10 and US$7.4). However, previous studies showed lower WTP prices among high-risk populations for an HIV test: US$5 in Peru, US$7.75 in Vietnam, US$2 in Kenya and US$4.8-8.1 in China. The general population in China was willing to pay US$8 and students in Kenya US$3.2. The WTP prices for an HIV screening test varied across studies may be because of different HIV prevalence, health literacy level, and socio-economic factors.

While previous studies explored the WTP value for only one disease, this study explored the WTP prices for HIV and syphilis screening tests simultaneously. As the HIV/AIDS is perceived by a layperson as relatively more severe than syphilis so the WTP amount should be reflective, this study showed the higher WTP price of HIV than that of syphilis screening tests, suggesting good reliability of the findings.

In Thailand, the HIV screening test has been financially supported by the Thai Universal Coverage Scheme since 2009; the pregnant women and their husbands who attend ANC service at any public health care facility will receive HIV screening test free of charge two times per year. Husbands who accompanied their wives to attend ANC service are not only considered ‘family men’ but also financially viable and have time to spend with the loved ones, suggesting a lower risk of STI than those at lower socioeconomic status. Therefore, government subsidization of the laboratory expenses should be for the poor and/or high-risk.

In this study, 88% of the accompanying husbands were willing to test for STIs. This is similar to other studies. Batte et al conducted a survey in Uganda and reported 98.9% of pregnant partners to receive CHTC whereas only 42.4% were tested when coming separately. Moreover, Thirumurthy et al in Kenya attributed HIV self-testing of partners through pregnant women; the result showed 91% of the pregnant women gave the self-tests to their partner but only 51% were tested, suggesting that husbands tended to receive HIV testing when they were approached as a couple.
History of STI test was significantly associated with willingness to test; Xu et al reported the association between history of STI testing, education, risk behavior and willingness to test among men who have sex with men and female sex workers. The associated factors may be different across population groups. Batte et al in Uganda reported the significant association between the number of ANC services and willingness to test but this study surveyed only the first ANC visit so the impact of ANC visits could not be investigated.

Barriers to STI screening at our ANC clinic were similar to previous studies. Musheke et al, for example, reported self-perception of no risk, fear of secret being revealed, stigma, cost of STIs testing and gender equality. In Thailand, Lolekha et al conducted a survey in the pilot CHTC program and revealed that the husbands of pregnant women who were unwilling to test for STI reported self-perception of no risk, intention to be tested at another facility, fear of the needles, and already know their HIV status to be barriers to STI screening uptake. Our study showed 44% of husbands who received STI testing previously and 88% were willing to test with their pregnant wives. According to the propitious selection theory, supported by our findings, husbands who accompanied their wives to ANC services were more likely to cooperate with the CHTC program.

Some limitations should be noted. This study was conducted at an ANC clinic of a tertiary care hospital and all data were collected from randomly selected husbands of pregnant women receiving their first ANC service so the findings might not be generalizable to other settings. Husbands who participated in the study may be more willing to cooperate and able to pay for their STI screening tests than those in lower socioeconomic contexts. We did not have information about one-third of husbands who did not come to the ANC clinic and might be of lower socioeconomic status and/or less health concerned. The study was conducted at a university hospital, thus not representative of Thailand, as Bangkok populations, in general, have higher incomes than those in rural areas. Additionally, individuals who come to university hospitals usually agree to pay medical care costs out-of-pocket as opposed to patients who go to Ministry of Public Health hospitals under the Universal Coverage Scheme. For further studies, the survey should be conducted at multiple ANC service settings nationwide. To represent the general population, the survey should be done in husbands attending and not attending ANC services with their pregnant wives. Also, the survey should cover all population groups to provide better evidence policymakers to allocate more resources to people who have higher risk but lower ability to pay. For the reliability of the willingness to pay, comparing two diseases and two contingent valuation methods are recommended.

**Conclusion**

The husbands who accompanied their pregnant wives to the ANC clinic showed positive behaviors according to the propitious selection theory. They tend to cooperate well with STI testing and are willing to pay at least two times the price of the STI screening tests. The financial support to promote STI screenings should be reconsidered to cover other groups with higher sexual behavior risks and less WTP.
Declarations

Ethics approval and consent to participate:

This study approved by the Institutional Review Board of the Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand (IRB No.028/61). All participants provided written informed consent.

Consent for publication:

Not applicable.

Availability of data and material:

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

Funding:

This study received the 90th Anniversary of Chulalongkorn University Ratchadapiseksompotch Endowment Fund Batch #41 (GCUGR1125614023M). The funding body does not involve in the study design, data collection, data analysis, data interpretation, or manuscript preparation.

Authors’ contributions:

KP, TP, SC, and OA conceived of the study. OA, KR, JK, WNS collected the data. OA, TP, and KP analyzed and interpreted the data. OA drafted the manuscript. KP, OA, and TP revised the manuscript. All authors read and approved the final version of the manuscript.

Acknowledgments:

The authors wish to thank Assoc. Prof. Somrat Lertmaharit, Assoc. Prof. Charuwan Tadadej, and Dr. Piya Hanvoravongchai, for their advice for this study. We would also like to thank all staff at the ANC clinic for kindly supporting us, as well as staff at the Center of Excellence of Pediatric Infectious Diseases and Vaccines, and Miss Tuangtip Theerawit for data management.

References

1. UNAIDS. 2018 fact sheet. Global HIV & AIDS statistics 2018; http://www.unaids.org/en/resources/fact-sheet.
2. Korenromp EL, Rowley J, Alonso M, et al. Global burden of maternal and congenital syphilis and associated adverse birth outcomes—Estimates for 2016 and progress since 2012. *PloS one.* 2019;14(2):e0211720-e0211720.

3. World Health Organization. Antenatal care attendees who were positive for syphilis Data by country. *Global Health Observatory data repository.* 2018. 
   [http://apps.who.int/gho/data/node.main.A1359STI](http://apps.who.int/gho/data/node.main.A1359STI). Accessed 20 May 2019.

4. AVERT. FUNDING FOR HIV AND AIDS. *Global statistics* 2018; 
   [https://www.avert.org/professionals/hiv-around-world/global-response/funding](https://www.avert.org/professionals/hiv-around-world/global-response/funding).

5. Tonpuds C, Loleka R, Pavaputanondh P. Remaining causes of mother to child HIV transmission (MTCT) in Thailand: barriers to achieving an MTCT rate of <1%. *IAS 2017.* Paris, France 2017.

6. Puthanakit T, Thepnarong N, Chaithongwongwatthana S, et al. Intensification of antiretroviral treatment with raltegravir for pregnant women living with HIV at high risk of vertical transmission. *Journal of virus eradication.* Apr 1 2018;4(2):61-65.

7. Validation of Elimination of Mother-to-Child Transmission of HIV and Syphilis, Thailand 2013-2015 Report. Thailand: Minister of Public Health 2016.

8. Loleka R, Kullerk N, Wolfe MI, et al. Assessment of a couples HIV counseling and testing program for pregnant women and their partners in antenatal care (ANC) in 7 provinces, Thailand. *BMC international health and human rights.* Dec 24 2014;14:39.

9. Loleka R, Boonsuk S, Plipat T, et al. Elimination of Mother-to-Child Transmission of HIV - Thailand. *MMWR. Morbidity and mortality weekly report.* Jun 10 2016;65(22):562-566.

10. National Health Security Office. Preventive and Health Promotion Services. *User Manual for Health Security Rights* 2017; [http://www.nhso.go.th/FrontEnd/page-contentdetail.aspx?ContentID=NjAwMDAwMTk2](http://www.nhso.go.th/FrontEnd/page-contentdetail.aspx?ContentID=NjAwMDAwMTk2). Accessed 20 August 2017.

11. Hemenway D. *Propitious Selection in Insurance.* Vol 51 1992.

12. Frew EJ, Whynes DK, Wolstenholme JL. Eliciting willingness to pay: comparing closed-ended with open-ended and payment scale formats. *Med Decis Making.* Mar-Apr 2003;23(2):150-159.

13. *Sample size and power calculations for iOS*[computer program]. The Thailand Research Fund&Prince of Songkla University.: The Royal Golden Jubilee Ph.D. Program; 2014.

14. Xu Y, Zhang Z, Li D, et al. Willingness to use the oral fluid HIV rapid test among men who have sex with men in Beijing, China. *PLoS One.* 2013;8(5):e64652.

15. Bustamante MJ, Konda KA, Joseph Davey D, et al. HIV self-testing in Peru: questionable availability, high acceptability but potential low linkage to care among men who have sex with men and transgender women. *Int J STD AIDS.* Feb 2017;28(2):133-137.

16. Nguyen LH, Tran BX, Nguyen NP, Phan HT, Bui TT, Latkin CA. Mobilization for HIV Voluntary Counseling and Testing Services in Vietnam: Clients’ Risk Behaviors, Attitudes and Willingness to Pay. *AIDS Behav.* Apr 2016;20(4):848-858.
17. Forsythe S, Arthur G, Ngatia G, Mutemi R, Odhiambo J, Gilks C. Assessing the cost and willingness to pay for voluntary HIV counseling and testing in Kenya. *Health Policy Plan.* Jun 2002;17(2):187-195.

18. Xun H, Kang D, Huang T, et al. Factors associated with willingness to accept oral fluid HIV rapid testing among most-at-risk populations in China. *PLoS One.* 2013;8(11):e80594.

19. Uzochukwu B, Uguru N, Ezeoke U, Onwujekwe O, Sibeudu T. Voluntary counseling and testing (VCT) for HIV/AIDS: a study of the knowledge, awareness, and willingness to pay for VCT among students in tertiary institutions in Enugu State Nigeria. *Health policy (Amsterdam, Netherlands).* Mar 2011;99(3):277-284.

20. Batte A, Katahoire AR, Chimoyi A, Ajambo S, Tbingana B, Banura C. Disclosure of HIV test results by women to their partners following antenatal HIV testing: a population-based cross-sectional survey among slum dwellers in Kampala Uganda. *BMC Public Health.* Jan 31 2015;15:63.

21. Thirumurthy H, Masters SH, Mavedzenge SN, Maman S, Omanga E, Agot K. Promoting male partner HIV testing and safer sexual decision making through secondary distribution of self-tests by HIV-negative female sex workers and women receiving antenatal and post-partum care in Kenya: a cohort study. *Lancet HIV.* Jun 2016;3(6):e266-274.

22. Musheke M, Ntalasha H, Gari S, et al. A systematic review of qualitative findings on factors enabling and deterring uptake of HIV testing in Sub-Saharan Africa. *BMC Public Health.* Mar 11 2013;13:220.

Tables

Table 1 Literature on Willingness-to-Pay for HIV Screening Test
| Study                          | Population                                                                 | Study Design                  | Country   | WTP Method | Local Price | WTP       | GDP 2016 |
|-------------------------------|-----------------------------------------------------------------------------|-------------------------------|-----------|------------|-------------|-----------|-----------|
| Huanmiao Xun (2013)(17)       | 1,151 of MSM, female sex workers and VCT clients                           | Cross-sectional survey        | China     | Not specified | US$17       | Median US$4.8 to US$8.1 | 11,199.1 |
| Xu Y (2013)(13)               | MSM at a VCT site at the Beijing Jingcheng Skin Disease Hospital             | Cross-sectional survey        | China     | Open-ended | US$16       | Median US$8 | 11,199.1 |
| Li J (2015)(23)               | 511 of people seeking counsel and HIV test, STD clinic patients, university students, migrant people, female sex workers, MSM and injecting drug users | Cross-sectional survey        | China     | Not specified | Unknown     | 84.1% were willing to pay for HIV antibody saliva rapid test | 11,199.1 |
| Long Hoang Nguyen (2016)(15)  | 365 VCT clients in Ha Noi and Nam Dinh province                            | Cross-sectional survey        | Vietnam   | Open-ended for pilot study then Bidding | US$20       | Mean US$7.75 (2013) | 202.6 |
| Bach Xuan Tran (2016)(24)     | 1,016 MMT patients in Hanoi and Nam Dinh                                   | Cross-sectional survey        | Vietnam   | Bidding and Open-ended | US$20       | Mean US$17.9 | 202.6 |
| Forsythe S (2002)(16)         | 2 health care centers                                                      | Cross-sectional survey        | Kenya     | Payment Scale and Bidding | US$2-6      | At least US$2 | 70.5 |
| Uzochukwu B (2011)(18)        | 250 of undergraduate students of two tertiary institutions                 | Cross-sectional survey        | Nigeria   | Bidding and Open-ended | Free of charge | Mean US$3.2 | 405.1 |
| Maria Jose Bustamante         | 147 MSM and 45 transgender women                                           | Cross-sectional survey        | Peru      | Not specified | US$10       | Mean US$5 | 192.1 |
Table 2 Characteristics of Husbands Participated in Willingness-to-Pay for HIV and Syphilis Study at Antenatal Care Clinic, King Chulalongkorn Memorial Hospital, Bangkok, Thailand.

| Characteristics                        | Total (n=200) |
|----------------------------------------|---------------|
| Age (Median, IQR)                      | 31 (27-36)    |
| Income (Median, IQR)                   | 581 (484-968)*|
| **History of having child (n, %)**     |               |
| Yes                                    | 66 (67.0)     |
| **History of STIs Screening Tested**   |               |
| Yes                                    | 88 (44.0)     |
| Educational levels (n, %)              |               |
| ≤ Junior high school                   | 36 (18.0)     |
| High school/Diploma                    | 84 (42.0)     |
| University                             | 80 (40.0)     |
| **Knowledge about HIV Prevention**     |               |
| Low                                    | 8 (4.0)       |
| Moderate                               | 81 (40.5)     |
| High                                   | 111 (55.5)    |

*US$1 = 31 Thai Baht

** History of HIV and/or syphilis screening tested

*** Score 0-3, Low; 3-4, Moderate; 5, High
Table 3 Amount of Willingness-to-Pay for HIV and Syphilis Screening Tests

|                        | Median (IQR) (US$) |                  |                  |
|------------------------|--------------------|------------------|------------------|
|                        | All Husbands (n=200) | Willing to test (n=176) | Not willing to test (n=24) |
| HIV Screening          |                    |                  |                  |
| - Bidding Game         | 14.5 (12.2-14.5)   | 14.5 (12.3-14.5) | 14.5 (11.7-14.5) |
| - Payment Scale        | 9.7 (5.5-14.5)     | 10.0 (5.5-14.5)  | 12.3 (8.9-15.1)  |
| Syphilis Screening     |                    |                  |                  |
| - Bidding Game         | 10 (9.7-11.4)      | 9.7 (9.7-370)    | 9.7 (9.1-10.8)   |
| - Payment Scale        | 7.4 (5.2-9.7)      | 7.4 (5.2-9.7)    | 9.7 (6.3-14.2)   |

*US$1 = 31 Thai Baht

Figures

Figure 1
Willingness-to-pay for HIV screening test using bidding method

Figure 2

Willingness-to-pay for syphilis screening test using bidding method