



HHS Public Access

Author manuscript

J Perinatol. Author manuscript; available in PMC 2017 March 29.

Published in final edited form as:

J Perinatol. 2017 January ; 37(1): 21–26. doi:10.1038/jp.2016.160.

Sexual partner testing for HIV to eliminate mother-to-child HIV transmission: a needs assessment in an urban hospital community clinic

Lynn M. Yee, MD, MPH, Adina R. Kern-Goldberger, MD, MPH, Patricia M. Garcia, MD, MPH, and Emily S. Miller, MD, MPH

¹Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Northwestern University Feinberg School of Medicine

²Department of Obstetrics and Gynecology, Columbia University Medical Center

Abstract

Objective—To characterize pregnant patients' knowledge, attitudes and preferences regarding antenatal HIV testing for themselves and their sexual partners.

Study Design—Observational, mixed methods study of HIV-negative pregnant women from a university-based urban clinic. Participants completed an anonymous survey about HIV testing for themselves and their partners. Descriptive statistics, bivariable analyses, multivariable logistic regression and qualitative thematic analysis were utilized.

Results—142 patients (mean age 28.6 ± 5.5 years) participated. A majority (57.7%) were married or partnered, and 92.9% reported having at least one current sexual partner. While a majority (62.8%) reported their partner had a prior HIV test, and 93.0% of these women were aware of test results, only 20.7% reported partner testing had occurred in the past 6 months. Women who had a prior HIV test, who were older or who were non-white were more likely to be aware of their partner's HIV status. A majority (66.9%) of women desired knowledge of their partner's current status and 76.0% believed their partners would like to know his HIV status; in addition, 74% were interested in receiving partner testing at the site of prenatal care. Qualitative analysis demonstrated health concerns and believing HIV knowledge is important to the relationship were motivators for desiring partner testing.

Conclusions—In this urban community, a majority of pregnant women do not know HIV test results for their sexual partner *during the current pregnancy*. Women desired to know their partner's HIV status and were receptive to partner testing at the site of prenatal care or other

Users may view, print, copy, and download text and data-mine the content in such documents, for the purposes of academic research, subject always to the full Conditions of use:http://www.nature.com/authors/editorial_policies/license.html#terms

CORRESPONDING AUTHOR: Lynn M. Yee, MD, MPH, Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Northwestern University Feinberg School of Medicine, 250 E. Superior Street, #5-2191, Chicago, IL 60611, Phone: 312-472-0119, Fax: 312-472-4687, lynn.yee@northwestern.edu.

This abstract was presented as a poster presentation at the 2015 National HIV Prevention Conference, December 6–9, 2015, in Atlanta, Georgia.

DISCLOSURES: The authors report no conflicts of interest.

locations. Partner testing may be a critical step towards elimination of seroconversion during pregnancy and maternal-to-child HIV transmission.

INTRODUCTION

Elimination of maternal-to-child transmission (MTCT) of HIV, defined as reducing perinatal transmission to an incidence of <1 infection per 100,000 live births and to a rate of <1% among HIV-exposed infants, is a critical and achievable public health goal.(1) Every year, over 8000 women with HIV become pregnant in the United States, and without prevention efforts, 25% will transmit HIV to their infant.(2, 3) With appropriate management, perinatal transmission can be reduced to 2% or less, yet elimination of MTCT requires antenatal knowledge of HIV status so antenatal, intrapartum, and neonatal preventive strategies can be employed.(1) To this end, current screening recommendations include universal testing for HIV early in pregnancy.(4–7)

Yet, mathematical modeling demonstrates that not all pregnant women with HIV will be reached by universal screening just once during a pregnancy.(8) In particular, women who seroconvert during pregnancy are at risk of remaining unidentified if they were HIV negative at first screen. Due to physiologic changes in the immune system and the vaginal mucosa, pregnancy increases a woman's risk of acquiring HIV.(9) Compounding this increased risk of acquisition, women who seroconvert during pregnancy face a significantly increased risk of MTCT,(10) accounting for one-quarter of cases of MTCT.(11) Accordingly, newer guidelines support repeat HIV testing in the third trimester for women known to be at risk of HIV acquisition and women living in areas with high HIV incidence or prevalence.(2, 4, 5, 7) However, literature suggests a potentially more cost-effective approach is partner testing.(12, 13) Although data on the cost-effectiveness of this practice in urban centers such as Chicago are lacking, there are a number of potential benefits. Identification of positive partners allows providers to employ contemporary strategies for HIV prevention, including partner viral load suppression, use of barrier protection, and maternal pre-exposure prophylaxis with antiretroviral medications. Partner testing, with uptake of prevention strategies, has the significant advantage of prevention of horizontal HIV transmission to pregnant women, obviating the risk of MTCT, while also affording the opportunity to promote health for the family unit and identify men who may need HIV care for themselves.

While partner counseling and testing has been employed internationally as a means to optimize the health of the couple as well as to reduce MTCT,(14, 15) this strategy is not routine in the United States. Moreover, there is a substantial lack of data about acceptability and feasibility of partner testing in high-risk obstetric populations in the United States. Despite the burden of HIV infection for reproductive-aged women in disadvantaged communities, little is known about how much women know about HIV testing and whether HIV testing of sexual partners would be acceptable. Thus, using a high risk cohort, the aims of this study were to characterize pregnant patients' knowledge about antenatal HIV testing, to assess their knowledge of their sexual partners' HIV status, and to determine interest and preferences regarding antenatal partner HIV testing.

MATERIALS AND METHODS

This was an observational, mixed methods survey-based study of antenatal HIV testing knowledge, awareness of partner HIV status, and interest and preferences regarding antenatal partner HIV testing in among an urban community of pregnant women. Pregnant women were recruited from a university-based perinatal clinic serving urban Chicago women. This clinic serves a largely minority population of women who receive Medicaid assistance for prenatal care. The clinic population draws from the communities in Chicago with a high prevalence of HIV, with average annual HIV infection case rates ranging from 54.1–132.2 per 100,000 in the South and West Side neighborhoods where the majority of patients live.⁽¹⁶⁾ English-speaking pregnant women age 18 and older attending prenatal care in this setting were recruited to complete this survey between October 2014 to June 2015 and late October to mid-November 2015. Participants were required to have had at least one prior prenatal care visit in this clinic, to ensure that an HIV test had been performed or records of an outside HIV test had been reviewed; it is universal practice in this clinic to obtain an HIV test at first prenatal visit if not otherwise documented during the pregnancy. Patients with a positive HIV test were subsequently referred to a multidisciplinary perinatal HIV program which offered care at a different location on this campus, and thus HIV positive patients would never be seen for a return visit at this site. Through this process, it was possible to ensure that no participants in the study were HIV-positive. Recruitment was conducted as a non-probability convenience sample with a goal of 130 responses, which would represent approximately 60% of the participants seen in the study period. For the qualitative data, sample size was determined based on the goal of saturation, in which the responses obtained are judged to be representative of the population under investigation. Qualitative responses were reviewed iteratively by two investigators (LMY and AKG) to ensure achievement of saturation.

Since literature review did not yield any existing validated scales addressing the items of interest, surveys were developed based on clinician expertise. Surveys were pilot tested with HIV-negative patients and women's health care providers to ensure acceptability of language, tone, length, formatting and content. Surveys were modified in response to feedback; the IRB-approved surveys were then placed at the clinic front desk and distributed to eligible women checking in for prenatal appointments. Women were asked to not complete a duplicate survey if they had already participated. Surveys were self-administered and completed anonymously, and thus no written consent was required by the reviewing Institutional Review Board, although the paper survey provided consent information and study contact details. The survey collected data on demographics, reproductive history, knowledge of HIV testing during pregnancy, history of partner HIV testing, attitudes and comfort regarding discussing partner HIV status and testing, and preferences for location of obtaining partner testing. The survey used a combination of multiple choice, Likert scale, and free-response questions. The two open-ended questions queried reasons for desiring or not desiring partner HIV testing and general thoughts about HIV testing. No identifying or personal health information were collected.

This was a mixed methods analysis. First, patient characteristics were described using simple descriptive statistics. Knowledge of partner HIV status was examined based on

patient characteristics using chi-square tests, Student's t-tests, and Mann-Whitney U tests, as appropriate. Independent associations with knowledge of partner HIV status were estimated using multivariable logistic regression accounting for factors with a $p < 0.1$ in the bivariable analysis. All statistical analyses were conducted with Stata v13 (College Station, TX). All analyses were two-tailed and $p < 0.05$ was used to define statistical significance.

Next, a theme-generating qualitative analysis was performed. All written responses to the two open-ended questions were transcribed verbatim to Microsoft Excel (Redmond, WA). Participant responses were analyzed and grouped into major themes and sub-themes. Analysis was conducted by hand using a constant comparative method in which investigators generate themes from the data rather than using pre-developed hypotheses.⁽¹⁷⁾ Coding was conducted by one trained investigator (LMY) with codes confirmed by a second investigator (AKG). Emergent themes are described using illustrative quotations. Approval was received from the Northwestern University Institutional Review Board prior to study initiation.

RESULTS

During the study time period, 222 prenatal patients were seen for care in this clinic, and 142 (63.9%) completed the survey. All participants were insured by Illinois Medicaid at the time of participation. The majority of participants (57.7%) were married or considered themselves to be a partner in an unmarried couple. Over 90% of participants self-described as belonging to a racial or ethnic minority group, with 57.1% non-Hispanic black and 30.7% Hispanic. Mean gestational age was 17.1 weeks (SD 8.5), ranging from 6 to 38 weeks. While the majority (90.7%) reported having one current sexual partner, 7.1% reported no current sexual partner and 2.1% reported more than one current sexual partner. A minority of participants (39%) reported their partner had insurance coverage for medical care or a primary care provider. All participants had undergone an HIV test at their first prenatal visit and were HIV negative. However, only half (54.6%) of participants reported knowledge of their own HIV test results during the current pregnancy. Nearly 80% of participants reported having had an HIV test prior to the current pregnancy.

Participants were queried about their knowledge of partner HIV status. A majority (62.8%) were aware their partner had a prior HIV test at some point in his life and most (93.0%) of these women reported they were aware of the test results. There were no statistically significant differences in participant knowledge of her partner's HIV status based on her marital status, education, employment, partner insurance status, number of current sexual partners, or clinical characteristics (Table 1). Notably, race/ethnicity was statistically significantly associated with knowledge of partner HIV status. Women who were non-Hispanic black were more likely to be aware of their partner's HIV status ($p = 0.02$). Women who knew their own HIV test results during the current pregnancy and women who had ever been tested for HIV prior to pregnancy were also more likely to be aware of their partner's status. On multivariable logistic regression analysis accounting for factors with a $p < 0.1$ on bivariable analysis, compared to non-Hispanic white women, women who were racial/ethnic minorities remained more likely to be aware of their partner's HIV status. Additionally, having had a prior HIV test and increasing maternal age were additionally associated with

increased odds of knowledge of partner status. Participant knowledge of her own result during pregnancy did not remain statistically significantly associated with knowledge of partner status on multivariable analysis.

While a majority reported their partners had prior HIV testing, only 20.7% of women reported knowledge that their partner had undergone testing in the past 6 months, within the timeframe of the index pregnancy. Strikingly, although no participants had reported a serodiscordant relationship to their health care providers during the study period, one participant reported having an HIV-infected sexual partner.

Participants were queried about preferences for partner testing. Participants reported a desire to know their partner's HIV status, with 66.2% stating they had previously discussed HIV with their partner, 66.9% interested in knowing their partner's status, and 76.0% believing their partner would like to know his status. The majority felt "somewhat" or "very" confident about talking about HIV with their partner (93.1%), telling their partner the results of her own HIV test (94.7%), asking their partner to take an HIV test (93.9%), and talking about the results of his test with him (92.4%). Further, participants reported high levels of interest in having their partners undergo testing in any of the proposed locations: at home, at his own doctor/clinic, or at the site of prenatal care, either in conjunction with a prenatal appointment or on his own (Table 2). Participants similarly felt their partners would be interested in testing at each of these locations.

Fifty-seven women (40.1%) provided written responses to the open-ended questions. Qualitative data demonstrated two major themes: reasons to pursue HIV partner testing and reasons not to pursue testing (Table 3). Reasons to pursue testing comprised of 6 sub-themes. Subthemes about desiring testing included concerns about protecting her own health, believing knowledge of HIV status is an important part of a relationship, knowledge of prior results but desire to re-test for security, pregnancy-specific health concerns, curiosity or a desire to know without a stated link to health reasons, and lack of trust in the partner. The second major theme, reasons testing was not desired, comprised of six sub-themes. These sub-themes included having knowledge of prior testing, the concept of trust and/or belief in monogamy even without prior test knowledge, having a belief in the partner's negative status without mention of fidelity or testing, no being longer partnered, and desiring to avoid the consequences of results. Examples of each theme are provided in Table 3.

DISCUSSION

Patients and their partners must both know their HIV status during the current pregnancy if MTCT is to be eliminated. However, in this urban community located in a city with a high prevalence of HIV, a majority of pregnant women do not know the results of a HIV test for their sexual partner *during the current pregnancy*. Moreover, one of the 80 women knew her partner's HIV positive test results but had not disclosed this to her obstetrician, representing an unmet need for horizontal transmission counseling for a pregnant woman at risk of HIV seroconversion and subsequent vertical transmission to her fetus. This finding, while striking, fits the context of HIV epidemiology in Chicago, where the rate of HIV infection is approximately 2.5 times higher than the national rate.(16)

While prior work has demonstrated it is cost-effective to repeat HIV testing in the third trimester for high incidence communities such as Chicago,(18) national data have also estimated as many as 14% of persons living with HIV remain undiagnosed, and these individuals result in nearly one-third of ongoing transmissions.(19) Thus, the community surveyed in this study represents a population in which HIV partner testing may be a particularly effective strategy to reducing both horizontal and vertical HIV transmission. However, it remains unclear what time period in pregnancy represents the most effective gestational age for partner testing, and whether repeat testing of the partner should be considered alongside repeat testing of the patient. Similarly, prior to initiating programmatic efforts to engage partners in testing, additional work must be performed to understand how to address the risk for intimate partner violence around HIV testing and disclosure, as pregnant women are known to be at increased risk of violence.

The findings also demonstrated areas for improvement in patient-provider communication about HIV testing during pregnancy, as all women underwent testing but only half were aware of their own results. Some women may have been unaware of their results due to early gestational age and lack of opportunity to be told results if they had only had one prior prenatal visit, but we do not believe this accounted for the majority of the women lacking knowledge of their results, given the gestational ages represented in this cohort. Moreover, analysis of the qualitative results demonstrated that only two women cited pregnancy- or newborn-related reasons as an explanation for why they desired partner testing, demonstrating a lack of knowledge about how antenatal HIV acquisition could affect offspring. Concerted efforts to discuss HIV testing and results may be one strategy to reduce HIV stigma and discuss risk factors for seroconversion during pregnancy. Given the expressed interest in partner testing at the site of prenatal care, patient-provider discussion about her own HIV test results may represent an opportunity for providers to discuss partner testing.

We identified several factors associated with knowledge of the sexual partner's HIV status. Women who had an HIV test prior to the current pregnancy were more likely to be aware of their partner's HIV status. These findings suggest women with greater awareness of the importance of HIV testing and greater concern about knowing their own HIV status are also more likely to engage in conversations with sexual partners about HIV. In addition, while the number of non-Hispanic white women in the study was small, women who identified a minority racial/ethnic status were more likely to be aware of their partner's HIV status. This finding is encouraging, as the Chicago HIV prevalence data demonstrate a significant health disparity among racial/ethnic minority women compared to non-Hispanic white women(16) and may point to the success of various city-wide public health education and screening programs.

Importantly, pregnant women in this study reported a strong desire to know their partner's HIV status and reported a high degree of comfort with discussing and requesting HIV testing of their partners. Although a minority of women reported their partners had good access to health care, participants were receptive to partner testing either at the site of prenatal care or at other points of care. As prenatal care often represents a critical point of access to health care for women in underserved communities, the acceptability of partner

HIV testing as a component of prenatal care represents a potentially important resource to expand HIV testing in at-risk communities. Next steps include determining whether there is a mutual desire for testing, as our data only demonstrate the pregnant woman's desire to know her partner's status; this desire alone is insufficient to have an impact on MTCT unless the partner also desires such knowledge. Indeed, partner testing has been found to be well-received in other settings; testing of male partners of pregnant women has been widely investigated in the international setting. Couple testing, as opposed to merely maternal testing, has been reported to facilitate disclosure of serostatus, improve maternal antiretroviral initiation and adherence, reduce loss-to-follow-up rates, and improve postnatal MTCT strategies, all of which independently can reduce MTCT.(20–22) Moreover, acceptability and uptake of couple or partner testing has been demonstrated to be high in multiple international settings.(23–26) While international settings represent different social, cultural, and medical perspectives on HIV than found in urban Chicago, the international data are promising and suggest more widely employed partner testing of pregnant patients could achieve similar successes in the United States.

Several systems barriers to partner or couple testing must be considered for this strategy to be effective. First, male partners in at-risk communities may not present to prenatal care with the parturient due to work obligations, and thus accessing these partners may require non-standard approaches, such as home nursing, after hours or weekend clinics, prenatal care clinic drop-in times, or at-home self-testing. Second, an effective partner testing program requires prenatal care providers to be aware of HIV risk in their patient population, be equipped to counsel about HIV risk factors, and be linked to expert resources for serodiscordant couples. Many obstetrical providers are unfamiliar with perinatal HIV prevention, and providers already have a wide array of preventive health and anticipatory guidance topics to address in prenatal care. Thus, an effective partner testing program would necessitate provider education and support. Provider education on an institutional level as well as from professional organizations, electronic medical record reminders and resources, and the organized support of perinatal HIV experts would all be important strategies for consideration. Third, although pregnant women often can obtain public insurance coverage due to pregnancy, their undocumented or otherwise un-/under-insured partners may have less access to health care; partner testing programs must additionally consider how to fund testing in such situations.

A strength of this study lies in its characterization of an important component of the HIV MTCT path, the risk of horizontal transmission, not previously well investigated in the United States. In addition, the anonymous nature of the survey allowed participants to provide honest answers without fear of stigma. Further, allowing for open-ended responses, analyzed using rigorous qualitative methodology, enriched the data and allowed the voices of the participants to contribute. However, this study also has a number of limitations. First, the response rate was 63.9% of all patients seen in this practice during the study period; while the majority of patients participated, the response rate did not achieve optimal levels. Further, while we attempted to sample every clinic patient via introduction of the survey by clinic staff, this was a convenience sample of patients presenting to care who were willing to participate, and thus there is possible selection bias. The restriction of the study to English-speaking patients, which was performed due to limited research team capacity for bilingual

surveys, is an additional limitation. The survey methodology relied on participant understanding of the written questions, and while attempts were made to design the survey at a low literacy level, it is possible that questions could have been misunderstood. The anonymous nature of the study precluded the investigators from corroborating survey responses with medical record data. Additionally, there remain unanswered questions about HIV testing knowledge and preferences, since our analysis is limited by the questions asked. Finally, this study focused solely on the pregnant woman's knowledge, attitude, and behaviors; future work in this realm will require direct investigation of male partner perspectives.

In summary, in this high risk community of pregnant women receiving prenatal care in urban Chicago, a majority of women do not know the results of recent HIV testing for their sexual partners. Testing of sexual partners is one potentially highly effective strategy to identify women at risk of HIV seroconversion during pregnancy, which would then allow for implementation of a multitude of clinical strategies aimed at eliminating MTCT. This study demonstrates the acceptability of partner testing in this community of pregnant women. Additionally, qualitative findings suggesting pregnant women are motivated for partner testing via concerns for health and interest in having a trusting relationship should be considered as possible patient-centered approaches to promoting partner testing. Future work aimed at eliminating MTCT must investigate how to counsel about and subsequently expand HIV testing resources for partners, the acceptability of HIV testing from the male partners' perspectives, the optimal deployment of HIV-transmission prevention strategies in pregnant women at risk for seroconversion, and, once programs are employed, the uptake of such resources for male partners in at-risk communities.

Acknowledgments

FUNDING: LMY and ESM are supported by the NICHD K12 HD050121-11 and K12 HD050121-09, respectively.

References

1. Panel on Treatment of HIV-Infected Pregnant Women and Prevention of Perinatal Transmission. Recommendations for use of antiretroviral drugs in pregnant HIV-1-infected women for maternal health and interventions to reduce perinatal HIV transmission in the United States 2015. 2015 Dec 28. Available from: <http://aidsinfo.nih.gov/contentfiles/lvguidelines/PerinatalGL.pdf>
2. Centers for Disease Control. HIV Among Pregnant Women, Infants, and Children. 2014. [cited 2014]. Available from: <http://www.cdc.gov/hiv/risk/gender/pregnantwomen/facts/>
3. Sperling RS, Shapiro DE, Coombs RW, Todd JA, Herman SA, McSherry GD, et al. Maternal viral load, zidovudine treatment, and the risk of transmission of human immunodeficiency virus type 1 from mother to infant. Pediatric AIDS Clinical Trials Group Protocol 076 Study Group. The New England journal of medicine. 1996; 335(22):1621–1629. [PubMed: 8965861]
4. American College of Obstetrics and Gynecology Committee on Obstetric Practice. ACOG Committee Opinion No. 418: Prenatal and perinatal human immunodeficiency virus testing: expanded recommendations. Obstetrics and gynecology. 2008; 112(3):739–742. [PubMed: 18757690]
5. Moyer VA. U.S. Preventive Services Task Force. Screening for HIV: U.S. Preventive Services Task Force Recommendation Statement. Annals of internal medicine. 2013; 159(1):51–60. [PubMed: 23698354]
6. Workowski KA, Berman S. Centers for Disease C, Prevention. Sexually transmitted diseases treatment guidelines, 2010. MMWR Recommendations and reports : Morbidity and mortality

weekly report Recommendations and reports / Centers for Disease Control. 2010; 59(RR-12):1–110.

7. American College of Obstetricians and Gynecologists Committee on Obstetric Practice and HIV Expert Work Group. Prenatal and perinatal Human Immunodeficiency Virus Testing: Expanded Recommendations, Committee Opinion Number 635. *Obstet Gynecol.* 2015; 125:1544–1547. [PubMed: 26000543]
8. Mahy M, Stover J, Kiragu K, Hayashi C, Akwara P, Luo C, et al. What will it take to achieve virtual elimination of mother-to-child transmission of HIV? An assessment of current progress and future needs. *Sexually transmitted infections.* 2010; 86(Suppl 2):ii48–ii55. [PubMed: 21106515]
9. Mugo NR, Heffron R, Donnell D, Wald A, Were EO, Rees H, et al. Increased risk of HIV-1 transmission in pregnancy: a prospective study among African HIV-1-serodiscordant couples. *Aids.* 2011; 25(15):1887–1895. [PubMed: 21785321]
10. Duval M, Faye A, Rohrlach P, Levine M, Matheron S, Larchee R, et al. Failure of pediatric AIDS prevention despite maternal HIV screening in Paris, France. *Journal of acquired immune deficiency syndromes and human retrovirology : official publication of the International Retrovirology Association.* 1999; 20(1):100–101.
11. Dinh T, Delaney K, Goga A, Jackson D, Lombard C, Woldesenbet S, et al. Impact of maternal HIV seroconversion during pregnancy on early maternal to child transmission of HIV (MTCT) measured at 4–8 weeks postpartum in South Africa 2011–2012: A national population-based evaluation. *PLoS One.* 2015; 10(5):e0125525. [PubMed: 25942423]
12. Huang Y, Lasry A, Hutchinson A, Sansom S. A systematic review on cost effectiveness of HIV prevention interventions in the United States. *Appl Health Econ Health Policy.* 2015; 13(2):149–156. [PubMed: 25536927]
13. Postma MJ, Beck EJ, Mandalia S, Sherr L, Walters MD, Houweling H, et al. Universal HIV screening of pregnant women in England: cost effectiveness analysis. *Bmj.* 1999; 318(7199):1656–1660. [PubMed: 10373167]
14. Musheke M, Bond V, Merten S. Couple experiences of provider-initiated couple HIV testing in an antenatal clinic in Lusaka, Zambia: lessons for policy and practice. *BMC health services research.* 2013; 13:97. [PubMed: 23496926]
15. Crepez N, Tungol-Ashmon M, Vosburgh H, Baack B, Mullins M. Are couple-based interventions more effective than interventions delivered to individuals in promoting HIV protective behaviours? A meta-analysis. *AIDS Care.* 2015; 27(11):1361–1366. [PubMed: 26608175]
16. Chicago Department of Public Health. HIV/STI Surveillance Report, 2014. Chicago, IL: City of Chicago; 2014.
17. Ulin, P.; Robinson, E.; Tolley, E. *Qualitative Methods in Public Health: A Field Guide for Applied Research.* San Francisco, CA: Jossey-Bass; 2005.
18. Sansom S, Jamieson D, Farnham P, BUlterys M, Fowler M. Human immunodeficiency virus retesting during pregnancy: costs and effectiveness in preventing perinatal transmission. *Obstet Gynecol.* 2003; 102(4):782–790. [PubMed: 14551009]
19. Hall H, An Q, Tang T, Song R, Chen M, Green T, et al. Prevalence of diagnosed and undiagnosed HIV infection - United States, 2008–2012. *MMWR Morb Mortal Wkly Rep.* 2015; 64(24):657–662. [PubMed: 26110835]
20. Becker S, Mlay R, Schwandt HM, Lyamuya E. Comparing couples' and individual voluntary counseling and testing for HIV at antenatal clinics in Tanzania: a randomized trial. *AIDS and behavior.* 2010; 14(3):558–566. [PubMed: 19763813]
21. Farquhar C, Kiarie JN, Richardson BA, Kabura MN, John FN, Nduati RW, et al. Antenatal couple counseling increases uptake of interventions to prevent HIV-1 transmission. *Journal of acquired immune deficiency syndromes.* 2004; 37(5):1620–1626. [PubMed: 15577420]
22. Conkling M, Shutes E, Karita E, Chomba E, Tichacek A, Sinkala M, et al. Couples' voluntary counselling and testing and nevirapine use in antenatal clinics in two African capitals: a prospective cohort study. *J Int AIDS Soc.* 2010; 13:1–10. [PubMed: 20205768]
23. Rosenberg N, Mtande T, Saidi F, Stanley C, Jere E, Paile L, et al. Recruiting male partners for couple HIV testing and counselling in Malawi's option B+ programme: an unblinded randomised controlled trial. *Lancet HIV.* 2015; 2(11):e483–e491. [PubMed: 26520928]

24. Lolekha R, Kullerk N, Wolfe M, Klumthanom K, Singhagowin T, Pattansin S, 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 Int Health Hum Rights*. 2014; 14(39):1–10.
25. Mohlala B, Boily M, Gregson S. The forgotten half of the equation: randomized controlled trial of a male invitation to attend couple voluntary counselling and testing. *AIDS*. 2011; 25(12):1534–1541.
26. Koo K, Makin J, Forsyth B. Where are the men? Targeting male partners in preventing mother-to-child transmission. *AIDS Care*. 2013; 25(1):43–48. [PubMed: 22670795]

Table 1

Participant demographics, stratified by knowledge of partner’s HIV status

	Aware of partner’s HIV status (N=80)	Unaware of partner’s HIV status (N=62)	p-value	aOR for knowledge of partner HIV status* (95% CI)
Age (mean, years)	29.3 (0.6)	27.6 (0.7)	0.07	1.09 (1.01–1.18)
Public insurance	80 (100.0%)	62 (100.0%)	1.00	--
Race/ethnicity			0.02	
Non-Hispanic white	2 (2.5%)	10 (16.4%)		(ref)
Non-Hispanic black	51 (64.6%)	29 (47.5%)		12.27 (2.23–67.47)
Hispanic	23 (29.1%)	20 (32.8%)		11.30 (1.85–68.96)
Asian/Asian American	3 (3.8%)	2 (3.3%)		25.11 (1.43–439.96)
Married/partner in an unmarried couple	47 (60.3%)	32 (54.2%)	0.48	--
Education			0.57	--
Some high school or less	5 (6.3%)	6 (9.8%)		
High school graduate	14 (17.5%)	13 (21.3%)		
Some college/technical school	29 (36.3%)	24 (39.3%)		
College/technical school graduate	32 (40.0%)	18 (29.5%)		
Employed	42 (52.5%)	34 (56.7%)	0.62	--
More than one current sexual partner	1 (1.3%)	2 (3.3%)	0.40	--
Gestational age at survey completion, weeks	18.0 (8.7)	16.0 (8.0)	0.17	--
Nulliparous	21 (26.6%)	14 (22.6%)	0.59	--
Intended pregnancy	24 (30.4%)	24 (38.7%)	0.30	--
Partner has health insurance	35 (44.9%)	20 (32.8%)	0.15	--
Partner has a primary doctor or clinic	32 (42.1%)	19 (35.9%)	0.48	--
Patient had been tested for HIV prior to current pregnancy	69 (87.3%)	41 (69.5%)	0.027	3.11 (1.13–8.56)
Patient was aware of her own HIV test results from current pregnancy	48 (62.3%)	24 (43.6%)	0.033	2.05 (0.93–4.51)

aOR, adjusted odds ratio; CI, confidence interval

* Adjusted for prior HIV test, awareness of HIV test results, maternal race/ethnicity, and maternal age

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 2

Participant preferences for partner HIV testing location

	Patient is interested in partner testing at this location N(%)*	Patient believed her partner would be interested HIV testing at this location N(%)*
Home testing	84 (68.4%)	84 (70.6%)
Testing with his own doctor or another clinic	96 (77.4%)	90 (74.4%)
Come to prenatal clinic on his own	85 (70.8%)	69 (60.0%)
Come to prenatal clinic with me	92 (73.6%)	80 (67.2%)

* Participants were asked to agree or disagree with testing at each location option, but could express interest with multiple options

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3

Qualitative assessment of participant perspectives on partner testing for HIV

Theme	Response count	Exemplary quotation (N=57 total responses)
Reasons to have testing		
Protection of my own health	14	<ul style="list-style-type: none"> I need to know for my own health. To make sure I am ok and don't have it. I would want to know because whatever he has would affect me. I would like to know the status so that treatment can get done. For health risk Helth [sic] reasons for what is best for the family Because I need to make sure I'm having safe sex in case condoms go wron [sic].
Knowledge of HIV status is an important part of a relationship	14	<ul style="list-style-type: none"> It's always best to know your status! I believe in regular testing & STD/HIV/AIDS discussion and sharing. As I get tested regularly I would like my partner to as well. Because we have unprotected sex with one another as an exclusive couple. I believe it's safe that both partners know each other status. It's important. We have unprotected sex, I should know his status.
Already know results but interested in repeat testing	6	<ul style="list-style-type: none"> My husband gets tested every year at the clinic he goes to.
Pregnancy-specific health reasons	2	<ul style="list-style-type: none"> I would want to know because it could effect [sic] me and the baby. I want all of us to be safe and healthy. I would like to know because of the health of my baby and because we are still sexual active.
Curiosity	2	<ul style="list-style-type: none"> No specific reason, just to cure my curiosity.
Lack of trust in partner	1	<ul style="list-style-type: none"> 'Cause I know he sleep around.
Reasons to NOT have testing		
Already know prior test results	12	<ul style="list-style-type: none"> We are in a committed relationship. I have no doubt he is negative of any STD or HIV. He took a test when we first began dating; that is good enough for me. Seen his results and I've been tested twice since our relationship (no scares, just making sure the first test was accurate) and all times my results have been negative. I already talked to him about and saw results of the test so I am okay. They are not positive so we are okay on that part of our lives.
Trust and/or monogamy	7	<ul style="list-style-type: none"> Were committed to each other. No partners outside our relationship. I would like to know but I trust him and I know he's [sic] does not HIV.

Theme	Response count	Exemplary quotation (N=57 total responses)
Belief in partner's negative status	3	<ul style="list-style-type: none"> • I know he does not have HIV. We've been together 11 yrs. • I'm hundred percent sure my partner who is my husband does not have HIV. • I know he doesn't have HIV so I don't see any reason to test.
No longer partnered	2	<ul style="list-style-type: none"> • Currently not dealing with him.
Avoiding consequences of results	1	<ul style="list-style-type: none"> • Because I really don't want to know for all I know he only been with me in the past 4 years

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript