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**FACTORS ASSOCIATED WITH SUCCESSFUL TREATMENT OF
TRICHOMONAS VAGINALIS AMONG HIV-INFECTED WOMEN**

A DISSERTATION

SUBMITTED ON THE FIFTH DAY OF MARCH 2010

TO THE DEPARTMENT OF EPIDEMIOLOGY

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OF THE SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE

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OF

DOCTOR OF PHILOSOPHY

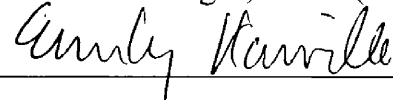
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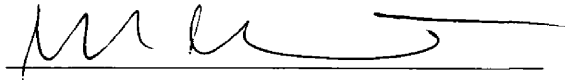
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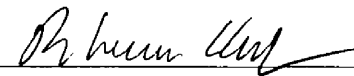
Patricia Kissinger, Ph.D. (Chair)



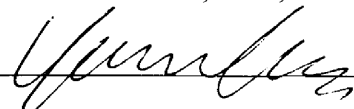
Emily Harville, Ph.D.



Xu Xiong, Ph.D.



Rebecca Clark, MD, Ph.D.



C. Lillian Yau, Ph.D.

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Abstract

Background: HIV+ women have high prevalence and recurrence rates of *Trichomonas vaginalis* (TV), and TV infection may increase HIV transmission.

Objectives: To examine factors associated with successful treatment of TV among HIV+ women, specifically 1) adherence to patient-delivered partner treatment (PDPT) and possible causes of repeat TV infection, 2) effectiveness of the metronidazole (MTZ) single dose versus 7 day dose for treatment of TV, and 3) influence of bacterial vaginosis (BV) on response to treatment of TV.

Methods: Phase-IV randomized clinical trial comparing the MTZ 2 gm single dose to the 7 day 500 mg BID dose conducted from May 2006 - July 2009. HIV+ women who were TV-positive by culture were randomized to treatment arm, then re-cultured for TV at 6-12 days post-treatment completion (Test-of-Cure visit, TOC) and at 3 months. Participants were provided MTZ 2 gm single doses to deliver to all sexual partners.

Results: From the ongoing trial, 75.4% of women with partners provided PDPT to all partners. Of 24 repeat TV infections at TOC, 87.5% reported adherence to medication and no sexual exposure. In total, 270 HIV+/TV+ women were enrolled. Women in the 7 day arm had lower repeat TV infection rates at TOC [R.R. 0.50, 95% CI=0.25, 1.00; P<0.05] and 3 months [R.R. 0.46, 95% CI=0.21, 0.98; P=0.03] compared to the single dose arm. Of 244 HIV+/TV+ women with Gram stains, 66.8% had BV. At TOC, women with a TV/BV co-infection were more likely to retest positive for TV compared to

women with a TV infection only [R.R. 2.42, 95% CI=0.96, 6.07; P=0.05]. This association was significant only for the single dose arm (P=0.02).

Conclusions: Among HIV+ women: reported adherence to PDPT was high and treatment failure was the most common probable cause of repeat TV infection; the 7 day dose of MTZ was more effective than the single dose for treatment of TV; and co-infection with BV was associated with the failure of the MTZ single dose treatment for TV. The MTZ 2 gm single dose should no longer be recommended for the treatment of TV among HIV+ women.

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Chapter 1. Background and Literature Review

Trichomonas vaginalis is the most common curable sexually transmitted infection (STI) worldwide with an estimated 173.5 million new cases among adults in 1999, of which 87.7 million were female ¹. For comparison, the estimated new cases among adults for the same year was 92 million for Chlamydia, 62 million for gonorrhea, and 12 million for syphilis ¹. In the United States, an estimated 7.4 million new cases of *T vaginalis* occur annually among women and men ². Prevalence rates of *T vaginalis* infection in U.S. women range from 3% in a nationally representative sample of women ³, to 13% in pregnant women ⁴, 11 to 26% in women attending STD clinics ⁵⁻⁷, and up to 47% in newly incarcerated pregnant women ⁸. The highest prevalence of *T vaginalis* infection in U. S. women is seen among African-Americans with rates ranging from 23 to 51% ⁹.

Women in the U.S. who are infected with the human immunodeficiency virus (HIV) also have high prevalence rates of *T vaginalis* infection, ranging from 6 to 44% ¹⁰⁻¹⁶. In a cohort of HIV-infected women in Los Angeles, *T vaginalis* infection was the most frequently identified STI with a prevalence rate of 17.4%, and African-American women were 5.6 times more likely to have *T vaginalis* infection ¹⁷. The rates of repeat *T vaginalis* infection among HIV-infected women can be as high as 18 to 36% ^{11, 18, 19} compared to only a 7 to 8% repeat infection rate in HIV-negative women ^{19, 20}.

T vaginalis infection is associated with an increased risk of HIV acquisition in women ^{21, 22}. Increased genital shedding of HIV, as a result of *T vaginalis* infection, may increase sexual and perinatal HIV transmission ^{9, 23-26}. Research has shown that treatment

for *T vaginalis* infection can reduce vaginal shedding of HIV^{27, 28}. Because of high prevalence rates and high recurrence rates in HIV-infected women, as well as the implications for HIV transmission, the issues surrounding successful treatment of *T vaginalis* infection warrant attention.

The following sections will discuss the epidemiology of *T vaginalis*, the relationship between *T vaginalis* and HIV among women, and the treatment of *T vaginalis* among HIV-infected women.

1.1. Epidemiology of *Trichomonas vaginalis*

Trichomonas vaginalis (TV) is a single-celled protozoan parasite. The pathogen is transmitted sexually²⁹, with cases of perinatal transmission from an infected, untreated, pregnant woman to her female neonate reported³⁰. TV infection is mostly asymptomatic in both men and women³¹. One study found that roughly 77% of men with TV were asymptomatic³² and a different study found that 50% to 70% of women with TV had subclinical infection³³. In men, TV infection can cause signs and symptoms of urethritis³⁴ and untreated infection may lead to prostatitis, epididymitis, and infertility³⁵. In women, the most frequent signs and symptoms of infection are vaginal discharge, odor, edema or erythema, pruritis, and irritation³⁶. TV in women is associated with vaginitis, cervicitis, urethritis, and pelvic inflammatory disease³⁷ and in pregnant women, TV is associated with low birth weight and preterm delivery³⁸.

High-risk groups for TV infection include African-American males and females³⁹, female prison inmates^{8, 40}, drug users⁴¹, and sex workers^{42, 43}. In a nationally representative sample of U.S. women, risk factors for TV were non-Hispanic black race/ethnicity, being born in the U.S., greater number of lifetime sex partners, increasing age, lower educational level, poverty, and douching³. In a U.S. sample of women attending STD clinics, risk factors for TV included older age (20 years or above), black race, having less than 12 years of education, and having a concurrent chlamydial infection⁴⁴. Unlike other STIs which are usually found in younger women, TV is associated with older age. A recent study found TV infection to be significantly associated with concurrent STI, where the following STIs were more common among U.S. women with TV: Chlamydia, gonorrhea, herpes simplex virus types 1 and 2, syphilis, and HIV⁴⁵. One study examining risk factors for TV among HIV-infected women in the U.S. found black race to be associated with infection¹⁷. The same study found trading sex for money or drugs and single marital status to be associated with infection only in the nonblack women¹⁷.

TV is not a nationally reportable disease, and therefore attempts to report prevalence and incidence of the infection in the U.S. have come from studies mostly conducted among highly select convenience samples⁴⁶. Screening recommendations for TV are still under investigation, but one study suggests using any one of the following three predictors to identify women who would benefit from targeted TV testing: any drug use, contact with TV, or African-American race⁴⁷. Control strategies for TV focus largely on testing, treatment, health education, and condom promotion³¹.

1.1.1. Diagnosis of TV

Wet mount is a diagnostic technique that involves looking under a microscope at a glass slide with a mixture of vaginal discharge and saline. The diagnosis of TV is based on the identification of the motile trichomonads. It is the most commonly used and cheapest method to detect TV. However, the sensitivity of wet mount compared with culture can range from 58% to 82%⁴⁸ and depends on the skill of the person using the microscope, as well as the specimen collection method. Wet mount preparation of cervicovaginal lavage (CVL) is significantly more sensitive (72.2%) than vaginal swabs (52.8%) when compared to culture¹⁰, but the collection of CVL is not a routine clinical practice. Also, in order to maximize the sensitivity of the wet mount preparation, the slide needs to be examined immediately after the vaginal specimen is obtained to capture the trichomonads before losing motility⁴⁹. Therefore, some practical limitations do exist in collecting and reading the wet mount preparation. Another diagnostic technique which is routinely collected is the cervical Papanicolaou (Pap) smear, but this method only has a sensitivity of 57% compared with culture⁴⁸.

There is a method which combines the wet mount approach and culture approach to detecting TV⁵⁰. The InPouch TV test has a top portion which functions as a slide to be examined under the microscope for motile trichomonads from vaginal discharge. If this initial reading is negative, the specimen is pushed down into the bottom pouch, which serves as the culture. The pouch is incubated at 37°C for 24 hours, and then evaluated under the microscope for trichomonads. A negative specimen should be re-incubated and examined again at 48 hours and at 5 days⁵¹. Of three culture media for

TV (InPouch TV, Diamond's, and Trichosel), the InPouch TV test was significantly more sensitive than the other two media ⁵² with more positive results at each level of dilution and in shorter time periods, especially during the first 24 hours of incubation. The comparisons of the three culture media are presented in **Table 1.1**. The InPouch TV test has proven to be a simple, cost-effective, and sensitive method for diagnosis of TV⁵³; however, it does require the use of an incubator and repeat microscopic evaluations.

Highly sensitive PCR techniques have been developed to detect TV, but are not routinely used and not readily available ⁴⁶. In one study, the sensitivity of InPouch TV culture compared to PCR was 70% and the sensitivity of wet preparation compared to PCR was 36% ⁵⁴. Another study found the sensitivity of InPouch TV culture to be 69.2% (100% specificity) compared to real-time PCR assay ⁵⁵.

The diagnosis of TV is a challenge given current resources. Rapid tests to detect TV in vaginal specimens have been developed and are currently being tested for performance and cost results ⁵⁶. While wet mount preparation is the easiest technique available to clinicians, the lower sensitivity results in missed diagnoses of TV-infected women.

1.1.2. Treatment of TV

The only class of drugs used to treat TV is the nitroimidazoles. The recommended treatment regimens from the Centers for Disease Control and Prevention are: metronidazole 2 gm orally in a single dose; or tinidazole 2 gm orally in a single dose ⁵⁷. The alternative treatment regimen is metronidazole 500 mg orally twice a day for 7

days⁵⁷. The recommended metronidazole regimens have resulted in cure rates of approximately 90%–95% in randomized clinical trials, and the recommended tinidazole regimen has resulted in cure rates of approximately 86%–100%⁵⁷.

In randomized trials comparing the single doses of metronidazole and tinidazole, results suggest that tinidazole is equivalent to, or superior to, metronidazole in the achievement of parasitologic cure and resolution of symptoms⁵⁸. Resistance to metronidazole has been found in 2.2-9.6% of clinical isolates of TV⁵⁹⁻⁶¹, while resistance to tinidazole has been found in 0.6% of clinical isolates⁵⁹. Tinidazole is an option for patients with TV infection that is resistant to metronidazole³⁶.

1.2. Women and HIV

Worldwide in 2007, there were an estimated 33 million people living with HIV and 2.7 million new HIV infections⁶². A majority of all people living with HIV (67%) are located in sub-Saharan Africa, and women account for half of all people living with HIV⁶². In the United States, there were an estimated 1 million people living with HIV at the end of 2003⁶³. Women account for 26% of the U.S. population living with HIV, with the main route of transmission being high-risk heterosexual contact⁶⁴. In 2006, the estimated number of new HIV infections in the U.S. was 56,300, with an estimated incidence rate of 22.8 per 100,000 population⁶⁵. Of new HIV diagnoses in 2006, 49% were African-American and 27% were female⁶⁴. The HIV diagnosis rate in 2006 for African-American females was 56.2 per 100,000 population, more than 19 times the rate

for white females (2.9 per 100,000 population)⁶⁴. In 2004, HIV infection was the leading cause of death for African-American women aged 25 to 34 years; the third leading cause of death for African-American women aged 35 to 44 years; and the fourth leading cause of death for African-American women aged 45 to 54 years⁶⁶. A recent study of HIV-infected patients in ten U.S. cities found a gender difference in the treatment of HIV, with women being less likely than men to receive prescriptions for highly active antiretroviral therapy (HAART)⁶⁷.

1.2.1. TV and HIV

Several studies conducted in Africa have shown an association between TV and HIV transmission in women. A cross-sectional study in the Ivory Coast using female sex workers found that women with TV infection were 1.8 times more likely to be infected with HIV (95% CI=1.3, 2.7)⁶⁸. Another cross-sectional study in Tanzania using hospitalized patients found that women with TV infection had a nearly 3-fold higher risk of HIV infection (Adjusted OR=2.96, $p<0.001$)⁶⁹. In prospective studies, which provide temporal evidence, the same effect is seen. A study from the Democratic Republic of Congo (formerly Zaire), which followed female prostitutes over time found that a diagnosis of TV was associated with a nearly 2-fold increase in the rate of HIV seroconversion (Adjusted OR=1.9, 95%CI=0.9, 4.1)²². A prospective study in Kenya found that TV infection was associated with a 1.5-fold increased risk of HIV acquisition (Adjusted OR=1.52, 95% CI=1.04, 2.24)²¹. And a third prospective study conducted in Uganda and Zimbabwe found another strong association between TV infection and increased risk for HIV acquisition (Adjusted OR=2.74, 95% CI=1.25, 6.00)⁷⁰.

The results from these studies suggest that women with TV are more susceptible to HIV infection. This greater susceptibility is biologically plausible for three reasons. First, TV infection can elicit an inflammatory response in the cervicovaginal region ⁷¹, resulting in leukocyte appearance including HIV target cells (such as CD4 lymphocytes) to which HIV can attach and gain access ⁷². Second, TV infection can cause punctate mucosal hemorrhages resulting in a compromised mechanical barrier to HIV ⁷³. Third, infection with TV may change the normal vaginal flora and therefore increase susceptibility to bacterial vaginosis ⁷⁴, which would increase the risk of HIV acquisition ⁷⁵. These consequences combine to enlarge the portal of entry for HIV in TV-infected women, through increased number of HIV target cells and direct bloodstream access from genital lesions.

There is also evidence to suggest that women co-infected with TV and HIV are more infectious, which can increase HIV transmission to others. Studies have shown that TV can increase genital shedding of HIV in women ^{27, 28}, and increased HIV in the genital tract can increase sexual and perinatal transmission of HIV ²³⁻²⁶. The increase of free virus in the genital tract of TV-infected women acts to expand the portal of exit for HIV to uninfected persons.

Figure 1.1 illustrates the level of HIV transmission that would be attributable to TV infection at varying prevalences of TV, with the assumption of an increased relative risk of 2 or 3-fold for HIV infection ⁹. Under the assumption that TV amplifies HIV transmission by 2-fold and the prevalence of TV in the community is 25%, one-fifth

(20%) of HIV transmission in that population would be attributable to TV. Reducing the prevalence of TV may translate into a substantial decrease in HIV transmission⁹.

1.2.2. TV and HIV in African-American Women

In the United States, the prevalence of TV has been highest among African-American women, ranging from 1.5 to 10 times greater than the prevalence for other racial and ethnic groups⁴⁶. There are several factors which may explain this high rate of TV in this group. A high prevalence of TV infection may exist among the sexual partners of African-American women. Data on race-specific TV rates in men is sparse, but one study found a prevalence rate of 58% in young, inner-city, African-American men⁷⁶. Perhaps the high rates of TV in African-American women are a result of not using barrier protection, although a recent study which used a representative sample of U.S. men found that African-Americans in concurrent partnerships used condoms more than other racial/ethnic groups⁷⁷. The practice of douching is more common among African-American women^{78,79}, and has been associated with the acquisition of other STIs^{80,81}. In a group of HIV-infected women, those who douched were more likely to have TV¹⁴. Douching could explain part of the racial association between TV and African-American women. It is also possible that the high rates of TV in African-American women reflect differences in access to health care by race, a genetic susceptibility to TV, or the existence of different strains of TV⁴⁶.

African-Americans in the U.S. have suffered a disproportionate burden of HIV infection. Even though African-Americans only account for roughly 13% of the U.S. population, they account for nearly half (49%) of the people diagnosed with HIV/AIDS

⁸². In 2005, a majority (64%) of the women living with HIV/AIDS were African-American ⁸². Given the evidence that TV increases HIV transmission, and the high rates of TV among African-American women, control of TV in both HIV-infected and HIV-negative African-American women may be an effective measure to decrease HIV transmission in the African-American community.

1.2.3. Treatment for TV and Cervicovaginal Shedding of HIV

It is probable that heterosexual and some perinatal transmission of HIV occurs through direct contact with virus present in the genital tract ^{83, 84}. Cervicovaginal shedding of HIV among women may increase infectiousness and result in increased sexual and perinatal transmission ²³⁻²⁶. Factors associated with increased shedding of HIV in the female genital tract include higher plasma viral load levels ⁸⁵⁻⁸⁸, low CD4 cell counts ⁸⁷⁻⁸⁹ or immunosuppression ^{90, 91}, menses ⁹²⁻⁹⁴, hormonal contraceptives ^{89, 95}, pregnancy ⁹⁶, cervical inflammation ^{97, 98}, basic vaginal pH ⁸⁸, vitamin A deficiency ⁸⁹, selenium deficiency ⁹⁹, genital ulcers ⁹⁰ including those caused by genital herpes simplex virus type 2 infection ¹⁰⁰, and genital tract infections including vaginal candidiasis ^{89, 101}, gonorrhea ^{89, 90}, Chlamydia ^{90, 102}, TV ^{27, 28}, BV ¹⁰³⁻¹⁰⁵, and human papillomavirus ¹⁰⁶.

The use of antiretroviral therapy (ART) has been shown to decrease genital shedding of HIV ^{87, 107}. Treatment for genital tract infections has also been shown to reduce genital HIV levels, including treatment for candida ²⁷, treatment of cervicitis (related to gonorrhea, Chlamydia, or non-specific) ¹⁰⁸, and the treatment of both gonorrhea and Chlamydia specifically ⁹⁰.

One of the first studies to assess genital shedding of HIV after treatment for TV was conducted in an African cohort of women, where participants were tested for TV by culture, then treated for TV with metronidazole 400 mg twice a day (BID) for 10 days, and asked to return for a follow-up visit in 2 weeks. Although the sample size was small (n=55) and there was no control group, treatment of TV resulted in a 4.2-fold reduction in mean vaginal HIV-1 copies per swab ($p<0.001$)²⁷.

The next study conducted by Kissinger *et al.* used a cohort of women from a U.S. metropolitan area, where participants were tested for TV by culture, treated with either the metronidazole 2 gm single dose or metronidazole 500 mg BID for 7 days, and asked to return for a 1 month and 3 month follow-up visit. The analysis compared 58 women who were successfully treated for TV (no repeat infection) with 92 women who were TV-negative and served as controls. Over time, the prevalence of vaginal HIV shedding was higher for the TV-positive women at baseline (36.2% vs. 19.6%, $p=0.02$) and 1 month (34.6% vs. 14.1%, $p=0.01$), but then dropped to the same level as the controls at 3 months (18.4% vs. 12.2%, $p=0.91$)²⁸. Women who were TV-positive were significantly less likely to have detectable vaginal shedding at the 3-month visit compared to baseline (RR=0.34, 95% CI=0.12, 0.92) whereas controls were equally as likely to have detectable vaginal shedding at 3 months compared to baseline (RR=0.59, 95% CI=0.23, 1.51)²⁸.

Figure 1.2 presents the prevalence of vaginal HIV shedding by TV status over the course of follow-up. Treatment for TV was associated with a reduction in vaginal HIV shedding by 3 months post-treatment.

The implication from these two studies is that effective treatment for TV may actually reduce HIV transmission. Further studies are needed to replicate these results using larger samples from more diverse geographic locations. Also, because the first study reported an effect after 2 weeks while the second study reported an effect after 3 months, the timing of the treatment effect on genital shedding needs more investigation. It may be due to a difference in ART status between the two cohorts, or to the difference in metronidazole dosing. Not only would it be appropriate to counsel women on the importance of using condoms to prevent transmission of TV before treatment completion, it may also be appropriate to counsel women on the increased potential for shedding of HIV in the genital tract during and after treatment for TV.

1.3. Repeat Infections with TV

The rates of repeat TV infections are estimated to be 7-8% for HIV-negative women^{19, 20, 109}, and 18-36% for HIV-positive women^{11, 18, 19}. Repeat TV infections can result from non-adherence to treatment by the index patient, reinfection by an untreated sexual partner, infection by a new sexual partner, or treatment failure¹¹⁰. A recent study examined the likely causes of repeat infections at one month following administration of the metronidazole 2 gm single dose under directly observed therapy to TV-infected women. In HIV-negative women, the recurrences were classified as 8% probable reinfections (unprotected sexual exposure to an untreated sexual partner) and 92% probable treatment failures (TV positive after 2 courses of metronidazole and no sexual exposure)¹⁹. For HIV-positive women, the recurrences were classified as 27% probable

reinfections, 55% probable treatment failures, and 18% probable infections from a new sexual partner (no sexual exposure to the original partner but unprotected sex with a new partner) ¹⁹. Both groups of women experienced high overall rates of treatment failure for TV: 10% for HIV-positive women and 7.3% for HIV-negative women. Also, a large percentage of the women with repeat TV infections were asymptomatic: 36.4% of the HIV-positive women and 75% of the HIV-negative women ¹⁹. More studies are needed to verify the probable causes of repeat TV infections, among both HIV-positive and – negative women.

Given the high rates of repeat infections most likely due to treatment failure, the metronidazole 2 gm single dose may not be adequate treatment for some women with TV, especially HIV-infected women. Studies that were conducted to confirm the efficacy of the metronidazole 2 gm single dose largely used non-HIV infected women ^{111, 112}. HIV may influence the duration, response to treatment, recurrence rate, or severity of genital-tract infections in women ¹¹³. HIV-infected women may present unique challenges that reduce the efficacy of the 2 gm single dose: pharmaco-absorption issues related to multiple medications including ART; compromised immune status; or compromised vaginal ecology from common co-infections or common behaviors such as douching. Successful treatment of TV among HIV-infected women may require a regimen different from the metronidazole 2 gm single dose.

Drug-resistant TV infection appears to be on the rise ¹¹⁴ and could explain some repeat infections due to treatment failure. However, drug susceptibility among HIV-infected women has not been well studied. In a study of early repeat TV infections

among HIV-positive women, 2 of the 6 women with probable treatment failure had isolates with mild resistance to metronidazole ¹⁹. One small study showed that a woman (HIV-status unknown) with a resistant isolate could still be cured with the metronidazole 2 gm single dose ⁶¹. More studies are needed to examine the rate of metronidazole resistance and the level of resistance among HIV-infected women, but it is likely that drug resistance only explains a minority of the repeat infections due to treatment failure.

Another concern with high rates of repeat infections, which are largely asymptomatic, is finding the most appropriate time to retest women for TV. Two recent reports suggest that TV infection can become nondetectable for months after treatment, and then reappear ^{115, 116}. In Peterman *et al.*'s report, of 13 women with a previous TV infection, 11 (85%) had negative test results before having a positive TV result in a study interval during which they were not having sex ¹¹⁵. These data suggest that a combination of treatment failure and undetected infection can make it difficult to capture repeat infections. The time frame for retesting may last from a few weeks after treatment to a few months after treatment ⁵⁸.

1.4. Partner Treatment for STIs

Expedited partner therapy (EPT) is the practice of treating the sex partners of persons with curable STIs without requiring the partners to first obtain a medical evaluation ¹¹⁷. EPT usually consists of a practice called patient-delivered partner therapy or treatment (PDPT), where the patient is given a medication or prescription to deliver to

their sex partners. The CDC supports the use of EPT for partner management among heterosexual men and women with chlamydial infection or gonorrhea ¹¹⁸. There is no evidence to support the use of EPT among men who have sex with men, and for partner management of syphilis ¹¹⁸.

The CDC recommendations were based on randomized controlled trials of EPT in the United States. The first trial looked at PDPT versus self-referral of partners in reducing repeat chlamydial infections in women. Results showed that the risk of re-infection was 20% lower among women in the PDPT arm, but the difference was not statistically significant (OR=0.80, 95% CI=0.62, 1.05) ¹¹⁹. The second trial looked at EPT versus standard partner referral in reducing gonorrhea and chlamydial infections in women and heterosexual men. The EPT arm used a combination of PDPT and staff provision of medication to partners without a clinical exam. Results showed that infection with gonorrhea or Chlamydia at follow-up was significantly less common for patients in the EPT arm (RR=0.76, 95% CI=0.59, 0.98) ¹²⁰. And the third trial looked at PDPT or booklet-enhanced partner referral versus standard partner referral in reducing gonorrhea and chlamydial infections in men. Results showed that men in the PDPT arm (OR=0.40, 95% CI=0.21, 0.78) and booklet-enhanced partner referral arm (OR=0.22, 95% CI=0.11, 0.45) were less likely to test positive for gonorrhea or Chlamydia compared to men who received standard partner referral ¹²¹. However, the first randomized trial from the UK looking at partner interventions to reduce chlamydial infections among women found no significant difference in re-infection between PDPT versus patient referral (HR=1.32, 95% CI= 0.50, 3.56) ¹²² although the sample size was only 215 women.

The legal status of EPT is considered state-by-state, because legal provisions are needed to allow a clinician to provide a medication or prescription to a person (the patient's sex partner) without medical evaluation. In 2010, EPT is permissible in 22 states plus the city of Baltimore, potentially allowable in 20 states, and prohibited in 8 states ¹²³. **Table 1.2** provides the list of states under each category.

1.4.1. Partner Treatment for TV

According to the CDC, there is insufficient evidence to recommend the use of EPT for partner management among patients with TV ¹¹⁸. A randomized controlled trial looked at PDPT versus booklet-enhanced partner referral versus standard partner referral in reducing TV infections in women. Results showed no difference in TV infection rates at follow-up among the women in the three study arms ¹⁰⁹. There was, however, a cost savings seen with PDPT compared to the other two groups, both in terms of cost per woman and cost per partner treated.

The findings from this study could be attributed to several factors. First, women with TV tend to be older than women with other STIs, and perhaps these older women (mean age 25.8 years) in this study were more committed to partner treatment regardless of study group. This idea is supported by the fact that women in all arms were compliant with the partner treatment intervention. Second, women in all arms received counseling about partner notification that lasted on average from 10 to 20 minutes. This brief counseling session may have mediated any difference in effects of PDPT versus standard partner referral. Lastly, because rates of sexual exposure between visits were low in all

arms, the repeat TV infections could be related to index patient treatment failure rather than partner treatment.

The above trial was conducted with mostly African-American women (99.1%) from an outpatient women's health clinic. It may be important to look at PDPT adherence and effectiveness for TV infections among high-risk groups of women, such as patients at STD clinics or HIV-infected women. From a small cohort of HIV-infected women who were treated for TV and provided PDPT, 67.9% reported that the majority of their partners took the medication for TV¹⁹. Also, if women are offered a choice of partner treatment methods, PDPT may prove to be preferable and effective for certain subgroups of women.

Two aspects of TV treatment among HIV-infected women have been discussed thus far: high rates of repeat infections most likely due to treatment failure; and the questionable benefit of PDPT. The next aspect of TV treatment among HIV-infected women to be discussed is the possibility of treatment interference from the presence of a co-infection.

1.5. Bacterial Vaginosis

Bacterial vaginosis (BV) is a condition in women where the normal balance of vaginal bacteria is disrupted and replaced by an overgrowth of other harmful bacteria¹²⁴. There is a disappearance of hydrogen peroxide-producing lactobacilli, with a massive growth of anaerobic species. Etiologic agents are diverse but include *Gardnerella*

vaginalis, *Bacterioides spp.*, *Mobiluncus spp.* and *Mycoplasma hominis*^{125, 126}. The cause of BV remains unknown, although there is some evidence to suggest it is the result of a sexually transmissible agent¹²⁷. The prevalence of BV in the U.S. ranges from 29% in a nationally representative sample¹²⁸ (where the prevalence was 3.1 times greater for African-American women compared to whites), 35-55% among HIV-infected women^{10, 13, 14, 16, 129}, and up to 56.3% among injection drug users¹³⁰. BV is the most common vaginal infection in women of childbearing age and is frequently seen in pregnant women¹²⁴. The risk factors associated with developing BV are douching^{130, 131}, sexual contact with new and multiple male and female partners¹³², and frequency of vaginal intercourse¹³³.

Symptoms of BV can include abnormal vaginal discharge, odor, and/or irritative symptoms (itching, burning, pain)¹²⁷. However, it is estimated that more than 50% of women with BV are asymptomatic¹³⁴. A recent study found that the two classic symptoms of BV, discharge and odor, are each only reported by a minority of women with BV¹³⁵. BV can increase a woman's susceptibility to HIV infection^{136, 137}, herpes simplex virus¹³⁸, Chlamydia and gonorrhea¹³⁹. BV during pregnancy has been associated with an increased risk of preterm birth, premature rupture of membranes, low birth weight¹⁴⁰, as well as amniotic fluid infection¹⁴¹. BV has also been associated with an increased risk of infection after pelvic surgery, such as a hysterectomy or abortion¹²⁴. Among HIV-infected women, BV is associated with increased genital viral shedding¹⁰³. Some studies have shown an association between BV and pelvic inflammatory disease^{142, 143}, while a recent study found no increased risk of developing pelvic inflammatory disease among women with BV¹⁴⁴.

The diagnosis of BV is usually made using Amsel criteria or Nugent score. With Amsel criteria, a diagnosis of BV can be made if 3 of the 4 clinical criteria are present: vaginal pH > 4.5; thin, homogeneous discharge, independent of color and quantity; accentuation of the fishy odor of the discharge with addition of 10% potassium hydroxide (the whiff test); and clue cells on wet prep test ¹³⁴. The Nugent score is a scoring system for Gram stains of vaginal swabs, with the following interpretation: scores of 0 to 3 are considered normal; scores of 4 to 6 are considered intermediate; and scores of 7 to 10 are considered BV ¹⁴⁵. **Table 1.3** shows the scoring criteria for the Nugent score. The overall concordance between Amsel criteria and Nugent score is 80% to 90% ¹²⁷.

There are three recommended treatment regimens for BV: oral metronidazole 500 mg twice a day for 7 days; intravaginal metronidazole gel, 0.75%, 5 gm once a day for 5 days; or intravaginal clindamycin cream, 2%, 5 gm at bedtime for 7 days ⁵⁷. The alternative treatment regimens are as follows: oral clindamycin 300 mg twice a day for 7 days; or intravaginal clindamycin ovules 100 mg once at bedtime for 3 days ⁵⁷. A recent randomized controlled trial shows that oral tinidazole offers a new treatment option for BV, with fewer doses than the recommended metronidazole regimen ¹⁴⁶. Recurrent BV is common, with up to two-thirds of women experiencing treatment failure and multiple episodes of BV ¹²⁷.

1.5.1. BV and TV

Frequently, BV and TV are seen as co-infections among women ¹⁴⁷⁻¹⁵¹, although the rates have not been well studied specifically for HIV-infected women. This co-

infection status suggests that one of these infections may alter a woman's susceptibility to the other infection; the order of which infection comes first is still not known.

An examination of cervicovaginal smears from 600 women revealed a significant correlation between TV and BV ¹⁵². Of the women diagnosed with TV (n=36), 44.4% were found to have BV as well. Of the women not infected with TV (n=564), only 5.5% were positive for BV. The authors postulated that infection with TV may change the vaginal flora and create an environment more suitable for anaerobic microorganism growth, which would favor the development of BV and lead to an increased prevalence of BV in the presence of TV infection. In another study, a retrospective review of Pap smear reports found the prevalence of BV to be significantly higher in the TV group (46.5%) than in the TV-negative group (24.5%), ($p < 0.0001$) ¹⁵³.

The other explanation is that the vaginal flora changes from BV may increase a woman's susceptibility to TV infection. A prospective study found that abnormal vaginal flora on Gram stain was associated with an increased risk of acquiring TV (HR=1.8, 95% CI=1.3, 2.4) ¹⁵⁰. However, a recent cross-sectional study found a statistically significant difference in the prevalence of TV in patients with low Nugent scores (12%) versus patients with intermediate scores (33%) ($p < 0.001$), but found the prevalence of TV to be similar among patients with intermediate scores (33%) and high scores (33%) ⁷⁴. The constant prevalence of TV in patients with Nugent scores of 4 or greater shows a non-linear association between TV and abnormal vaginal flora, characterized by a sharp rise (12% to 33%) and then a plateau. According to the authors, this non-linear relationship suggests that TV changes the vaginal flora and may be a factor in the development of

BV. Otherwise, one would expect to see a gradual increase in the prevalence of TV as the abnormal vaginal flora worsened.

Even though it is still not clear which condition precedes the other (BV or TV), the presence of both may amplify the transmission of HIV. Both BV and TV have been shown to be separately associated with increased risk of HIV acquisition and increased genital viral shedding which can increase sexual and perinatal transmission. More prospective, longitudinal studies are needed to determine the temporal relationship between TV, BV, and HIV.

1.5.2. Treatment for TV/BV Co-infection

The CDC no longer recommends the metronidazole 2 gm single dose as a treatment regimen for BV because this therapy had the lowest efficacy⁵⁷. Tinidazole has been recently approved for the treatment of BV, and is also approved for the treatment of TV¹²⁷. The metronidazole 7 day dose is a recommended treatment regimen for BV and an alternative regimen for the treatment of TV. There is no information about trials which compare treatments for women with TV/BV co-infections.

Given that more than half of women with BV are asymptomatic, and co-infections of BV and TV frequently occur, it is possible that the doses used to treat one or the other condition are not adequate to treat both conditions. This seems most likely in the case of the metronidazole 2 gm single dose, which is a recommended treatment regimen for TV but not efficacious for BV. There may exist a dose competition between BV and TV for the ingested drug, where a woman with a diagnosed TV infection, who also has a co-

infection with BV, would be unable to clear either infection if prescribed the metronidazole 2 gm single dose. This problem may be exacerbated in immunocompromised women, such as those with HIV, because the dose competition would occur in addition to an already diminished immune response. Studies are needed to address the most effective treatment regimen for TV/BV co-infections among both HIV-infected women and women in general.

1.6. Other Treatment Issues Surrounding TV

There is conflicting evidence regarding the treatment of TV during pregnancy. The drug metronidazole is classified as pregnancy category B (animal studies have revealed no evidence of harm to the fetus, but no adequate, well-controlled studies among pregnant women have been conducted) and tinidazole is classified as pregnancy category C (animal studies have demonstrated an adverse event, and no adequate, well-controlled studies in pregnant women have been conducted)⁵⁷. Treatment with 2 gm of metronidazole in a single dose may help to relieve symptoms of vaginal discharge in pregnant women, and prevent respiratory or genital infection of the newborn⁵⁷. However, some trials suggest that metronidazole treatment may actually increase perinatal morbidity. A clinical trial in the U.S. randomly assigned women with asymptomatic TV infection who were 16 to 23 weeks pregnant to receive treatment with metronidazole or placebo. The trial was stopped early because preterm delivery (defined as delivery before 37 weeks of gestation) was more common among the women assigned to the treatment group (RR=1.8, 95% CI= 1.2, 2.7; P=0.004)¹⁵⁴. A sub-analysis from a

community randomized trial in Uganda found that women who were treated for TV during pregnancy had a significantly increased risk of delivering a low birth weight infant (RR=2.49, 95% CI=1.12, 5.50) and an increased risk of preterm delivery (RR=1.28, 95% CI=0.81, 2.02) compared with women with TV who were not treated during pregnancy¹⁵⁵. The CDC recommends that clinicians should counsel women regarding the potential risks and benefits of treatment for TV during pregnancy, with the possibility of deferring treatment in asymptomatic pregnant women until after 37 weeks gestation⁵⁷.

Mass treatment is a possible approach for controlling TV³¹. A community-based randomized, controlled trial was conducted in Uganda using home-based mass antibiotic treatment (including metronidazole) for the intervention group and vitamins and/or anthelmintic drugs for the control group¹⁵⁶. The aim of the study was to test the hypothesis that community-level control of STIs would lower the incidence of HIV infection in comparison to the control communities. Ten community clusters were randomized, with residents aged 15 to 59 years being enrolled after consent, and household visits conducted every 10 months. At the initial visit, both groups had a prevalence rate of 24% for TV¹⁵⁶. At the first follow-up visit, the prevalence rate for TV in the intervention group was 10.9%, while the rate for the control group was 18.7% (Prevalence ratio=0.58, 95% CI=0.38, 0.87). By the second follow-up visit around 20 months, the prevalence rate for TV in the intervention group was 9.3%, compared to 14.4% for the control group (PR=0.59, 95% CI=0.38, 0.91). The intervention group also had significantly lower rates of syphilis compared to the control group, but no effect was found for other STIs or HIV. More information about the impact of mass treatment on TV is needed, including other study populations with varying prevalence rates.

1.7. Conclusion

Trichomonas vaginalis is the most common curable STI worldwide, and is associated with an increased risk of HIV acquisition and transmission among women. Given the high prevalence rates of TV among African-American women in the U.S., as well as the growing HIV epidemic in the African-American community, the control of TV may impact HIV transmission in this population. Treatment issues surrounding TV among HIV-infected women include treatment failure, partner therapy, and frequent co-infections with BV. Effective treatment for TV is necessary to decrease repeat infections and reduce transmission of TV and HIV.

Table 1.1. Comparison of Three Culture Media for Detection of TV ⁵²

A comparative study of Trichomonas vaginalis using the InPouch, Diamond's, and Trichosel media

<i>Media</i>	<i>Accumulative positive cultures *</i>					
	<i>24 Hours</i>		<i>48 Hours</i>		<i>96 Hours</i>	
	<i>+ ve</i>	<i>%</i>	<i>+ ve</i>	<i>%</i>	<i>+ ve</i>	<i>%</i>
At 2.0×10^4/ml dilution:						
InPouch	42	97.6	43	100	43	100
Diamond's	18	24	31	72	33	76.7
Trichosel	17	39.5	29	67	33	76.7
At 2.0×10^3/ml dilution:						
InPouch	31	61.5	35	81.3	41	95.3
Diamond's	5	11.6	20	46.5	26	60.4
Trichosel	1	2.5	16	37.2	24	55.8
At 2.0×10^2/ml dilution:						
InPouch	11	25.5	20	46.5	28	65.1
Diamond's	0	0	4	9.3	19	44.1
Trichosel	0	0	2	4.6	17	39.5
Statistical analysis	At 0.01 level of significance, $p_{\text{InPouch}} > p_{\text{Diamond's}}$; $p_{\text{InPouch}} > p_{\text{Trichosel}}$ on all three dilutions at 24, 48, and 96 hours					

*Total isolates: n = 43.

Table 1.2. Legal Status of Expedited Partner Therapy (EPT) ¹²³

EPT is permissible in 22 states:	EPT is potentially allowable in 20 states:	EPT is prohibited in 8 states:
<p> <u>Arizona</u> <u>California</u> <u>Colorado</u> <u>Illinois</u> <u>Iowa</u> <u>Louisiana</u> <u>Minnesota</u> <u>Mississippi</u> <u>Nevada</u> <u>New Hampshire</u> <u>New Mexico</u> <u>New York</u> <u>North Carolina</u> <u>North Dakota</u> <u>Oregon</u> <u>Pennsylvania</u> <u>Tennessee</u> <u>Texas</u> <u>Utah</u> <u>Vermont</u> <u>Washington</u> <u>Wyoming</u> </p> <p>☆ Exception: EPT is permissible in Baltimore, <u>Maryland</u>.</p>	<p> <u>Alabama</u> <u>Alaska</u> <u>Connecticut</u> <u>Delaware</u> <u>Georgia</u> <u>Hawaii</u> <u>Idaho</u> <u>Indiana</u> <u>Kansas</u> <u>Maine</u> <u>Maryland</u> <u>Massachusetts</u> <u>Missouri</u> <u>Montana</u> <u>Nebraska</u> <u>New Jersey</u> <u>Rhode Island</u> <u>South Dakota</u> <u>Virginia</u> <u>Wisconsin</u> </p> <p>EPT is potentially allowable in <u>District of Columbia</u> and <u>Puerto Rico</u>.</p>	<p> <u>Arkansas</u> <u>Florida</u> <u>Kentucky</u> <u>Michigan</u> <u>Ohio</u> <u>Oklahoma</u> <u>South Carolina</u> <u>West Virginia</u> </p>

Table 1.3. Nugent Score Criteria for Gram-Stained Vaginal Smears ¹⁴⁵

TABLE 1. Scoring system (0 to 10) for Gram-stained vaginal smears^a

Score ^b	Lactobacillus morphotypes	<i>Gardnerella</i> and <i>Bacteroides</i> spp. morphotypes	Curved gram-variable rods
0	4+	0	0
1	3+	1+	1+ or 2+
2	2+	2+	3+ or 4+
3	1+	3+	
4	0	4+	

^a Morphotypes are scored as the average number seen per oil immersion field. Note that less weight is given to curved gram-variable rods. Total score = lactobacilli + *G. vaginalis* and *Bacteroides* spp. + curved rods.

^b 0, No morphotypes present; 1, <1 morphotype present; 2, 1 to 4 morphotypes present; 3, 5 to 30 morphotypes present; 4, 30 or more morphotypes present.

Figure 1.1. Hypothetical level of HIV transmission attributable to *Trichomonas vaginalis* at varying prevalences of *T. vaginalis* infection and assuming that *T. vaginalis* infection amplifies HIV infection by two- or three-fold ⁹.

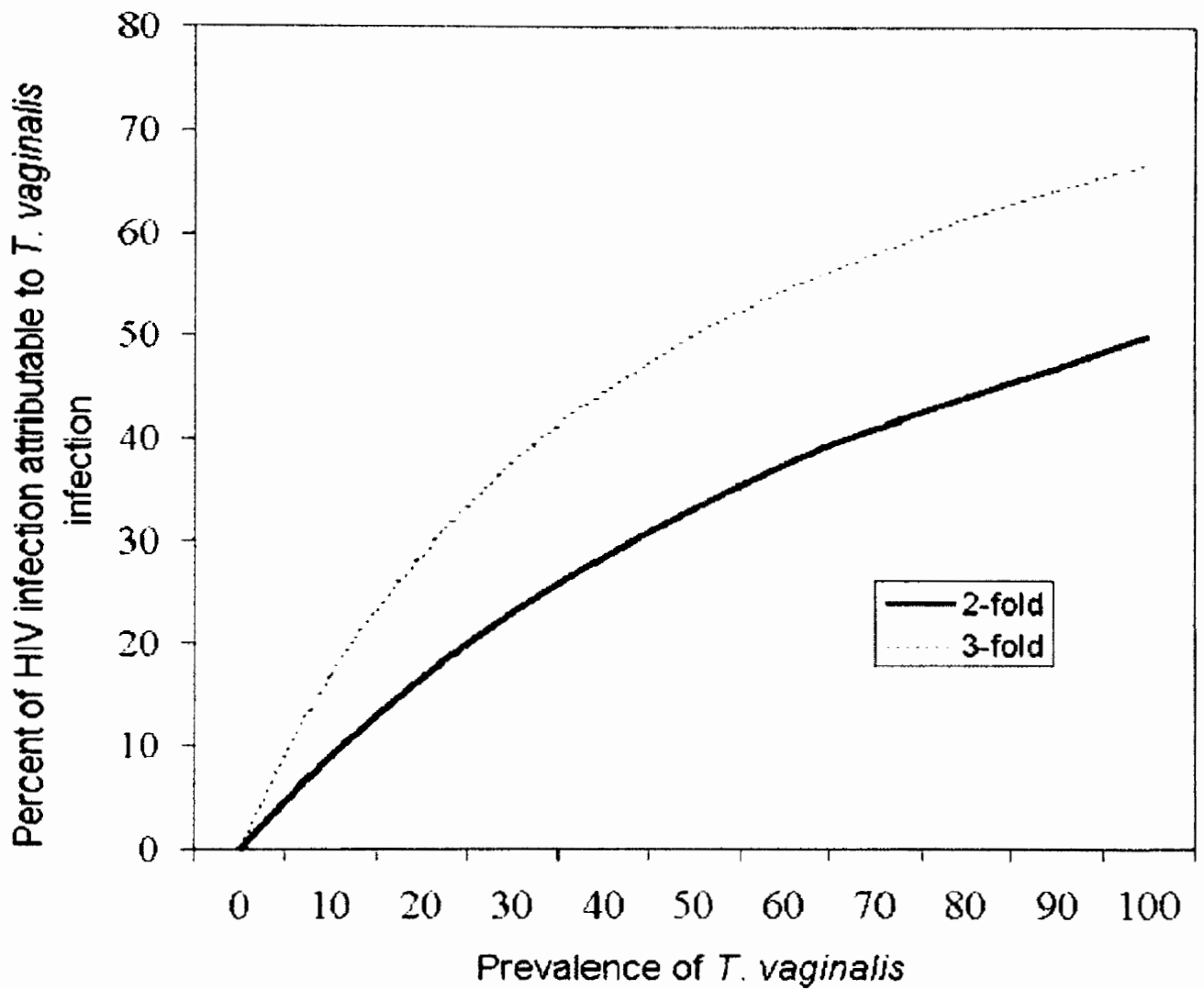
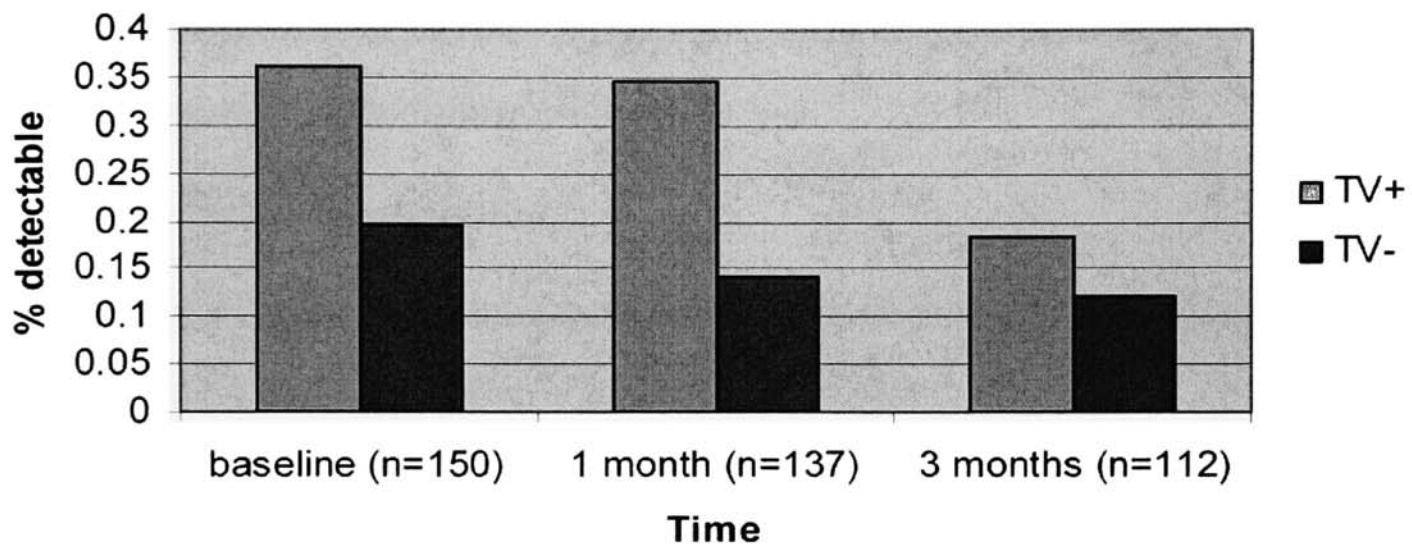


Figure 1.2. Presence of Vaginal HIV-1 RNA by TV Status: TV+ Women Treated at Baseline²⁸



Chapter 2. Study Objectives, Rationale, and Significance

2.1. Study Objectives

The purpose of this study was to examine specific factors associated with successful treatment of *Trichomonas vaginalis* (TV) among HIV-infected women attending outpatient clinics in three southern U.S. cities.

The specific objectives were to:

1. Examine the adherence to patient-delivered partner treatment (PDPT), and possible causes of repeat infection in a group of HIV-infected women with TV.
2. Determine the effectiveness of the 2 gm single dose of metronidazole versus the 7 day 500 mg BID dose for treatment of TV among HIV-infected women.
3. Examine if bacterial vaginosis influences the response to treatment of TV in HIV-infected women.

The specific hypotheses were:

1. Adherence to PDPT will be high among HIV-infected women with TV, and most repeat TV infections will likely be due to treatment failure.
2. The metronidazole 7 day 500 mg BID dose will be superior to the 2 gm single dose for treatment of TV among HIV-infected women.
3. A bacterial vaginosis co-infection will result in higher repeat TV infection rates among HIV-infected women treated for TV.

2.2. Study Rationale

Prevalence rates of TV among HIV-infected women are high, and rates of repeat infection in this group range from 18% to 36%^{11, 18, 19}. Successful treatment of TV is essential in HIV-infected women to decrease morbidity and potential HIV transmission. The role of PDPT for TV infection among women with HIV is unknown, and could reduce recurrences of TV. The more effective treatment dose of metronidazole for TV infection among women with HIV is unknown, and proper treatment could reduce treatment failure and recurrences of TV. A co-infection with bacterial vaginosis and TV among HIV-infected women may require a higher dose of medication to avoid recurrences of TV.

2.3. Study Significance

This study has important public health and clinical implications. Identifying treatment strategies associated with lower rates of repeat TV infection will decrease TV morbidity and improve the health status of HIV-infected women. Also, successful treatment of TV among HIV-infected women will decrease the transmission of TV and HIV. It is estimated that each year in the United States, 746 new HIV infections among women can be attributed to TV, and the lifetime cost of treating these TV-attributable HIV infections is approximately \$167 million¹⁵⁷. Treatment of TV among HIV-infected women in the United States is a concern for clinicians and public health officials.

Chapter 3. Methods

The Clinical Research Center Project #4 (CRC4) was a study designed to examine TV recurrence among HIV-infected women using a randomized phase IV trial to determine if the 2 gm single dose of metronidazole was as effective as the 7 day 500 mg BID dose for treatment of TV. The CRC4 study was sponsored by the National Institute of Allergy and Infectious Diseases (NIAID). Participants included HIV-infected women recruited from clinics in three southern cities: New Orleans, Louisiana; Jackson, Mississippi; and Houston, Texas. After a diagnosis of TV by culture, participants were randomized to receive one of two treatments: metronidazole 2 gm single dose or metronidazole 7 day 500 mg BID dose. Participants also received treatment (metronidazole 2 gm single dose) to deliver to their sexual partner(s). The cohort of women were followed prospectively and re-cultured for TV at the test-of-cure visit (TOC) which occurred 6 to 12 days after treatment completion, the 3 month visit, and again at the 6 month visit. The CRC4 study was conducted from May 1, 2006 to July 31, 2009.

3.1. Study Population

The CRC4 study participants were recruited from: 2 HIV outpatient clinics in New Orleans (HIV Outpatient Program (HOP) and NO/AIDS); 1 outpatient clinic in Jackson (Crossroads Clinic); and 2 outpatient clinics in Houston (Thomas Street and Northwest Clinics). The eligibility criteria for participants are listed in **Table 3.1**.

During the routine gynecological examinations performed by providers, all women at the

clinics were screened for TV per standard of care protocol. Women who tested positive for TV by either wet preparation (confirmed by culture) or culture only, and who met the eligibility criteria, were recruited for the study. Women who tested positive for TV but were ineligible for the study, or who refused participation, were treated for TV by their provider at the clinic. After eligibility was confirmed and women were invited to participate in the study, an informed consent form was signed at the baseline visit. If the woman was positive for TV by wet preparation, or immediately positive by culture, the baseline visit occurred on the same day as the gynecological examination. If the woman tested positive for TV by culture after leaving the clinic, she was contacted by study staff to set an appointment for the baseline visit.

3.2. Randomization and Treatment

A block randomization scheme was used to help ensure equal, or nearly equal, sample sizes in the treatment arms, and to ensure that participants and researchers could not anticipate treatment assignment. Sealed envelopes containing treatment arm assignment were opened at the time of enrollment. The trial was unblinded because no attempts were made to use placebos to supplement the single dose to mimic the 7 day dose.

Following randomization, participants assigned to the single dose treatment arm were given the metronidazole 2 gm dose (4 pills) under direct observation by the study coordinator. To prevent nausea, snacks were provided upon request. The participant was

asked to remain at the clinic for 30 minutes to monitor for vomiting. Following randomization, participants assigned to the 7 day treatment arm were given the metronidazole 7 day 500 mg BID dose. The first pill (500 mg) was directly observed by the study coordinator.

All participants received the same counseling: to refrain from unprotected sexual intercourse and alcohol consumption while taking the medication and for 24 hours after completion; adverse events while taking metronidazole are generally mild and include dizziness, headache, diarrhea, nausea, stomach pain, change in taste sensation or dry mouth; and metronidazole may cause urine to darken in color and this effect is not harmful. Participants in the 7 day treatment arm were also given additional counseling on the importance of taking all doses of the medication.

3.2.1 Partner Treatment

Participants were provided with metronidazole 2 gm single doses to deliver to each of their sex partners. The participant had to provide identifying initials for each partner, so that questions and responses at follow-up visits could be linked to specific partners. The medication was dispensed in a child-proof container, with clear and visible instructions to avoid drinking any alcohol for 24 hours after taking the medicine, and to take the medication with food. Participants were given a 24-hour pager number for the study coordinator in case the partner had any questions or concerns. A medication instruction sheet for metronidazole was printed to accompany each partner dose, with warnings to not take the medicine if taking disulfiram (Antabuse), if the partner had known allergies to the medicine, liver problems, or if the partner was unable to refrain

from alcohol use. If any of these warnings were true, the participant was instructed to tell the partner to seek care from their provider or local STD clinic.

3.2.2. Treatment after Randomization

If a participant tested positive for TV at a study visit after enrollment, the woman was referred to her provider at the clinic for further treatment. The prescribed treatment (drug and dose) was documented in the participant's medical record, along with documentation of partner treatment if prescribed by the provider.

3.3. Follow-up Schedule

After the baseline visit (enrollment), participants were asked to return for 3 follow-up study visits. The test-of-cure (TOC) visit was scheduled for 6 to 12 days after medication completion, with an allowed window of up to 8 weeks after enrollment. The 3 month visit was scheduled for roughly 12 weeks after enrollment, with an allowed window of 8 to 18 weeks. And the 6 month visit was scheduled for roughly 24 weeks after enrollment, with an allowed window of 18 to 30 weeks. Follow-up visits were frequently scheduled to coincide with participants' appointments at the clinics. Participants were sent visit reminders in the mail in addition to phone call reminders by the study coordinator.

At baseline, participants were given a \$25 gift card as an incentive to enroll in the study. For the subsequent study visits (TOC, 3 months, 6 months), participants were given a \$50 gift card at each visit as an incentive to attend follow-up visits.

If a participant did not attend a follow-up visit, they were considered lost-to-follow-up for that visit, but were still eligible to continue with the study and attend future follow-up visits. For example, a participant could attend the baseline and TOC visits, not attend the 3 month visit, and then schedule and complete a 6 month visit.

3.4. Data Collection

Table 3.2 summarizes the data collection procedures. In brief, the data collection procedures are described below.

3.4.1. Provider Assessment and Exam Specimens

During the gynecological examination, the provider assessed the woman's vaginal discharge for amount, color, and consistency. The following specimens were obtained by the provider generally in this order: 1) vaginal swab for TV culture 2) vaginal swab for wet preparation, 3) vaginal swab for "whiff test" using potassium hydroxide (KOH), 4) vaginal swab for Gram stain testing (processed after enrollment), 5) endocervical brush/spatula for pap smear, and 6) endocervical swab for chlamydia and gonorrhea. A vaginal pH was obtained from secretions after speculum removal. These specimens were collected on all women at the clinics as part of routine gynecological care.

The pap smear, chlamydia, and gonorrhea tests were processed per clinic laboratory protocol. The wet preparation was examined by the provider under the microscope for TV, presence of clue cells, and candidiasis. The "whiff test", vaginal pH,

vaginal discharge assessment, and wet preparation were conducted by the provider as part of the assessment for bacterial vaginosis using Amsel criteria.

3.4.2. InPouch TV culture

Participants were tested for TV at all study visits using the InPouch culture technique (In Pouch – Biomed Diagnostics; White City, Oregon). Vaginal swabs were obtained by the provider during the baseline examination. At the follow-up visits, vaginal swabs were obtained by the provider or by participant self-swab. Self-collected vaginal specimens for TV diagnosis have been validated previously¹⁵⁸. For the self-swab, the woman was asked to insert the swab into the vagina, similar to tampon insertion. Once inserted, the woman was instructed to rotate the swab 3 times around the vaginal cavity, remove the swab and place in a clear plastic tube, and give the specimen to the study staff.

Vaginal swabs were placed into the culture pouch by trained study staff. The culture was examined under the microscope for TV by the study staff immediately upon receipt. The pouch was then placed in an incubator with a regulated temperature of 37° C. Study staff were required to obtain 3 daily readings (TV positive or negative) within a 5-day period, to accommodate weekends and holidays. A diagnosis of TV was made after the first positive pouch reading. After three negative pouch readings, the woman was considered TV-negative.

All positive cultures were split and processed at local laboratories for frozen storage except if the result was positive at the test-of-cure visit. These TOC specimens

were sent live to the Centers for Disease Control and Prevention laboratory for sensitivity testing. One of each pair of banked frozen specimens was sent for genotyping. The others are still banked for possible use in the future.

3.4.3. Baseline Gram stain

Using the vaginal swab obtained by the provider during the gynecological examination, study staff prepared the Gram stain by carefully rolling the swab over a predefined area of a glass slide and placing the slide in a cover to air dry. After a participant was enrolled, Gram stain slides were transported to the Core Lab for staining and reading. Gram stain tests were scored by the lab using Nugent criteria. The Nugent score was not used as a clinical diagnostic, but rather as a consistent method to indicate bacterial vaginosis for research purposes only.

3.4.4. Vaginal Viral Load (VVL)

At the baseline, 3 month, and 6 month visits, participants were asked to perform a self-swab to obtain a vaginal specimen for viral load testing. The participant's self-swab was handed over to study staff, the tip of the applicator was placed in RNA stabilization solution in a plastic tube with lid, and the specimen was refrigerated at the clinics. These VVL specimens were processed at the microbiology laboratory at Louisiana State University Health Sciences Center. The amount of vaginal HIV-1 RNA was reported as copies/mL, with <50 copies considered undetectable vaginal HIV shedding and ≥ 50 copies considered detectable vaginal HIV shedding.

3.4.5. Survey

Participants were asked to complete a survey at each study visit. The survey was conducted using audio computer assisted self-administered interview (ACASI) format, and was based on previous survey instruments used among HIV-infected women^{10,28}. If participants were unable to use the computer, or unable to read, the study staff provided assistance (computer assisted personal interview, CAPI). If computer problems occurred, paper surveys were available for the study staff to use.

The baseline survey asked detailed information about participants' demographics, socio-economics, HIV history, STI risk behavior, substance use, douching, and birth control methods. The survey also asked partner specific information about sexual behavior, disclosure of HIV status, condom usage, and partnership status. Partner specific information was linked from visit to visit by the identifying initials of each partner reported by the participant on the baseline survey.

The TOC survey asked detailed information about participant treatment adherence, delivery of treatment to partner(s), sexual exposure with baseline or new partners, and any symptoms from participants or partners. The 3 month and 6 month surveys asked follow-up questions about delivery of treatment to partner(s), sexual exposure with baseline and/or new partners, and participant or partner symptoms.

3.4.6. Medications

At each study visit, participants completed a face-to-face interview about their medications. A standard questionnaire form was used by the study staff to ask

participants to list their prescribed antiretroviral medications and to report their adherence to each antiretroviral for the day before the study visit.

3.4.7. Chart Abstraction

At the baseline, 3 month, and 6 month visits, a standard form was used by the study staff to abstract information from the participant's clinic chart about the type of prescribed antiretrovirals and antibiotics, CD4 cell count, and plasma viral load. The following information was also abstracted, if available, from provider visits: vaginal discharge amount, color, and consistency; wet preparation results; Pap smear results; gonorrhea and chlamydia test results.

3.5. Quality Assurance and Control

All study staff successfully completed a training program with the project coordinator. This program included training on the study protocol, informed consent form, ACASI surveys, data collection forms, and specimen collection procedures. All study staff working directly with the InPouch culture technique participated in special training sessions on how to use the culture system, and how to read the culture.

All study forms were checked for completeness and double-entered into a computer database by the Biostatistics Core team. Multiple checks were also performed by the data manager to look for missing study forms, as well as missing or incomplete data on study forms. Study staff were requested to send all missing forms and to correct missing data before the end of the study.

The data from the ACASI surveys was checked quarterly to ensure that partner identification remained consistent throughout the follow-up period, TV results were accurately entered, and that randomization arm was consistent by participant for all study data. In order to keep track of overall study enrollment and follow-up visits, sites were required to submit monthly statistics on screening, recruitment, number of study visits, TV results, and lost-to-follow-up numbers. At the beginning of each month, all sites participated in a conference call with the data manager, project coordinator and principal investigator. These meetings were used to review study progress, address any issues or questions, give reminders to study staff, and discuss possibilities for improvement of study protocol and methods. In addition to the conference calls, site visits were conducted by the principal investigator or project coordinator whenever necessary.

3.6. Statistical Methods

3.6.1. Descriptive Statistics of Study Participants

All statistical analyses were conducted using SAS version 9.1. Univariate analyses were conducted to examine the baseline characteristics of the study participants. Categorical variables were reported as the number and percent of participants in each level of the variable. Continuous variables were assessed for normality and measures of central tendency were reported as appropriate. Continuous variables were also categorized using clinically relevant cut-points.

3.6.2. Adherence to Patient-Delivered Partner Treatment (PDPT) and Possible Causes of Repeat TV Infection

There were two units of analyses: 1) the women (participants), and 2) the partners. Univariate analyses were conducted to examine characteristics of the women, as well as characteristics of the partners. Bivariate analyses were conducted to examine the factors associated with providing or not providing PDPT to partners. At the participant (woman) level, factors were assessed using Chi-square tests. At the partner level, generalized estimating equation (GEE) was used to accommodate for multiple partnerships for some women in assessing factors associated with a partner receiving or not receiving PDPT.

Participants who tested positive for TV at the TOC visit were considered a repeat infection. Based on self-reported sexual behavior with all sexual partners and self-reported adherence to treatment, 4 categories of repeat infection were determined: lack of treatment adherence (for women who reported not taking all of their metronidazole treatment), probable reinfection (for women with sexual exposure to a baseline partner), probable infection by a new sexual partner (for women with no sexual exposure to a baseline partner, but reported sex with a new partner), and probable treatment failure (for women with no reported sexual exposure and full treatment adherence). For probable causes of repeat TV infection, the number and percent of women in each category was assessed.

3.6.3. Metronidazole Single Dose versus 7 Day Dose

Baseline characteristics were compared across treatment arms using a Chi-square test, to ensure that there were no differences in women by arm and that randomization was successful. Participant treatment adherence and side effects (reported at TOC) were also compared across treatment arms using a Chi-square test. Any participants who were lost-to-follow-up for the TOC visit were compared to those who completed a TOC visit to detect differential participation. Women who tested positive for TV at the TOC visit were considered an early repeat infection. Women who tested negative for TV at the TOC visit, or who did not complete a TOC visit, were followed to their 3 month visit. Time to follow-up visit and sexual exposure were also compared between treatment arms at TOC and 3 months.

The main exposure of interest was treatment arm: single dose versus 7 day dose. The main outcome of interest was repeat TV infection. The measure of association at TOC and 3 months was calculated as a relative risk with 95% confidence interval.

The anticipated sample size for the study was 380 participants (190 women in each treatment arm, with an alpha of 0.05 and power of 0.78 to detect a 50% difference in the repeat infection rate, specifically 10% vs. 20%). However, a total of 270 women were enrolled. Using the assumption of an approximate normal distribution, with 135 women per arm and an alpha of 0.05, the overall power to detect a 50% difference in the repeat infection rate (8% vs. 16%) between treatment arms was 0.53.

3.6.4. Bacterial Vaginosis (BV) Co-infection and Treatment of TV

Any participants with a missing baseline Gram stain were excluded from this analysis. BV was defined as present or absent based on the participant's baseline Gram stain test, with Nugent scores of 7 to 10 classified as BV. Univariate analyses were conducted to examine the prevalence of BV co-infection. Bivariate analyses were conducted to examine factors associated with TV/BV co-infection or TV infection only using a Chi-square test. The main exposure of interest was TV/BV co-infection status: HIV+ women with a TV/BV co-infection, and HIV+ women with a TV infection only. The outcome of interest was repeat TV infections, which would indicate that the MTZ treatment was likely not successful. The measure of association at TOC was calculated as a relative risk with 95% confidence interval, to examine the relationship between TV/BV co-infection status and repeat TV infections. Results were then stratified by treatment arm and this relationship was examined by MTZ treatment dose.

3.7. Protection of Subject Rights

The Institutional Review Boards at the participating study sites approved the CRC4 study: Tulane University Health Sciences Center, Louisiana State University Health Sciences Center, University of Mississippi Medical Center, Mississippi State Department of Health, Baylor College of Medicine, and Harris County Hospital District.

All subjects were informed that study participation was voluntary, and refusal to participate would not change any routine care provided or received by their clinic. To maintain strict confidentiality, unique study identifiers were provided and any subject

personal identifiers were stripped from all study materials. All data was kept secure using locked file drawers in the clinics, and electronic databases were kept secure with password-protected access.

The CRC4 study was supported by NIH grant # U19 AI061972. The trial was registered at ClinicalTrials.gov (<http://clinicaltrials.gov/show/NCT01018095>).

Table 3.1 CRC4 Eligibility Criteria

Inclusion Criteria:

To be eligible for the study, subjects must:

- be female;
- be age \geq 18 years;
- be English speaking;
- be HIV infected (with Western Blot confirmation);
- be enrolled at the clinic;
- be scheduled to undergo a gynecological examination (menstruating women are not excluded from this);
- test TV positive by culture;
- have the ability to refrain from all alcohol use during and for 24 hours after taking oral metronidazole;
- be willing to take metronidazole treatment;

Exclusion Criteria:

Exclusion criteria are the following:

- pregnant;
- bacterial vaginosis per Amsel criteria (per provider discretion);
- previously enrolled and attended at least the first follow-up visit;
- incarcerated;
- currently taking disulfiram;
- alcoholism or known liver damage;
- have medical contraindications to metronidazole;
- have been treated with metronidazole within the previous 14 days
- unable to provide informed consent

Table 3.2. Summary of Data Collection Procedures

Data/Specimen collected	Collection method	Collection site	Baseline (or before)	Test of Cure	Three months	Six months
Provider assessment	Gynecologic exam	Exam room	✓			
Pap smear	Brush/Spatula	Endocervical	✓			
Gonorrhea and Chlamydia	Swab	Endocervical	✓			
Wet prep	Swab	Posterior fornix	✓			
KOH	Swab	Posterior fornix	✓			
pH	From speculum	Vaginal cavity	✓			
InPouch™ TV Culture	Swab	Posterior fornix	✓	✓	✓	✓
Gram stain	Swab	Posterior Fornix	✓			
Vaginal viral load	Swab	Posterior fornix	✓		✓	✓
Survey	ACASI	Study room	✓	✓	✓	✓
Medications	Interview	Study room	✓	✓	✓	✓
Chart abstraction	Chart review	Clinic	✓		✓	✓
Metronidazole susceptibility testing**	From InPouch culture	Posterior fornix		✓		

**Metronidazole susceptibility testing was conducted for any TV positive cultures at test of cure.

Chapter 4. Patient-delivered Partner Treatment and *Trichomonas vaginalis* Repeat Infection among HIV-infected Women

Trichomonas vaginalis (TV) is a common parasitic sexually transmitted infection found among HIV-infected women with prevalence rates ranging from 6 to 44% in this population^{10, 11, 13-16}. TV in women is associated with vaginitis, cervicitis, urethritis, and pelvic inflammatory disease³⁷. Among HIV-infected women, the presence of TV infection may amplify HIV transmission through increased shedding of HIV in vaginal fluids^{23, 159} implicating TV infection as a source of sexual and perinatal transmission of HIV²⁴⁻²⁶. Two studies have shown that treatment for TV can result in a reduction of HIV vaginal shedding^{27, 28}. Therefore, prevention of TV infections, including repeat infections, among HIV-infected women can provide not only a clinical, but also a public health benefit⁹.

The rates of repeat TV infections among HIV-infected women range from 18-36%^{11, 18, 19}, which is much higher than the 8% repeat infection rate for non-HIV infected women¹⁰⁹. Repeat TV infections can result from non-adherence to treatment by the index patient, reinfection by an untreated sexual partner, infection by a new sexual partner, or treatment failure^{19, 110}. Expedited partner therapy (EPT) is the practice of treating the sex partners of persons with curable STIs without requiring the partners to first obtain a medical evaluation¹¹⁷. EPT generally consists of a practice called patient-delivered partner therapy or treatment (PDPT), where the patient is given a medication or prescription to deliver to their sex partner(s). PDPT has been recommended for the

prevention of recurrent infections with *Chlamydia trachomatis* and *Neisseria gonorrhoeae* among women and heterosexual men. However, the Centers for Disease Control and Prevention has declared that there is insufficient evidence to support recommending PDPT for partner management among patients with TV ¹¹⁸.

We found some evidence that PDPT may be helpful among HIV-infected women. In our prior cohort of HIV-infected women with TV who were given PDPT, we found that most repeat infections (55%) were attributed to treatment failure ¹⁹ suggesting that PDPT does prevent reinfection. The purpose of the current study was to evaluate in more depth the adherence to PDPT and possible causes of repeat TV infection in a different cohort of HIV-infected women to determine if our prior findings are reproducible.

Methods

The study population consisted of HIV-infected women with TV infection from an on-going multi-center randomized equivalency trial of 2 doses of metronidazole. Study participants were patients at public HIV clinics in New Orleans, Louisiana, Houston, Texas, and Jackson, Mississippi.

Women were considered eligible for study participation if they were HIV-infected (confirmed by Western Blot), at least 18 years of age, tested positive for TV by wet preparation which was confirmed by culture using InPouch (Biomed Diagnostics White City, Oregon) or tested positive for TV by culture only, were willing to take metronidazole treatment, and agreed to refrain from drinking alcohol 24 hours after taking oral metronidazole. Women were excluded from participation if they were

pregnant, symptomatic for bacterial vaginosis (which would require a higher dose of metronidazole), incarcerated at the time of the study visit, taking disulfiram at baseline, or treated with metronidazole within the previous 14 days. Other exclusion criteria, per discretion of the medical provider, were: alcoholism or known liver damage, medical contraindications to metronidazole, or cognitively impaired and unable to provide informed consent.

Data were collected on demographics and partner-specific information, including sexual exposure and partner treatment, using a computer assisted self-administered interview format (CASI) created with Questionnaire Development Software (Nova Research Company, Bethesda Maryland). Those who refused or were unable to take the CASI were interviewed using a computer-assisted personal interview format (CAPI) which was conducted by the study staff.

Women were given either a single dose of metronidazole (2gm, taken as directly observed therapy) or a 7 day dose of metronidazole (500 mg BID for 7 days) according to randomization. Women in the 7 day arm were further counseled to take all of their medication. All women were instructed to refrain from unprotected sex for 24 hours after completion of medication, and until all partners had completed their medications.

All women were given a 2 gm single dose of metronidazole to deliver to each of their identified sex partners. Women were asked to identify their sex partners by initials, which were used only for the purposes of tracking women's responses to partner treatment questions during study follow-up visits. The medicine was dispensed in a child-proof container, with clear and visible instructions to avoid drinking any alcohol for 24

hours after taking the medicine and to take the medication with food. A 24 hour pager number for the study nurse was provided in case the partner had any side-effects or questions. Women were also provided with informational documents about TV and the medication to give to their partners. Medication warnings were also included indicating that partners should not take the medication and go to the STD clinic of their choice for care if they were taking disulfiram, have known allergies to the medicine, have liver problems, or were unable to refrain from alcohol use. Contact information for public STD clinics was provided.

A Test of Cure (TOC) visit was scheduled for 6 to 12 days after the index woman completed her medication dose, and this follow-up timeframe was used for women in both treatment arms. At this visit, women were asked to provide a self-collected vaginal swab for TV culture. Women were instructed to insert the swab into the vagina, rotate the swab three times, place in a sterile cup and give to the study staff. The verbal instructions were accompanied by a diagram. The specimen was then immediately placed in the InPouch medium, incubated and read according to BioMed Diagnostics protocol. Women were again interviewed using CASI or CAPI to elicit information on sexual exposure, partner treatment and adherence to treatment. Sexual exposure between the baseline and TOC visits was classified as: women who reported sexual exposure with a baseline partner and women who reported sexual exposure with a new partner.

Women who tested positive for TV at the TOC visit were considered a repeat infection. Based on self-reported sexual behavior with all sexual partners and self-reported adherence to treatment, 4 categories of repeat infection were determined: lack

of treatment adherence (for women who reported not taking all of their metronidazole dose), probable reinfection (for women with sexual exposure to an untreated baseline partner), probable infection by a new sexual partner (for women with no sexual exposure to the baseline partner, but unprotected sex with a new partner), and probable treatment failure (for women with no sexual exposure).

Statistical Analysis

All statistical analyses were conducted using SAS version 9.1. There were two units of analyses: 1) the women, and 2) the partners. Univariate analyses were conducted to examine characteristics of the women, as well as characteristics of the partners. Bivariate analyses were conducted to examine the factors associated with providing or not providing PDPT to partners. At the participant (woman) level, factors were assessed using Chi-square tests. At the partner level, generalized estimating equation (GEE) was used to accommodate for multiple partnerships for some women in assessing factors associated with a partner receiving or not receiving PDPT. For probable causes of repeat infection, the number and percent of women in each category was assessed.

Results

Baseline Characteristics

Of the 252 women enrolled at the baseline visit, 92.5% (n=233) were African American, with a mean age of 40.0 years (S.D. 9.1). More than half of study participants were taking ART (58.3%, n=147), 26.2% had CD4 cell counts < 200/mm³ (n=66), and

34.1% (n=86) had plasma viral loads > 10,000 copies (median=2,185 copies). In the past 3 months, 22.6% of participants reported no sex partners (n=57), 62.3% reported 1 sex partner (n=157), and 15.1% reported more than one partner (n=38). At baseline, 60.9% (n=154) of participants completed the CASI interview with no or minimal assistance from study staff, and 68.0% of participants did the same at TOC (n=159).

Adherence to PDPT at TOC Visit

Of the 183 women who reported having partners at baseline, 75.4% (n=138) provided PDPT to all of their partner(s), 61.7% (n=113) reported that they were “sure” that all of their partner(s) took the medication, though only 51.9% (n=95) reported actually seeing all partners take the medicine. Of the 45 women who did not provide PDPT to all partners, 8 provided PDPT to some partners but not all, and 37 did not provide PDPT to any partners.

From the women who did not give medication to all of their partners (n=45), the main reason was not being able to get in touch with a partner (46.8%), followed by being afraid of a partner’s reaction (10.6%), not wanting to see a partner again (8.5%), not wanting to give a partner meds (4.3%), a partner got meds from another place (4.3%), and the medication was lost (2.1%). Factors associated with not giving medications to all partner(s) were multiple sex partners in the past 3 months prior to baseline (p=0.03), being single (p=0.006), and having at least one partner who did not know the index woman’s HIV status (p=0.02). The mean age of women who did not give medications to all of their partners was 37.2 years, which was younger (p=0.05) than the mean age of

women who provided PDPT to all of their partners (40.2 years). Race, education level, and employment status were not associated with giving meds to all partners.

In Table 4.1, partner characteristics are presented on the 218 partners from 183 women at the TOC visit. Almost all of the partners were male, and very few (6.4%, n=14) were reported by the woman to have symptoms for TV. A majority of the partners were delivered meds by the woman (76.6%, n=167) but only 50.5% of the partners were witnessed taking the meds (n=110) by the index woman.

Table 4.2 presents partner factors associated with PDPT, using GEE to accommodate for multiple partnerships for some women. Casual sex partners and partners who did not know the woman's HIV status were less likely to receive PDPT, with respective p-values of <.0001 and .002. If the woman anticipated that talking to the partner about her TV infection and the need for both of them to take medications would be very or somewhat difficult, partners were less likely to receive PDPT (p<.0001). Partners with whom women were living with or re-initiated sex with were more likely to receive PDPT (p=0.003 and p=0.05, respectively).

Sexual Exposure at TOC Visit

Of the 234 women who returned for the test of cure (TOC) visit, 16.7% (n=39) reported sexual exposure since the baseline visit with a majority of these women having used condoms all (48.7%, n=19) or most (15.4%, n=6) of the time. Among the women reporting sexual exposure with baseline partners (n=33), 39.4% reported having sex before a partner took their medication (n=13), 21.2% reported having sex before finishing

all of their own medication (n=7), 18.2% reported having sex before they and a partner took the medication (n=6), and only one woman had a repeat TV infection. Of the women who had sex with an untreated partner (n=13), 53.8% reported using condoms all of the time (n=7) and 30.8% reported using condoms most of the time (n=4). Among the women reporting sexual exposure with a new partner since baseline (n=6), all reported taking their own medication as instructed and 4 women reported not having sex before finishing their medication.

Repeat Infections at TOC Visit

Of the 234 women who returned for the test of cure (TOC) visit, 96.6% reported taking all of their medicine, 10.3% were positive for TV (n=24). Of the 24 women with repeat infection, only 2 reported sexual exposure since the baseline visit. The repeat infections were categorized as follows: 1 (4.2%) was classified as lack of treatment adherence, 1 (4.2%) was classified as a probable case of reinfection, 1 (4.2%) was classified as a probable case of infection by a new sexual partner and, 21 (87.5%) were classified as probable cases of treatment failure (Table 4.3). There was no difference in median time to follow-up (TOC visit) for women with a repeat infection versus women with no repeat infection (10.5 versus 8.0 days, p=0.53).

Discussion

In this study, high rates of adherence to PDPT were found among HIV-infected women who were treated for TV. Despite the high rate of partner treatment, 10.3% of the women tested positive for TV at the TOC visit. This rate of repeat infection is similar to

our prior study of HIV-infected women who were provided PDPT (18.3%)¹⁹ and lower than two other studies of HIV-infected women from the same site where PDPT was not provided (36% and 37%)^{11, 18}.

The Centers for Disease Control and Prevention has stated that there is not enough evidence to support recommending PDPT for partner management among patients with TV¹¹⁸. Other than anecdotal evidence, only one randomized clinical trial of PDPT for TV among non-HIV infected women has been published which showed that while PDPT was less costly than standard partner referral, provision of PDPT to TV-infected women did not result in more partners taking the medicine or lower rates of repeat TV infection at test of cure¹⁰⁹. In the trial of PDPT for TV, all arms received counseling beyond the standard of care which may have diminished the effect of PDPT. Furthermore, the trial was conducted among non-HIV infected women which may not be generalizable to HIV-infected women. The effectiveness of PDPT for partner management among HIV-infected women with TV has not yet been assessed, although the current study shows that these women are adherent to PDPT.

Similar to our prior study of repeat TV infections among HIV-infected women¹⁹, the repeat infections in this study were largely due to probable treatment failure. The prevalence of metronidazole-resistant TV has been estimated to be 2.5-9.6%⁵⁹⁻⁶¹ and is suspected to be on the rise¹⁶⁰. The parent study to this sub-study will determine which dose of metronidazole is superior and how much metronidazole-resistance exists among HIV-infected women.

Since all sexual and partner-related behavior was determined from women's self-report, it is possible that sexual exposure and partner treatment were misclassified. Future studies of TV repeat infections among HIV-infected women should include genotype testing, which may help to determine if the repeat infection was from the original partner or not, irrespective of the woman's reported behavior.

One of the factors associated with not giving PDPT to a partner was having a partner who was thought to be unaware of the woman's HIV-positive status. This suggests that one of the barriers to STI partner treatment among HIV-infected women is fear of disclosure. For these women, the option of third party notification (such as a provider or a disease intervention specialist) should be considered.

This was not a randomized trial of PDPT, so it is not possible to say if PDPT reduced the repeat infection rate. However, the overwhelming adherence to PDPT demonstrates that it is acceptable. Given the high rates of repeat TV infections among HIV-infected women and the findings that TV increases HIV shedding, the provision of PDPT or some form of EPT among HIV-infected women with TV needs further consideration and research.

Table 4.1. Description of Sexual Partners and Partner Treatment Details from HIV+/TV+ Women (n=218, number of partners)

	N (%)
Partner is male	214 (98.2%)
Woman delivered meds to partner	167 (76.6%)
Woman saw the partner take the meds	110 (50.5%)
Woman delivered meds to partner* and very sure that partner took meds	132 (79.0%)
Partner given meds the same day woman received meds from clinic	127 (58.3%)
Partner was symptomatic for TV	14 (6.4%)

*(n=167)

Table 4.2. Factors Associated with Patient (HIV+/TV+ Woman) Delivery of Medication to Partners (N=183 women; 218 observations, done by GEE)

	Delivered medication to partner (n=167 partners) %	Did not deliver medication to partner (n= 51 partners) %	P-value
Casual sex partner	17.7%	51.2%	<.0001
Living with partner	41.6%	14.6%	0.003
Partner does not know woman's HIV positive status	21.1%	43.9%	0.002
Talking to partner about TV infection and meds will be very or somewhat difficult	23.4%	61.0%	<.0001
Re-initiated sex with partner	18.4%	6.1%	0.05

Table 4.3. Possible Causes of Repeat TV Infections among HIV+ Women (N=24)

Repeat infection category	N (%)
Lack of treatment adherence	1 (4.2%)
Probable reinfection	1 (4.2%)
Probable new infection	1 (4.2%)
Probable treatment failure	21 (87.5%)

**Chapter 5. A Randomized Treatment Trial: Single versus 7 Day Dose of
Metronidazole for the Treatment of *Trichomonas vaginalis* Among HIV-infected
Women**

Trichomonas vaginalis (TV), the most common curable sexually transmitted infection (STI) worldwide ¹, has been associated with vaginitis, cervicitis, urethritis, and pelvic inflammatory disease in women ³⁷. TV infection in HIV-infected women may enhance HIV transmission by increasing genital viral shedding ^{9, 23-26} and successful treatment for TV has been shown to reduce shedding ^{27, 28}, suggesting that effective TV treatment could play a preventative role in perinatal and sexual HIV infection ⁹.

Post-treatment repeat TV infection rates among HIV-positive women have been shown to be higher (18-36%) ^{11, 18, 19} than among HIV-negative women (7-8%) ^{20, 109, 161}. While these studies had variable lengths of follow-up time, a comparison study at one-month found that repeat TV infections were two-fold higher among HIV-positive women compared to HIV-negative women ¹⁹ indicating that the phenomenon is real. This study also found that the most likely cause of repeat infections for both groups was treatment failure and that the treatment failure was most likely biological rather than organism-related ¹⁹.

The recommended treatment regimens for TV from the Centers for Disease Control and Prevention include: metronidazole (MTZ) 2 gm oral single dose; or tinidazole 2 gm oral single dose ⁵⁷. The alternative treatment regimen is MTZ 500 mg orally twice a day (BID) for 7 days ⁵⁷. The studies supporting the use of the single 2 gm

MTZ dose as the primary treatment regimen, however, were conducted with mostly non-HIV infected women^{111, 112, 162-167}. Given the high rates of repeat infections and the mounting evidence that many of these repeat infections are due to treatment failure, the MTZ 2 gm single dose may not be adequate for HIV-infected women. The purpose of this randomized trial was to determine if the recommended MTZ 2 gm single dose is as effective as the alternative 7 day 500 mg BID dose for treatment of TV among HIV-infected women.

Methods

Participants

HIV-infected women attending selected public HIV outpatient clinics in New Orleans, Louisiana; Houston, Texas; and Jackson, Mississippi; who underwent a routine gynecological examination performed by a clinic health care provider between May 1, 2006 and July 17, 2009; were tested for TV by culture as standard of care practice.

Eligibility

Women were considered eligible for study participation if they were HIV-infected (confirmed by Western Blot), ≥ 18 years of age, English speaking, positive for TV by culture, willing to take MTZ treatment, and agreed to refrain from drinking alcohol 24 hours after taking MTZ. Women were excluded from participation if they were pregnant, incarcerated, taking disulfiram, or treated with MTZ within the previous 14 days. Other exclusion criteria, per provider discretion, were: diagnosis of bacterial vaginosis per

Amsel criteria, alcoholism or known liver damage, medical contraindications to MTZ, or unable to provide informed consent.

Randomization

Randomization allocation was done in blocks of 4 and 6 using SAS version 9.0. Sealed, numbered envelopes containing treatment assignment were prepared in advance and opened at enrollment. A list of arm by study number was kept sealed in the principal investigator's office for quality assurance.

Baseline examination

During the routine gynecological examination, the provider assessed the woman's vaginal discharge for amount, color, and consistency. The following specimens were obtained by the provider generally in this order: 1) four vaginal swabs for TV culture, wet preparation, "whiff test" using potassium hydroxide (KOH), and Gram stain testing (processed after enrollment), 2) endocervical brush/spatula for pap smear, and 3) endocervical swab for chlamydia and gonorrhea. A vaginal pH was obtained from secretions after speculum removal. The wet preparation was examined by the provider for TV, clue cells, and candidiasis. The "whiff test", vaginal pH, and wet preparation were conducted by the provider as part of the assessment for bacterial vaginosis using Amsel criteria. If the wet preparation was positive for TV, women were enrolled immediately and culture results were used as confirmation. If only the culture was positive, women were called back to the clinic for enrollment.

InPouch Culture

Participants were tested for TV using the InPouch culture technique (InPouch - Biomed Diagnostics; White City, Oregon). Vaginal swabs were obtained by the provider during the baseline examination. At the follow-up visits, vaginal swabs were obtained by the provider or by participant self-swab. Self-collected vaginal specimens for TV diagnosis have been validated previously¹⁵⁸. For the self-swab, the woman was asked to insert a swab into the vagina similar to tampon insertion, rotate the swab 3 times around the vaginal cavity, remove the swab, and place in a clear plastic tube which was then given to study staff.

Vaginal swabs were placed into the culture pouch and agitated to release adherent organisms following the manufacturer's protocol. Pouches were examined under the microscope for TV by trained study staff immediately upon receipt. The culture was then placed in an incubator with a regulated temperature of 37° C. Study staff were required to obtain 3 daily readings within a 5-day period. A diagnosis of TV was made after the first positive pouch reading. After three negative pouch readings, the woman was considered TV-negative.

Survey

At each study visit, a survey was conducted using audio computer assisted self interview (ACASI) format, and was based on previous survey instruments used among HIV-infected women^{19,28}. If participants were unable to use the computer, or unable to read, the study staff provided assistance (computer assisted personal interview, CAPI). Paper surveys were also available if necessary.

The baseline survey elicited detailed information about participants' demographics, socio-economics, HIV history, STI risk behavior, substance use, and birth control methods, as well as partner specific information about sexual behavior, disclosure of HIV status, condom usage, and partnership status. Partner specific information was linked from visit to visit by the identifying initials of each partner reported by the participant on the baseline survey. The follow-up surveys conducted at TOC and 3 months asked detailed information about participant treatment adherence, delivery of treatment to partner(s), sexual exposure with baseline or new partners, and participant or partner symptoms.

At the baseline visit, study staff abstracted information from the participant's clinic chart about the type of prescribed antiretrovirals, CD4 cell count, and viral load.

Treatment

According to randomization, participants assigned to the single dose arm were given the MTZ 2 gm dose (4 pills) under direct observation by the study coordinator. The participant was asked to remain at the clinic for 30 minutes to monitor for vomiting. Participants randomized to the 7 day arm were given the MTZ 500 mg BID dose (14 pills) and the first pill was given under direct observation. To prevent nausea, snacks were provided upon request. Since this was an effectiveness trial with an objective end point (i.e. TV culture), we did not use a placebo-controlled double-blind study design.

Counseling

All participants received the same counseling: to refrain from unprotected sexual intercourse until they and their partner(s) completed the medication, to refrain from alcohol consumption while taking the medication and for 24 hours after completion; MTZ related adverse events were listed including dizziness, headache, diarrhea, nausea, upset stomach, change in taste sensation or dry mouth. It was explained that MTZ can cause urine to darken in color but that this effect is not harmful. Participants in the 7 day treatment arm were also given additional counseling on the importance of taking all doses of the medication.

Partner treatment

Participants in both treatment arms were provided with MTZ 2 gm single doses to deliver to their sex partner(s), i.e. patient-delivered partner treatment (PDPT), a form of expedited partner therapy (EPT). The medication was dispensed in a child-proof container, with clear and visible instructions to take the medication with food and to avoid drinking any alcohol for 24 hours after taking the medicine. Additionally, a medication instruction sheet for MTZ was provided with each PDPT dose, reiterating the warnings on the medication container as well as with warnings not to take the medicine if the partner was taking disulfiram, was allergic to MTZ, had liver problems, or was unable to refrain from alcohol use. If any warnings were true, the participant was instructed to tell her partner to seek care from their personal health care provider or local STD clinic. Participants were given a 24-hour pager number for the study coordinator in case she or any partners had questions.

Follow-up

A TOC visit was scheduled for 6-12 days after the index woman completed her medication dose, with an allowed window of 8 weeks after enrollment. Women who tested positive for TV at the TOC visit were considered an early repeat infection, most likely due to treatment failure^{19, 168}. Women who tested negative for TV at the TOC visit, or who did not complete a TOC visit, were scheduled for a follow-up visit at 3 months after enrollment with an allowed window of 8-18 weeks. The 3 month timeframe was chosen to coincide with routinely scheduled clinic appointments. The rationale for including the 3 month visit as a secondary outcome in the evaluation of the treatment trial was twofold: 1) some women would not attend the TOC visit and 2) the potential for false negatives at TOC. The sensitivity of InPouch TV culture compared to polymerase chain reaction (PCR) testing is only 70-78%^{54, 55, 147}. Thus, treatment-induced low concentrations of viable organisms at the time of the TOC visit may have been below the limit of culture detection¹¹⁵. If such were the case, it would be anticipated that renewed growth would occur over time, enhancing the chance of detection by culture at a later follow-up visit.

Women who tested positive for TV at either follow-up visit (TOC or 3 months) were referred to their clinic provider for further treatment and this information was documented in their clinic records.

Statistical Analysis

All statistical analyses were conducted using SAS version 9.1. Continuous variables were assessed for normality, and tested accordingly. When appropriate, continuous variables were categorized using clinically relevant cut-points. Categorical

variables were compared using the Chi-square test. The measure of association at TOC and 3 months was calculated as a relative risk with 95% confidence interval.

This study was approved by the institutional review boards of the clinical sites, and all women gave written informed consent before randomization. Participants received the following incentives for study visit completion: \$25 gift card at baseline; \$50 gift card at TOC and 3 months. While side effects were closely monitored, no interim analysis was performed as this was a phase IV trial.

Results

A total of 2,833 screenings were conducted among HIV-infected women from all participating clinics, with 16.9% testing TV-positive (n=480). Of the 480 TV+ women, 110 were ineligible, 65 refused study participation, and 35 women could not be contacted by study staff. A total of 270 women were enrolled in the study (**Figure 5.1**): 60.7% were positive for TV by wet preparation and culture (n=164); 39.3% were positive for TV by culture only (n=106).

Baseline characteristics

The 270 participants (HIV+/TV+ women) had the following enrollment distribution: 129 in Houston (47.8%), 74 in New Orleans (27.4%), and 67 in Jackson (24.8%). The majority of participants (92.2%) were African-American (n=249), and the mean age was 40.1 years (± 9.4). Over half of the participants (65.2%, n=176) were on antiretroviral therapy (ART), 29.6% had a CD4 cell count $< 200 \text{ mm}^3$ (n=80), and 35.6% had a plasma viral load $> 10,000$ copies (n=96). Only 28.5% of the participants were

married or cohabitating (n=77), 42.2% reported not graduating high school (n=114), and 69.6% reported being unemployed (n=188).

Most participants reported having a history of yeast infection at least once in the past (76.7%, n=207), and 41.5% reported a history of TV (n=112). The reported history of ever having other infections is as follows: 26.7% had gonorrhea (n=72), 25.2% had Chlamydia (n=68), 24.8% had syphilis (n=67), 22.2% had genital warts (n=60), 21.9% had genital herpes (n=59), and 12.2% had bacterial vaginosis (n=33). From the baseline gynecological examination, Chlamydia and gonorrhea results were available for 240 women, with 2.5% (n=6) and 1.7% (n=4) testing positive respectively.

In the three months before baseline, 22.2% of participants reported not having any sex partners (n=60), 62.2% had 1 sex partner (n=168), and 14.8% had 2 or more sex partners (n=40). Of the 208 participants with partners, the majority had male sex partners (95.2%, n=198), with 7 participants having male and female partners (3.4%) and 3 participants having only female partners (1.4%).

Baseline characteristics by arm

As randomized, 135 participants received the MTZ 2 gm single dose, and 135 participants received the MTZ 7 day 500 mg BID dose. There were no differences found between arms with respect to age, race, having ≥ 1 sex partner, CD4 count, viral load, ART status, or enrollment site (**Table 5.1**).

TOC visit

A total of 255 participants returned for the TOC visit, including 125 from the single dose arm and 130 from the 7 day arm. There were no differences found between women who completed a TOC visit (n=255) and women who did not return for this visit (n=15) with respect to age, race, CD4 count, viral load, ART status, enrollment site, or arm. The median time interval from baseline to the TOC visit for the single dose arm was 7 days, and for the 7 day arm was 14 days (p<.0001). This difference was expected given the duration of treatment for each arm.

Partner treatment and sexual exposure at TOC

Of the 208 participants with partners at baseline, 201 returned for the TOC visit, and 76.1% reported giving the partner treatment to all of their partners (n=153). There were no differences found between arms for delivery of partner treatment [74.0% (71/96) in the single dose arm and 78.1% (82/105) in the 7 day arm reported giving the medication to all partners; p=0.49]. At TOC, reported sexual exposure to baseline and/or new partners was 16.1% (41/255) and there were no differences in sexual exposure by arm [19.2% (24/125) in the single dose arm versus 13.1% (17/130) in the 7 day arm; p=0.18].

Adverse events and treatment compliance at TOC

Overall, 96.1% of participants reported taking all of their MTZ treatment as instructed (n=245). A majority of participants (60.4%) reported no adverse events secondary to MTZ (n=154). The most common adverse event reported was nausea and/or upset stomach (n=65, 25.5%) followed by headache (n=22, 8.6%), dizziness

(n=22, 8.6%), and vomiting (n=12, 4.7%). A few participants reported taste perversions (n=6) or itching/rash (n=9).

There were no differences found between arms with respect to index treatment adherence and side effects (**Table 5.2**). Treatment adherence for the single dose arm was not reported to be 100% because a few women were under time constraints at their baseline visit and unable to stay for 30 minutes of observation. In these instances, women were provided the single dose treatment to take later that day.

TV culture results at TOC

Of the 255 participants at TOC, 32 (12.5%) tested positive for TV (**Table 5.3**). In the 7 day arm, 8.5% tested positive for TV (11/130). In the single dose arm, 16.8% tested positive for TV (21/125). Women in the 7 day arm were less likely to test positive for an early repeat TV infection compared to women in the single dose arm [R.R. 0.50 (95% CI=0.25, 1.00; P=0.045)].

3 month visit

From the 223 participants who were TV-negative at TOC, 149 returned for a 3 month visit. There were 6 participants who did not attend the TOC visit but completed a visit at 3 months. There were no differences found between women who completed a 3 month visit (n=155) and women who were lost-to-follow-up at 3 months (n=83) with respect to race, CD4 count, viral load, ART status, enrollment site, or treatment arm. Women who were lost-to-follow-up were younger than women who completed a 3 month visit, with respective mean ages of 38.5 and 41.3 years (p=0.03).

Three participants reported taking MTZ since the baseline visit and were excluded from the analysis. Of 152 participants seen at the 3 month visit, 79 were in the single dose arm and 73 were in the 7 day arm. The median time intervals from baseline to the 3 month visit were 91 and 90 days for the single dose arm and for the 7 day arm respectively (p=0.44). Reported sexual exposure to baseline and/or new partners was 53.9% (n=82), and did not differ between arms [57.0% (45/79) in the single dose arm versus 50.7% (37/73) in the 7 day arm; p=0.44].

TV culture results at 3 months

Of the 152 participants at 3 months, 27 (17.8%) tested positive for TV (**Table 5.3**). In the 7 day arm, 11.0% (8/73) tested positive for TV compared to 24.1% (19/79) in the single dose arm. Women in the 7 day arm were less likely to test positive for a repeat TV infection compared to women in the single dose arm [R.R. 0.46 (95% CI=0.21, 0.98 ; P=0.03)].

Discussion

At TOC, the 7 day 500 mg BID MTZ dose resulted in significantly lower repeat TV infections compared to the 2 gm single MTZ dose in this group of HIV-infected women. Additionally, there were no differences found between treatment adherence and side effects by arm, making the 7 day dose just as acceptable as the single dose. Because of the possibility of false negatives at the TOC visit, we also examined treatment differences at 3 months as a secondary outcome. These findings were consistent with the TOC results indicating treatment superiority for the 7 day dose.

One explanation for the treatment advantage in the 7 day arm is that women would be less likely to re-initiate sex while still taking medication. We found similar rates of sexual exposure in both arms at TOC and 3 months, so it is unlikely that the difference in repeat TV infection rates was due to differential re-infections by old and/or new partners.

The screening prevalence of TV for this study (17%) is in the range of previously described TV rates among HIV-infected women ^{10, 12, 14, 17} but the TOC repeat infection rate (12.5%) was lower compared to those described in the literature (18-36%)^{11, 18, 19}. This could be attributed to longer follow-up times in the older studies, differences in partner treatment approaches (providing or not providing patient-delivered partner treatment), and/or false negatives because of our early rescreening time and the possibility of persistent infections at undetectable levels¹¹⁵.

It is unlikely that treatment effectiveness can be attributed to organism differences by arm, since women were randomized. Although there is some indication that the prevalence of MTZ-resistant TV may be on the rise ¹¹⁴, studies of clinical TV isolates have found nonsusceptibility rates to be low at 2.2-9.6% ⁵⁹⁻⁶¹. This suggests that the high rate of treatment failure found among HIV-positive women is more likely attributed to biological factors in the host (HIV+ woman) rather than the TV organism.

While the 7 day dose was superior, the repeat infection rate in this arm was 8.5% at TOC and 11.0% at 3 months. Given the clinical and public health ramifications of untreated TV in HIV-infected women, future studies are needed to understand the

biological factors involved in treatment failure and to determine optimal treatment regimens for HIV-infected women.

In conclusion, the results from this trial provide evidence for recommending the 7 day 500 mg BID dose of MTZ as the standard treatment regimen for TV among HIV-infected women. The MTZ single 2 gm dose should no longer be recommended for HIV-positive women.

Table 5.1. Baseline Characteristics of HIV+/TV+ Women by Metronidazole Treatment Arm (N=270)

	Single dose (n=135)	7 day dose (n=135)	P-value
≥ 40 years of age	50.4%	50.4%	1.00
African-American	91.9%	92.6%	0.99
≥1 sex partner in past 3 months	77.0%	77.0%	1.00
On ART	65.2%	65.2%	1.00
CD4 cell count ≤ 200/mm ³	24.8%	35.1%	0.07
Plasma viral load >10,000 copies	37.9%	34.6%	0.58
Enrollment Site			0.96
New Orleans HOP clinic (n=66)	25.2%	23.7%	
New Orleans NOAIDS clinic (n=8)	2.2%	3.7%	
Jackson Crossroads clinic (n=67)	24.4%	25.2%	
Houston Thomas St. clinic (n=108)	40.0%	40.0%	
Houston Northwest clinic (n=21)	8.2%	7.4%	

Table 5.2. Treatment Adherence and Side Effects by Metronidazole Treatment Arm at Test-of-Cure Visit (N=255)

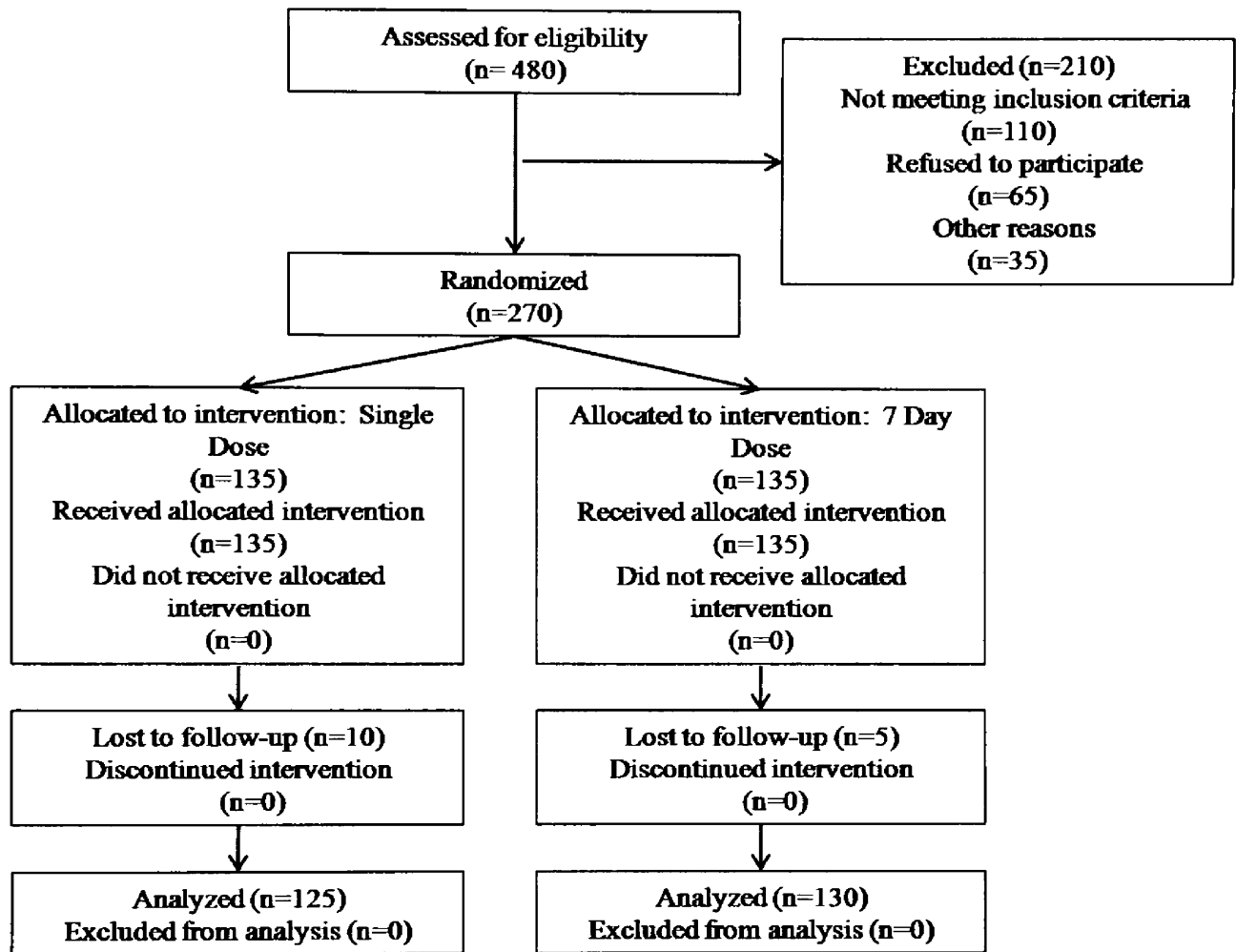
	Single dose (n=125) %	7 day dose (n=130) %	P-value
Index reported taking all treatment as instructed	97.6%	94.6%	0.33
No reported reaction to MTZ	63.2%	57.7%	0.37
Reported nausea or upset stomach	22.4%	28.5%	0.27
Reported headache	7.2%	10.0%	0.43
Reported dizziness	8.0%	9.2%	0.73
Reported vomiting	4.0%	5.4%	0.60

Table 5.3. *T. vaginalis* Results by Metronidazole Treatment Arm at Test-of-Cure (N=255) and 3 Month (N=152) Visits

	TV+ Rate			RR	P-value
	Overall	7 day dose	Single dose	(95% CI)	
	% (n)	% (n)	% (n)		
TOC	12.5% (32/255)	8.5% (11/130)	16.8% (21/125)	0.50 (0.25, 1.00)	0.045
3 month	17.8% (27/152)	11.0% (8/73)	24.1% (19/79)	0.46 (0.21, 0.98)	0.030

RR=Relative Risk; CI=Confidence Interval;

Figure 5.1. Enrollment Flow Chart



Chapter 6. The Influence of Bacterial Vaginosis on the Response to *Trichomonas vaginalis* Treatment Among HIV-infected Women

Trichomonas vaginalis (TV), a common sexually transmitted infection among HIV-positive women^{10-12, 14, 17, 169, 170}, has the potential to increase HIV transmission through increased genital viral shedding^{9, 23-25}. Effective treatment for TV has been shown to reduce shedding in women^{27, 28} and therefore may help to prevent new sexual and perinatal HIV infections. HIV-infected women have experienced high rates of post-treatment repeat TV infection (12% to 36%)^{11, 18, 19, 171}, indicating the complexity of successful treatment in this population. The most probable cause of these repeat TV infections is treatment failure, and the treatment failure is most likely related to host factors rather than the organism itself^{19, 168}. A recent randomized clinical trial found the metronidazole (MTZ) 500 mg twice a day (BID) for 7 days treatment regimen to be more effective for treatment of TV among HIV-infected women when compared to the MTZ 2 gm single dose¹⁷¹.

One possible factor in the failure of the MTZ single dose treatment among HIV-infected women is the presence of a co-infection. Bacterial vaginosis (BV) is another common infection among HIV-positive women, with prevalence rates ranging from 35-55%^{10, 13, 14, 16, 129}. TV and BV are frequently seen as co-infections¹⁴⁹⁻¹⁵¹, although the rates have not been well studied specifically for HIV-infected women. The Centers for Disease Control and Prevention no longer recommends the MTZ 2 gm single dose as a treatment regimen for BV due to its low efficacy; however, this regimen is still the

recommended treatment for TV infection⁵⁷. If HIV+/TV+ women who are treated with the MTZ 2 gm single dose are also co-infected with BV, there may exist a dose competition for the MTZ which results in the host's inability to clear one or both infections.

The purpose of this study was to examine if infection with BV influences the response to TV treatment among HIV-infected women, and to determine if BV was a factor in the failure of the single dose treatment. This study was conducted as a secondary analysis of the recent randomized clinical trial comparing the MTZ 2 gm single dose to the MTZ 500 mg BID 7 day dose.

Methods

Participants

Data was collected as part of a phase IV randomized clinical trial comparing 2 doses of MTZ for the treatment of TV among HIV-infected women. This study was conducted from May 2006 through July 2009, and the methods have been published elsewhere¹⁷¹. In brief, HIV-infected women attending selected public HIV outpatient clinics in New Orleans, Louisiana; Houston, Texas; and Jackson, Mississippi; were tested for TV by culture as standard of care practice during routine gynecological examinations performed by clinic providers. Women who were HIV+ (confirmed by Western Blot), at least 18 years of age, English speaking, and positive for TV by culture were considered eligible for study participation. Pregnant women, incarcerated women, those taking disulfiram at baseline, or those treated with MTZ within the previous 14 days were

excluded. Other exclusion criteria, per discretion of the medical provider, were: diagnosis of BV per Amsel criteria, alcoholism or known liver damage, medical contraindications to MTZ, or cognitively impaired and unable to provide informed consent.

Treatment and Follow-up

According to randomization, HIV+/TV+ participants received either the MTZ 2 gm single dose or the MTZ 500 mg BID 7 day dose. The single dose (4 pills) was given under direct observation by the study coordinator, and the first pill (500 mg) of the 7 day dose was given under direct observation. Participants in the 7 day arm were also given additional counseling on the importance of taking all doses of the medication. The women in both treatment arms were also provided with MTZ 2 gm single doses to deliver to their sex partner(s) as part of expedited partner therapy (EPT).

A test-of-cure (TOC) visit was scheduled for 6 to 12 days after the participant completed her medication dose, with an allowed window of up to 8 weeks after enrollment. Women with positive TV results at the TOC visit were considered a repeat infection, and referred to their clinic provider for further treatment.

Specimen collection - Baseline provider examination

During the routine gynecological examination, the following specimens were obtained by the provider generally in this order: 1) vaginal swab for TV culture, 2) vaginal swab for wet preparation, 3) vaginal swab for “whiff test” using potassium hydroxide (KOH), 4) vaginal swab specimen for Gram stain testing (processed after

enrollment) 5) endocervical brush/spatula for pap smear, 6) endocervical swab for chlamydia and gonorrhea, and 7) vaginal pH obtained from secretions after speculum removal. The provider also assessed the woman's vaginal discharge for amount, color, and consistency. The wet preparation was examined by the provider for TV, clue cells, and candidiasis. The "whiff test", vaginal pH, vaginal discharge assessment, and wet preparation were conducted by the provider as part of the assessment for bacterial vaginosis using Amsel criteria.

Diagnosis of *Trichomonas vaginalis*

Participants were tested for TV at all study visits using the InPouch culture technique (InPouch - Biomed Diagnostics; White City, Oregon). Vaginal swabs were obtained by the provider during the baseline examination. Women were eligible for immediate enrollment if the wet preparation was positive for TV, or if the first read of the pouch was positive. Culture results were used as confirmation for any positive wet preparations. If the culture was positive after the gynecological examination, women were called back to their clinic for enrollment. At the follow-up visits, vaginal swabs were obtained by the provider or by participant self-swab.

Vaginal swabs were placed into the culture pouch and agitated to release adherent organisms following the manufacturer's protocol. Pouches were examined under the microscope for TV by trained study staff immediately upon receipt. The culture was then placed in an incubator with a regulated temperature of 37° C. Study staff were required to obtain 3 daily readings within a 5-day period. A diagnosis of TV was made after the

first positive pouch reading. After three negative pouch readings, the woman was considered TV-negative.

Classification of bacterial vaginosis

Using the vaginal swab obtained by the provider during the baseline examination, study staff prepared a Gram stain by carefully rolling the swab over a predefined area of a glass slide and placing the slide in a cover to air dry. After a participant was enrolled, the Gram stain was sent to the core laboratory for subsequent staining and reading. Gram stains were scored using Nugent criteria¹⁴⁵, with the criterion for BV being a score of 7 or higher. After study enrollment ended, Gram stain results were analyzed for research purposes only and were not used for clinical diagnostics.

Data collection

Participants completed a survey at each study visit using audio computer assisted self interview (ACASI) format, or computer assisted personal interview (CAPI) format with assistance from study staff if participants were unable to use the computer or unable to read. The baseline survey elicited information about participants' demographics, HIV history, STI risk behavior, substance use, douching, birth control methods, and sexual behavior. The follow-up surveys asked detailed information about participant treatment adherence, delivery of treatment to partner(s), sexual exposure with baseline or new partners, and participant or partner symptoms. Study staff abstracted information from the participants' clinic charts about the type of prescribed antiretrovirals, CD4 cell count, and plasma viral load.

Statistical Analysis

All statistical analyses were conducted using SAS version 9.1. Continuous variables were assessed for normality, and tested accordingly. When appropriate, continuous variables were categorized using clinically relevant cut-points. Categorical variables were compared using the Chi-square test. The main exposure of interest was TV/BV co-infection status: HIV+ women with a TV/BV co-infection, and HIV+ women with a TV infection only. The outcome of interest was repeat TV infections, which would indicate that the MTZ treatment was likely not successful. The measure of association at TOC was calculated as a relative risk with 95% confidence interval, to examine the relationship between TV/BV co-infection status and repeat TV infections. Results were then stratified by treatment arm and this relationship was examined by MTZ dose.

The trial was approved by the institutional review boards of Tulane University and the clinical sites, and all women gave written informed consent before randomization. Participants received the following incentives for study visit completion: \$25 gift card at baseline; \$50 gift card at TOC.

Results

Of the 270 HIV+/TV+ women enrolled in the randomized clinical trial, 244 participants had Gram stain results and were included in this analysis. The distribution of Nugent scores was as follows: 8.2% with scores of 0 to 3 (n=20); 25.0% with scores of 4 to 6 (n=61); and 66.8% with scores of 7 to 10 (n=163). Since BV was classified per

Nugent score of 7 or higher, 66.8% of women had a TV/BV co-infection (n=163) and 33.2% of women had a TV infection only (n=81). The prevalence of BV did not differ by treatment arm in the randomized clinical trial [68.8% (86/125) in the single dose arm versus 64.7% (77/119) in the 7 day dose arm; p=0.50].

Baseline characteristics

The majority of the 244 HIV+/TV+ women were African-American (92.2%, n=225) and the mean age was 40.3 years (std. dev=9.5). Only 26.2% of the women were married or cohabitating (n=64), most were unemployed (70.1%, n=171), and 42.2% did not graduate high school (n=103). Most women reported douching (69.3%, n=169) and having one or more sex partners in the past 3 months (77.0%, n=188). Some women reported regularly smoking cigarettes (43.0%, n=105) and drinking alcohol in the past week (37.3%, n=91). In this group of HIV+/TV+ women, 64.8% (n=158) were on antiretroviral therapy (ART), 28.7% had a CD4 cell count < 200 mm³ (n=70), and 35.2% had a plasma viral load >10,000 copies (n=86).

Almost half of the women reported having unusual vaginal discharge (45.1%, n=110) and unusual vaginal itching or irritation (42.6%, n=104) in the past week. Women also reported having unusual vaginal odor (33.2%, n=81) and pain while urinating (12.7%, n=31) in the past week. There were 218 women who were tested for Chlamydia and gonorrhea at baseline, with 2.3% positive for CT (n=5) and 1.8% positive for GC (n=4). Signs associated with BV were present, with 52.2% of women having a positive whiff test (n=121, total n=232) and 31.5% of women having clue cells present on wet prep (n=73, total n=232). The median vaginal pH was 5.3 (range 3-7, total n=173).

Baseline characteristics by TV/BV co-infection status

Table 6.1 presents baseline characteristics of the HIV+/TV+ participants by co-infection status: co-infection (TV\BV) versus single infection (TV only). HIV-infected women who reported douching and reported ≥ 1 sex partners in the past 3 months were more likely to have a TV/BV co-infection, with respective p-values of 0.04 and 0.02. There were no differences found between co-infection status with respect to age, race, ART status, CD4 count, plasma viral load, symptom report, provider exam of vaginal discharge, whiff test results, clue cells on wet prep, infection with Chlamydia or gonorrhea (results not shown), and vaginal pH (results not shown).

TV culture results at TOC

Of the 244 HIV+/TV+ participants, 230 returned for a TOC visit and 13.0% (n=30) retested positive for TV (**Table 6.2**). In women with a TV/BV co-infection, 16.1% retested positive for TV (25/155) and in women with a single TV infection, 6.7% retested positive for TV (5/75). HIV+ women with a TV/BV co-infection were more likely to retest positive for TV compared to women with a TV infection only [R.R. 2.42 (95% CI=0.96, 6.07; P=0.05)].

TV culture results at TOC by treatment arm

There were 115 HIV+ women in the MTZ 2 gm single dose arm at the TOC visit, with 18.3% retesting positive for TV (n=21). In this arm, 23.8% of women with a TV/BV co-infection (19/80) and 5.7% of women with a single TV infection (2/35) retested positive for TV. For the MTZ single dose, women with a TV/BV co-infection

were significantly more likely to retest positive for TV compared to women with a TV infection only [R.R. 4.16 (95% CI=1.02, 16.89; P=0.02)].

Of 115 HIV+ women in the MTZ 500 mg BID 7 day dose arm at TOC, 7.8% retested positive for TV (n=9). In this arm, 8.0% of women with a TV/BV co-infection (6/75) and 7.5% of women with a single TV infection (3/40) retested positive for TV. For the MTZ 7 day dose, women with a TV/BV co-infection were just as likely to retest positive for TV compared to women with a TV infection only [R.R. 1.07 (95% CI=0.28, 4.04; P=0.92)].

Discussion

Our recent randomized clinical trial found that the MTZ 500 mg BID 7 day dose was superior to the MTZ 2 gm single dose for the treatment of TV among HIV-infected women¹⁷¹. The current study examined one possible factor in the failure of the MTZ single dose: co-infection with BV. For HIV+ women who were given the single dose of MTZ, those with a TV/BV co-infection were 4.2 times more likely to retest positive for TV compared to those with a TV infection only. Where as for HIV+ women who were given the 7 day dose of MTZ, those with a TV/BV co-infection were just as likely to retest positive for TV compared to those with a single TV infection. Among HIV+ women with TV/BV co-infections, the single dose of MTZ appears to be inadequate treatment for TV.

A baseline co-infection with BV, as classified by Nugent score, was common (66.8%) in this group of HIV+/TV+ women. In many clinical settings, women are

inconsistently screened for BV and those who are screened may be under-diagnosed. The most common method of diagnosing BV at the point of care is the Amsel criteria which has demonstrated low sensitivities among HIV-infected women (34-37%)^{10, 172}. In the absence of more sensitive point-of-care tests in the clinical setting, a diagnosis of BV will be frequently missed.

No repeat measures of BV were taken after the baseline visit, which is a limitation of the study. Therefore, even if women with a TV/BV co-infection at baseline did not retest positive for TV, it does not necessarily mean that their BV infection was also cured. The repeat TV infection rate for the 7 day dose was nearly the same for women with a TV/BV co-infection (8.0%) and women with a TV infection only (7.5%). Other factors which may influence the high repeat infection rate, including the most effective treatment for TV/BV co-infections, will need to be examined. Another limitation of the study is the possibility that more severe or symptomatic cases of BV are underrepresented because of the exclusion of women with BV (diagnosed per Amsel criteria) from the randomized clinical trial.

In sum, co-infection with BV modifies the effect of MTZ treatment for TV among HIV-infected women, and is one factor associated with the failure of the single dose treatment to prevent repeat TV infections. The findings of the randomized clinical trial in conjunction with this present study indicate that the MTZ 2 gm single dose should no longer be recommended for the treatment of TV among HIV-infected women.

Table 6.1. Baseline Characteristics of HIV+/TV+ Women by TV/BV Co-infection Status

(N=244)

	Co-Infection TV/BV (n=163) %	Single Infection TV (n=81) %	P-value
DEMOGRAPHIC			
African-American	92.6%	91.4%	0.60
≥ 40 years of age	49.7%	56.8%	0.30
Married or Cohabiting	26.4%	25.9%	0.94
Unemployed	71.2%	67.9%	0.55
Did Not Graduate High School	45.4%	35.8%	0.14
BEHAVIORAL			
Regularly Smokes Cigarettes	46.6%	35.8%	0.11
Drank Alcohol in Past Week	39.9%	32.1%	0.24
Douches	73.6%	60.5%	0.04
≥ 1 Sex Partner in Past 3 Months	81.0%	69.1%	0.02
HIV DISEASE			
On ART	67.5%	59.3%	0.21
CD4 cell count ≤ 200 mm ³	25.2%	35.8%	0.10
Plasma viral load >10,000 copies	33.1%	39.5%	0.40
CLINICAL			
Unusual vaginal discharge in past week by self-report	47.9%	39.5%	0.22
Unusual vaginal odor in past week by self report	35.0%	29.6%	0.40
Unusual vaginal itching or irritation in past week by self-report	42.3%	43.2%	0.90
Pain while urinating in past week by self-	14.7%	8.6%	0.18

report			
Provider exam: discharge amount*			0.24
Scant	46.6%	43.5%	
Moderate	34.6%	44.9%	
Large	18.8%	11.6%	
Provider exam: discharge color**			0.98
Clear	13.2%	12.5%	
White	65.9%	67.2%	
Yellow	20.9%	20.3%	
Provider exam: discharge consistency***			0.39
Thin	51.2%	42.6%	
Thick	35.6%	45.6%	
Frothy	13.2%	11.8%	
Positive whiff test****	55.1%	46.0%	0.19
Clue cells present on wet prep****	30.1%	34.2%	0.53

*total n=202

**total n=193

***total n=197

****total n=232

Table 6.2. Repeat *Trichomonas vaginalis* Infection Rates of HIV+/TV+ Women at the Test-of-Cure Visit by TV/BV Co-infection Status and MTZ Treatment Arm (N=230)

	Overall	Co-Infection TV/BV	Single Infection TV	RR (95% CI)	P-value
	TV+ % (n)				
TOC	13.0% (30/230)	16.1% (25/155)	6.7% (5/75)	2.42 (0.96, 6.07)	0.05
Single dose	18.3% (21/115)	23.8% (19/80)	5.7% (2/35)	4.16 (1.02, 16.89)	0.02
7 day dose	7.8% (9/115)	8.0% (6/75)	7.5% (3/40)	1.07 (0.28, 4.04)	0.92

RR=Relative Risk; CI=Confidence Interval;

Chapter 7. Discussion

The overall objective of this dissertation was to examine factors associated with successful treatment of *Trichomonas vaginalis* (TV) among HIV-infected women, specifically 1) adherence to patient-delivered partner treatment (PDPT) and possible causes of repeat TV infection, 2) effectiveness of the metronidazole single dose versus 7 day dose for treatment of TV, and 3) influence of bacterial vaginosis on the response to treatment of TV. These research questions were assessed in HIV+/TV+ female participants from a phase-IV randomized clinical trial comparing the metronidazole 2 gm single dose to the 7 day 500 mg BID dose. Participants were recruited from selected outpatient clinics in three southern cities (New Orleans, Louisiana; Jackson, Mississippi; and Houston, Texas) between May 1, 2006 and July 31, 2009. A total of 270 HIV-infected women with culture-confirmed TV were randomized to metronidazole treatment arm: single dose versus 7 day dose. Participants also received metronidazole 2 gm single doses to deliver to their sexual partners. Women were re-cultured for TV at the test-of-cure visit (TOC) which occurred 6-12 days after treatment completion, a 3 month visit, and again at a 6 month visit.

7.1. Summary of Findings

In aggregate, this dissertation documented several important factors related to successful treatment of TV among HIV-infected women. First, PDPT was given to participants in order to prevent repeat TV infections due to re-infection by a baseline

partner. In the cohort analysis from the ongoing trial, HIV-infected women with TV were found to be highly adherent to PDPT with a majority reporting that they provided PDPT to all of their partners (75.4%, 138/183). Even with a high level of partner treatment, the repeat TV infection rate at TOC was 10.3% (24/234) and only 2 women with repeat infections reported sexual exposure since the baseline visit. The majority of repeat TV infections were classified as probable treatment failure (87.5%, n=21). Therefore, overwhelming adherence to PDPT among HIV-infected women did not prevent a high rate of repeat TV infections since most repeat infections were likely due to treatment failure.

Given the high rates of repeat TV infections among HIV-positive women and the mounting evidence that many of these repeat infections were due to treatment failure, the CDC recommended treatment regimen (MTZ 2 gm single dose) was compared to the alternative treatment regimen (MTZ 500 mg BID 7 day dose) in 270 HIV+/TV+ women enrolled in the phase-IV randomized clinical trial. Women in the 7 day arm were less likely to test positive for a repeat TV infection at TOC [8.5% (11/130) versus 16.8% (21/125); R.R. 0.50, 95% CI=0.25, 1.00; P=0.045] and at 3 months [11.0% (8/73) versus 24.1% (19/79); R.R. 0.46, 95% CI=0.21, 0.98; P=0.03] compared to women in the single dose arm. Therefore, the MTZ 500 mg BID 7 day dose was superior to the MTZ 2 gm single dose for the treatment of TV among HIV-infected women.

The failure of the MTZ single dose treatment among HIV-infected women with TV was re-examined to consider the possible influence of bacterial vaginosis (BV). In participants from the clinical trial (HIV+/TV+ women) with Gram stain test results

(n=244), 66.8% also had BV per Nugent score (n=163). HIV+ women with a TV/BV co-infection were more likely to test positive for a repeat TV infection at TOC compared to women with a TV infection only [16.1% (25/155) versus 6.7% (5/75); R.R. 2.42, 95% CI=0.96, 6.07; P=0.05]. When stratified by MTZ treatment arm, results showed that this association was only significant in the single dose arm [23.8% with TV/BV co-infection versus 5.7% with TV infection only tested positive for repeat TV; R.R. 4.16, 95% CI=1.02, 16.89; P=0.02]. There was no association found between TV/BV co-infection status and repeat TV infection in the 7 day arm [8.0% with TV/BV co-infection versus 7.5% with TV infection only tested positive for repeat TV; R.R. 1.07, 95% CI=0.28, 4.04; P=0.92]. Therefore, co-infection with BV was common, and was associated with the failure of the MTZ 2 gm single dose among HIV-infected women treated for TV.

Given the findings from this dissertation, the MTZ 2 gm single dose should no longer be recommended for the treatment of TV among HIV-infected women. The 7 day 500 mg BID dose of MTZ is a superior treatment regimen for HIV/TV-infected.

7.2. Study Strengths

One important strength of the study was the randomized design, which helps to increase the validity of the treatment trial results through elimination of confounding. Based on demographic and clinical characteristics of the participants compared across treatment arm, randomization was successful. The multi-centered aspect of the study provides results from a sample of HIV-infected women representative of a more diverse

geographic population, helping to increase generalizability of findings in the United States.

Another important strength of the study was the high follow-up rate at TOC, with 94.4% of enrolled participants completing this visit (255/270). There were no differences found between the women who completed a TOC visit and women who did not return for this visit. Therefore, it is likely that differential loss-to-follow-up did not occur.

Women were tested for TV at all study visits using culture, which is the most sensitive method available in clinical settings. The survey conducted at each study visit was based on previous survey instruments used among HIV-infected women. The audio computer assisted self interview (ACASI) format of the survey likely reduced interviewer bias and social desirability bias. To date, this study is the only randomized clinical trial of the effectiveness of treatment for TV among HIV-infected women.

7.3. Study Limitations

The anticipated sample size for the study was 380 participants (190 women in each treatment arm). Due to funding limitations, study enrollment was stopped prematurely and the total number of participants was 270 (135 women in each arm). With this smaller sample size, the treatment trial results at TOC were marginally significant ($P=0.045$) and the 95% confidence interval contained the null.

Since the design of the study was an effectiveness trial with an objective end point (i.e. TV culture), a placebo-controlled double-blind study design was not used. However,

it is possible that participant behaviors, especially sexual exposure, were affected by the length of the medication dose. For example, if women in the 7 day arm decided to wait longer to re-initiate sex because they were still taking medication, these women would experience a lower risk of repeat TV infection due to reinfection or new infection. This possibility seems unlikely given the fact that sexual exposure rates at TOC and 3 months did not differ by treatment arm.

Even though the main outcome of repeat TV infection was an objective measure by TV culture, important contextual information such as participant treatment adherence, sexual exposure, and partner treatment, came from participant self-report. There is a possibility that participants were not accurate in their reporting of sexual exposure; however, it is expected that any misclassification would not differ by treatment arm. In the future, genotyping information from baseline and repeat TV infections will help to classify repeat infections as persistent or new, regardless of self-reported behaviors.

This study only compared two treatment regimens for TV: metronidazole 2 gm single dose (recommended regimen) versus metronidazole 7 day 500 mg BID dose (alternative regimen). There is another recommended treatment regimen for TV: tinidazole 2 gm single dose. It is not known how effective the tinidazole single dose would be if compared to the metronidazole 7 day dose for the treatment of TV among HIV-infected women.

7.4. Future Directions

This dissertation identified several important factors related to successful treatment of TV among HIV-infected women. However, there were some unexpected findings which have generated questions that remain to be answered.

High repeat TV infection rates among HIV-positive women in the 7 day arm were an unexpected and concerning finding of the trial. At the TOC visit, 8.5% of women in the 7 day arm tested positive for TV (11/130). The overall TV-positive rates in the 7 day arm at the 3 and 6 month follow-up visits were, respectively: 13.8% (11/80) and 16.5% (13/79). These rates are unacceptable in a superior dose given the clinical and public health consequences of TV among HIV-infected women. Recent studies have shown that different treatment regimens are needed in women who fail standard first-line treatments (MTZ 2 gm single dose or MTZ 500 mg BID 7 day dose) and do not respond to retreatment with a standard therapy. It may be necessary to use higher doses of MTZ (800mg three times daily for seven days)¹⁶¹, high doses of oral and vaginal tinidazole¹⁷³, or combination treatments such as tinidazole, a broad-spectrum antibiotic, and clotrimazole pessaries¹⁷⁴. These studies were conducted among mostly non-HIV infected women. It will be necessary to examine effective treatment regimens specifically for HIV-infected women who fail the MTZ 7 day dose, since treatment regimens are not necessarily generalizable between non-HIV and HIV-infected women.

Another unexpected and concerning finding from the trial was the high frequency of BV among HIV-infected women with TV. This study was not designed to measure treatment effectiveness for TV/BV co-infections since no repeat measures of BV were

obtained after baseline. Given the implications of both BV and TV separately for HIV transmission, the asymptomatic nature of both infections and the established high recurrence rates, it is important for future studies to determine the most effective treatment regimen for the cure of both BV and TV among HIV-infected women.

In addition, the most appropriate time to test for repeat TV infections needs to be evaluated among both non-HIV and HIV-infected women. Peterman *et al.*'s report of persistent, undetected TV infections¹¹⁵ should be verified using other groups of women, including specifically HIV-infected women. It may be necessary to conduct repeat specimen comparisons between culture and PCR tests to determine the length of time and level of organism needed for culture detection of TV¹¹⁶.

7.5. Final Perspectives

The findings from this dissertation contribute important information to the understanding of successful treatment of TV among HIV-infected women. The clinical implications of reducing repeat TV infections include decreasing TV morbidity and improving the general health status of HIV-infected women. The public health implications of reducing repeat TV infections include decreasing TV and HIV transmission. The findings from this dissertation also raise important questions, which warrant attention to better understand the successful treatment of TV among HIV-infected women. In conclusion, the metronidazole 2 gm single dose should no longer be recommended for the treatment of TV among HIV-infected women. The 7 day 500 mg

BID dose of MTZ should be considered for implementation as the new standard first-line treatment for HIV-infected women with TV.

Appendix A. Baseline Survey

Q1.	Study site SITE	1. Site	<p>0 = Jackson -- Crossroads 1 = HOP -- Hutchinson 2 = Houston-Thomas St 3 = Houston - Northwest</p>	1
Q2.	Interview date DATE	2. Interview Date 1/1/2006 - 12/31/2011 = mm/dd/yyyy		8
Q3.	Study ID number STUDYID	3. Study ID 1 - 5000 = range		4
Q4.	Clinic ID number CLINICID	4. Clinic ID		10
Q5.	What is your birthdate? DOB	5. Date of birth 1/1/1900 - 1/1/1995 = mm/dd/yyyy 2099 = Not Applicable (Year)		8
Q6.	What best describes your relationship status? MARITAL	6. Marital Status	<p>0 = I am single 1 = I am unmarried but living with a partner/ common law marriage 2 = I am married 3 = I am divorced or separated 4 = I am widowed 88 = Refuse to Answer</p>	1
Q7.	What is your main type of health insurance? INS	7. Health Insurance	<p>0 = I don't have any health insurance 1 = Medicaid 2 = Medicare 3 = Private insurance, HMO, private managed care 4 = Other 99 = Don't Know 88 = Refuse to Answer</p>	1

Q8.	Would you please specify what type of health insurance you have?		
	SPEC_INS	7a. Specified Health Insurance	50
Q9.	What race do you consider yourself? (Check all that apply)		
	RACEA	8. Race: Black/ African-American	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	RACEB	8. Race: White/ Caucasian	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	RACEC	8. Race: Native American/ Alaskan Native	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	RACED	8. Race: Asian/ Pacific Islander	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	RACEE	8. Race: Hispanic/ Latina	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q10.	What best describes your living situation?		
	HSE	9. Living Situation	1
		0 = I live in an apartment or house that I rent	
		1 = I live in an apartment or house that I own	
		2 = I live with family or friends and don't pay rent	
		3 = I am homeless right now (live in a shelter, a car, a mission, or on the streets)	
		4 = I live in a group home, a half-way house or some other residential facility	
		5 = I live in a hospice, a nursing home, an inpatient treatment center, or some other health care facility	
		6 = I live in a trailer or temporary housing because of the hurricanes	
		7 = Other	
		88 = Refuse to Answer	

Q11.	Please specify what best describes your current living situation.		
	SPEC_HSE	9a. Specified living	200
Q12.	Are you currently (check all that apply)		
	EMPLOYA	10. Employment: A student	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	EMPLOYB	10. Employment: Employed full-time	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	EMPLOYC	10. Employment: Employed part-time	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	EMPLOYD	10. Employment: Unemployed	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q13.	How much school have you completed?		
	EDU	11. Education level	2
		0 = Less than high school	
		1 = Some high school but did not graduate	
		2 = Completed high school (got diploma) or GED	
		3 = Completed vocational school	
		4 = Some college or higher	
		88 = Refuse to Answer	
Q14.	What best describes you current cigarette smoking?		
	SMK	12. Smoked Cigarettes	1
		0 = I don't smoke cigarettes at all	
		1 = I only smoke every once in a while	
		2 = I regularly smoke less than a pack a day	
		3 = I regularly smoke about a pack a day or more	
		88 = Refuse to Answer	

- Q15.** What best describes the number of days you drank alcohol in the past week (this means at least one drink of beer, wine, or liquor)?
- WEEK1** 13. Number of days drank alcohol is past week 1
- 0 = None (I didn't drink in the last week)
 - 1 = 1 day
 - 2 = 2 days
 - 3 = 3 days
 - 4 = 4 days
 - 5 = 5 days
 - 6 = 6 days
 - 7 = all 7 days
 - 88 = Refuse to Answer
- Q16.** On the days that you drank alcohol in the past week, about (on average) how many drinks did you have per day?
- WEEK2** 14. Drinks per day in the past week 1
- 0 = 1 drink
 - 1 = 2 to 3 drinks
 - 2 = 4 to 6 drinks
 - 3 = more than 6 drinks
 - 88 = Refuse to Answer
- Q17.** In the last week, how often did you drink 4 or more drinks at the same time or within a 2 hour time period?
- WEEK4DRI** 15. How often had ≥ 4 drinks in past week 1
- 0 = Never
 - 1 = 1 day
 - 2 = 2 days
 - 3 = 3 days
 - 4 = 4 days
 - 5 = 5 days
 - 6 = 6 days
 - 7 = Everyday
 - 88 = Refuse to Answer
- Q18.** How many drinks have you had in the past 24 hours?
- DRINKS24** 16. Number of drinks in last 24 hours 3
- 0 - 100 = range
 - 88 = Refuse to Answer

Q19.	How do you think you became HIV-infected?		
	HIV_CAUS	17. Cause of HIV	1
		<ul style="list-style-type: none"> 0 = By having sex with a man who was HIV-infected (heterosexual contact) 1 = By having sex with a man who was HIV-infected and also shooting up (heterosexual contact and IDU) 2 = By injecting drugs/ shooting up (IDU) 3 = My mother was HIV-infected when she was pregnant with me (perinatal transmission) 4 = Blood transfusion/ receiving blood or tissue products 5 = I don't know how I got infected (risk not reported or identified) 6 = Other 88 = Refuse to Answer 	
Q20.	Please specify how you think you became HIV-infected?		
	SPEC_HIV	17a. Specified HIV-Infected	200
Q21.	Which birth control methods do you currently use? (check all that apply)		
	BCM_A	18. Birth control method: None	1
		<ul style="list-style-type: none"> 0 = No 1 = Yes 8 = Refuse to Answer 	
	BCM_B	18. Birth control method: Male condoms (the type that the man wears)	1
		<ul style="list-style-type: none"> 0 = No 1 = Yes 8 = Refuse to Answer 	
	BCM_C	18. Birth control method: Female condoms (the type the woman wears)	1
		<ul style="list-style-type: none"> 0 = No 1 = Yes 8 = Refuse to Answer 	
	BCM_D	18. Birth control method: Depo-provera/ The shot	1
		<ul style="list-style-type: none"> 0 = No 1 = Yes 8 = Refuse to Answer 	
	BCM_E	18. Birth control method: Birth control pills/ The pill	1
		<ul style="list-style-type: none"> 0 = No 1 = Yes 8 = Refuse to Answer 	

BCM_F	18. Birth control method: Norplant 0 = No 1 = Yes 8 = Refuse to Answer	1
BCM_G	18. Birth control method: IUD 0 = No 1 = Yes 8 = Refuse to Answer	1
BCM_H	18. Birth control method: Foam/ Insertable films/ Spermicidal creams 0 = No 1 = Yes 8 = Refuse to Answer	1
BCM_I	18. Birth control method: The patch 0 = No 1 = Yes 8 = Refuse to Answer	1
BCM_J	18. Birth control method: Nuvaring 0 = No 1 = Yes 8 = Refuse to Answer	1
BCM_K	18. Birth control method: Withdrawal (when the man pulls out before he ejaculates) 0 = No 1 = Yes 8 = Refuse to Answer	1
BCM_L	18. Birth control method: I am abstinent/ Not sexually active 0 = No 1 = Yes 8 = Refuse to Answer	1
BCM_M	18. Birth control method: Other 0 = No 1 = Yes 8 = Refuse to Answer	1

Q22.	Please specify the other kind of birth control method you currently use?	
SPEC_BC	18a. Specified Birth control	200

- Q23. Are you currently on hormone replacement therapy (HRT)?**
HRT 19. HRT 1
- 0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer
- Q24. Do you douche?**
DCHE 20. Douche 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q25. How often do you usually douche?**
FRQ_DCHE 21. frequency of douching 1
- 0 = Daily (6-7 times a week)
1 = 2-5 times a week
2 = 1 time a week
3 = A few times a month
4 = 1 time a month
5 = 1 time every few months
6 = About once or twice a year
88 = Refuse to Answer
- Q26. When was the last time you douched?**
LT_DCHE 22. Last time douched 1
- 0 = Today
1 = Yesterday
2 = 3 to 30 days ago
3 = More than a month ago
88 = Refuse to Answer
- Q27. In the past week, have you had any (check all that apply)**
- SYMPT_A** 23. Symptoms: Unusual vaginal discharge 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- SYMPT_B** 23. Symptoms: Unusual vaginal odor 1
- 0 = No
1 = Yes
8 = Refuse to Answer

SYMPT_C	23. Symptoms: Unusual vaginal itching or irritation	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
SYMPT_D	23. Symptoms: Pain while urinating	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
SYMPT_E	23. Symptoms: Pelvic pain	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
SYMPT_F	23. Symptoms: Other unusual vaginal problems	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
SYMPT_G	23. Symptoms: I have not had any vaginal problems in the past week	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q28.	Please specify what other unusual vaginal problems you have had in the past week.	
SPEC_VP	23a. Specified vaginal problems	200
Q29.	Before today, has anyone ever told you that you had Trichomonas vaginalis (also called trichomonas, trichomoniasis, or trich)?	
TV	24. History of trich	1
	0 = No	
	1 = Yes	
	9 = Don't Know	
	8 = Refuse to Answer	
Q30.	When was the last time you had trichomonas?	
LX_TV	25. Last time had trich	6
	1/1950 - 1/2006 = mm/yyyy	
	2099 = Don't Know (Year)	
	2088 = Refuse to Answer (Year)	

- Q31. Has anyone ever told you that you had gonorrhea (also called "the clap")?**
GON 26. Gonorrhea History 1
0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer
- Q32. When was the last time you had gonorrhea?**
LX_GON 27. Last time had gonorrhea 6
1/1950 - 12/2011 = mm/yyyy
2099 = Don't Know (Year)
2088 = Refuse to Answer (Year)
- Q33. Has anyone ever told you that you had chlamydia?**
CLYM 28. History of Chlamydia 1
0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer
- Q34. When was the last time you had chlamydia?**
LX_CLYM 29. Last time had chlamydia 6
1/1950 - 12/2011 = mm/yyyy
2099 = Don't Know (Year)
2088 = Refuse to Answer (Year)
- Q35. Have you ever had syphilis?**
SYPH 30. Syphilis 1
0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer
- Q36. When was the last time you had syphilis?**
LX_SYPH 31. Last syphilis 6
1/1950 - 12/2011 = mm/yyyy
2097 = Don't Know (Year)
2098 = Refuse to Answer (Year)
- Q37. Have you ever had HPV or genital warts?**
HPV 32. History of genital warts 1
0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer

- Q38. When was the last time you were diagnosed with HPV or genital warts?**
LX_HP 33. Last HPV 6
1/1950 - 12/2011 = mm/yyyy
2097 = Don't Know (Year)
2098 = Refuse to Answer (Year)
- Q39. Have you ever had genital herpes?**
HRPS 34. History of genital herpes 1
0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer
- Q40. When was your last genital herpes outbreak?**
LX_HERP 35. Last herpes 6
1/1950 - 12/2011 = mm/yyyy
2097 = Don't Know (Year)
2098 = Refuse to Answer (Year)
- Q41. Have you ever had bacterial vaginosis?**
BV 36. History of BV 1
0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer
- Q42. When was the last time you had bacterial vaginosis?**
LX_BV 37. Last time had BV 6
1/1950 - 12/2011 = mm/yyyy
2099 = Don't Know (Year)
2088 = Refuse to Answer (Year)
- Q43. Have you ever had a yeast infection?**
YEAST 38. History of Yeast Infection 1
0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer
- Q44. When was the last time you had a yeast infection?**
LX_YST 39. Last time had Yeast Infection 6
1/1950 - 12/2011 = mm/yyyy
2097 = Don't Know (Year)
2098 = Refuse to Answer (Year)

- Q45. Have you ever had any other vaginal infection or sexually transmitted disease (STD) not mentioned?**
- VISTD** 40. History of other vaginal infections or STDs 1
- 0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer
- Q46. What was the last other vaginal infection or STD that you had?**
- VISTD_TP** 41. Type of VI or STD 50
- Q47. When was the last time you had that infection or STD?**
- LXVISTD** 42. Last time had VI or STD 6
- 1/1950 - 12/2011 = mm/yyyy
2099 = Don't Know (Year)
2088 = Refuse to Answer (Year)
- Q48. Before today, have you ever taken metronidazole, also called Flagyl, for treatment of trichomonas, bacterial vaginosis (BV), or any other infection?**
- L_FLAGYL** 43. History of Flagyl 1
- 0 = No
1 = Yes
9 = Don't Know
8 = Refuse to Answer
- Q49. What kind of reaction did you have when you last took metronidazole? (check all that apply)**
- REACT_FA** 44. Past reaction Flagyl: None 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- REACT_FB** 44. Past reaction Flagyl: Nausea or upset stomach 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- REACT_FC** 44. Past reaction Flagyl: Vomiting 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- REACT_FD** 44. Past reaction Flagyl: Headaches 1
- 0 = No
1 = Yes
8 = Refuse to Answer

REACT_FE 44. Past reaction Flagyl: Dizziness 1
0 = No
1 = Yes
8 = Refuse to Answer

REACT_FF 44. Past reaction Flagyl: Other 1
0 = No
1 = Yes
8 = Refuse to Answer

REACT_FG 44. Past reaction Flagyl: I don't remember 1
0 = No
1 = Yes
8 = Refuse to Answer

Q50. Please specify what other kind of reaction you had when you last took metronidazole. 200
SPEC_RF 44a. Specify past reaction to flagyl

Q51. If you are given the 7-day dose of metronidazole today for trich, how difficult do you think it would be to take all of this medication as prescribed, that is to take 2 pills today and then 2 pills a day for the next 6 days in a row? 1
DIFFFL 45. Difficulty taking Flagyl 7d
0 = Not at all difficult
1 = Somewhat difficult
2 = Very difficult
3 = Not sure
88 = Refuse to Answer

Q52. In the past three months, how many male sex partners have you had? This should include any men that you had oral, vaginal, or anal sexual contact with. Please include any main or casual partners 3
MSX_3M 46. Male sex partners in past 3 months
0 - 500 = range
999 = Don't Know
888 = Refuse to Answer

Q53. In the past three months, how many female sex partners have you had? This should include any women that you have had oral, vaginal, or anal sexual contact with. Please include any main or casual partners. 3
FSX_3M 47. Female sex partners in past 3 months
0 - 500 = range
999 = Don't Know
888 = Refuse to Answer

Q54. What is your partner's name or initials? 20
PTID_1 48. Partner's name

Q55.	What best describes [Response to Q54]'s race?		
	PRACE_1	49. Partner's race	1
		0 = Black/ African-American	
		1 = White/ Caucasian	
		2 = Native American/Alaskan Native	
		3 = Asian/Pacific Islander	
		4 = Hispanic/Latino(a)	
		5 = Other	
		88 = Refuse to Answer	
Q56.	Please specify [Response to Q54]'s race?		
	SRACE_1	49a. Specified race of partner	50
Q57.	Would you call [Response to Q54] a main (regular) or a casual (non-regular) partner?		
	PREL_1	50. Main or casual partner	1
		0 = Main	
		1 = Casual	
		88 = Refuse to Answer	
Q58.	Are you married or living with [Response to Q54]?		
	PLIV_1	51. Living with partner	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q59.	Is [Response to Q54] HIV-infected?		
	PHIV_1	52. Partner's HIV status	1
		0 = No	
		1 = Yes	
		2 = Not sure but I think infected	
		3 = Not sure but I think uninfected	
		88 = Refuse to Answer	
Q60.	Have you disclosed your HIV status to [Response to Q54]?		
	STATUS	53. Discuss HIV status with partner	1
		0 = No, this partner doesn't know my status	
		1 = No, I didn't tell but this partner knows my status	
		2 = Yes I told this partner my status	
		88 = Refuse to Answer	
Q61.	Is [Response to Q54]		
	PT_GEN	54. Gender of Partner	1
		1 = Male	
		2 = Female	

- Q62. In the past three months, have you had vaginal sex with [Response to Q54]? (The type of sex when a man puts his penis in your vagina.)**
- P1VAG** 55. Partner 1 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q63. In the past three months about how often have you had vaginal sex with [Response to Q54]?**
- P1VAG_FQ** 56. Freq of vaginal sex with partner 1 1
- 0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q64. In the past three months, how often did you use condoms with [Response to Q54] when you had vaginal sex?**
- FCVX_1** 57. Frequency of condom use for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q65. The last time you had vaginal sex with [Response to Q54], did you use a condom?**
- LXCVX_1** 58. Last time vaginal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q66. In the past three months, have you had anal sex with [Response to Q54]? (The type of sex when a man puts his penis in your butt.)**
- P1_ANAL** 59. Anal sex with partner 1 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q67. In the past three months, about how often have you had anal sex with [Response to Q54]?**
- FAXP4_1** 60. Freq of anal sex with partner 1 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer
- Q68. In the past three months, how often did you use condoms with [Response to Q54] when you had anal sex?**
- FCAX_1** 61. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q69. The last time you had anal sex with [Response to Q54], did you use a condom?**
- LXCAX_1** 62. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q70. In the past three months, have you received oral sex from [Response to Q54]? (The type of sex when a man puts his mouth on your vagina.)**
- P1_ORAL** 63. Oral sex with partner 1 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q71. In the past three months, about how often have your received oral sex from [Response to Q54]?**
- FOXP4_1** 64. Frequency of oral sex with partner in past month 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer

- Q72. In the past three months, how often did you use dental dams with [Response to Q54] when you received oral sex?**
- FCOX_1** 65. Frequency of dental dam use for oral sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q73. The last time you received oral sex from [Response to Q54] did you use a dental dam?**
- LXCOX_1** 66. Last time oral sex use dental dam 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q74. In the past three months have your received oral sex from [Response to Q54]? (The type of sex when a woman puts her mouth on your vagina)**
- P1F_ORAL** 67. Partner 1 female, oral sex 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q75. In the past three months about how often have you received oral sex from [Response to Q54]?**
- P1FORFQ** 68. Frequency oral sex female partner 1 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer
- Q76. In the past three months, how often did you use dental dams with [Response to Q54] when you received oral sex?**
- P1FDDOR** 69. Dental dams with female partner 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 8 = Refuse to Answer

- Q77. The last time you received oral sex from [Response to Q54], did you use a dental dam?**
LP1ODD 70. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q78. In the last three months, have you shared sex toys with [Response to Q54] without washing the sex toy before using it on you or her?**
SX_TOY 71. Use Sex Toys 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q79. About how many times have you used sex toys in this way with [Response to Q54] in the past three months?**
SXTOYF 72. Frequency sex toy with female partner 1
0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q80. In the last three months, have you or [Response to Q54] touched each other's vagina without washing your fingers before touching the other partner?**
P1MAS 73. Touched each other female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q81. About how many times have you or [Response to Q54] touched each other this way in the past three months?**
FP1MAS 74. Female partners touched 1
0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q82. Has [Response to Q54] told you that he/she has had an STD in the past three months?**
PSTD_1 75. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q83.** In the past three months, has [Response to Q54] told you that he/she had any symptoms, such as unusual discharge, odor, or painful urination?
PT_SYM 76. Symptoms of partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q84.** How difficult will it be for you to talk to [Response to Q54] about your trichomonas infection and the need for him/her to take medication?
PT_TALK 77. Talk to partner about infection 1
0 = Not difficult at all
1 = Somewhat difficult
2 = Very difficult
88 = Refuse to Answer
- Q85.** How difficult will it be for you to give the medication for trichomonas to [Response to Q54]?
DIFF_TX 78. Difficulty in giving partner meds 1
0 = Not difficult at all
1 = Somewhat difficult
2 = Very difficult
88 = Refuse to Answer
- Q86.** How likely do you think it is that [Response to Q54] will follow your instructions about taking the medicine?
PT_INS 79. Partner follow instructions about treatment 1
0 = Very likely
1 = Somewhat likely
2 = Somewhat unlikely
3 = Very unlikely
88 = Refuse to Answer
- Q87.** Did you have any other partners in the past three months?
NOP_1 80. Do you have another partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q88.** What is your partner's name or initials?
PTID_2 48_2. Partner's 2 name 20

- Q89. What best describes [Response to Q88]'s race?**
PRACE_2 49_2. Partner's race 1
- 0 = Black/ African-American
 - 1 = White/ Caucasian
 - 2 = Native American/Alaskan Native
 - 3 = Asian/Pacific Islander
 - 4 = Hispanic/Latino(a)
 - 5 = Other
 - 88 = Refuse to Answer
- Q90. Please specify [Response to Q88]'s race?**
SRACE_2 49a_2. Specified race of partner 20
- Q91. Would you call [Response to Q88] a main (regular) or a casual (non-regular) partner?**
PREL_2 50_2. Main or casual partner 1
- 0 = Main
 - 1 = Casual
 - 88 = Refuse to Answer
- Q92. Are you married or living with [Response to Q88]?**
PLIV_2 51_2. Living with partner 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q93. Is [Response to Q88] HIV-infected?**
PHIV_2 52_2. Partner's HIV status 1
- 0 = No
 - 1 = Yes
 - 2 = Not sure but I think infected
 - 3 = Not sure but I think uninfected
 - 88 = Refuse to Answer
- Q94. Have you disclosed your HIV status to [Response to Q88]?**
STATUS2 53_2. Discuss HIV status with partner 1
- 0 = No, this partner doesn't know my status
 - 1 = No, I didn't tell but this partner knows my status
 - 2 = Yes I told this partner my status
 - 88 = Refuse to Answer
- Q95. Is [Response to Q88]**
PT_GEN2 54_2. Gender of Partner 1
- 1 = Male
 - 2 = Female

- Q96. In the past three months, have you had vaginal sex with [Response to Q88]? (The type of sex when a man puts his penis in your vagina.)**
- P1VAG2** 55_2. Partner 2 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q97. In the past three months about how often have you had vaginal sex with [Response to Q88]?**
- P2VAG_FQ** 56_2. Freq of vaginal sex with partner 2 1
- 0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q98. In the past three months, how often did you use condoms with [Response to Q88] when you had vaginal sex?**
- FCVX_2** 57_2. Frequency of condom use for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q99. The last time you had vaginal sex with [Response to Q88], did you use a condom?**
- LXCVX_2** 58_2. Last time vaginal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q100. In the past three months, have you had anal sex with [Response to Q88]? (The type of sex when a man puts his penis in your butt.)**
- P2_ANAL** 59_2. Anal sex with partner 2 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q101. In the past three months, about how often have you had anal sex with [Response to Q88]?**
- FAXP4_2** 60_2. Freq of anal sex with partner 2 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer
- Q102. In the past three months, how often did you use condoms with [Response to Q88] when you had anal sex?**
- FCAX_2** 61_2. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q103. The last time you had anal sex with [Response to Q88], did you use a condom?**
- LXCAX_2** 62_2. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q104. In the past three months, have you received oral sex from [Response to Q88]? (The type of sex when a man puts his mouth on your vagina.)**
- P2_ORAL** 63_2. Oral sex with partner 2 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q105. In the past three months, about how often have your received oral sex from [Response to Q88]?**
- FOXP4_2** 64_2. Frequency of oral sex with partner in past month 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer

- Q106.** In the past three months, how often did you use dental dams with [Response to Q88] when you received oral sex? 1
- FCOX_2** 65_2. Frequency of dental dam use for oral sex
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q107.** The last time you received oral sex from [Response to Q88] did you use a dental dam? 1
- LXCOX_2** 66_2. Last time oral sex use dental dam
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q108.** In the past three months have you received oral sex from [Response to Q88]? (The type of sex when a woman puts her mouth on your vagina) 1
- P2F_ORAL** 67_2. Partner 2 female, oral sex
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q109.** In the past three months about how often have you received oral sex from [Response to Q88]? 1
- P2FORFQ** 68_2. Frequency oral sex female partner 2
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer
- Q110.** In the past three months, how often did you use dental dams with [Response to Q88] when you received oral sex? 1
- P2FDDOR** 69_2. Dental dams with female partner
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 8 = Refuse to Answer

- Q111. The last time you received oral sex from [Response to Q88], did you use a dental dam?**
LP2ODD 70_2. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q112. In the last three months, have you shared sex toys with [Response to Q88] without washing the sex toy before using it on you or her?**
SX_TOY2 71_2. Use Sex Toys 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q113. About how many times have you used sex toys in this way with [Response to Q88] in the past three months?**
SXTOYF2 72_2. Frequency sex toy with female partner 1
0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q114. In the last three months, have you or [Response to Q88] touched each other's vagina without washing your fingers before touching the other partner?**
P2MAS 73_2. Touched each other female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q115. About how many times have you or [Response to Q88] touched each other this way in the past three months?**
FP2MAS 74_2. Female partners touched 1
0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q116. Has [Response to Q88] told you that he/she has had an STD in the past three months?**
PSTD_2 75_2. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q117.** In the past three months, has [Response to Q88] told you that he/she had any symptoms, such as unusual discharge, odor, or painful urination? 1
PT_SYM2 76_2. Symptoms of partner
0 = No
1 = Yes
8 = Refuse to Answer
- Q118.** How difficult will it be for you to talk to [Response to Q88] about your trichomonas infection and the need for him/her to take medication? 1
PT2_TALK 77_2. Talk to partner about infection
0 = Not difficult at all
1 = Somewhat difficult
2 = Very difficult
88 = Refuse to Answer
- Q119.** How difficult will it be for you to give the medication for trichomonas to [Response to Q88]? 1
DIFF_TX2 78_2. Difficulty in giving partner meds
0 = Not difficult at all
1 = Somewhat difficult
2 = Very difficult
88 = Refuse to Answer
- Q120.** How likely do you think it is that [Response to Q88] will follow your instructions about taking the medicine? 1
PT_INS2 79_2. Partner follow instructions about treatment
0 = Very likely
1 = Somewhat likely
2 = Somewhat unlikely
3 = Very unlikely
88 = Refuse to Answer
- Q121.** Did you have any other partners in the past three months? 1
NOP_2 80_2. Do you have another partner
0 = No
1 = Yes
8 = Refuse to Answer
- Q122.** What is your partner's name or initials? 20
PTID_3 48_3. Partner's 3 name

- Q123. What best describes [Response to Q122]'s race?** 1
- PRACE_3** 49_3. Partner's race
- 0 = Black/ African-American
 - 1 = White/ Caucasian
 - 2 = Native American/Alaskan Native
 - 3 = Asian/Pacific Islander
 - 4 = Hispanic/Latino(a)
 - 5 = Other
 - 88 = Refuse to Answer
- Q124. Please specify [Response to Q122]'s race?** 20
- SRACE_3** 49a_3. Specified race of partner
- Q125. Would you call [Response to Q122] a main (regular) or a casual (non-regular) partner?** 1
- PREL_3** 50_3. Main or casual partner
- 0 = Main
 - 1 = Casual
 - 88 = Refuse to Answer
- Q126. Are you married or living with [Response to Q122]?** 1
- PLIV_3** 51_3. Living with partner
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q127. Is [Response to Q122] HIV-infected?** 1
- PHIV_3** 52_3. Partner's HIV status
- 0 = No
 - 1 = Yes
 - 2 = Not sure but I think infected
 - 3 = Not sure but I think uninfected
 - 88 = Refuse to Answer
- Q128. Have you disclosed your HIV status to [Response to Q122]?** 1
- STATUS3** 53_3. Discuss HIV status with partner
- 0 = No, this partner doesn't know my status
 - 1 = No, I didn't tell but this partner knows my status
 - 2 = Yes I told this partner my status
 - 88 = Refuse to Answer
- Q129. Is [Response to Q122]** 1
- PT_GEN3** 54_3. Gender of Partner
- 1 = Male
 - 2 = Female

- Q130.** In the past three months, have you had vaginal sex with [Response to Q122]? (The type of sex when a man puts his penis in your vagina.)
- P3VAG** 55_3. Partner 3 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q131.** In the past three months about how often have you had vaginal sex with [Response to Q122]?
- P3VAG_FQ** 56_3. Freq of vaginal sex with partner 3 1
- 0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q132.** In the past three months, how often did you use condoms with [Response to Q122] when you had vaginal sex?
- FCVX_3** 57_3. Frequency of condom use for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q133.** The last time you had vaginal sex with [Response to Q122], did you use a condom?
- LXCVX_3** 58_3. Last time vaginal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q134.** In the past three months, have you had anal sex with [Response to Q122]? (The type of sex when a man puts his penis in your butt.)
- P3_ANAL** 59_3. Anal sex with partner 3 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q135. In the past three months, about how often have you had anal sex with [Response to Q122]?**
- FAXP4_3** 60_3. Freq of anal sex with partner 3 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer
- Q136. In the past three months, how often did you use condoms with [Response to Q122] when you had anal sex?**
- FCAX_3** 61_3. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q137. The last time you had anal sex with [Response to Q122], did you use a condom?**
- LXCAX_3** 62_3. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q138. In the past three months, have you received oral sex from [Response to Q122]? (The type of sex when a man puts his mouth on your vagina.)**
- P3_ORAL** 63_3. Oral sex with partner 3 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q139. In the past three months, about how often have your received oral sex from [Response to Q122]?**
- FOXP4_3** 64_3. Frequency of oral sex with partner in past month 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer

- Q140.** In the past three months, how often did you use dental dams with [Response to Q122] when you received oral sex?
FCOX_3 65_3. Frequency of dental dam use for oral sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q141.** The last time you received oral sex from [Response to Q122] did you use a dental dam?
LXCOX_3 66_3. Last time oral sex use dental dam 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q142.** In the past three months have you received oral sex from [Response to Q122]? (The type of sex when a woman puts her mouth on your vagina)
P3F_ORAL 67_3. Partner 3 female, oral sex 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q143.** In the past three months about how often have you received oral sex from [Response to Q122]?
P3FORFQ 68_3. Frequency oral sex female partner 3 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer
- Q144.** In the past three months, how often did you use dental dams with [Response to Q122] when you received oral sex?
P3FDDOR 69_3. Dental dams with female partner 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 8 = Refuse to Answer

- Q145.** The last time you received oral sex from [Response to Q122], did you use a dental dam?
LP3ODD 70_3. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q146.** In the last three months, have you shared sex toys with [Response to Q122] without washing the sex toy before using it on you or her?
SX_TOY3 71_3. Use Sex Toys 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q147.** About how many times have you used sex toys in this way with [Response to Q122] in the past three months?
SXTOYF3 72_3. Frequency sex toy with female partner 1
0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q148.** In the last three months, have you or [Response to Q122] touched each other's vagina without washing your fingers before touching the other partner?
P3MAS 73_3. Touched each other female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q149.** About how many times have you or [Response to Q122] touched each other this way in the past three months?
FP3MAS 74_3. Female partners touched 1
0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q150.** Has [Response to Q122] told you that he/she has had an STD in the past three months?
PSTD_3 75_3. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q151.** In the past three months, has [Response to Q122] told you that he/she had any symptoms, such as unusual discharge, odor, or painful urination? 1
PT_SYM3 76_3. Symptoms of partner
0 = No
1 = Yes
8 = Refuse to Answer
- Q152.** How difficult will it be for you to talk to [Response to Q122] about your trichomonas infection and the need for him/her to take medication? 1
PT3_TALK 77_3. Talk to partner about infection
0 = Not difficult at all
1 = Somewhat difficult
2 = Very difficult
88 = Refuse to Answer
- Q153.** How difficult will it be for you to give the medication for trichomonas to [Response to Q122]? 1
DIFF_TX3 78_3. Difficulty in giving partner meds
0 = Not difficult at all
1 = Somewhat difficult
2 = Very difficult
88 = Refuse to Answer
- Q154.** How likely do you think it is that [Response to Q122] will follow your instructions about taking the medicine? 1
PT_INS3 79_3. Partner follow instructions about treatment
0 = Very likely
1 = Somewhat likely
2 = Somewhat unlikely
3 = Very unlikely
88 = Refuse to Answer
- Q155.** Did you have any other partners in the past three months? 1
NOP_3 80_3. Do you have another partner
0 = No
1 = Yes
8 = Refuse to Answer
- Q156.** What is your partner's name or initials? 20
PTID_4 48_4. Partner's 4 name

- Q157. What best describes [Response to Q156]'s race?** 1
- PRACE_4** 49_4. Partner's race
- 0 = Black/ African-American
 - 1 = White/ Caucasian
 - 2 = Native American/Alaskan Native
 - 3 = Asian/Pacific Islander
 - 4 = Hispanic/Latino(a)
 - 5 = Other
 - 88 = Refuse to Answer
- Q158. Please specify [Response to Q156]'s race?** 20
- SRACE_4** 49a_4. Specified race of partner
- Q159. Would you call [Response to Q156] a main (regular) or a casual (non-regular) partner?** 1
- PREL_4** 50_4. Main or casual partner
- 0 = Main
 - 1 = Casual
 - 88 = Refuse to Answer
- Q160. Are you married or living with [Response to Q156]?** 1
- PLIV_4** 51_4. Living with partner
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q161. Is [Response to Q156] HIV-infected?** 1
- PHIV_4** 52_4. Partner's HIV status
- 0 = No
 - 1 = Yes
 - 2 = Not sure but I think infected
 - 3 = Not sure but I think uninfected
 - 88 = Refuse to Answer
- Q162. Have you disclosed your HIV status to [Response to Q156]?** 1
- STATUS4** 53_4. Discuss HIV status with partner
- 0 = No, this partner doesn't know my status
 - 1 = No, I didn't tell but this partner knows my status
 - 2 = Yes I told this partner my status
 - 88 = Refuse to Answer
- Q163. Is [Response to Q156]** 1
- PT_GEN4** 54_4. Gender of Partner
- 1 = Male
 - 2 = Female

- Q164.** In the past three months, have you had vaginal sex with [Response to Q156]? (The type of sex when a man puts his penis in your vagina.)
- P4VAG** 55_4. Partner 4 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q165.** In the past three months about how often have you had vaginal sex with [Response to Q156]?
- P4VAG_FQ** 56_4. Freq of vaginal sex with partner 4 1
- 0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q166.** In the past three months, how often did you use condoms with [Response to Q156] when you had vaginal sex?
- FCVX_4** 57_4. Frequency of condom use for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q167.** The last time you had vaginal sex with [Response to Q156], did you use a condom?
- LXCVX_4** 58_4. Last time vaginal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q168.** In the past three months, have you had anal sex with [Response to Q156]? (The type of sex when a man puts his penis in your butt.)
- P4_ANAL** 59_4. Anal sex with partner 4 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q169.** In the past three months, about how often have you had anal sex with [Response to Q156]?
- FAXP4_4** 60_4. Freq of anal sex with partner 4 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer
- Q170.** In the past three months, how often did you use condoms with [Response to Q156] when you had anal sex?
- FCAX_4** 61_4. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q171.** The last time you had anal sex with [Response to Q156], did you use a condom?
- LXCAX_4** 62_4. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q172.** In the past three months, have you received oral sex from [Response to Q156]? (The type of sex when a man puts his mouth on your vagina.)
- P4_ORAL** 63_4. Oral sex with partner 4 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q173.** In the past three months, about how often have your received oral sex from [Response to Q156]?
- FOXP4_4** 64_4. Frequency of oral sex with partner in past month 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer

- Q174.** In the past three months, how often did you use dental dams with [Response to Q156] when you received oral sex?
FCOX_4 65_4. Frequency of dental dam use for oral sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q175.** The last time you received oral sex from [Response to Q156] did you use a dental dam?
LXCOX_4 66_4. Last time oral sex use dental dam 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q176.** In the past three months have your received oral sex from [Response to Q156]? (The type of sex when a woman puts her mouth on your vagina)
P4F_ORAL 67_4. Partner 4 female, oral sex 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q177.** In the past three months about how often have you received oral sex from [Response to Q156]?
P4FORFQ 68_4. Frequecy oral sex female partner4 1
- 0 = Once or twice
 - 1 = Once a month
 - 2 = A couple of times a month
 - 3 = Once a week
 - 4 = A few times a week
 - 5 = More than a few times a week
 - 88 = Refuse to Answer
- Q178.** In the past three months, how often did you use dental dams with [Response to Q156] when you received oral sex?
P4FDDOR 69_4. Dental dams with female partner 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 8 = Refuse to Answer

- Q179.** The last time you received oral sex from [Response to Q156], did you use a dental dam?
LP4ODD 70_4. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q180.** In the last three months, have you shared sex toys with [Response to Q156] without washing the sex toy before using it on you or her?
SX_TOY4 71_4. Use Sex Toys 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q181.** About how many times have you used sex toys in this way with [Response to Q156] in the past three months?
SXTOYF4 72_4. Frequency sex toy with female partner 1
0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q182.** In the last three months, have you or [Response to Q156] touched each other's vagina without washing your fingers before touching the other partner?
P4MAS 73_4. Touched each other female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q183.** About how many times have you or [Response to Q156] touched each other this way in the past three months?
FP4MAS 74_4. Female partners touched 1
0 = Once or twice
1 = Once a month
2 = A couple of times a month
3 = Once a week
4 = A few times a week
5 = More than a few times a week
88 = Refuse to Answer
- Q184.** Has [Response to Q156] told you that he/she has had an STD in the past three months?
PSTD_4 75_4. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q185.** In the past three months, has [Response to Q156] told you that he/she had any symptoms, such as unusual discharge, odor, or painful urination?
PT_SYM4 76_4. Symptoms of partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q186.** How difficult will it be for you to talk to [Response to Q156] about your trichomonas infection and the need for him/her to take medication?
PT4_TALK 77_4. Talk to partner about infection 1
0 = Not difficult at all
1 = Somewhat difficult
2 = Very difficult
88 = Refuse to Answer
- Q187.** How difficult will it be for you to give the medication for trichomonas to [Response to Q156]?
DIFF_TX4 78_4. Difficulty in giving partner meds 1
0 = Not difficult at all
1 = Somewhat difficult
2 = Very difficult
88 = Refuse to Answer
- Q188.** How likely do you think it is that [Response to Q156] will follow your instructions about taking the medicine?
PT_INS4 79_4. Partner follow instructions about treatment 1
0 = Very likely
1 = Somewhat likely
2 = Somewhat unlikely
3 = Very unlikely
88 = Refuse to Answer
- Q189.** Which arm was the patient randomized to?
ARM 81. Randomization arm 1
0 = 2 gm stat dose
1 = 500 mg 7-Day dose
- Q190.** Did participant complete the ACASI interview
ACASI 82. Help with interview 1
0 = With no or minimal assistance from study staff
1 = With assistance from study staff
2 = Study staff entered all the participants responses in ACASI
- Q191.** Interviewer's initials
STAFF 83. Staff completing interview 20

Appendix B. Test of Cure Survey

Q1.	Study site SITE	1. Site	<p>0 = Jackson -- Crossroads 1 = HOP -- Hutchinson 2 = Houston -Thomas Street 3 = Houston - Northwest</p>	1
Q2.	Date of baseline interview BASEDTE	2. Baseline interview date	<p>2/1/2006 - 12/31/2011 = mm/dd/yyyy 2097 = Don't Know (Year) 2098 = Refuse to Answer (Year) 2099 = Not Applicable (Year)</p>	8
Q3.	Interview date DATE	3. Interview Date	<p>2/1/2006 - 12/31/2011 = mm/dd/yyyy</p>	8
Q4.	Study ID number STUDYID	4. Study ID	<p>1 - 5000 = range</p>	4
Q5.	Clinic ID number CLINICID	5. Clinic ID		10
Q6.	TV results at this visit TVRES	6. Trich results at visit	<p>0 = Negative 1 = Positive by wet prep 2 = Positive by culture 3 = Specimen error</p>	1
Q7.	Number of baseline partners (up to 4) BASEPART	7. Number of baseline partners	<p>0 - 4 = range</p>	1
Q8.	First baseline partner's name (leave blank and press "enter" if no baseline partners). Name must be written EXACTLY as written by participant in the baseline survey. BASE_P1	8. Baseline partner 1		20

- Q9. Second baseline partner's name (leave blank and press "enter" if no other partners). Name must be written EXACTLY as written by participant in the baseline survey.**
BASE_P2 9. Baseline partner 2 20
- Q10. Third baseline partner's name (leave blank and press "enter" if no other partners). Name must be written EXACTLY as written by participant in the baseline survey.**
BASE_P3 10. Baseline partner 3 20
- Q11. Fourth baseline partner's name (leave blank and press "enter" if no other partners). Name must be written EXACTLY as written by participant in the baseline survey.**
BASE_P4 11. Baseline partner 4 20
- Q12. Which arm was the patient randomized to?**
ARM 12. Randomization arm 1
0 = 2 gm stat dose
1 = 500 mg 7-Day dose
- Q13. What best describes the number of days you drank alcohol in the past week (this means at least one drink of beer, wine, or liquor)?**
WEEK1 13. Number of days drank alcohol is past week 1
0 = None (I didn't drink in the last week)
1 = 1 day
2 = 2 days
3 = 3 days
4 = 4 days
5 = 5 days
6 = 6 days
7 = all 7 days
88 = Refuse to Answer
- Q14. On the days that you drank alcohol in the past week, about (on average) how many drinks did you have per day?**
WEEK2 14. Drinks per day in the past week 1
0 = 1 drink
1 = 2 to 3 drinks
2 = 4 to 6 drinks
3 = more than 6 drinks
88 = Refuse to Answer

- Q15. In the last week, how often did you drink 4 or more drinks at the same time or within a 2 hour time period?**
- WEEK4DRI** 15. How often had ≥ 4 drinks in past week 1
- 0 = Never
 - 1 = 1 day
 - 2 = 2 days
 - 3 = 3 days
 - 4 = 4 days
 - 5 = 5 days
 - 6 = 6 days
 - 7 = Everyday
 - 88 = Refuse to Answer
- Q16. How many drinks have you had in the past 24 hours?**
- DRINKS24** 16. Number of drinks in last 24 hours 3
- 0 - 100 = range
 - 88 = Refuse to Answer
- Q17. Do you douche?**
- DCHE** 17. Douche 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q18. When was the last time you douched?**
- LT_DCHE** 18. Last time douched 1
- 0 = Today
 - 1 = Yesterday
 - 2 = 3 to 30 days ago
 - 3 = More than a month ago
 - 88 = Refuse to Answer
- Q19. In the past week, have you had any (check all that apply)**
- SYMPT_A** 19. Symptoms: unusual vaginal discharge 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- SYMPT_B** 19. Symptoms: unusual vaginal odor 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

SYMPT_C	19. Symptoms: unusual vaginal itching or irritation	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
SYMPT_D	19. Symptoms: pain while urinating	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
SYMPT_E	19. Symptoms: pelvic pain	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
SYMPT_F	19. Symptoms: other unusual vaginal problems	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
SYMPT_G	19. Symptoms: I have not had any vaginal problems in the past week	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q20.	Please specify what other unusual vaginal problems you have had in the past week.	
SPEC_VP	19a. Specified vaginal problems	200
Q21.	At your last clinic visit on [Response to Q2], you were given medicine called metronidazole or Flagyl for your trichomonas infection. Did you	
TX	20. Type of medication given at baseline	1
	0 = take 4 pills at the clinic that day	
	1 = take a pill at the clinic and then were given some to take at home for the next 6 days	
	88 = Refuse to Answer	
Q22.	Did you take all of your metronidazole as instructed?	
TAKETX	21. Take tx as instructed	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	

- Q23. How many days did you take the metronidazole?**
- DAYSTX** 22. Days took metronidazole 1
- 0 = Only on the first day at the clinic
 1 = 1 or 2 more days
 2 = 3 or 4 more days
 3 = 5 or 6 more days
 4 = I'm not sure but there are still pills left
 88 = Refuse to Answer
- Q24. What were the reasons that you did not take all of your metronidazole as instructed? (check all that apply)**
- REASNOTA** 23. Why didn't take all metronidazole: It made me feel sick 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer
- REASNOTB** 23. Why didn't take all metronidazole: I have too many other medications to take for my HIV infection, I didn't want to take another 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer
- REASNOTC** 23. Why didn't take all metronidazole: I forgot 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer
- REASNOTD** 23. Why didn't take all metronidazole: I didn't think I needed it 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer
- REASNOTE** 23. Why didn't take all metronidazole: I gave it to someone else 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer
- REASNOTF** 23. Why didn't take all metronidazole: I lost it 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer
- REASNOTG** 23. Why didn't take all metronidazole: It was too hard to take 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer

	REASNOTH	23. Why didn't take all metronidazole: Other	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q25.		Please specify what other reason(s) you didn't take all of your metronidazole.	
	TCNOTOTH	23a. Specified other reasons not all tx	200
Q26.		What kind of reaction did you have when you took the metronidazole? (check all that apply)	
	REACTXA	24. Reaction to metronidazole: None	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	REACTXB	24. Reaction to metronidazole: Nausea or upset stomach	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	REACTXC	24. Reaction to metronidazole: Vomiting	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	REACTXD	24. Reaction to metronidazole: Headaches	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	REACTXE	24. Reaction to metronidazole: Dizziness	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	REACTXF	24. Reaction to metronidazole: Other	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
	REACTXG	24. Reaction to metronidazole: I don't remember	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	

- Q27. Please specify what other reaction(s) you had after taking metronidazole at your last visit.**
REACOTH 24a. Specified reaction to metronidazole 200
- Q28. If you had a choice about the kind of metronidazole you could take to treat trichomonas, would you rather take**
TPEMED 25. Type of Flagyl prefer 1
- 0 = 4 pills the first day
 1 = 2 pills the first day and 2 pills a day for the next 6 days
 2 = I don't have a preference
 88 = Refuse to Answer
- Q29. Since you were given metronidazole by this clinic on [Response to Q2], have you received and taken metronidazole for any other reason?**
MOREMET 26. Taken more metronidazole since baseline 1
- 0 = No
 1 = Yes
 7 = Don't Know
 8 = Refuse to Answer
- Q30. When was the last time you received and took another dose of metronidazole since that visit?**
WHENMET 27. When took metronidazole since base 200
- Q31. Did you tell [Response to Q8] about your trichomonas infection?**
TELL_P1 28. Tell baseline partner 1 about TV 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer
 9 = Not Applicable
- Q32. Did you give [Response to Q8] the trichomonas medication the clinic gave you to give to him/ her?**
GIVE_P1 29. Give baseline partner 1 medication 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer
- Q33. Why didn't you give [Response to Q8] the medicine? (check all that apply)**
WHYNOPIA 30. Why didn't give baseline partner 1 meds: I didn't want to 1
- 0 = No
 1 = Yes
 8 = Refuse to Answer

WHYNOP1B	30. Why didn't give baseline partner 1 meds: I was afraid of his/her reaction	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WHYNOP1C	30. Why didn't give baseline partner 1 meds: I didn't want to see him/her again	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WHYNOP1D	30. Why didn't give baseline partner 1 meds: I couldn't get in touch with him/her	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WHYNOP1E	30. Why didn't give baseline partner 1 meds: I lost the medicine	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WHYNOP1F	30. Why didn't give baseline partner 1 meds: He/ she got medication for trichomonas from another place	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WHYNOP1G	30. Why didn't give baseline partner 1 meds: Other	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q34.	Please specify why you didn't give [Response to Q8] the medicine.	
NOP1_OTH	30a. Specified why not give baseline partner 1 meds	200
Q35.	When did you give [Response to Q8] the medicine?	
WHNXP1	31. When give baseline partner 1 meds	1
	0 = The same day I got it from the clinic	
	1 = The day after I got it from the clinic	
	2 = 2-6 days after I got it from the clinic	
	3 = About a week after I got it from the clinic	
	4 = About two weeks after I got it from the clinic	
	5 = More than two weeks after I got it from the clinic	
	6 = Other	
	8 = Refuse to Answer	

- Q36. Please specify when you gave [Response to Q8] the medication.**
WHNP1OT 31a. Specified when gave baseline partner 1 meds 200
- Q37. What happened after you gave [Response to Q8] the medicine?**
AFTTXP1 32. Happened after giving baseline partner 1 meds 1
- 0 = I saw him/ her take the medicine
 - 1 = He/ she told me they took the medicine but I didn't watch them take it
 - 2 = He/ she told me that they did not take the medicine
 - 3 = I never talked about the medicine with this partner after I gave it to him/ her.
 - 8 = Refuse to Answer
- Q38. How sure are you that [Response to Q8] took the medicine?**
SUREP1 33. How sure baseline partner 1 took meds 1
- 0 = Not at all sure
 - 1 = Somewhat sure
 - 2 = Very sure
 - 8 = Refuse to Answer
- Q39. Did [Response to Q8] tell you that he/she had symptoms or did you see any symptoms related to trichomonas such as unusual discharge, odor, or pain while urinating?**
P1SYMP 34. Symptoms of baseline partner 1 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q40. Did [Response to Q8] tell you that he/ she went to a doctor or clinic after you told them about your infection or gave him/her the medicine?**
P1CLINIC 35. Did baseline partner 1 go to clinic after 1
- 0 = No
 - 1 = Yes
 - 2 = I never told this partner about the infection or gave the medicine
 - 8 = Refuse to Answer
- Q41. Is [Response to Q8] a**
BP1_GEN 36. Gender of baseline partner 1 1
- 1 = Male
 - 2 = Female

- Q42.** Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q8]? (The type of sex when a man puts his penis in your vagina.)
- BP1VAG** 37. Baseline partner 1 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q43.** Since your last visit about how many times have you had vaginal sex with [Response to Q8]?
- BP1VAGFQ** 38. Freq of vaginal sex with baseline partner 1 2
- 0 - 80 = range
88 = Refuse to Answer
- Q44.** Did you have vaginal sex with [Response to Q8] before he took the medicine for trichomonas?
- VSXP1B4** 39. Vaginal sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q45.** Did you have vaginal sex with [Response to Q8] before you finished all of your medication for trichomonas?
- VSXB4IM1** 40. Vaginal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q46.** Since your last visit, how often did you use condoms with [Response to Q8] when you had vaginal sex?
- FCVX_BP1** 41. Frequency of condom use with baseline partner 1 for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q47.** The last time you had vaginal sex with [Response to Q8], did you use a condom?
- LXCVXBP1** 42. Last time vaginal sex baseline partner 1 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q48.** Since your last visit on [Response to Q2], have you had anal sex with [Response to Q8]? (The type of sex when a man puts his penis in your butt.)
BP1_ANAL 43. Anal sex with partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q49.** Since your last visit, about how many times have you had anal sex with [Response to Q8]?
FAXP4BP1 44. Freq of anal sex with baseline partner 1 2
0 - 80 = range
88 = Refuse to Answer
- Q50.** Did you have anal sex with [Response to Q8] before he took the medicine for trichomonas?
ASXP1B4 45. Anal sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q51.** Did you have anal sex with [Response to Q8] before you finished all of your medication for trichomonas?
ASXB4IM1 46. Anal sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q52.** Since your last visit, how often did you use condoms with [Response to Q8] when you had anal sex?
FCAX_BP1 47. Frequency of condom use with baseline partner 1 anal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q53.** The last time you had anal sex with [Response to Q8], did you use a condom?
LXCAXBP1 48. Last time anal sex baseline partner 1 use condom 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q54.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q8]? (The type of sex when a man puts his mouth on your vagina.)
- BP1_ORAL** 49. Oral sex with baseline partner 1 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q55.** Since your last visit about how many times have your received oral sex from [Response to Q8]?
- FOXP4BP1** 50. Frequency of oral sex with baseline partner 1 in past month 2
- 0 - 96 = range
80 = Refuse to Answer
- Q56.** Did you receive oral sex from [Response to Q8] before he took the medicine for trichomonas?
- OSXP1B4** 51. Oral sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q57.** Did you receive oral sex from [Response to Q8] before you finished all of your medication for trichomonas?
- OSXB4IM1** 52. Oral sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q58.** Since your last visit, how often did you use dental dams with [Response to Q8] when you received oral sex?
- FCOXBP1** 53. Frequency of dental dam use for oral sex with baseline partner 1 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q59.** The last time you received oral sex from [Response to Q8] did you use a dental dam?
- LXCOXBP1** 54. Last time oral sex use dental dam 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q60.** Since your last visit on [Response to Q2] have you received oral sex from [Response to Q8]? (The type of sex when a woman puts her mouth on your vagina)
BP1FORAL 55. Baseline partner 1 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q61.** Since your last visit about how many times have you received oral sex from [Response to Q8]?
BP1FORFQ 56. Frequency oral sex female baseline partner 1 2
0 - 96 = range
80 = Refuse to Answer
- Q62.** Did you receive oral sex from [Response to Q8] before she took the medicine for trichomonas?
OSXFP1B4 57. Oral sex before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q63.** Did you receive oral sex from [Response to Q8] before you finished all of your medication for trichomonas?
OSXB4MF1 58. Oral sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q64.** Since your last visit how often did you use dental dams with [Response to Q8] when you received oral sex?
BP1FDDOR 59. Dental dams with female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q65.** The last time you received oral sex from [Response to Q8], did you use a dental dam?
LBP1ODD 60. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q66.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q8] without washing the sex toy before using it on you or her?
SXTOYBP1 61. Use Sex Toys baseline partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q67.** About how many times have you used sex toys in this way with [Response to Q8] since your last visit?
SXTYFBP1 62. Frequency sex toy with female baseline partner1 2
0 - 80 = range
88 = Refuse to Answer
- Q68.** Did you use sex toys in this way with [Response to Q8] before she took the medicine for trichomonas?
SXTFP1B4 63. Sex toys before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q69.** Did you use sex toys in this way with [Response to Q8] before you finished all of your medication for trichomonas?
SXTB4MF1 64. Sex before index finished meds baseline partner 1 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q70.** Since your last visit on [Response to Q2], have you or [Response to Q8] touched each other's vagina without washing your fingers before touching the other partner?
BP1MAS 65. Touched each other female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q71.** About how many times have you or [Response to Q8] touched each other this way since your last visit?
FBP1MAS 66. Female baseline partner 1 touched 2
0 - 80 = range
88 = Refuse to Answer

- Q72. Did you and [Response to Q8] touch each other in this way before she took the medicine for trichomonas?**
MASFP1B4 67. Touch before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q73. Did you and [Response to Q8] touch each other in this way before you finished all of your medication for trichomonas?**
MASB4MF1 68. Touch before index finished meds baseline partner 1 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q74. Has [Response to Q8] told you that he/she has had an STD since your last visit?**
PSTD_BP1 69. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q75. Did you tell [Response to Q9] about your trichomonas infection?**
TELL_P2 28_2. Tell baseline partner 2 about TV 1
0 = No
1 = Yes
8 = Refuse to Answer
9 = Not Applicable
- Q76. Did you give [Response to Q9] the trichomonas medication the clinic gave you to give to him/ her?**
GIVE_P2 29_2. Give baseline partner 2 medication 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q77. Why didn't you give [Response to Q9] the medicine? (check all that apply)**
WHYNOP2A 30_2. Why didn't give baseline partner 2 meds: I didn't want to 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP2B** 30_2. Why didn't give baseline partner 2 meds: I was afraid of his/her reaction 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP2C	30_2. Why didn't give baseline partner 2 meds: I didn't want to see him/her again	1
	0 = No 1 = Yes 8 = Refuse to Answer	
WHYNOP2D	30_2. Why didn't give baseline partner 2 meds: I couldn't get in touch with him/her	1
	0 = No 1 = Yes 8 = Refuse to Answer	
WHYNOP2E	30_2. Why didn't give baseline partner 2 meds: I lost the medicine	1
	0 = No 1 = Yes 8 = Refuse to Answer	
WHYNOP2F	30_2. Why didn't give baseline partner 2 meds: He/ she got medication from trichomonas from another place	1
	0 = No 1 = Yes 8 = Refuse to Answer	
WHYNOP2G	30_2. Why didn't give baseline partner 2 meds: Other	1
	0 = No 1 = Yes 8 = Refuse to Answer	
Q78.	Please specify why you didn't give [Response to Q9] the medicine.	
NOP2_OTH	30a_2. Specified why not give baseline partner 2 meds	200
Q79.	When did you give [Response to Q9] the medicine?	
WHNTP2	31_2. When give baseline partner 2 meds	1
	0 = The same day I got it from the clinic 1 = The day after I got it from the clinic 2 = 2-6 days after I got it from the clinic 3 = About a week after I got it from the clinic 4 = About two weeks after I got it from the clinic 5 = More than two weeks after I got it from the clinic 6 = Other 8 = Refuse to Answer	
Q80.	Please specify when you gave [Response to Q9] the medication.	
WHNP2OT	31a_2. Specified when gave baseline partner 2 meds	200

- Q81. What happened after you gave [Response to Q9] the medicine?**
AFTTXP2 32_2. Happened after giving baseline partner 2 meds 1
- 0 = I saw him/ her take the medicine
 - 1 = He/ she told me they took the medicine but I didn't watch them take it
 - 2 = He/ she told me that they did not take the medicine
 - 3 = I never talked about the medicine with this partner after I gave it to him/ her.
 - 8 = Refuse to Answer
- Q82. How sure are you that [Response to Q9] took the medicine?**
SUREP2 33_2. How sure baseline partner 2 took meds 1
- 0 = Not at all sure
 - 1 = Somewhat sure
 - 2 = Very sure
 - 8 = Refuse to Answer
- Q83. Did [Response to Q9] tell you that he/she had symptoms or did you see any symptoms related to trichomonas such as unusual discharge, odor, or pain while urinating?**
P2SYMP 34_2. Symptoms of baseline partner 2 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q84. Did [Response to Q9] tell you that he/ she went to a doctor or clinic after you told them about your infection or gave him/her the medicine?**
P2CLINIC 35_2. Did baseline partner 2 go to clinic after 1
- 0 = No
 - 1 = Yes
 - 2 = I never told this partner about the infection or gave the medicine
 - 8 = Refuse to Answer
- Q85. Is [Response to Q9] a**
BP2_GEN 36_2. Gender of baseline partner 2 1
- 1 = Male
 - 2 = Female
- Q86. Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q9]? (The type of sex when a man puts his penis in your vagina.)**
BP2VAG 37_2. Baseline partner 2 vaginal sex 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q87.** Since your last visit about how many times have you had vaginal sex with [Response to Q9]?
- BP2VAGFQ** 38_2. Freq of vaginal sex with baseline partner 2 2
- 0 - 80 = range
88 = Refuse to Answer
- Q88.** Did you have vaginal sex with [Response to Q9] before he took the medicine for trichomonas?
- VSXP2B4** 39_2. Vaginal sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q89.** Did you have vaginal sex with [Response to Q9] before you finished all of your medication for trichomonas?
- VSXB4IM2** 40_2. Vaginal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q90.** Since your last visit, how often did you use condoms with [Response to Q9] when you had vaginal sex?
- FCVX_BP2** 41_2. Frequency of condom use with baseline partner 2 for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q91.** The last time you had vaginal sex with [Response to Q9], did you use a condom?
- LXCVXBP2** 42_2. Last time vaginal sex baseline partner 2 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q92.** Since your last visit on [Response to Q2], have you had anal sex with [Response to Q9]? (The type of sex when a man puts his penis in your butt.)
- BP2_ANAL** 43_2. Anal sex with partner 2 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q93.** Since your last visit, about how many times have you had anal sex with [Response to Q9]?
- FAXP4BP2** 44_2. Freq of anal sex with baseline partner 2 2
- 0 - 80 = range
88 = Refuse to Answer
- Q94.** Did you have anal sex with [Response to Q9] before he took the medicine for trichomonas?
- ASXP2B4** 45_2. Anal sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q95.** Did you have anal sex with [Response to Q9] before you finished all of your medication for trichomonas?
- ASXB4IM2** 46_2. Anal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q96.** Since your last visit, how often did you use condoms with [Response to Q9] when you had anal sex?
- FCAX_BP2** 47_2. Frequency of condom use with baseline partner 2 anal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q97.** The last time you had anal sex with [Response to Q9], did you use a condom?
- LXCAXBP2** 48_2. Last time anal sex baseline partner 2 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q98.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q9]? (The type of sex when a man puts his mouth on your vagina.)
- BP2_ORAL** 49_2. Oral sex with baseline partner 2 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q99.** Since your last visit about how many times have you received oral sex from [Response to Q9]?
- FOXP4BP2** 50_2. Frequency of oral sex with baseline partner 2 in past month 2
- 0 - 96 = range
80 = Refuse to Answer
- Q100.** Did you receive oral sex from [Response to Q9] before he took the medicine for trichomonas?
- OSXP2B4** 51_2. Oral sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q101.** Did you receive oral sex from [Response to Q9] before you finished all of your medication for trichomonas?
- OSXB4IM2** 52_2. Oral sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q102.** Since your last visit, how often did you use dental dams with [Response to Q9] when you received oral sex?
- FCOXPBP2** 53_2. Frequency of dental dam use for oral sex with baseline partner 2 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q103.** The last time you received oral sex from [Response to Q9] did you use a dental dam?
- LXCOXPBP2** 54_2 Last time oral sex use dental dam 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q104.** Since your last visit on [Response to Q2] have you received oral sex from [Response to Q9]? (The type of sex when a woman puts her mouth on your vagina)
- BP2FORAL** 55_2. Baseline partner 2 female, oral sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q105.** Since your last visit about how many times have you received oral sex from [Response to Q9]?
- BP2FORFQ** 56_2. Frequency oral sex female baseline partner 2 2
- 0 - 96 = range
80 = Refuse to Answer
- Q106.** Did you receive oral sex from [Response to Q9] before she took the medicine for trichomonas?
- OSXFP2B4** 57_2. Oral sex before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q107.** Did you receive oral sex from [Response to Q9] before you finished all of your medication for trichomonas?
- OSXB4MF2** 58_2. Oral sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q108.** Since your last visit how often did you use dental dams with [Response to Q9] when you received oral sex?
- BP2FDDOR** 59_2. Dental dams with female partner 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q109.** The last time you received oral sex from [Response to Q9], did you use a dental dam?
- LBP2ODD** 60_2. Last time use dental dam female partner 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q110.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q9] without washing the sex toy before using it on you or her?
- SXTOYBP2** 61_2. Use Sex Toys baseline partner 2 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q111. About how many times have you used sex toys in this way with [Response to Q9] since your last visit?**
- SXTYFBP2** 62_2. Frequency sex toy with female baseline partner2 2
- 0 - 80 = range
88 = Refuse to Answer
- Q112. Did you use sex toys in this way with [Response to Q9] before she took the medicine for trichomonas?**
- SXTFP2B4** 63_2. Sex toys before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q113. Did you use sex toys in this way with [Response to Q9] before you finished all of your medication for trichomonas?**
- SXTB4MF2** 64_2. Sex before index finished meds baseline partner 2 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q114. Since your last visit on [Response to Q2], have you or [Response to Q9] touched each other's vagina without washing your fingers before touching the other partner?**
- BP2MAS** 65_2. Touched each other female partner 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q115. About how many times have you or [Response to Q9] touched each other this way since your last visit?**
- FBP2MAS** 66_2. Female baseline partner 2 touched 2
- 0 - 80 = range
88 = Refuse to Answer
- Q116. Did you use and [Response to Q9] touch each other in this way before she took the medicine for trichomonas?**
- MASFP2B4** 67_2. Touch before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer

- Q117. Did you and [Response to Q9] touch each other in this way before you finished all of your medication for trichomonas?**
MASB4MF2 68_2. Touch before index finished meds baseline partner 2 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q118. Has [Response to Q9] told you that he/she has had an STD since your last visit?**
PSTD_BP2 69_2. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q119. Did you tell [Response to Q10] about your trichomonas infection?**
TELL_P3 28_3. Tell baseline partner 3 about TV 1
0 = No
1 = Yes
8 = Refuse to Answer
9 = Not Applicable
- Q120. Did you give [Response to Q10] the trichomonas medication the clinic gave you to give to him/ her?**
GIVE_P3 29_3. Give baseline partner 3 medication 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q121. Why didn't you give [Response to Q10] the medicine? (check all that apply)**
WHYNOP3A 30_3. Why didn't give baseline partner 3 meds: I didn't want to 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP3B** 30_3. Why didn't give baseline partner 3 meds: I was afraid of his/her reaction 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP3C** 30_3. Why didn't give baseline partner 3 meds: I didn't want to see him/her again 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP3D	30_3. Why didn't give baseline partner 3 meds: I couldn't get in touch with him/her	1
	0 = No 1 = Yes 8 = Refuse to Answer	
WHYNOP3E	30_3. Why didn't give baseline partner 3 meds: I lost the medicine	1
	0 = No 1 = Yes 8 = Refuse to Answer	
WHYNOP3F	30_3. Why didn't give baseline partner 3 meds: He/ she got medication for trichomonas from another place	1
	0 = No 1 = Yes 8 = Refuse to Answer	
WHYNOP3G	30_3. Why didn't give baseline partner 3 meds: Other	1
	0 = No 1 = Yes 8 = Refuse to Answer	
Q122.	Please specify why you didn't give [Response to Q10] the medicine.	
	NOP3_OTH 30a_3. Specified why not give baseline partner 3 meds	200
Q123.	When did you give [Response to Q10] the medicine?	
	WHNTP3 31_3. When give baseline partner 3 meds	1
	0 = The same day I got it from the clinic 1 = The day after I got it from the clinic 2 = 2-6 days after I got it from the clinic 3 = About a week after I got it from the clinic 4 = About two weeks after I got it from the clinic 5 = More than two weeks after I got it from the clinic 6 = Other 8 = Refuse to Answer	
Q124.	Please specify when you gave [Response to Q10] the medication.	
	WHNP3OT 31a_3. Specified when gave baseline partner 3 meds	200

- Q125. What happened after you gave [Response to Q10] the medicine?** 1
- AFTTXP3** 32_3. Happened after giving baseline partner 3 meds
- 0 = I saw him/ her take the medicine
 - 1 = He/ she told me they took the medicine but I didn't watch them take it
 - 2 = He/ she told me that they did not take the medicine
 - 3 = I never talked about the medicine with this partner after I gave it to him/ her.
 - 8 = Refuse to Answer
- Q126. How sure are you that [Response to Q10] took the medicine?** 1
- SUREP3** 33_3. How sure baseline partner 3 took meds
- 0 = Not at all sure
 - 1 = Somewhat sure
 - 2 = Very sure
 - 8 = Refuse to Answer
- Q127. Did [Response to Q10] tell you that he/she had symptoms or did you see any symptoms related to trichomonas such as unusual discharge, odor, or pain while urinating?** 1
- P3SYMP** 34_3. Symptoms of baseline partner 3
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q128. Did [Response to Q10] tell you that he/ she went to a doctor or clinic after you told them about your infection or gave him/her the medicine?** 1
- P3CLINIC** 35_3. Did baseline partner 3 go to clinic after
- 0 = No
 - 1 = Yes
 - 2 = I never told this partner about the infection or gave the medicine
 - 8 = Refuse to Answer
- Q129. Is [Response to Q10] a** 1
- BP3_GEN** 36_3. Gender of baseline partner 3
- 1 = Male
 - 2 = Female
- Q130. Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q10]? (The type of sex when a man puts his penis in your vagina.)** 1
- BP3VAG** 37_3. Baseline partner 3 vaginal sex
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q131.** Since your last visit about how many times have you had vaginal sex with [Response to Q10]?
- BP3VAGFQ** 38_3. Freq of vaginal sex with baseline partner 3 2
- 0 - 80 = range
88 = Refuse to Answer
- Q132.** Did you have vaginal sex with [Response to Q10] before he took the medicine for trichomonas?
- VSXP3B4** 39_3. Vaginal sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q133.** Did you have vaginal sex with [Response to Q10] before you finished all of your medication for trichomonas?
- VSXB4IM3** 40_3. Vaginal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q134.** Since your last visit, how often did you use condoms with [Response to Q10] when you had vaginal sex?
- FCVX_BP3** 41_3. Frequency of condom use with baseline partner 3 for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q135.** The last time you had vaginal sex with [Response to Q10], did you use a condom?
- LXCVXBP3** 42_3. Last time vaginal sex baseline partner 3 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q136.** Since your last visit on [Response to Q2], have you had anal sex with [Response to Q10]? (The type of sex when a man puts his penis in your butt.)
- BP3_ANAL** 43_3. Anal sex with partner 3 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q137.** Since your last visit, about how many times have you had anal sex with [Response to Q10]?
- FAXP4BP3** 44_3. Freq of anal sex with baseline partner 3 2
- 0 - 80 = range
88 = Refuse to Answer
- Q138.** Did you have anal sex with [Response to Q10] before he took the medicine for trichomonas?
- ASXP3B4** 45_3. Anal sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q139.** Did you have anal sex with [Response to Q10] before you finished all of your medication for trichomonas?
- ASXB4IM3** 46_3. Anal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q140.** Since your last visit, how often did you use condoms with [Response to Q10] when you had anal sex?
- FCAX_BP3** 47_3. Frequency of condom use with baseline partner 3 anal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q141.** The last time you had anal sex with [Response to Q10], did you use a condom?
- LXCAXBP3** 48_3. Last time anal sex baseline partner 3 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q142.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q10]? (The type of sex when a man puts his mouth on your vagina.)
- BP3_ORAL** 49_3. Oral sex with baseline partner 3 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q143.** Since your last visit about how many times have you received oral sex from [Response to Q10]?
- FOXP4BP3** 50_3. Frequency of oral sex with baseline partner 3 in past month 2
- 0 - 96 = range
80 = Refuse to Answer
- Q144.** Did you receive oral sex from [Response to Q10] before he took the medicine for trichomonas?
- OSXP3B4** 51_3. Oral sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q145.** Did you receive oral sex from [Response to Q10] before you finished all of your medication for trichomonas?
- OSXB4IM3** 52_3. Oral sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q146.** Since your last visit, how often did you use dental dams with [Response to Q10] when you received oral sex?
- FCOXPBP3** 53_3. Frequency of dental dam use for oral sex with baseline partner 2 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q147.** The last time you received oral sex from [Response to Q10] did you use a dental dam?
- LXCOXPBP3** 54_3 Last time oral sex use dental dam 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q148.** Since your last visit on [Response to Q2] have you received oral sex from [Response to Q10]? (The type of sex when a woman puts her mouth on your vagina)
- BP3FORAL** 55_3. Baseline partner 3 female, oral sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q149.** Since your last visit about how many times have you received oral sex from [Response to Q10]?
- BP3FORFQ** 56_3. Frequency oral sex female baseline partner 3 2
- 0 - 96 = range
80 = Refuse to Answer
- Q150.** Did you receive oral sex from [Response to Q10] before she took the medicine for trichomonas?
- OSXFP3B4** 57_3. Oral sex before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q151.** Did you receive oral sex from [Response to Q10] before you finished all of your medication for trichomonas?
- OSXB4MF3** 58_3. Oral sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q152.** Since your last visit how often did you use dental dams with [Response to Q10] when you received oral sex?
- BP3FDDOR** 59_3. Dental dams with female partner 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q153.** The last time you received oral sex from [Response to Q10], did you use a dental dam?
- LBP3ODD** 60_3. Last time use dental dam female partner 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q154.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q10] without washing the sex toy before using it on you or her?
- SXTOYBP3** 61_3. Use Sex Toys baseline partner 3 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q155. About how many times have you used sex toys in this way with [Response to Q10] since your last visit?**
- SXTYFBP3** 62_3. Frequency sex toy with female baseline partner 3 2
- 0 - 80 = range
88 = Refuse to Answer
- Q156. Did you use sex toys in this way with [Response to Q10] before she took the medicine for trichomonas?**
- SXTFP3B4** 63_3. Sex toys before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q157. Did you use sex toys in this way with [Response to Q10] before you finished all of your medication for trichomonas?**
- SXTB4MF3** 64_3. Sex before index finished meds baseline partner 3 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q158. Since your last visit on [Response to Q2], have you or [Response to Q10] touched each other's vagina without washing your fingers before touching the other partner?**
- BP3MAS** 65_3. Touched each other female partner 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q159. About how many times have you or [Response to Q10] touched each other this way since your last visit?**
- FBP3MAS** 66_3. Female baseline partner 3 touched 2
- 0 - 80 = range
88 = Refuse to Answer
- Q160. Did you and [Response to Q10] touch each other in this way before she took the medicine for trichomonas?**
- MASFP3B4** 67_3. Touch before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer

- Q161. Did you and [Response to Q10] touch each other in this way before you finished all of your medication for trichomonas?**
MASB4MF3 68_3. Touch before index finished meds baseline partner 3 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q162. Has [Response to Q10] told you that he/she has had an STD since your last visit?**
PSTD_BP3 69_3. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q163. Did you tell [Response to Q11] about your trichomonas infection?**
TELL_P4 28_4. Tell baseline partner 4 about TV 1
0 = No
1 = Yes
8 = Refuse to Answer
9 = Not Applicable
- Q164. Did you give [Response to Q11] the trichomonas medication the clinic gave you to give to him/ her?**
GIVE_P4 29_4. Give baseline partner 4 medication 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q165. Why didn't you give [Response to Q11] the medicine? (check all that apply)**
- WHYNOP4A** 30_4. Why didn't give baseline partner 4 meds: I didn't want to 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP4B** 30_4. Why didn't give baseline partner 4 meds: I was afraid of his/her reaction 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP4C** 30_4. Why didn't give baseline partner 4 meds: I didn't want to see him/her again 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP4D	30_4. Why didn't give baseline partner 4 meds: I couldn't get in touch with him/her	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WHYNOP4E	30_4. Why didn't give baseline partner 4 meds: I lost the medicine	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WHYNOP4F	30_4. Why didn't give baseline partner 4 meds: He/ she got medication for trichomonas from another place	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WHYNOP4G	30_4. Why didn't give baseline partner 4 meds: Other	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q166.	Please specify why you didn't give [Response to Q11] the medicine.	
NOP4_OTH	30a_4. Specified why not give baseline partner 4 meds	200
Q167.	When did you give [Response to Q11] the medicine?	
WHNXP4	31_4. When give baseline partner 4 meds	1
	0 = The same day I got it from the clinic	
	1 = The day after I got it from the clinic	
	2 = 2-6 days after I got it from the clinic	
	3 = About a week after I got it from the clinic	
	4 = About two weeks after I got it from the clinic	
	5 = More than two weeks after I got it from the clinic	
	6 = Other	
	8 = Refuse to Answer	
Q168.	Please specify when you gave [Response to Q11] the medication.	
WHNP4OT	31a_4. Specified when gave baseline partner 4 meds	200

- Q169. What happened after you gave [Response to Q11] the medicine?**
AFTTXP4 32_4. Happened after giving baseline partner 4 meds 1
- 0 = I saw him/ her take the medicine
 - 1 = He/ she told me they took the medicine but I didn't watch them take it
 - 2 = He/ she told me that they did not take the medicine
 - 3 = I never talked about the medicine with this partner after I gave it to him/ her.
 - 8 = Refuse to Answer
- Q170. How sure are you that [Response to Q11] took the medicine?**
SUREP4 33_4. How sure baseline partner 4 took meds 1
- 0 = Not at all sure
 - 1 = Somewhat sure
 - 2 = Very sure
 - 8 = Refuse to Answer
- Q171. Did [Response to Q11] tell you that he/she had symptoms or did you see any symptoms related to trichomonas such as unusual discharge, odor, or pain while urinating?**
P4SYMP 34_4. Symptoms of baseline partner 4 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q172. Did [Response to Q11] tell you that he/ she went to a doctor or clinic after you told them about your infection or gave him/her the medicine?**
P4CLINIC 35_4. Did baseline partner 4 go to clinic after 1
- 0 = No
 - 1 = Yes
 - 2 = I never told this partner about the infection or gave the medicine
 - 8 = Refuse to Answer
- Q173. Is [Response to Q11] a**
BP4_GEN 36_4. Gender of baseline partner 4 1
- 1 = Male
 - 2 = Female
- Q174. Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q11]? (The type of sex when a man puts his penis in your vagina.)**
BP4VAG 37_4. Baseline partner 4 vaginal sex 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q175.** Since your last visit about how many times have you had vaginal sex with [Response to Q11]?
- BP4VAGFQ** 38_4. Freq of vaginal sex with baseline partner 4 2
- 0 - 80 = range
88 = Refuse to Answer
- Q176.** Did you have vaginal sex with [Response to Q11] before he took the medicine for trichomonas?
- VSXP4B4** 39_4. Vaginal sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q177.** Did you have vaginal sex with [Response to Q11] before you finished all of your medication for trichomonas?
- VSXB4IM4** 40_4. Vaginal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q178.** Since your last visit, how often did you use condoms with [Response to Q11] when you had vaginal sex?
- FCVX_BP4** 41_4. Frequency of condom use with baseline partner 3 for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q179.** The last time you had vaginal sex with [Response to Q11], did you use a condom?
- LXCVXBP4** 42_4. Last time vaginal sex baseline partner 4 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q180.** Since your last visit on [Response to Q2], have you had anal sex with [Response to Q11]? (The type of sex when a man puts his penis in your butt.)
- BP4_ANAL** 43_4. Anal sex with partner 4 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q181.** Since your last visit, about how many times have you had anal sex with [Response to Q11]?
- FAXP4BP4** 44_4. Freq of anal sex with baseline partner 4 2
- 0 - 80 = range
88 = Refuse to Answer
- Q182.** Did you have anal sex with [Response to Q11] before he took the medicine for trichomonas?
- ASXP4B4** 45_4. Anal sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q183.** Did you have anal sex with [Response to Q11] before you finished all of your medication for trichomonas?
- ASXB4IM4** 46_4. Anal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q184.** Since your last visit, how often did you use condoms with [Response to Q11] when you had anal sex?
- FCAX_BP4** 47_4. Frequency of condom use with baseline partner 4 anal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q185.** The last time you had anal sex with [Response to Q11], did you use a condom?
- LXCAXBP4** 48_4. Last time anal sex baseline partner 4 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q186.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q11]? (The type of sex when a man puts his mouth on your vagina.)
- BP4_ORAL** 49_4. Oral sex with baseline partner 4 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q187.** Since your last visit about how many times have you received oral sex from [Response to Q11]?
- FOXP4BP4** 50_4. Frequency of oral sex with baseline partner 4 in past month 2
- 0 - 96 = range
80 = Refuse to Answer
- Q188.** Did you receive oral sex from [Response to Q11] before he took the medicine for trichomonas?
- OSXP4B4** 51_4. Oral sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q189.** Did you receive oral sex from [Response to Q11] before you finished all of your medication for trichomonas?
- OSXB4IM4** 52_4. Oral sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q190.** Since your last visit, how often did you use dental dams with [Response to Q11] when you received oral sex?
- FCOXP4** 53_4. Frequency of dental dam use for oral sex with baseline partner 4 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q191.** The last time you received oral sex from [Response to Q11] did you use a dental dam?
- LXCOXP4** 54_4 Last time oral sex use dental dam 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q192.** Since your last visit on [Response to Q2] have you received oral sex from [Response to Q11]? (The type of sex when a woman puts her mouth on your vagina)
- BP4FORAL** 55_4. Baseline partner 4 female, oral sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q193.** Since your last visit about how many times have you received oral sex from [Response to Q11]?
- BP4FORFQ** 56_4. Frequency oral sex female baseline partner 4 2
- 0 - 96 = range
80 = Refuse to Answer
- Q194.** Did you receive oral sex from [Response to Q11] before she took the medicine for trichomonas?
- OSXFP4B4** 57_4. Oral sex before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q195.** Did you receive oral sex from [Response to Q11] before you finished all of your medication for trichomonas?
- OSXB4MF4** 58_4. Oral sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q196.** Since your last visit how often did you use dental dams with [Response to Q11] when you received oral sex?
- BP4FDDOR** 59_4. Dental dams with female partner 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q197.** The last time you received oral sex from [Response to Q11], did you use a dental dam?
- LBP4ODD** 60_4. Last time use dental dam female partner 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q198.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q11] without washing the sex toy before using it on you or her?
- SXTOYBP4** 61_4. Use Sex Toys baseline partner 4 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q199. About how many times have you used sex toys in this way with [Response to Q11] since your last visit?**
- SXTYFBP4** 62_4. Frequency sex toy with female baseline partner 4 2
- 0 - 80 = range
88 = Refuse to Answer
- Q200. Did you use sex toys in this way with [Response to Q11] before she took the medicine for trichomonas?**
- SXTFP4B4** 63_4. Sex toys before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q201. Did you use sex toys in this way with [Response to Q11] before you finished all of your medication for trichomonas?**
- SXTB4MF4** 64_4. Sex before index finished meds baseline partner 4 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q202. Since your last visit on [Response to Q2], have you or [Response to Q11] touched each other's vagina without washing your fingers before touching the other partner?**
- BP4MAS** 65_4. Touched each other female partner 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q203. About how many times have you or [Response to Q11] touched each other this way since your last visit?**
- FBP4MAS** 66_4. Female baseline partner 4 touched 2
- 0 - 80 = range
88 = Refuse to Answer
- Q204. Did you [Response to Q11] touch each other in this way before she took the medicine for trichomonas?**
- MASFP4B4** 67_4. Touch before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer

Q205.	Did you and [Response to Q10] touch each other in this way before you finished all of your medication for trichomonas4	
	MASB4MF4 68_4. Touch before index finished meds baseline partner 4	1
	0 = No	
	1 = Yes	
	7 = Don't Know	
	8 = Refuse to Answer	
Q206.	Has [Response to Q11] told you that he/she has had an STD since your last visit?	
	PSTD_BP4 69_4. Partner told respondent if they have an STD	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q207.	Since your last visit, how many NEW male sex partners have you had? This should include any men that you had oral, vaginal, or anal sexual contact with . Please include any main or casual partners	
	NWMSXLV 71. New male sex partners since last visit	2
	0 - 50 = range	
	98 = Refuse to Answer	
Q208.	Since your last visit, how many NEW female sex partners have you had? This should include any women that you have had oral, vaginal, or anal sexual contact with. Please include any main or casual partners.	
	NWFSXLV 72. Female sex partners since last visit	2
	0 - 50 = range	
	88 = Refuse to Answer	
Q209.	What is your new partner's name or initials?	
	NPTID_1 73. Partner's name	20
Q210.	What best describes [Response to Q209]'s race?	
	NPRACE_1 74. New partner 1 race	1
	0 = Black/ African-American	
	1 = White/ Caucasian	
	2 = Native American/Alaskan Native	
	3 = Asian/Pacific Islander	
	4 = Hispanic/Latino(a)	
	5 = Other	
	88 = Refuse to Answer	
Q211.	Please specify [Response to Q209]'s race?	
	SRACE_N1 74a. Specified race of new partner 1	50

- Q212. Would you call [Response to Q209] a main (regular) or a casual (non-regular) partner?**
NPREL_1 75. Main or casual partner new partner 1 1
0 = Main
1 = Casual
88 = Refuse to Answer
- Q213. Are you married or living with [Response to Q209]?**
PLIV_N1 76. Living with new partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q214. Is [Response to Q209] HIV-infected?**
NPHIV_1 77. New partner 1 HIV status 1
0 = No
1 = Yes
2 = Not sure but I think infected
3 = Not sure but I think uninfected
88 = Refuse to Answer
- Q215. Have you disclosed your HIV status to [Response to Q209]?**
N1STATUS 78. Discuss HIV status with new partner 1 1
0 = No, this partner doesn't know my status
1 = No, I didn't tell but this partner knows my status
2 = Yes I told this partner my status
88 = Refuse to Answer
- Q216. Did you talk about trichomonas with [Response to Q209]?**
NP1_TV 79. Talk about trich with new partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q217. Did you have sex with [Response to Q209] before you finished taking all of your medication for trichomonas?**
NP1SXB4M 80. Sex before tx with new partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q218. Is [Response to Q209] a**
NPT_GEN 81. Gender of new partner1 1
1 = Male
2 = Female

- Q219.** Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q209]? (The type of sex when a man puts his penis in your vagina.)
- NP1VAG** 82. New partner 1 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q220.** Since your last visit, about how many times have you had vaginal sex with [Response to Q209]?
- NP1VAGFQ** 83. Freq of vaginal sex with new partner 1 2
- 0 - 80 = range
88 = Refuse to Answer
- Q221.** Since your last visit, how often did you use condoms with [Response to Q209] when you had vaginal sex?
- FCVX_N1** 84. Frequency of condom use for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q222.** The last time you had vaginal sex with [Response to Q209], did you use a condom?
- LXCVX_N1** 85. Last time vaginal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q223.** Since your last visit on [Response to Q2], have you had anal sex with [Response to Q209]? (The type of sex when a man puts his penis in your butt.)
- NP1_ANAL** 86. Anal sex with new partner 1 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q224.** Since your last visit, about how many times have you had anal sex with [Response to Q209]?
- FAXP4_N1** 87. Freq of anal sex with new partner 1 2
- 0 - 80 = range
88 = Refuse to Answer

- Q225. Since your last visit, how often did you use condoms with [Response to Q209] when you had anal sex?**
- FCAX_N1** 88. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q226. The last time you had anal sex with [Response to Q209], did you use a condom?**
- LXCAX_N1** 89. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q227. Since your last visit on [Response to Q2], have you received oral sex from [Response to Q209]? (The type of sex when a man puts his mouth on your vagina.)**
- NP1_ORAL** 90. Oral sex with new partner 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q228. Since your last visit, about how many times have you received oral sex from [Response to Q209]?**
- FOXP4_N1** 91. Frequency of oral sex with new partner 1 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q229. Since your last visit, how often did you use dental dams with [Response to Q209] when you received oral sex?**
- FCOX_N1** 92. Frequency of dental dam use for oral sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q230. The last time you received oral sex from [Response to Q209] did you use a dental dam?**
- LXCOX_N1** 93. Last time oral sex use dental dam 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q231.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q209]? (The type of sex when a woman puts her mouth on your vagina)
NP1FORAL 94. New partner 1 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q232.** Since your last visit, about how many times have you received oral sex from [Response to Q209]?
NP1FORFQ 95. Frequency oral sex new female partner 1 2
0 - 80 = range
88 = Refuse to Answer
- Q233.** Since your last visit, how often did you use dental dams with [Response to Q209] when you received oral sex?
NP1FDDOR 96. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q234.** The last time you received oral sex from [Response to Q209], did you use a dental dam?
LNP1ODD 97. Last time use dental dam new female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q235.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q209] without washing the sex toy before using it on you or her?
SX_TOYN1 98. Use sex toys with new partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q236.** About how many times have you used sex toys in this way with [Response to Q209] since your last visit?
SXTOYFN1 99. Frequency sex toy with new female partner 2
0 - 80 = range
88 = Refuse to Answer

- Q237. Since your last visit on [Response to Q2], have you or [Response to Q209] touched each other's vagina without washing your fingers before touching the other partner?**
NP1MAS 100. Touched each other new female partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q238. About how many times have you or [Response to Q209] touched each other this way since your last visit?**
NFP1MAS 101. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer
- Q239. Has [Response to Q209] told you that he/she has had an STD in the past three months?**
NPSTD_1 102. New partner 1 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q240. Have you seen any symptoms or has [Response to Q209] told you that he/she has any symptoms, such as unusual discharge, odor, or painful urination?**
NPT1_SYM 103. Symptoms of new partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q241. Have you had any other new partners since your last visit on [Response to Q2]?**
NONP_1 104. Any other new partners 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q242. What is your new partner's name or initials?**
NPTID_2 73_2. Partner's name 20
- Q243. What best describes [Response to Q242]'s race?**
NPRACE_2 74_2. New partner 2 race 1
0 = Black/ African-American
1 = White/ Caucasian
2 = Native American/Alaskan Native
3 = Asian/Pacific Islander
4 = Hispanic/Latino(a)
5 = Other
88 = Refuse to Answer

- Q244. Please specify [Response to Q242]'s race?**
SRACE_N2 74a_2. Specified race of new partner 2 50
- Q245. Would you call [Response to Q242] a main (regular) or a casual (non-regular) partner?**
NPREL_2 75_2. Main or casual partner new partner 2 1
0 = Main
1 = Casual
88 = Refuse to Answer
- Q246. Are you married or living with [Response to Q242]?**
PLIV_N2 76_2. Living with new partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q247. Is [Response to Q242] HIV-infected?**
NPHIV_2 77_2. New partner 2 HIV status 1
0 = No
1 = Yes
2 = Not sure but I think infected
3 = Not sure but I think uninfected
88 = Refuse to Answer
- Q248. Have you disclosed your HIV status to [Response to Q242]?**
N2STATUS 78_2. Discuss HIV status with new partner 2 1
0 = No, this partner doesn't know my status
1 = No, I didn't tell but this partner knows my status
2 = Yes I told this partner my status
88 = Refuse to Answer
- Q249. Did you talk about trichomonas with [Response to Q242]?**
NP2_TV 79_2. Talk about trich with new partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q250. Did you have sex with [Response to Q242] before you finished taking all of your medication for trichomonas?**
NP2SXB4M 80_2. Sex before tx with new partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q251. Is [Response to Q242] a**
NPT2_GEN 81_2. Gender of new partner2 1
1 = Male
2 = Female
- Q252. Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q242]? (The type of sex when a man puts his penis in your vagina.)**
NP2VAG 82_2. New partner 2 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q253. Since your last visit, about how many times have you had vaginal sex with [Response to Q242]?**
NP2VAGFQ 83_2. Freq of vaginal sex with new partner 2 2
0 - 80 = range
88 = Refuse to Answer
- Q254. Since your last visit, how often did you use condoms with [Response to Q242] when you had vaginal sex?**
FCVX_N2 84_2. Frequency of condom use for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q255. The last time you had vaginal sex with [Response to Q242], did you use a condom?**
LXCVX_N2 85_2. Last time vaginal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q256. Since your last visit on [Response to Q2], have you had anal sex with [Response to Q242]? (The type of sex when a man puts his penis in your butt.)**
NP2_ANAL 86_2. Anal sex with new partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q257. Since your last visit, about how many times have you had anal sex with [Response to Q242]?**
FAXP4_N2 87_2. Freq of anal sex with new partner 2 2
0 - 80 = range
88 = Refuse to Answer

- Q258.** Since your last visit, how often did you use condoms with [Response to Q242] when you had anal sex?
FCAX_N2 88_2. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q259.** The last time you had anal sex with [Response to Q242], did you use a condom?
LXCAX_N2 89_2. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q260.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q242]? (The type of sex when a man puts his mouth on your vagina.)
NP2_ORAL 90_2. Oral sex with new partner 2 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q261.** Since your last visit, about how many times have you received oral sex from [Response to Q242]?
FOXP4_N2 91_2. Frequency of oral sex with new partner 2 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q262.** Since your last visit, how often did you use dental dams with [Response to Q242] when you received oral sex?
FCOX_N2 92_2. Frequency of dental dam use for oral sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q263.** The last time you received oral sex from [Response to Q242] did you use a dental dam?
LXCOX_N2 93_2. Last time oral sex use dental dam 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q264.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q242]? (The type of sex when a woman puts her mouth on your vagina)
NP2FORAL 94_2. New partner 2 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q265.** Since your last visit, about how many times have you received oral sex from [Response to Q242]?
NP2FORFQ 95_2. Frequency oral sex new female partner 2 2
0 - 80 = range
88 = Refuse to Answer
- Q266.** Since your last visit, how often did you use dental dams with [Response to Q242] when you received oral sex?
NP2FDDOR 96_2. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q267.** The last time you received oral sex from [Response to Q242], did you use a dental dam?
LNP2ODD 97_2. Last time use dental dam new female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q268.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q242] without washing the sex toy before using it on you or her?
SX_TOYN2 98_2. Use sex toys with new partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q269.** About how many times have you used sex toys in this way with [Response to Q242] since your last visit?
SXTOYFN2 99_2. Frequency sex toy with new female partner 2
0 - 80 = range
88 = Refuse to Answer

- Q270. Since your last visit on [Response to Q2], have you or [Response to Q242] touched each other's vagina without washing your fingers before touching the other partner?**
NP2MAS 100_2. Touched each other new female partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q271. About how many times have you or [Response to Q242] touched each other this way since your last visit?**
NFP2MAS 101_2. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer
- Q272. Has [Response to Q242] told you that he/she has had an STD in the past three months?**
NPSTD_2 102_2. New partner 2 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q273. Have you seen any symptoms or has [Response to Q242] told you that he/she has any symptoms, such as unusual discharge, odor, or painful urination?**
NPT2_SYM 103_2. Symptoms of new partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q274. Have you had any other new partners since your last visit on [Response to Q2]?**
NONP_2 104_2. Any other new partners 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q275. What is your new partner's name or initials?**
NPTID_3 73_3. Partner's name 20
- Q276. What best describes [Response to Q275]'s race?**
NPRACE_3 74_3. New partner 3 race 1
0 = Black/ African-American
1 = White/ Caucasian
2 = Native American/Alaskan Native
3 = Asian/Pacific Islander
4 = Hispanic/Latino(a)
5 = Other
88 = Refuse to Answer

Q277.	Please specify [Response to Q275]'s race?	
	SRACE_N3 74a_3. Specified race of new partner 3	50
Q278.	Would you call [Response to Q275] a main (regular) or a casual (non-regular) partner?	
	NPREL_3 75_3. Main or casual partner new partner 3	1
	0 = Main	
	1 = Casual	
	88 = Refuse to Answer	
Q279.	Are you married or living with [Response to Q275]?	
	PLIV_N3 76_3. Living with new partner 3	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q280.	Is [Response to Q275] HIV-infected?	
	NP HIV_3 77_3. New partner 3 HIV status	1
	0 = No	
	1 = Yes	
	2 = Not sure but I think infected	
	3 = Not sure but I think uninfected	
	88 = Refuse to Answer	
Q281.	Have you disclosed your HIV status to [Response to Q275]?	
	N3STATUS 78_3. Discuss HIV status with new partner 3	1
	0 = No, this partner doesn't know my status	
	1 = No, I didn't tell but this partner knows my status	
	2 = Yes I told this partner my status	
	88 = Refuse to Answer	
Q282.	Did you talk about trichomonas with [Response to Q275]?	
	NP3_TV 79_3. Talk about trich with new partner 3	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q283.	Did you have sex with [Response to Q275] before you finished taking all of your medication for trichomonas?	
	NP3SXB4M 80_3. Sex before tx with new partner 3	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	

- Q284. Is [Response to Q275]**
NPT3_GEN 81_3. Gender of new partner3 1
1 = Male
2 = Female
- Q285. Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q275]? (The type of sex when a man puts his penis in your vagina.)**
NP3VAG 82_3. New partner 3 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q286. Since your last visit, about how many times have you had vaginal sex with [Response to Q275]?**
NP3VAGFQ 83_3. Freq of vaginal sex with new partner 3 2
0 - 80 = range
88 = Refuse to Answer
- Q287. Since your last visit, how often did you use condoms with [Response to Q275] when you had vaginal sex?**
FCVX_N3 84_3. Frequency of condom use for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q288. The last time you had vaginal sex with [Response to Q275], did you use a condom?**
LXCVX_N3 85_3. Last time vaginal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q289. Since your last visit on [Response to Q2], have you had anal sex with [Response to Q275]? (The type of sex when a man puts his penis in your butt.)**
NP3_ANAL 86_3. Anal sex with new partner 3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q290. Since your last visit, about how many times have you had anal sex with [Response to Q275]?**
FAXP4_N3 87_3. Freq of anal sex with new partner 3 2
0 - 80 = range
88 = Refuse to Answer

- Q291.** Since your last visit, how often did you use condoms with [Response to Q275] when you had anal sex?
FCAX_N3 88_3. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q292.** The last time you had anal sex with [Response to Q275], did you use a condom?
LXCAX_N3 89_3. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q293.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q275]? (The type of sex when a man puts his mouth on your vagina.)
NP3_ORAL 90_3. Oral sex with new partner 3 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q294.** Since your last visit, about how many times have your received oral sex from [Response to Q275]?
FOXP4_N3 91_3. Frequency of oral sex with new partner 3 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q295.** Since your last visit, how often did you use dental dams with [Response to Q275] when you received oral sex?
FCOX_N3 92_3. Frequency of dental dam use for oral sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q296.** The last time you received oral sex from [Response to Q275] did you use a dental dam?
LXCOC_N3 93_3. Last time oral sex use dental dam 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q297.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q275]? (The type of sex when a woman puts her mouth on your vagina)
NP3FORAL 94_3. New partner 3 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q298.** Since your last visit, about how many times have you received oral sex from [Response to Q275]?
NP3FORFQ 95_3. Frequency oral sex new female partner 3 2
0 - 80 = range
88 = Refuse to Answer
- Q299.** Since your last visit, how often did you use dental dams with [Response to Q275] when you received oral sex?
NP3FDDOR 96_3. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q300.** The last time you received oral sex from [Response to Q275], did you use a dental dam?
LNP3ODD 97_3. Last time use dental dam new female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q301.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q275] without washing the sex toy before using it on you or her?
SX_TOYN3 98_3. Use sex toys with new partner 3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q302.** About how many times have you used sex toys in this way with [Response to Q275] since your last visit?
SXTOYFN3 99_3. Frequency sex toy with new female partner 2
0 - 80 = range
88 = Refuse to Answer

- Q303.** Since your last visit on [Response to Q2], have you or [Response to Q275] touched each other's vagina without washing your fingers before touching the other partner?
NP3MAS 100_3. Touched each other new female partner 3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q304.** About how many times have you or [Response to Q275] touched each other this way since your last visit?
NFP3MAS 101_3. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer
- Q305.** Has [Response to Q275] told you that he/she has had an STD in the past three months?
NPSTD_3 102_3. New partner 3 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q306.** Have you seen any symptoms or has [Response to Q275] told you that he/she has any symptoms, such as unusual discharge, odor, or painful urination?
NPT3_SYM 103_3. Symptoms of new partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q307.** Have you had any other new partners since your last visit on [Response to Q2]?
NONP_3 104_3. Any other new partners 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q308.** What is your new partner's name or initials?
NPTID_4 73_4. Partner's name 20
- Q309.** What best describes [Response to Q308]'s race?
NPRACE_4 74_4. New partner 4 race 1
0 = Black/ African-American
1 = White/ Caucasian
2 = Native American/Alaskan Native
3 = Asian/Pacific Islander
4 = Hispanic/Latino(a)
5 = Other
88 = Refuse to Answer

Q310.	Please specify [Response to Q308]'s race?	50
	SRACE_N4 74a_4. Specified race of new partner 4	
Q311.	Would you call [Response to Q308] a main (regular) or a casual (non-regular) partner?	1
	NPREL_4 75_4. Main or casual partner new partner 4	
	0 = Main	
	1 = Casual	
	88 = Refuse to Answer	
Q312.	Are you married or living with [Response to Q308]?	1
	PLIV_N4 76_4. Living with new partner 4	
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q313.	Is [Response to Q308] HIV-infected?	1
	NPHIV_4 77_4. New partner 4 HIV status	
	0 = No	
	1 = Yes	
	2 = Not sure but I think infected	
	3 = Not sure but I think uninfected	
	88 = Refuse to Answer	
Q314.	Have you disclosed your HIV status to [Response to Q308]?	1
	N4STATUS 78_4. Discuss HIV status with new partner 4	
	0 = No, this partner doesn't know my status	
	1 = No, I didn't tell but this partner knows my status	
	2 = Yes I told this partner my status	
	88 = Refuse to Answer	
Q315.	Did you talk about trichomonas with [Response to Q308]?	1
	NP4_TV 79_4. Talk about trich with new partner 4	
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q316.	Did you have sex with [Response to Q308] before you finished taking all of your medication for trichomonas?	1
	NP4SXB4M 80_4. Sex before tx with new partner 4	
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	

- Q317. Is [Response to Q308] a**
NPT4_GEN 81_4. Gender of new partner 4 1
1 = Male
2 = Female
- Q318. Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q308]? (The type of sex when a man puts his penis in your vagina.)**
NP4VAG 82_4. New partner 4 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q319. Since your last visit, about how many times have you had vaginal sex with [Response to Q308]?**
NP4VAGFQ 83_4. Freq of vaginal sex with new partner 4 2
0 - 80 = range
88 = Refuse to Answer
- Q320. Since your last visit, how often did you use condoms with [Response to Q308] when you had vaginal sex?**
FCVX_N4 84_4. Frequency of condom use for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q321. The last time you had vaginal sex with [Response to Q308], did you use a condom?**
LXCVX_N4 85_4. Last time vaginal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q322. Since your last visit on [Response to Q2], have you had anal sex with [Response to Q308]? (The type of sex when a man puts his penis in your butt.)**
NP4_ANAL 86_4. Anal sex with new partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q323. Since your last visit, about how many times have you had anal sex with [Response to Q308]?**
FAXP4_N4 87_4. Freq of anal sex with new partner 4 2
0 - 80 = range
88 = Refuse to Answer

- Q324.** Since your last visit, how often did you use condoms with [Response to Q308] when you had anal sex?
FCAX_N4 88_4. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q325.** The last time you had anal sex with [Response to Q308], did you use a condom?
LXCAX_N4 89_4. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q326.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q308]? (The type of sex when a man puts his mouth on your vagina.)
NP4_ORAL 90_. Oral sex with new partner 4 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q327.** Since your last visit, about how many times have your received oral sex from [Response to Q308]?
FOXP4_N4 91_4. Frequency of oral sex with new partner 4 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q328.** Since your last visit, how often did you use dental dams with [Response to Q308] when you received oral sex?
FCOX_N4 92_4. Frequency of dental dam use for oral sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q329.** The last time you received oral sex from [Response to Q308] did you use a dental dam?
LXCOX_N4 93_4. Last time oral sex use dental dam 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q330.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q308]? (The type of sex when a woman puts her mouth on your vagina)
NP4FORAL 94_4. New partner 4 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q331.** Since your last visit, about how many times have you received oral sex from [Response to Q308]?
NP4FORFQ 95_4. Frequency oral sex new female partner 4 2
0 - 80 = range
88 = Refuse to Answer
- Q332.** Since your last visit, how often did you use dental dams with [Response to Q308] when you received oral sex?
NP4FDDOR 96_4. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q333.** The last time you received oral sex from [Response to Q308], did you use a dental dam?
LNP4ODD 97_4. Last time use dental dam new female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q334.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q308] without washing the sex toy before using it on you or her?
SX_TOYN4 98_4. Use sex toys with new partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q335.** About how many times have you used sex toys in this way with [Response to Q308] since your last visit?
SXTOYFN4 99_4. Frequency sex toy with new female partner 2
0 - 80 = range
88 = Refuse to Answer

- Q336.** Since your last visit on [Response to Q2], have you or [Response to Q308] touched each other's vagina without washing your fingers before touching the other partner?
NP4MAS 100_4. Touched each other new female partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q337.** About how many times have you or [Response to Q308] touched each other this way since your last visit?
NFP4MAS 101_4. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer
- Q338.** Has [Response to Q308] told you that he/she has had an STD in the past three months?
NPSTD_4 102_4. New partner 4 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q339.** Have you seen any symptoms or has [Response to Q308] told you that he/she has any symptoms, such as unusual discharge, odor, or painful urination?
NPT4_SYM 103_4. Symptoms of new partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q340.** Did participant complete the ACASI interview
ACASI 105. Help with interview 1
0 = With no or minimal assistance from study staff
1 = With assistance from study staff
2 = Study staff entered all the participants responses in ACASI
- Q341.** Interviewer's initials
STAFF 106. Staff completing interview 20

Appendix C. Three Month Survey

Q1.	Study site			1
	SITE	1. Site	<p>0 = Jackson -- Crossroads 1 = HOP -- Hutchinson 2 = Houston - St Thomas Street 3 = Houston - Northwest</p>	
Q2.	Date of baseline interview			8
	BASEDTE	2. Baseline interview date	<p>2/1/2006 - 12/31/2011 = mm/dd/yyyy 2097 = Don't Know (Year) 2098 = Refuse to Answer (Year) 2099 = Not Applicable (Year)</p>	
Q3.	Date of test of cure interview			8
	TOCDTE	3. Test of cure interview date	<p>2/1/2006 - 12/31/2011 = mm/dd/yyyy 2099 = Not Applicable (Year)</p>	
Q4.	Interview date			8
	DATE	4. Interview Date	<p>2/1/2006 - 12/31/2011 = mm/dd/yyyy</p>	
Q5.	Study ID number			4
	STUDYID	5. Study ID	<p>1 - 5000 = range</p>	
Q6.	Clinic ID number			10
	CLINICID	6. Clinic ID		
Q7.	TV results at this visit			1
	TVRES	7. Trich results at visit	<p>0 = Negative 1 = Positive by wet prep 2 = Positive by culture 3 = Specimen error</p>	
Q8.	Number of baseline or new test of cure partners (up to 8)			1
	BSTCPART	8. Number of baseline and TOC partners	<p>0 - 8 = range</p>	

- Q9.** Name of baseline partner if he was given meds OR name of new partner at TOC (leave blank and press "enter" if none). Name must be written EXACTLY as written by participant in the baseline or TOC survey.
BSTC_P1 9. Baseline gave meds or TOC new partner 20
- Q10.** Name of baseline partner if he was given meds OR name of new partner at TOC (leave blank and press "enter" if none). Name must be written EXACTLY as written by participant in the baseline or TOC survey.
BSTC_P2 10. Baseline gave meds or TOC new partner 20
- Q11.** Name of baseline partner if he was given meds OR name of new partner at TOC (leave blank and press "enter" if none). Name must be written EXACTLY as written by participant in the baseline or TOC survey.
BSTC_P3 11. Baseline gave meds or TOC new partner 20
- Q12.** Name of baseline partner if he was given meds OR name of new partner at TOC (leave blank and press "enter" if none). Name must be written EXACTLY as written by participant in the baseline or TOC survey.
BSTC_P4 12. Baseline gave meds or TOC new partner 20
- Q13.** Name of baseline partner if he was given meds OR name of new partner at TOC (leave blank and press "enter" if none). Name must be written EXACTLY as written by participant in the baseline or TOC survey.
BSTC_P5 13. Baseline gave meds or TOC new partner 20
- Q14.** Name of baseline partner if he was given meds OR name of new partner at TOC (leave blank and press "enter" if none). Name must be written EXACTLY as written by participant in the baseline or TOC survey.
BSTC_P6 14. Baseline gave meds or TOC new partner 20
- Q15.** Name of baseline partner if he was given meds OR name of new partner at TOC (leave blank and press "enter" if none). Name must be written EXACTLY as written by participant in the baseline or TOC survey.
BSTC_P7 15. Baseline gave meds or TOC new partner 20
- Q16.** Name of baseline partner if he was given meds OR name of new partner at TOC (leave blank and press "enter" if none). Name must be written EXACTLY as written by participant in the baseline or TOC survey.
BSTC_P8 16. Baseline gave meds or TOC new partner 20
- Q17.** Name of baseline partner if index reported at TOC interview that he did not get meds OR the index did not attend TOC interview (leave blank and press "enter" if not applicable). Name must be written EXACTLY as written by participant in the baseline survey.
BSNM_P1 17. Baseline no gave meds partner 20

Q18.	Name of baseline partner if index reported at TOC interview that he did not get meds OR the index did not attend TOC interview (leave blank and press "enter" if not applicable). Name must be written EXACTLY as written by participant in the baseline survey.		
	BSNM_P2	18. Baseline no gave meds partner	20
Q19.	Name of baseline partner if index reported at TOC interview that he did not get meds OR the index did not attend TOC interview (leave blank and press "enter" if not applicable). Name must be written EXACTLY as written by participant in the baseline survey.		
	BSNM_P3	19. Baseline no gave meds partner	20
Q20.	Name of baseline partner if index reported at TOC interview that he did not get meds OR the index did not attend TOC interview (leave blank and press "enter" if not applicable). Name must be written EXACTLY as written by participant in the baseline survey.		
	BSNM_P4	20. Baseline no gave meds partner	20
Q21.	Which arm was the patient randomized to?		
	ARM	21. Randomization arm	1
		0 = 2 gm stat dose	
		1 = 500 mg 7-Day dose	
Q22.	What is your main type of health insurance?		
	INS	22. Health Insurance	1
		0 = I don't have any health insurance	
		1 = Medicaid	
		2 = Medicare	
		3 = Private insurance, HMO, private managed care	
		4 = Other	
		99 = Don't Know	
		88 = Refuse to Answer	
Q23.	Would you please specify what type of health insurance you have?		
	SPEC_INS	22a. Specified Health Insurance	50

Q24.	What best describes your living situation?			
HSE	23. Living Situation			1
		0 =	I live in an apartment or house that I rent	
		1 =	I live in an apartment or house that I own	
		2 =	I live with family or friends and don't pay rent	
		3 =	I am homeless right now (live in a shelter, a car, a mission, or on the streets)	
		4 =	I live in a group home, a half-way house or some other residential facility	
		5 =	I live in a hospice, a nursing home, an inpatient treatment center, or some other health care facility	
		6 =	I live in a trailer or temporary housing because of the hurricanes	
		7 =	Other	
		88 =	Refuse to Answer	
Q25.	Please specify what best describes your current living situation.			
SPEC_HSE	23a. Specified living			200
Q26.	Are you currently (check all that apply)			
EMPLOYA	24. Employment: A student			1
		0 =	No	
		1 =	Yes	
		8 =	Refuse to Answer	
EMPLOYB	24. Employment: Employed full-time			1
		0 =	No	
		1 =	Yes	
		8 =	Refuse to Answer	
EMPLOYC	24. Employment: Employed part-time			1
		0 =	No	
		1 =	Yes	
		8 =	Refuse to Answer	
EMPLOYD	24. Employment: Unemployed			1
		0 =	No	
		1 =	Yes	
		8 =	Refuse to Answer	

- Q27. What best describes you current cigarette smoking?** 1
- SMK** 25. Smoked Cigarettes
- 0 = I don't smoke cigarettes at all
 - 1 = I only smoke every once in a while
 - 2 = I regularly smoke less than a pack a day
 - 3 = I regularly smoke about a pack a day or more
 - 88 = Refuse to Answer
- Q28. What best describes the number of days you drank alcohol in the past week (this means at least one drink of beer, wine, or liquor)?** 1
- WEEK1** 26. Number of days drank alcohol is past week
- 0 = None (I didn't drink in the last week)
 - 1 = 1 day
 - 2 = 2 days
 - 3 = 3 days
 - 4 = 4 days
 - 5 = 5 days
 - 6 = 6 days
 - 7 = all 7 days
 - 88 = Refuse to Answer
- Q29. On the days that you drank alcohol in the past week, about (on average) how many drinks did you have per day?** 1
- WEEK2** 27. Drinks per day in the past week
- 0 = 1 drink
 - 1 = 2 to 3 drinks
 - 2 = 4 to 6 drinks
 - 3 = more than 6 drinks
 - 88 = Refuse to Answer
- Q30. In the last week, how often did you drink 4 or more drinks at the same time or within a 2 hour time period?** 1
- WEEK4DRI** 28. How often had ≥ 4 drinks in past week
- 0 = Never
 - 1 = 1 day
 - 2 = 2 days
 - 3 = 3 days
 - 4 = 4 days
 - 5 = 5 days
 - 6 = 6 days
 - 7 = Everyday
 - 88 = Refuse to Answer
- Q31. How many drinks have you had in the past 24 hours?** 3
- DRINKS24** 29. Number of drinks in last 24 hours
- 0 - 100 = range
 - 88 = Refuse to Answer

Q32. Which birth control methods do you currently use? (check all that apply)

BCM_A	30. Birth control method: None	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_B	30. Birth control method: Male condoms (the type that the man wears)	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_C	30. Birth control method: Female condoms (the type the woman wears)	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_D	30. Birth control method: Depo-provera/ The shot	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_E	30. Birth control method: Birth control pills/ The pill	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_F	30. Birth control method: Norplant	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_G	30. Birth control method: IUD	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_H	30. Birth control method: Foam/ Insertable films/ Spermicidal creams	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_I	30. Birth control method: The patch	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	

BCM_J	30. Birth control method: Nuvaring	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_K	30. Birth control method: Withdrawal (when the man pulls out before he ejaculates)	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_L	30. Birth control method: I am abstinent/ Not sexually active	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
BCM_M	30. Birth control method: Other	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q33.	Please specify the other kind of birth control method you currently use?	
SPEC_BC	30a. Specified Birth control	200
Q34.	Are you currently on hormone replacement therapy (HRT)?	
HRT	31. HRT	1
	0 = No	
	1 = Yes	
	9 = Don't Know	
	8 = Refuse to Answer	
Q35.	Do you douche?	
DCHE	32. Douche	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q36.	When was the last time you douched?	
LT_DCHE	33. Last time douched	1
	0 = Today	
	1 = Yesterday	
	2 = 3 to 30 days ago	
	3 = More than a month ago	
	88 = Refuse to Answer	

Q37.	In the past week, have you had any (check all that apply)		
<i>SYMPT_A</i>	34. Symptoms: unusual vaginal discharge		1
	0 = No		
	1 = Yes		
	8 = Refuse to Answer		
<i>SYMPT_B</i>	34. Symptoms: unusual vaginal odor		1
	0 = No		
	1 = Yes		
	8 = Refuse to Answer		
<i>SYMPT_C</i>	34. Symptoms: unusual vaginal itching or irritation		1
	0 = No		
	1 = Yes		
	8 = Refuse to Answer		
<i>SYMPT_D</i>	34. Symptoms: pain while urinating		1
	0 = No		
	1 = Yes		
	8 = Refuse to Answer		
<i>SYMPT_E</i>	34. Symptoms: pelvic pain		1
	0 = No		
	1 = Yes		
	8 = Refuse to Answer		
<i>SYMPT_F</i>	34. Symptoms: other unusual vaginal problems		1
	0 = No		
	1 = Yes		
	8 = Refuse to Answer		
<i>SYMPT_G</i>	34. Symptoms: I have not had any vaginal problems in the past week		1
	0 = No		
	1 = Yes		
	8 = Refuse to Answer		
Q38.	Please specify what other unusual vaginal problems you have had in the past week.		
<i>SPEC_VP</i>	34a. Specified vaginal problems		200

- Q39. Since you were given metronidazole by this clinic on [Response to Q2], have you received and taken metronidazole for any other reason?**
- MOREMT** 35. Taken more metronidazole since last visit 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q40. When was the last time you received and took another dose of metronidazole since that visit?**
- WHENMT** 36. When took metronidazole since last visit 200
- Q41. Did you tell [Response to Q17] about your trichomonas infection?**
- TELL_P1** 37. Tell baseline no give meds partner 1 about TV 1
- 0 = No
1 = Yes
8 = Refuse to Answer
9 = Not Applicable
- Q42. Did you give [Response to Q17] the trichomonas medication the clinic gave you to give to him/ her?**
- GIVE_P1** 38. Give baseline no give med partner 1 medication 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q43. Why didn't you give [Response to Q17] the medicine? (check all that apply)**
- WHYNOP1A** 39. Why didn't give baseline partner 1 meds: I didn't want to 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP1B** 39. Why didn't give baseline partner 1 meds: I was afraid of his/her reaction 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP1C** 39. Why didn't give baseline partner 1 meds: I didn't want to see him/her again 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP1D** 39. Why didn't give baseline partner 1 meds: I couldn't get in touch with him/her 1
- 0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP1E 39. Why didn't give baseline partner 1 meds: I lost the medicine 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP1F 39. Why didn't give baseline partner 1 meds: He/ she got medication for trichomonas from another place 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP1G 39. Why didn't give baseline partner 1 meds: Other 1
0 = No
1 = Yes
8 = Refuse to Answer

Q44. Please specify why you didn't give [Response to Q17] the medicine.
NOP1_OTH 39a. Specified why not give baseline partner 1 meds 200

Q45. When did you give [Response to Q17] the medicine?
WHTXP1 40. When give baseline partner 1 meds 1
0 = Between 3-4 weeks after I got it from the clinic
1 = Between 1-2 months after I got it from the clinic
2 = Between 2-3 months after I got it from the clinic
3 = More than 3 months after I got it from the clinic
4 = Other
7 = Don't Know
88 = Refuse to Answer

Q46. Please specify when you gave [Response to Q17] the medication.
WHNP1OT 40a. Specified when gave baseline partner 1 meds 8
Unlimited - Unlimited = mm/dd/yyyy
2097 = Don't Know (Year)
2098 = Refuse to Answer (Year)
2099 = Not Applicable (Year)

Q47. Why did you wait to give [Response to Q17] the trichomonas medication?
WAITMD1A 41. Why wait give meds: I didn't want to see him/her before then 1
0 = No
1 = Yes
8 = Refuse to Answer

WAITMD1B 41. Why wait give meds: I was afraid of his/her reaction 1
0 = No
1 = Yes
8 = Refuse to Answer

WAITMD1C 41. Why wait give meds: I couldn't get in touch with him/her 1
0 = No
1 = Yes
8 = Refuse to Answer

WAITMD1D 41. Why wait give meds: He/she was out of town 1
0 = No
1 = Yes
8 = Refuse to Answer

WAITMD1E 41. Why wait give meds: Other 1
0 = No
1 = Yes
8 = Refuse to Answer

Q48. Please specify why you waited to give [Response to Q17] the medicine.

WTMED10 41a. Specified why wait give baseline partner 1 meds 200

Q49. What happened after you gave [Response to Q17] the medicine?

AFTTXP1 42. Happened after giving baseline partner 1 meds 1
0 = I saw him/ her take the medicine
1 = He/ she told me they took the medicine but I didn't watch them take it
2 = He/ she told me that they did not take the medicine
3 = I never talked about the medicine with this partner after I gave it to him/ her.
8 = Refuse to Answer

Q50. How sure are you that [Response to Q17] took the medicine?

SUREP1 43. How sure baseline partner 1 took meds 1
0 = Not at all sure
1 = Somewhat sure
2 = Very sure
8 = Refuse to Answer

- Q51. Did [Response to Q17] tell you that he/she had symptoms or did you see any symptoms related to trichomonas such as unusual discharge, odor, or pain while urinating?**
P1SYMP 44. Symptoms of baseline partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q52. Did [Response to Q17] tell you that he/ she went to a doctor or clinic after you told them about your infection or gave him/her the medicine?**
P1CLINIC 45. Did baseline partner 1 go to clinic after 1
0 = No
1 = Yes
2 = I never told this partner about the infection or gave the medicine
8 = Refuse to Answer
- Q53. Is [Response to Q17] a**
BP1_GEN 46. Gender of baseline partner 1 1
1 = Male
2 = Female
- Q54. Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q17]? (The type of sex when a man puts his penis in your vagina.)**
BP1VAG 47. Baseline partner 1 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q55. Since your last visit about how many times have you had vaginal sex with [Response to Q17]?**
BP1VAGFQ 48. Freq of vaginal sex with baseline partner 1 2
0 - 80 = range
88 = Refuse to Answer
- Q56. Did you have vaginal sex with [Response to Q17] before he took the medicine for trichomonas?**
VSXP1B4 49. Vaginal sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer

- Q57. Did you have vaginal sex with [Response to Q17] before you finished all of your medication for trichomonas?**
- VSXB4IM1** 50. Vaginal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q58. Since your last visit, how often did you use condoms with [Response to Q17] when you had vaginal sex?**
- FCVX_BP1** 51. Frequency of condom use with baseline partner 1 for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q59. The last time you had vaginal sex with [Response to Q17], did you use a condom?**
- LXCVXBP1** 52. Last time vaginal sex baseline partner 1 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q60. Since your last visit on [Response to Q2], have you had anal sex with [Response to Q17]? (The type of sex when a man puts his penis in your butt.)**
- BP1_ANAL** 53. Anal sex with partner 1 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q61. Since your last visit, about how many times have you had anal sex with [Response to Q17]?**
- FAXP4BP1** 54. Freq of anal sex with baseline partner 1 2
- 0 - 80 = range
88 = Refuse to Answer
- Q62. Did you have anal sex with [Response to Q17] before he took the medicine for trichomonas?**
- ASXP1B4** 55. Anal sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer

- Q63. Did you have anal sex with [Response to Q17] before you finished all of your medication for trichomonas?**
- ASXB4IM1** 56. Anal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q64. Since your last visit, how often did you use condoms with [Response to Q17] when you had anal sex?**
- FCAX_BP1** 57. Frequency of condom use with baseline partner 1 anal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q65. The last time you had anal sex with [Response to Q17], did you use a condom?**
- LXCAXBP1** 58. Last time anal sex baseline partner 1 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q66. Since your last visit on [Response to Q2], have you received oral sex from [Response to Q17]? (The type of sex when a man puts his mouth on your vagina.)**
- BP1_ORAL** 59. Oral sex with baseline partner 1 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q67. Since your last visit about how many times have your received oral sex from [Response to Q17]?**
- FOXP4BP1** 60. Frequency of oral sex with baseline partner 1 in past month 2
- 0 - 96 = range
80 = Refuse to Answer
- Q68. Did you receive oral sex from [Response to Q17] before he took the medicine for trichomonas?**
- OSXP1B4** 61. Oral sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer

- Q69. Did you receive oral sex from [Response to Q17] before you finished all of your medication for trichomonas?**
OSXB4IM1 62. Oral sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q70. Since your last visit, how often did you use dental dams with [Response to Q17] when you received oral sex?**
FCOXP1 63. Frequency of dental dam use for oral sex with baseline partner 1 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q71. The last time you received oral sex from [Response to Q17] did you use a dental dam?**
LXCOXP1 64. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q72. Since your last visit on [Response to Q2] have you received oral sex from [Response to Q17]? (The type of sex when a woman puts her mouth on your vagina)**
BP1FORAL 65. Baseline partner 1 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q73. Since your last visit about how many times have you received oral sex from [Response to Q17]?**
BP1FORFQ 66. Frequency oral sex female baseline partner 1 2
0 - 96 = range
80 = Refuse to Answer
- Q74. Did you receive oral sex from [Response to Q17] before she took the medicine for trichomonas?**
OSXFP1B4 67. Oral sex before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer

- Q75. Did you receive oral sex from [Response to Q17] before you finished all of your medication for trichomonas?**
OSXB4MF1 68. Oral sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q76. Since your last visit how often did you use dental dams with [Response to Q17] when you received oral sex?**
BP1FDDOR 69. Dental dams with female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q77. The last time you received oral sex from [Response to Q17], did you use a dental dam?**
LBP1ODD 70. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q78. Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q17] without washing the sex toy before using it on you or her?**
SXTOYBP1 71. Use Sex Toys baseline partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q79. About how many times have you used sex toys in this way with [Response to Q17] since your last visit?**
SXTYFBP1 72. Frequency sex toy with female baseline partner1 2
0 - 80 = range
88 = Refuse to Answer
- Q80. Did you use sex toys in this way with [Response to Q17] before she took the medicine for trichomonas?**
SXTFP1B4 73. Sex toys before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer

- Q81. Did you use sex toys in this way with [Response to Q17] before you finished all of your medication for trichomonas?**
SXTB4MF1 74. Sex before index finished meds baseline partner 1 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q82. Since your last visit on [Response to Q2], have you or [Response to Q17] touched each other's vagina without washing your fingers before touching the other partner?**
BP1MAS 75. Touched each other female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q83. About how many times have you or [Response to Q17] touched each other this way since your last visit?**
FBP1MAS 76. Female baseline partner 1 touched 2
0 - 80 = range
88 = Refuse to Answer
- Q84. Did you and [Response to Q17] touch each other in this way before she took the medicine for trichomonas?**
MASFP1B4 77. Touch before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q85. Did you and [Response to Q17] touch each other in this way before you finished all of your medication for trichomonas?**
MASB4MF1 78. Touch before index finished meds baseline partner 1 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q86. Has [Response to Q17] told you that he/she has had an STD since your last visit?**
PSTD_BP1 79. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q87. Did you tell [Response to Q18] about your trichomonas infection?**
- TELL_P2** 37. Tell baseline no give meds partner 2 about TV 1
- 0 = No
1 = Yes
8 = Refuse to Answer
9 = Not Applicable
- Q88. Did you give [Response to Q18] the trichomonas medication the clinic gave you to give to him/ her?**
- GIVE_P2** 38. Give baseline no give med partner 2 medication 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q89. Why didn't you give [Response to Q18] the medicine? (check all that apply)**
- WHYNOP2A** 39. Why didn't give baseline partner 2 meds: I didn't want to 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP2B** 39. Why didn't give baseline partner 2 meds: I was afraid of his/her reaction 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP2C** 39. Why didn't give baseline partner 2 meds: I didn't want to see him/her again 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP2D** 39. Why didn't give baseline partner 2 meds: I couldn't get in touch with him/her 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP2E** 39. Why didn't give baseline partner 2 meds: I lost the medicine 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP2F** 39. Why didn't give baseline partner 2 meds: He/ she got medication for trichomonas from another place 1
- 0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP2G 39. Why didn't give baseline partner 2 meds: Other 1
0 = No
1 = Yes
8 = Refuse to Answer

Q90. Please specify why you didn't give [Response to Q18] the medicine.
NOP2_OTH 39a. Specified why not give baseline partner 2 meds 200

Q91. When did you give [Response to Q18] the medicine?
WHTXP2 40. When give baseline partner 2 meds 1
0 = Between 3-4 weeks after I got it from the clinic
1 = Between 1-2 months after I got it from the clinic
2 = Between 2-3 months after I got it from the clinic
3 = More than 3 months after I got it from the clinic
4 = Other
7 = Don't Know
88 = Refuse to Answer

Q92. Please specify when you gave [Response to Q18] the medication.
WHNP2OT 40a. Specified when gave baseline partner 2 meds 200

Q93. Why did you wait to give [Response to Q18] the trichomonas medication?
WAITMD2A 41. Why wait give meds: I didn't want to see him/her before then 1
0 = No
1 = Yes
8 = Refuse to Answer

WAITMD2B 41. Why wait give meds: I was afraid of his/her reaction 1
0 = No
1 = Yes
8 = Refuse to Answer

WAITMD2C 41. Why wait give meds: I couldn't get in touch with him/her 1
0 = No
1 = Yes
8 = Refuse to Answer

WAITMD2D 41. Why wait give meds: He/she was out of town 1
0 = No
1 = Yes
8 = Refuse to Answer

	WAITMD2E	41. Why wait give meds: Other	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q94.		Please specify why you waited to give [Response to Q18] the medicine.	
	WTMD2O	41a. Specified why wait give baseline partner 2 meds	200
Q95.		What happened after you gave [Response to Q18] the medicine?	
	AFTTXP2	42. Happened after giving baseline partner2 meds	1
		0 = I saw him/ her take the medicine	
		1 = He/ she told me they took the medicine but I didn't watch them take it	
		2 = He/ she told me that they did not take the medicine	
		3 = I never talked about the medicine with this partner after I gave it to him/ her.	
		8 = Refuse to Answer	
Q96.		How sure are you that [Response to Q18] took the medicine?	
	SUREP2	43. How sure baseline partner 2 took meds	1
		0 = Not at all sure	
		1 = Somewhat sure	
		2 = Very sure	
		8 = Refuse to Answer	
Q97.		Did [Response to Q18] tell you that he/she had symptoms or did you see any symptoms related to trichomonas such as unusual discharge, odor, or pain while urinating?	
	P2SYMP	44. Symptoms of baseline partner 2	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q98.		Did [Response to Q18] tell you that he/ she went to a doctor or clinic after you told them about your infection or gave him/her the medicine?	
	P2CLINIC	45. Did baseline partner 2 go to clinic after	1
		0 = No	
		1 = Yes	
		2 = I never told this partner about the infection or gave the medicine	
		8 = Refuse to Answer	
Q99.		Is [Response to Q18] a	
	BP2_GEN	46. Gender of baseline partner 2	1
		1 = Male	
		2 = Female	

- Q100.** Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q18]? (The type of sex when a man puts his penis in your vagina.)
BP2VAG 47. Baseline partner 2 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q101.** Since your last visit about how many times have you had vaginal sex with [Response to Q18]?
BP2VAGFQ 48. Freq of vaginal sex with baseline partner 2 2
0 - 80 = range
88 = Refuse to Answer
- Q102.** Did you have vaginal sex with [Response to Q18] before he took the medicine for trichomonas?
VSXP2B4 49. Vaginal sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q103.** Did you have vaginal sex with [Response to Q18] before you finished all of your medication for trichomonas?
VSXB4IM2 50. Vaginal sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q104.** Since your last visit, how often did you use condoms with [Response to Q18] when you had vaginal sex?
FCVX_BP2 51. Frequency of condom use with baseline partner 2 for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q105.** The last time you had vaginal sex with [Response to Q18], did you use a condom?
LXCVXBP2 52. Last time vaginal sex baseline partner 2 use condom 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q106.** Since your last visit on [Response to Q2], have you had anal sex with [Response to Q18]? (The type of sex when a man puts his penis in your butt.)
- BP2_ANAL** 53. Anal sex with partner 2 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q107.** Since your last visit, about how many times have you had anal sex with [Response to Q18]?
- FAXP4BP2** 54. Freq of anal sex with baseline partner 2 2
- 0 - 80 = range
88 = Refuse to Answer
- Q108.** Did you have anal sex with [Response to Q18] before he took the medicine for trichomonas?
- ASXP2B4** 55. Anal sex before partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q109.** Did you have anal sex with [Response to Q18] before you finished all of your medication for trichomonas?
- ASXB4IM2** 56. Anal sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q110.** Since your last visit, how often did you use condoms with [Response to Q18] when you had anal sex?
- FCAX_BP2** 57. Frequency of condom use with baseline partner 2 anal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q111.** The last time you had anal sex with [Response to Q18], did you use a condom?
- LXCAXBP2** 58. Last time anal sex baseline partner 2 use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer

- Q112.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q18]? (The type of sex when a man puts his mouth on your vagina.)
BP2_ORAL 59. Oral sex with baseline partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q113.** Since your last visit about how many times have your received oral sex from [Response to Q18]?
FOXP4BP2 60. Frequency of oral sex with baseline partner 2 in past month 2
0 - 96 = range
80 = Refuse to Answer
- Q114.** Did you receive oral sex from [Response to Q18] before he took the medicine for trichomonas?
OSXP2B4 61. Oral sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q115.** Did you receive oral sex from [Response to Q18] before you finished all of your medication for trichomonas?
OSXB4IM2 62. Oral sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q116.** Since your last visit, how often did you use dental dams with [Response to Q18] when you received oral sex?
FCOXP2 63. Frequency of dental dam use for oral sex with baseline partner 2 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q117.** The last time you received oral sex from [Response to Q18] did you use a dental dam?
LXCOXP2 64. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q118.** Since your last visit on [Response to Q2] have you received oral sex from [Response to Q18]? (The type of sex when a woman puts her mouth on your vagina)
BP2FORAL 65. Baseline partner 2 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q119.** Since your last visit about how many times have you received oral sex from [Response to Q18]?
BP2FORFQ 66. Frequency oral sex female baseline partner 2 2
0 - 96 = range
80 = Refuse to Answer
- Q120.** Did you receive oral sex from [Response to Q18] before she took the medicine for trichomonas?
OSXFP2B4 67. Oral sex before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q121.** Did you receive oral sex from [Response to Q18] before you finished all of your medication for trichomonas?
OSXB4MF2 68. Oral sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q122.** Since your last visit how often did you use dental dams with [Response to Q18] when you received oral sex?
BP2FDDOR 69. Dental dams with female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q123.** The last time you received oral sex from [Response to Q18], did you use a dental dam?
LBP2ODD 70. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q124.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q18] without washing the sex toy before using it on you or her? 1
- SXTOYBP2** 71. Use Sex Toys baseline partner 2
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q125.** About how many times have you used sex toys in this way with [Response to Q18] since your last visit? 2
- SXTYFBP2** 72. Frequency sex toy with female baseline partner2
- 0 - 80 = range
88 = Refuse to Answer
- Q126.** Did you use sex toys in this way with [Response to Q18] before she took the medicine for trichomonas? 1
- SXTFP2B4** 73. Sex toys before female partner meds
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q127.** Did you use sex toys in this way with [Response to Q18] before you finished all of your medication for trichomonas? 1
- SXTB4MF2** 74. Sex before index finished meds baseline partner 2
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q128.** Since your last visit on [Response to Q2], have you or [Response to Q18] touched each other's vagina without washing your fingers before touching the other partner? 1
- BP2MAS** 75. Touched each other female partner
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q129.** About how many times have you or [Response to Q18] touched each other this way since your last visit? 2
- FBP2MAS** 76. Female baseline partner 2 touched
- 0 - 80 = range
88 = Refuse to Answer

- Q130. Did you and [Response to Q18] touch each other in this way before she took the medicine for trichomonas?**
MASFP2B4 77. Touch before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q131. Did you and [Response to Q18] touch each other in this way before you finished all of your medication for trichomonas?**
MASB4MF2 78. Touch before index finished meds baseline partner 2 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q132. Has [Response to Q18] told you that he/she has had an STD since your last visit?**
PSTD_BP2 79. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q133. Did you tell [Response to Q19] about your trichomonas infection?**
TELL_P3 37. Tell baseline no give meds partner 3 about TV 1
0 = No
1 = Yes
8 = Refuse to Answer
9 = Not Applicable
- Q134. Did you give [Response to Q19] the trichomonas medication the clinic gave you to give to him/ her?**
GIVE_P3 38. Give baseline no give med partner 3 medication 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q135. Why didn't you give [Response to Q19] the medicine? (check all that apply)**
WHYNOP3A 39. Why didn't give baseline partner 3 meds: I didn't want to 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP3B** 39. Why didn't give baseline partner 3 meds: I was afraid of his/her reaction 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP3C 39. Why didn't give baseline partner 3 meds: I didn't want to see him/her again 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP3D 39. Why didn't give baseline partner 3 meds: I couldn't get in touch with him/her 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP3E 39. Why didn't give baseline partner 3 meds: I lost the medicine 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP3F 39. Why didn't give baseline partner 3 meds: He/ she got medication for trichomonas from another place 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP3G 39. Why didn't give baseline partner 3 meds: Other 1
0 = No
1 = Yes
8 = Refuse to Answer

Q136. Please specify why you didn't give [Response to Q19] the medicine.
NOP3_OTH 39a. Specified why not give baseline partner 3 meds 200

Q137. When did you give [Response to Q19] the medicine?
WHTXP3 40. When give baseline partner3 meds 1
0 = Between 3-4 weeks after I got it from the clinic
1 = Between 1-2 months after I got it from the clinic
2 = Between 2-3 months after I got it from the clinic
3 = More than 3 months after I got it from the clinic
4 = Other
7 = Don't Know
88 = Refuse to Answer

Q138. Please specify when you gave [Response to Q19] the medication.
WHNP3OT 40a. Specified when gave baseline partner 3 meds 200

Q139.	Why did you wait to give [Response to Q19] the trichomonas medication?	
WAITMD3A	41. Why wait give meds: I didn't want to see him/her before then	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WAITMD3B	41. Why wait give meds: I was afraid of his/her reaction	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WAITMD3C	41. Why wait give meds: I couldn't get in touch with him/her	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WAITMD3D	41. Why wait give meds: He/she was out of town	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WAITMD3E	41. Why wait give meds: Other	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q140.	Please specify why you waited to give [Response to Q19] the medicine.	
WTMD30	41a. Specified why wait give baseline partner 3 meds	200
Q141.	What happened after you gave [Response to Q19] the medicine?	
AFTTXP3	42. Happened after giving baseline partner 3 meds	1
	0 = I saw him/ her take the medicine	
	1 = He/ she told me they took the medicine but I didn't watch them take it	
	2 = He/ she told me that they did not take the medicine	
	3 = I never talked about the medicine with this partner after I gave it to him/ her.	
	8 = Refuse to Answer	

- Q142. How sure are you that [Response to Q19] took the medicine?**
SUREP3 43. How sure baseline partner 3 took meds 1
0 = Not at all sure
1 = Somewhat sure
2 = Very sure
8 = Refuse to Answer
- Q143. Did [Response to Q19] tell you that he/she had symptoms or did you see any symptoms related to trichomonas such as unusual discharge, odor, or pain while urinating?**
P3SYMP 44. Symptoms of baseline partner3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q144. Did [Response to Q19] tell you that he/ she went to a doctor or clinic after you told them about your infection or gave him/her the medicine?**
P3CLINIC 45. Did baseline partner 3 go to clinic after 1
0 = No
1 = Yes
2 = I never told this partner about the infection or gave the medicine
8 = Refuse to Answer
- Q145. Is [Response to Q19] a**
BP3_GEN 46. Gender of baseline partner 3 1
1 = Male
2 = Female
- Q146. Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q19]? (The type of sex when a man puts his penis in your vagina.)**
BP3VAG 47. Baseline partner 3 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q147. Since your last visit about how many times have you had vaginal sex with [Response to Q19]?**
BP3VAGFQ 48. Freq of vaginal sex with baseline partner 3 2
0 - 80 = range
88 = Refuse to Answer

- Q148.** Did you have vaginal sex with [Response to Q19] before he took the medicine for trichomonas?
VSXP3B4 49. Vaginal sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q149.** Did you have vaginal sex with [Response to Q19] before you finished all of your medication for trichomonas?
VSXB4IM3 50. Vaginal sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q150.** Since your last visit, how often did you use condoms with [Response to Q19] when you had vaginal sex?
FCVX_BP3 51. Frequency of condom use with baseline partner 3 for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q151.** The last time you had vaginal sex with [Response to Q19], did you use a condom?
LXCVXBP3 52. Last time vaginal sex baseline partner 3 use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q152.** Since your last visit on [Response to Q2], have you had anal sex with [Response to Q19]? (The type of sex when a man puts his penis in your butt.)
BP3_ANAL 53. Anal sex with partner 3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q153.** Since your last visit, about how many times have you had anal sex with [Response to Q19]?
FAXP4BP3 54. Freq of anal sex with baseline partner 3 2
0 - 80 = range
88 = Refuse to Answer

- Q154. Did you have anal sex with [Response to Q19] before he took the medicine for trichomonas?**
ASXP3B4 55. Anal sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q155. Did you have anal sex with [Response to Q19] before you finished all of your medication for trichomonas?**
ASXB4IM3 56. Anal sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q156. Since your last visit, how often did you use condoms with [Response to Q19] when you had anal sex?**
FCAX_BP3 57. Frequency of condom use with baseline partner 3 anal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q157. The last time you had anal sex with [Response to Q19], did you use a condom?**
LXCAXBP3 58. Last time anal sex baseline partner 3 use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q158. Since your last visit on [Response to Q2], have you received oral sex from [Response to Q19]? (The type of sex when a man puts his mouth on your vagina.)**
BP3_ORAL 59. Oral sex with baseline partner 3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q159. Since your last visit about how many times have your received oral sex from [Response to Q19]?**
FOXP4BP3 60. Frequency of oral sex with baseline partner 3 in past month 2
0 - 96 = range
80 = Refuse to Answer

- Q160.** Did you receive oral sex from [Response to Q19] before he took the medicine for trichomonas?
OSXP3B4 61. Oral sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q161.** Did you receive oral sex from [Response to Q19] before you finished all of your medication for trichomonas?
OSXB4IM3 62. Oral sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q162.** Since your last visit, how often did you use dental dams with [Response to Q19] when you received oral sex?
FCOXP3 63. Frequency of dental dam use for oral sex with baseline partner 3 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q163.** The last time you received oral sex from [Response to Q19] did you use a dental dam?
LXCOXP3 64. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q164.** Since your last visit on [Response to Q2] have you received oral sex from [Response to Q19]? (The type of sex when a woman puts her mouth on your vagina)
BP3FORAL 65. Baseline partner 3 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q165.** Since your last visit about how many times have you received oral sex from [Response to Q19]?
BP3FORFQ 66. Frequency oral sex female baseline partner 3 2
0 - 96 = range
80 = Refuse to Answer

- Q166.** Did you receive oral sex from [Response to Q19] before she took the medicine for trichomonas?
OSXFP3B4 67. Oral sex before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q167.** Did you receive oral sex from [Response to Q19] before you finished all of your medication for trichomonas?
OSXB4MF3 68. Oral sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q168.** Since your last visit how often did you use dental dams with [Response to Q19] when you received oral sex?
BP3FDDOR 69. Dental dams with female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q169.** The last time you received oral sex from [Response to Q19], did you use a dental dam?
LBP3ODD 70. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q170.** Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q19] without washing the sex toy before using it on you or her?
SXTOYBP3 71. Use Sex Toys baseline partner 3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q171.** About how many times have you used sex toys in this way with [Response to Q19] since your last visit?
SXTYFBP3 72. Frequency sex toy with female baseline partner 3 2
0 - 80 = range
88 = Refuse to Answer

- Q172. Did you use sex toys in this way with [Response to Q19] before she took the medicine for trichomonas?**
- SXTFP3B4** 73. Sex toys before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q173. Did you use sex toys in this way with [Response to Q19] before you finished all of your medication for trichomonas?**
- SXTB4MF3** 74. Sex before index finished meds baseline partner 3 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q174. Since your last visit on [Response to Q2], have you or [Response to Q19] touched each other's vagina without washing your fingers before touching the other partner?**
- BP3MAS** 75. Touched each other female partner 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q175. About how many times have you or [Response to Q19] touched each other this way since your last visit?**
- FBP3MAS** 76. Female baseline partner 3 touched 2
- 0 - 80 = range
88 = Refuse to Answer
- Q176. Did you and [Response to Q19] touch each other in this way before she took the medicine for trichomonas?**
- MASFP3B4** 77. Touch before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q177. Did you and [Response to Q19] touch each other in this way before you finished all of your medication for trichomonas?**
- MASB4MF3** 78. Touch before index finished meds baseline partner 3 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer

- Q178.** Has [Response to Q19] told you that he/she has had an STD since your last visit?
PSTD_BP3 79. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q179.** Did you tell [Response to Q20] about your trichomonas infection?
TELL_P4 37. Tell baseline no give meds partner 4 about TV 1
0 = No
1 = Yes
8 = Refuse to Answer
9 = Not Applicable
- Q180.** Did you give [Response to Q20] the trichomonas medication the clinic gave you to give to him/ her?
GIVE_P4 38. Give baseline no give med partner 4 medication 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q181.** Why didn't you give [Response to Q20] the medicine? (check all that apply)
WHYNOP4A 39. Why didn't give baseline partner 4 meds: I didn't want to 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP4B** 39. Why didn't give baseline partner 4 meds: I was afraid of his/her reaction 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP4C** 39. Why didn't give baseline partner 4 meds: I didn't want to see him/her again 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP4D** 39. Why didn't give baseline partner 4 meds: I couldn't get in touch with him/her 1
0 = No
1 = Yes
8 = Refuse to Answer
- WHYNOP4E** 39. Why didn't give baseline partner 4 meds: I lost the medicine 1
0 = No
1 = Yes
8 = Refuse to Answer

WHYNOP4F	39. Why didn't give baseline partner 4 meds: He/ she got medication for trichomonas from another place	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WHYNOP4G	39. Why didn't give baseline partner 4 meds: Other	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q182.	Please specify why you didn't give [Response to Q20] the medicine.	
NOP4_OTH	39a. Specified why not give baseline partner 4 meds	200
Q183.	When did you give [Response to Q20] the medicine?	
WHTXP4	40. When give baseline partner 4 meds	1
	0 = Between 3-4 weeks after I got it from the clinic	
	1 = Between 1-2 months after I got it from the clinic	
	2 = Between 2-3 months after I got it from the clinic	
	3 = More than 3 months after I got it from the clinic	
	4 = Other	
	7 = Don't Know	
	88 = Refuse to Answer	
Q184.	Please specify when you gave [Response to Q20] the medication.	
WHNP4OT	40a. Specified when gave baseline partner 4 meds	200
Q185.	Why did you wait to give [Response to Q20] the trichomonas medication?	
WAITMD4A	41. Why wait give meds: I didn't want to see him/her before then	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WAITMD4B	41. Why wait give meds: I was afraid of his/her reaction	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WAITMD4C	41. Why wait give meds: I couldn't get in touch with him/her	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	

WAITMD4D	41. Why wait give meds: He/she was out of town	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
WAITMD4E	41. Why wait give meds: Other	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q186.	Please specify why you waited to give [Response to Q20] the medicine.	
WTMD4O	41a. Specified why wait give baseline partner 4 meds	200
Q187.	What happened after you gave [Response to Q20] the medicine?	
AFTTXP4	42. Happened after giving baseline partner 4 meds	1
	0 = I saw him/ her take the medicine	
	1 = He/ she told me they took the medicine but I didn't watch them take it	
	2 = He/ she told me that they did not take the medicine	
	3 = I never talked about the medicine with this partner after I gave it to him/ her.	
	8 = Refuse to Answer	
Q188.	How sure are you that [Response to Q20] took the medicine?	
SUREP4	43. How sure baseline partner 4 took meds	1
	0 = Not at all sure	
	1 = Somewhat sure	
	2 = Very sure	
	8 = Refuse to Answer	
Q189.	Did [Response to Q20] tell you that he/she had symptoms or did you see any symptoms related to trichomonas such as unusual discharge, odor, or pain while urinating?	
P4SYMP	44. Symptoms of baseline partner4	1
	0 = No	
	1 = Yes	
	8 = Refuse to Answer	
Q190.	Did [Response to Q20] tell you that he/ she went to a doctor or clinic after you told them about your infection or gave him/her the medicine?	
P4CLINIC	45. Did baseline partner 4 go to clinic after	1
	0 = No	
	1 = Yes	
	2 = I never told this partner about the infection or gave the medicine	
	8 = Refuse to Answer	

- Q191.** Is [Response to Q20] a
BP4_GEN 46. Gender of baseline partner 4 1
1 = Male
2 = Female
- Q192.** Since your last visit on [Response to Q2], have you had vaginal sex with [Response to Q20]? (The type of sex when a man puts his penis in your vagina.)
BP4VAG 47. Baseline partner 4 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q193.** Since your last visit about how many times have you had vaginal sex with [Response to Q20]?
BP4VAGFQ 48. Freq of vaginal sex with baseline partner 4 2
0 - 80 = range
88 = Refuse to Answer
- Q194.** Did you have vaginal sex with [Response to Q20] before he took the medicine for trichomonas?
VSXP4B4 49. Vaginal sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q195.** Did you have vaginal sex with [Response to Q20] before you finished all of your medication for trichomonas?
VSXB4IM4 50. Vaginal sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q196.** Since your last visit, how often did you use condoms with [Response to Q20] when you had vaginal sex?
FCVX_BP4 51. Frequency of condom use with baseline partner 4 for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer

- Q197.** The last time you had vaginal sex with [Response to Q20], did you use a condom?
LXCVXBP4 52. Last time vaginal sex baseline partner 4 use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q198.** Since your last visit on [Response to Q2], have you had anal sex with [Response to Q20]? (The type of sex when a man puts his penis in your butt.)
BP4_ANAL 53. Anal sex with partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q199.** Since your last visit, about how many times have you had anal sex with [Response to Q20]?
FAXP4BP4 54. Freq of anal sex with baseline partner 4 2
0 - 80 = range
88 = Refuse to Answer
- Q200.** Did you have anal sex with [Response to Q20] before he took the medicine for trichomonas?
ASXP4B4 55. Anal sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q201.** Did you have anal sex with [Response to Q20] before you finished all of your medication for trichomonas?
ASXB4IM4 56. Anal sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q202.** Since your last visit, how often did you use condoms with [Response to Q20] when you had anal sex?
FCAX_BP4 57. Frequency of condom use with baseline partner 4 anal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer

- Q203.** The last time you had anal sex with [Response to Q20], did you use a condom?
LXCAXB4 58. Last time anal sex baseline partner 4 use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q204.** Since your last visit on [Response to Q2], have you received oral sex from [Response to Q20]? (The type of sex when a man puts his mouth on your vagina.)
BP4_ORAL 59. Oral sex with baseline partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q205.** Since your last visit about how many times have your received oral sex from [Response to Q20]?
FOXP4BP4 60. Frequency of oral sex with baseline partner 4 in past month 2
0 - 96 = range
80 = Refuse to Answer
- Q206.** Did you receive oral sex from [Response to Q20] before he took the medicine for trichomonas?
OSXP4B4 61. Oral sex before partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q207.** Did you receive oral sex from [Response to Q20] before you finished all of your medication for trichomonas?
OSXB4IM4 62. Oral sex before index finished meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q208.** Since your last visit, how often did you use dental dams with [Response to Q20] when you received oral sex?
FCOXB4 63. Frequency of dental dam use for oral sex with baseline partner 4 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer

- Q209.** The last time you received oral sex from [Response to Q20] did you use a dental dam?
LXCOXBP4 64. Last time oral sex use dental dam 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q210.** Since your last visit on [Response to Q2] have you received oral sex from [Response to Q20]? (The type of sex when a woman puts her mouth on your vagina)
BP4FORAL 65. Baseline partner 4 female, oral sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q211.** Since your last visit about how many times have you received oral sex from [Response to Q20]?
BP4FORFQ 66. Frequency oral sex female baseline partner 4 2
- 0 - 96 = range
80 = Refuse to Answer
- Q212.** Did you receive oral sex from [Response to Q20] before she took the medicine for trichomonas?
OSXFP4B4 67. Oral sex before female partner meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q213.** Did you receive oral sex from [Response to Q20] before you finished all of your medication for trichomonas?
OSXB4MF4 68. Oral sex before index finished meds 1
- 0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q214.** Since your last visit how often did you use dental dams with [Response to Q20] when you received oral sex?
BP4FDDOR 69. Dental dams with female partner 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer

- Q215. The last time you received oral sex from [Response to Q20], did you use a dental dam?**
LBP4ODD 70. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q216. Since your last visit on [Response to Q2], have you shared sex toys with [Response to Q20] without washing the sex toy before using it on you or her?**
SXTOYBP4 71. Use Sex Toys baseline partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q217. About how many times have you used sex toys in this way with [Response to Q20] since your last visit?**
SXTYFBP4 72. Frequency sex toy with female baseline partner 4 2
0 - 80 = range
88 = Refuse to Answer
- Q218. Did you use sex toys in this way with [Response to Q20] before she took the medicine for trichomonas?**
SXTFP4B4 73. Sex toys before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q219. Did you use sex toys in this way with [Response to Q20] before you finished all of your medication for trichomonas?**
SXTB4MF4 74. Sex before index finished meds baseline partner 4 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q220. Since your last visit on [Response to Q2], have you or [Response to Q20] touched each other's vagina without washing your fingers before touching the other partner?**
BP4MAS 75. Touched each other female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q221. About how many times have you or [Response to Q20] touched each other this way since your last visit?**
FBP4MAS 76. Female baseline partner 4 touched 2
0 - 80 = range
88 = Refuse to Answer

- Q222. Did you and [Response to Q20] touch each other in this way before she took the medicine for trichomonas?**
MASFP4B4 77. Touch before female partner meds 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q223. Did you and [Response to Q20] touch each other in this way before you finished all of your medication for trichomonas?**
MASB4MF4 78. Touch before index finished meds baseline partner 4 1
0 = No
1 = Yes
7 = Don't Know
8 = Refuse to Answer
- Q224. Has [Response to Q20] told you that he/she has had an STD since your last visit?**
PSTD_BP4 79. Partner told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q225. Is [Response to Q9] a**
PT1_GEN 80. Gender of new partner1 1
1 = Male
2 = Female
- Q226. Since your last visit on [Response to Q3], have you had vaginal sex with [Response to Q9]? (The type of sex when a man puts his penis in your vagina.)**
P1VAG 81. partner 1 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q227. Since your last visit, about how many times have you had vaginal sex with [Response to Q9]?**
P1VAGFQ 82. Freq of vaginal sex with partner 1 2
0 - 80 = range
88 = Refuse to Answer

- Q228.** Since your last visit, how often did you use condoms with [Response to Q9] when you had vaginal sex?
FCVX_1 83. Frequency of condom use for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q229.** The last time you had vaginal sex with [Response to Q9], did you use a condom?
LXCVX_1 84. Last time vaginal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q230.** Since your last visit on [Response to Q3], have you had anal sex with [Response to Q9]? (The type of sex when a man puts his penis in your butt.)
P1_ANAL 85. Anal sex with partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q231.** Since your last visit, about how many times have you had anal sex with [Response to Q9]?
FAXP4_1 86. Freq of anal sex with new partner 1 2
0 - 80 = range
88 = Refuse to Answer
- Q232.** Since your last visit, how often did you use condoms with [Response to Q9] when you had anal sex?
FCAX_1 87. Frequency of condom use for anal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q233.** The last time you had anal sex with [Response to Q9], did you use a condom?
LXCAX_1 88. Last time anal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q234.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q9]? (The type of sex when a man puts his mouth on your vagina.)
- P1_ORAL** 89. Oral sex with new partner 1 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q235.** Since your last visit, about how many times have your received oral sex from [Response to Q9]?
- FOXP4_1** 90. Frequency of oral sex with partner 1 2
- 0 - 80 = range
88 = Refuse to Answer
- Q236.** Since your last visit, how often did you use dental dams with [Response to Q9] when you received oral sex?
- FCOX_1** 91. Frequency of dental dam use for oral sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q237.** The last time you received oral sex from [Response to Q9] did you use a dental dam?
- LXCOX_1** 92. Last time oral sex use dental dam 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q238.** Since your last visit on [Response to Q3], have your received oral sex from [Response to Q9]? (The type of sex when a woman puts her mouth on your vagina)
- P1FORAL** 93. partner 1 female, oral sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q239.** Since your last visit, about how many times have you received oral sex from [Response to Q9]?
- P1FORFQ** 94. Frequecy oral sex female partner 1 2
- 0 - 80 = range
88 = Refuse to Answer

- Q240.** Since your last visit, how often did you use dental dams with [Response to Q9] when you received oral sex?
P1FDDOR 95. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q241.** The last time you received oral sex from [Response to Q9], did you use a dental dam?
LP1ODD 96. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q242.** Since your last visit on [Response to Q3], have you shared sex toys with [Response to Q9] without washing the sex toy before using it on you or her?
SX_TOY1 97. Use sex toys with partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q243.** About how many times have you used sex toys in this way with [Response to Q9] since your last visit?
SXTOYF1 98. Frequency sex toy with female partner 2
0 - 80 = range
88 = Refuse to Answer
- Q244.** Since your last visit on [Response to Q3], have you or [Response to Q9] touched each other's vagina without washing your fingers before touching the other partner?
P1MAS 99. Touched each other female partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q245.** About how many times have you or [Response to Q9] touched each other this way since your last visit?
FP1MAS 100. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer

- Q246.** Has [Response to Q9] told you that he/she has had an STD in the past three months?
PSTD_1 101. partner 1 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q247.** Is [Response to Q10] a
PT2_GEN 80. Gender of new partner2 1
1 = Male
2 = Female
- Q248.** Since your last visit on [Response to Q3], have you had vaginal sex with [Response to Q10]? (The type of sex when a man puts his penis in your vagina.)
P2VAG 81. partner 2 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q249.** Since your last visit, about how many times have you had vaginal sex with [Response to Q10]?
P2VAGFQ 82. Freq of vaginal sex with partner 2 2
0 - 80 = range
88 = Refuse to Answer
- Q250.** Since your last visit, how often did you use condoms with [Response to Q10] when you had vaginal sex?
FCVX_2 83. Frequency of condom use for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q251.** The last time you had vaginal sex with [Response to Q10], did you use a condom?
LXCVX_2 84. Last time vaginal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q252.** Since your last visit on [Response to Q3], have you had anal sex with [Response to Q10]? (The type of sex when a man puts his penis in your butt.)
P2_ANAL 85. Anal sex with partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q253. Since your last visit, about how many times have you had anal sex with [Response to Q10]?**
- FAXP4_2** 86. Freq of anal sex with new partner 2 2
- 0 - 80 = range
88 = Refuse to Answer
- Q254. Since your last visit, how often did you use condoms with [Response to Q10] when you had anal sex?**
- FCAX_2** 87. Frequency of condom use for anal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q255. The last time you had anal sex with [Response to Q10], did you use a condom?**
- LXCAX_2** 88. Last time anal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q256. Since your last visit on [Response to Q3], have you received oral sex from [Response to Q10]? (The type of sex when a man puts his mouth on your vagina.)**
- P2_ORAL** 89. Oral sex with new partner 2 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q257. Since your last visit, about how many times have your received oral sex from [Response to Q10]?**
- FOXP4_2** 90. Frequency of oral sex with partner 2 2
- 0 - 80 = range
88 = Refuse to Answer
- Q258. Since your last visit, how often did you use dental dams with [Response to Q10] when you received oral sex?**
- FCOX_2** 91. Frequency of dental dam use for oral sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer

- Q259.** The last time you received oral sex from [Response to Q10] did you use a dental dam?
LXCOX_2 92. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q260.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q10]? (The type of sex when a woman puts her mouth on your vagina)
P2FORAL 93. partner 2 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q261.** Since your last visit, about how many times have you received oral sex from [Response to Q10]?
P2FORFQ 94. Frequency oral sex female partner 2 2
0 - 80 = range
88 = Refuse to Answer
- Q262.** Since your last visit, how often did you use dental dams with [Response to Q10] when you received oral sex?
P2FDDOR 95. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q263.** The last time you received oral sex from [Response to Q10], did you use a dental dam?
LP2ODD 96. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q264.** Since your last visit on [Response to Q3], have you shared sex toys with [Response to Q10] without washing the sex toy before using it on you or her?
SX_TOY2 97. Use sex toys with partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q265.** About how many times have you used sex toys in this way with [Response to Q10] since your last visit?
SXTOYF2 98. Frequency sex toy with female partner 2
0 - 80 = range
88 = Refuse to Answer
- Q266.** Since your last visit on [Response to Q3], have you or [Response to Q10] touched each other's vagina without washing your fingers before touching the other partner?
P2MAS 99. Touched each other female partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q267.** About how many times have you or [Response to Q10] touched each other this way since your last visit?
FP2MAS 100. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer
- Q268.** Has [Response to Q10] told you that he/she has had an STD in the past three months?
PSTD_2 101. partner 2 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q269.** Is [Response to Q11] a
PT3_GEN 80. Gender of new partner 3 1
1 = Male
2 = Female
- Q270.** Since your last visit on [Response to Q3], have you had vaginal sex with [Response to Q11]? (The type of sex when a man puts his penis in your vagina.)
P3VAG 81. partner 3 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q271.** Since your last visit, about how many times have you had vaginal sex with [Response to Q11]?
P3VAGFQ 82. Freq of vaginal sex with partner 3 2
0 - 80 = range
88 = Refuse to Answer

- Q272.** Since your last visit, how often did you use condoms with [Response to Q11] when you had vaginal sex?
FCVX_3 83. Frequency of condom use for vaginal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q273.** The last time you had vaginal sex with [Response to Q11], did you use a condom?
LXCVX_3 84. Last time vaginal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q274.** Since your last visit on [Response to Q3], have you had anal sex with [Response to Q11]? (The type of sex when a man puts his penis in your butt.)
P3_ANAL 85. Anal sex with partner 3 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q275.** Since your last visit, about how many times have you had anal sex with [Response to Q11]?
FAXP4_3 86. Freq of anal sex with new partner 3 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q276.** Since your last visit, how often did you use condoms with [Response to Q11] when you had anal sex?
FCAX_3 87. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q277.** The last time you had anal sex with [Response to Q11], did you use a condom?
LXCAX_3 88. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q278.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q11]? (The type of sex when a man puts his mouth on your vagina.)
P3_ORAL 89. Oral sex with new partner 3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q279.** Since your last visit, about how many times have your received oral sex from [Response to Q11]?
FOXP4_3 90. Frequency of oral sex with partner3 2
0 - 80 = range
88 = Refuse to Answer
- Q280.** Since your last visit, how often did you use dental dams with [Response to Q11] when you received oral sex?
FCOX_3 91. Frequency of dental dam use for oral sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q281.** The last time you received oral sex from [Response to Q11] did you use a dental dam?
LXCOX_3 92. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q282.** Since your last visit on [Response to Q3], have your received oral sex from [Response to Q11]? (The type of sex when a woman puts her mouth on your vagina)
P3FORAL 93. partner 3 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q283.** Since your last visit, about how many times have you received oral sex from [Response to Q11]?
P3FORFQ 94. Frequecy oral sex female partner 3 2
0 - 80 = range
88 = Refuse to Answer

- Q284.** Since your last visit, how often did you use dental dams with [Response to Q11] when you received oral sex?
P3FDDOR 95. Dental dams with new female partner 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 8 = Refuse to Answer
- Q285.** The last time you received oral sex from [Response to Q11], did you use a dental dam?
LP3ODD 96. Last time use dental dam female partner 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q286.** Since your last visit on [Response to Q3], have you shared sex toys with [Response to Q11] without washing the sex toy before using it on you or her?
SX_TOY3 97. Use sex toys with partner 3 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q287.** About how many times have you used sex toys in this way with [Response to Q11] since your last visit?
SXTOYF3 98. Frequency sex toy with female partner 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q288.** Since your last visit on [Response to Q3], have you or [Response to Q11] touched each other's vagina without washing your fingers before touching the other partner?
P3MAS 99. Touched each other female partner 3 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q289.** About how many times have you or [Response to Q11] touched each other this way since your last visit?
FP3MAS 100. Female partners touched 2
- 0 - 80 = range
 - 88 = Refuse to Answer

- Q290. Has [Response to Q11] told you that he/she has had an STD in the past three months?**
PSTD_3 101. partner 3 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q291. Is [Response to Q12] a**
PT4_GEN 80. Gender of new partner 4 1
1 = Male
2 = Female
- Q292. Since your last visit on [Response to Q3], have you had vaginal sex with [Response to Q12]? (The type of sex when a man puts his penis in your vagina.)**
P4VAG 81. partner 4 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q293. Since your last visit, about how many times have you had vaginal sex with [Response to Q12]?**
P4VAGFQ 82. Freq of vaginal sex with partner 4 2
0 - 80 = range
88 = Refuse to Answer
- Q294. Since your last visit, how often did you use condoms with [Response to Q12] when you had vaginal sex?**
FCVX_4 83. Frequency of condom use for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q295. The last time you had vaginal sex with [Response to Q12], did you use a condom?**
LXCVX_4 84. Last time vaginal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q296. Since your last visit on [Response to Q3], have you had anal sex with [Response to Q12]? (The type of sex when a man puts his penis in your butt.)**
P4_ANAL 85. Anal sex with partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q297.** Since your last visit, about how many times have you had anal sex with [Response to Q12]?
- FAXP4_4** 86. Freq of anal sex with new partner 4 2
- 0 - 80 = range
88 = Refuse to Answer
- Q298.** Since your last visit, how often did you use condoms with [Response to Q12] when you had anal sex?
- FCAX_4** 87. Frequency of condom use for anal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q299.** The last time you had anal sex with [Response to Q12], did you use a condom?
- LXCAX_4** 88. Last time anal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q300.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q12]? (The type of sex when a man puts his mouth on your vagina.)
- P4_ORAL** 89. Oral sex with new partner 4 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q301.** Since your last visit, about how many times have your received oral sex from [Response to Q12]?
- FOXP4_4** 90. Frequency of oral sex with partner 4 2
- 0 - 80 = range
88 = Refuse to Answer
- Q302.** Since your last visit, how often did you use dental dams with [Response to Q12] when you received oral sex?
- FCOX_4** 91. Frequency of dental dam use for oral sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer

- Q303.** The last time you received oral sex from [Response to Q12] did you use a dental dam?
LXCOX_4 92. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q304.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q12]? (The type of sex when a woman puts her mouth on your vagina)
P4FORAL 93. partner 4 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q305.** Since your last visit, about how many times have you received oral sex from [Response to Q12]?
P4FORFQ 94. Frequency oral sex female partner 4 2
0 - 80 = range
88 = Refuse to Answer
- Q306.** Since your last visit, how often did you use dental dams with [Response to Q12] when you received oral sex?
P4FDDOR 95. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q307.** The last time you received oral sex from [Response to Q12], did you use a dental dam?
LP4ODD 96. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q308.** Since your last visit on [Response to Q3], have you shared sex toys with [Response to Q12] without washing the sex toy before using it on you or her?
SX_TOY4 97. Use sex toys with partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q309. About how many times have you used sex toys in this way with [Response to Q12] since your last visit?**
- SXTOYF4** 98. Frequency sex toy with female partner 2
- 0 - 80 = range
88 = Refuse to Answer
- Q310. Since your last visit on [Response to Q3], have you or [Response to Q12] touched each other's vagina without washing your fingers before touching the other partner?**
- P4MAS** 99. Touched each other female partner 4 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q311. About how many times have you or [Response to Q12] touched each other this way since your last visit?**
- FP4MAS** 100. Female partners touched 2
- 0 - 80 = range
88 = Refuse to Answer
- Q312. Has [Response to Q12] told you that he/she has had an STD in the past three months?**
- PSTD_4** 101. partner 4 told respondent if they have an STD 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q313. Is [Response to Q13] a**
- PT5_GEN** 80. Gender of new partner 5 1
- 1 = Male
2 = Female
- Q314. Since your last visit on [Response to Q3], have you had vaginal sex with [Response to Q13]? (The type of sex when a man puts his penis in your vagina.)**
- P5VAG** 81. partner 5 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q315. Since your last visit, about how many times have you had vaginal sex with [Response to Q13]?**
- P5VAGFQ** 82. Freq of vaginal sex with partner 5 2
- 0 - 80 = range
88 = Refuse to Answer

- Q316.** Since your last visit, how often did you use condoms with [Response to Q13] when you had vaginal sex?
FCVX_5 83. Frequency of condom use for vaginal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q317.** The last time you had vaginal sex with [Response to Q13], did you use a condom?
LXCVX_5 84. Last time vaginal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q318.** Since your last visit on [Response to Q3], have you had anal sex with [Response to Q13]? (The type of sex when a man puts his penis in your butt.)
P5_ANAL 85. Anal sex with partner 5 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q319.** Since your last visit, about how many times have you had anal sex with [Response to Q13]?
FAXP4_5 86. Freq of anal sex with new partner 5 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q320.** Since your last visit, how often did you use condoms with [Response to Q13] when you had anal sex?
FCAX_5 87. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q321.** The last time you had anal sex with [Response to Q13], did you use a condom?
LXCAX_5 88. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q322.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q13]? (The type of sex when a man puts his mouth on your vagina.)
P5_ORAL 89. Oral sex with new partner 5 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q323.** Since your last visit, about how many times have your received oral sex from [Response to Q13]?
FOXP4_5 90. Frequency of oral sex with partner 5 2
0 - 80 = range
88 = Refuse to Answer
- Q324.** Since your last visit, how often did you use dental dams with [Response to Q13] when you received oral sex?
FCOX_5 91. Frequency of dental dam use for oral sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q325.** The last time you received oral sex from [Response to Q13] did you use a dental dam?
LXCOX_5 92. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q326.** Since your last visit on [Response to Q3], have your received oral sex from [Response to Q13]? (The type of sex when a woman puts her mouth on your vagina)
P5FORAL 93. partner 5 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q327.** Since your last visit, about how many times have you received oral sex from [Response to Q13]?
P5FORFQ 94. Frequecy oral sex female partner 5 2
0 - 80 = range
88 = Refuse to Answer

- Q328.** Since your last visit, how often did you use dental dams with [Response to Q13] when you received oral sex?
P5FDDOR 95. Dental dams with female partner 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 8 = Refuse to Answer
- Q329.** The last time you received oral sex from [Response to Q13], did you use a dental dam?
LP5ODD 96. Last time use dental dam female partner 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q330.** Since your last visit on [Response to Q3], have you shared sex toys with [Response to Q13] without washing the sex toy before using it on you or her?
SX_TOY5 97. Use sex toys with partner 5 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q331.** About how many times have you used sex toys in this way with [Response to Q13] since your last visit?
SXTOYF5 98. Frequency sex toy with female partner 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q332.** Since your last visit on [Response to Q3], have you or [Response to Q13] touched each other's vagina without washing your fingers before touching the other partner?
P5MAS 99. Touched each other female partner 5 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q333.** About how many times have you or [Response to Q13] touched each other this way since your last visit?
FP5MAS 100. Female partners touched 2
- 0 - 80 = range
 - 88 = Refuse to Answer

- Q334. Has [Response to Q13] told you that he/she has had an STD in the past three months?**
PSTD_5 101. partner 5 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q335. Is [Response to Q14] a**
PT6_GEN 80. Gender of new partner6 1
1 = Male
2 = Female
- Q336. Since your last visit on [Response to Q3], have you had vaginal sex with [Response to Q14]? (The type of sex when a man puts his penis in your vagina.)**
P6VAG 81. partner 6 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q337. Since your last visit, about how many times have you had vaginal sex with [Response to Q14]?**
P6VAGFQ 82. Freq of vaginal sex with partner 6 2
0 - 80 = range
88 = Refuse to Answer
- Q338. Since your last visit, how often did you use condoms with [Response to Q14] when you had vaginal sex?**
FCVX_6 83. Frequency of condom use for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q339. The last time you had vaginal sex with [Response to Q14], did you use a condom?**
LXCVX_6 84. Last time vaginal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q340. Since your last visit on [Response to Q3], have you had anal sex with [Response to Q14]? (The type of sex when a man puts his penis in your butt.)**
P6_ANAL 85. Anal sex with partner 6 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q341.** Since your last visit, about how many times have you had anal sex with [Response to Q14]?
- FAXP4_6** 86. Freq of anal sex with new partner 6 2
- 0 - 80 = range
88 = Refuse to Answer
- Q342.** Since your last visit, how often did you use condoms with [Response to Q14] when you had anal sex?
- FCAX_6** 87. Frequency of condom use for anal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q343.** The last time you had anal sex with [Response to Q14], did you use a condom?
- LXCAX_6** 88. Last time anal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q344.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q14]? (The type of sex when a man puts his mouth on your vagina.)
- P6_ORAL** 89. Oral sex with new partner 6 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q345.** Since your last visit, about how many times have your received oral sex from [Response to Q14]?
- FOXP4_6** 90. Frequency of oral sex with partner 6 2
- 0 - 80 = range
88 = Refuse to Answer
- Q346.** Since your last visit, how often did you use dental dams with [Response to Q14] when you received oral sex?
- FCOX_6** 91. Frequency of dental dam use for oral sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer

- Q347.** The last time you received oral sex from [Response to Q14] did you use a dental dam?
LXCOX_6 92. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q348.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q14]? (The type of sex when a woman puts her mouth on your vagina)
P6FORAL 93. partner 6 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q349.** Since your last visit, about how many times have you received oral sex from [Response to Q14]?
P6FORFQ 94. Frequency oral sex female partner 6 2
0 - 80 = range
88 = Refuse to Answer
- Q350.** Since your last visit, how often did you use dental dams with [Response to Q14] when you received oral sex?
P6FDDOR 95. Dental dams with female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q351.** The last time you received oral sex from [Response to Q14], did you use a dental dam?
LP6ODD 96. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q352.** Since your last visit on [Response to Q3], have you shared sex toys with [Response to Q14] without washing the sex toy before using it on you or her?
SX_TOY6 97. Use sex toys with partner 6 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q353. About how many times have you used sex toys in this way with [Response to Q14] since your last visit?**
- SXTOYF6** 98. Frequency sex toy with female partner 2
- 0 - 80 = range
88 = Refuse to Answer
- Q354. Since your last visit on [Response to Q3], have you or [Response to Q14] touched each other's vagina without washing your fingers before touching the other partner?**
- P6MAS** 99. Touched each other female partner 6 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q355. About how many times have you or [Response to Q14] touched each other this way since your last visit?**
- FP6MAS** 100. Female partners touched 2
- 0 - 80 = range
88 = Refuse to Answer
- Q356. Has [Response to Q14] told you that he/she has had an STD in the past three months?**
- PSTD_6** 101. partner 6 told respondent if they have an STD 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q357. Is [Response to Q15] a**
- PT7_GEN** 80. Gender of new partner 7 1
- 1 = Male
2 = Female
- Q358. Since your last visit on [Response to Q3], have you had vaginal sex with [Response to Q15]? (The type of sex when a man puts his penis in your vagina.)**
- P7VAG** 81. partner 7 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q359. Since your last visit, about how many times have you had vaginal sex with [Response to Q15]?**
- P7VAGFQ** 82. Freq of vaginal sex with partner 7 2
- 0 - 80 = range
88 = Refuse to Answer

- Q360.** Since your last visit, how often did you use condoms with [Response to Q15] when you had vaginal sex?
FCVX_7 83. Frequency of condom use for vaginal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q361.** The last time you had vaginal sex with [Response to Q15], did you use a condom?
LXCVX_7 84. Last time vaginal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q362.** Since your last visit on [Response to Q3], have you had anal sex with [Response to Q15]? (The type of sex when a man puts his penis in your butt.)
P7_ANAL 85. Anal sex with partner 7 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q363.** Since your last visit, about how many times have you had anal sex with [Response to Q15]?
FAXP4_7 86. Freq of anal sex with partner 7 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q364.** Since your last visit, how often did you use condoms with [Response to Q15] when you had anal sex?
FCAX_7 87. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q365.** The last time you had anal sex with [Response to Q15], did you use a condom?
LXCAX_7 88. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q366.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q15]? (The type of sex when a man puts his mouth on your vagina.)
P7_ORAL 89. Oral sex with new partner 7 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q367.** Since your last visit, about how many times have you received oral sex from [Response to Q15]?
FOXP4_7 90. Frequency of oral sex with partner7 2
0 - 80 = range
88 = Refuse to Answer
- Q368.** Since your last visit, how often did you use dental dams with [Response to Q15] when you received oral sex?
FCOX_7 91. Frequency of dental dam use for oral sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q369.** The last time you received oral sex from [Response to Q15] did you use a dental dam?
LXCOX_7 92. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q370.** Since your last visit on [Response to Q3], have your received oral sex from [Response to Q15]? (The type of sex when a woman puts her mouth on your vagina)
P7FORAL 93. partner 7 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q371.** Since your last visit, about how many times have you received oral sex from [Response to Q15]?
P7FORFQ 94. Frequecy oral sex female partner 7 2
0 - 80 = range
88 = Refuse to Answer

- Q372.** Since your last visit, how often did you use dental dams with [Response to Q15] when you received oral sex?
P7FDDOR 95. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q373.** The last time you received oral sex from [Response to Q15], did you use a dental dam?
LP7ODD 96. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q374.** Since your last visit on [Response to Q3], have you shared sex toys with [Response to Q15] without washing the sex toy before using it on you or her?
SX_TOY7 97. Use sex toys with partner 7 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q375.** About how many times have you used sex toys in this way with [Response to Q15] since your last visit?
SXTOYF7 98. Frequency sex toy with female partner 2
0 - 80 = range
88 = Refuse to Answer
- Q376.** Since your last visit on [Response to Q3], have you or [Response to Q15] touched each other's vagina without washing your fingers before touching the other partner?
P7MAS 99. Touched each other female partner 7 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q377.** About how many times have you or [Response to Q15] touched each other this way since your last visit?
FP7MAS 100. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer

- Q378. Has [Response to Q15] told you that he/she has had an STD in the past three months?**
PSTD_7 101. partner 7 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q379. Is [Response to Q16] a**
PT8_GEN 80. Gender of new partner 8 1
1 = Male
2 = Female
- Q380. Since your last visit on [Response to Q3], have you had vaginal sex with [Response to Q16]? (The type of sex when a man puts his penis in your vagina.)**
P8VAG 81. partner 8 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q381. Since your last visit, about how many times have you had vaginal sex with [Response to Q16]?**
P8VAGFQ 82. Freq of vaginal sex with partner 8 2
0 - 80 = range
88 = Refuse to Answer
- Q382. Since your last visit, how often did you use condoms with [Response to Q16] when you had vaginal sex?**
FCVX_8 83. Frequency of condom use for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q383. The last time you had vaginal sex with [Response to Q16], did you use a condom?**
LXCVX_8 84. Last time vaginal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q384. Since your last visit on [Response to Q3], have you had anal sex with [Response to Q16]? (The type of sex when a man puts his penis in your butt.)**
P8_ANAL 85. Anal sex with partner 8 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q385.** Since your last visit, about how many times have you had anal sex with [Response to Q16]?
- FAXP4_8** 86. Freq of anal sex with new partner 8 2
- 0 - 80 = range
88 = Refuse to Answer
- Q386.** Since your last visit, how often did you use condoms with [Response to Q16] when you had anal sex?
- FCAX_8** 87. Frequency of condom use for anal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q387.** The last time you had anal sex with [Response to Q16], did you use a condom?
- LXCAX_8** 88. Last time anal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q388.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q16]? (The type of sex when a man puts his mouth on your vagina.)
- P8_ORAL** 89. Oral sex with new partner 8 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q389.** Since your last visit, about how many times have your received oral sex from [Response to Q16]?
- FOXP4_8** 90. Frequency of oral sex with partner 8 2
- 0 - 80 = range
88 = Refuse to Answer
- Q390.** Since your last visit, how often did you use dental dams with [Response to Q16] when you received oral sex?
- FCOX_8** 91. Frequency of dental dam use for oral sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer

- Q391.** The last time you received oral sex from [Response to Q16] did you use a dental dam?
LXCOX_8 92. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q392.** Since your last visit on [Response to Q3], have you received oral sex from [Response to Q16]? (The type of sex when a woman puts her mouth on your vagina)
P8FORAL 93. partner 8 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q393.** Since your last visit, about how many times have you received oral sex from [Response to Q16]?
P8FORFQ 94. Frequency oral sex female partner 8 2
0 - 80 = range
88 = Refuse to Answer
- Q394.** Since your last visit, how often did you use dental dams with [Response to Q16] when you received oral sex?
P8FDDOR 95. Dental dams with female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q395.** The last time you received oral sex from [Response to Q16], did you use a dental dam?
LP8ODD 96. Last time use dental dam female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q396.** Since your last visit on [Response to Q3], have you shared sex toys with [Response to Q16] without washing the sex toy before using it on you or her?
SX_TOY8 97. Use sex toys with partner 8 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q397. About how many times have you used sex toys in this way with [Response to Q16] since your last visit?**
SXTOYF8 98. Frequency sex toy with female partner 2
0 - 80 = range
88 = Refuse to Answer
- Q398. Since your last visit on [Response to Q3], have you or [Response to Q16] touched each other's vagina without washing your fingers before touching the other partner?**
P8MAS 99. Touched each other female partner 8 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q399. About how many times have you or [Response to Q16] touched each other this way since your last visit?**
FP8MAS 100. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer
- Q400. Has [Response to Q16] told you that he/she has had an STD in the past three months?**
PSTD_8 101. partner 8 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q401. Since your last visit, how many NEW male sex partners have you had? This should include any men that you had oral, vaginal, or anal sexual contact with . Please include any main or casual partners**
NWMSXLV3 102. New male sex partners since last visit 2
0 - 50 = range
98 = Refuse to Answer
- Q402. Since your last visit, how many NEW female sex partners have you had? This should include any women that you have had oral, vaginal, or anal sexual contact with. Please include any main or casual partners.**
NWFSXLV3 103. Female sex partners since last visit 2
0 - 50 = range
88 = Refuse to Answer
- Q403. What is your new partner's name or initials?**
NPTID3_1 104. Partner's name 20

Q404.	What best describes [Response to Q403]'s race?		
	N3RACE_1	105. New partner 1 race	1
		0 = Black/ African-American	
		1 = White/ Caucasian	
		2 = Native American/Alaskan Native	
		3 = Asian/Pacific Islander	
		4 = Hispanic/Latino(a)	
		5 = Other	
		88 = Refuse to Answer	
Q405.	Please specify [Response to Q403]'s race?		
	SRC3_N1	105a. Specified race of new partner 1	50
Q406.	Would you call [Response to Q403] a main (regular) or a casual (non-regular) partner?		
	NPREL3_1	106. Main or casual partner new partner 1	1
		0 = Main	
		1 = Casual	
		88 = Refuse to Answer	
Q407.	Are you married or living with [Response to Q403]?		
	PLIV3_N1	107. Living with new partner 1	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q408.	Is [Response to Q403] HIV-infected?		
	NP HIV3_1	108. New partner 1 HIV status	1
		0 = No	
		1 = Yes	
		2 = Not sure but I think infected	
		3 = Not sure but I think uninfected	
		88 = Refuse to Answer	
Q409.	Have you disclosed your HIV status to [Response to Q403]?		
	N1STAT3	109. Discuss HIV status with new partner 1	1
		0 = No, this partner doesn't know my status	
		1 = No, I didn't tell but this partner knows my status	
		2 = Yes I told this partner my status	
		88 = Refuse to Answer	
Q410.	Did you talk about trichomonas with [Response to Q403]?		
	NP1_TV3	110. Talk about trich with new partner 1	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	

- Q411. Is [Response to Q403] a**
NP3_GEN 111. Gender of new partner1 1
1 = Male
2 = Female
- Q412. Since your last visit on have you had vaginal sex with [Response to Q403]? (The type of sex when a man puts his penis in your vagina.)**
NP1VAG3 112. New partner 1 vaginal sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q413. Since your last visit, about how many times have you had vaginal sex with [Response to Q403]?**
NP1VAGF3 113. Freq of vaginal sex with new partner 1 2
0 - 80 = range
88 = Refuse to Answer
- Q414. Since your last visit, how often did you use condoms with [Response to Q403] when you had vaginal sex?**
FCVX3_N1 114. Frequency of condom use for vaginal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q415. The last time you had vaginal sex with [Response to Q403], did you use a condom?**
LXCV3_N1 115. Last time vaginal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q416. Since your last visit on have you had anal sex with [Response to Q403]? (The type of sex when a man puts his penis in your butt.)**
N3P1ANAL 116. Anal sex with new partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q417. Since your last visit, about how many times have you had anal sex with [Response to Q403]?**
FAXP3_N1 117. Freq of anal sex with new partner 1 2
0 - 80 = range
88 = Refuse to Answer

- Q418.** Since your last visit, how often did you use condoms with [Response to Q403] when you had anal sex?
FCAX3_N1 118. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q419.** The last time you had anal sex with [Response to Q403], did you use a condom?
LXCAX3N1 119. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q420.** Since your last visit on have you received oral sex from [Response to Q403]? (The type of sex when a man puts his mouth on your vagina.)
NP13ORAL 120. Oral sex with new partner 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q421.** Since your last visit, about how many times have your received oral sex from [Response to Q403]?
FOXP43N1 121. Frequency of oral sex with new partner 1 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q422.** Since your last visit, how often did you use dental dams with [Response to Q403] when you received oral sex?
FCOX3N1 122. Frequency of dental dam use for oral sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q423.** The last time you received oral sex from [Response to Q403] did you use a dental dam?
LXCox3N1 123. Last time oral sex use dental dam 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q424.** Since your last visit on have you received oral sex from [Response to Q403]? (The type of sex when a woman puts her mouth on your vagina)
NP1FORA3 124. New partner 1 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q425.** Since your last visit, about how many times have you received oral sex from [Response to Q403]?
NP1FORF3 125. Frequency oral sex new female partner 1 2
0 - 80 = range
88 = Refuse to Answer
- Q426.** Since your last visit, how often did you use dental dams with [Response to Q403] when you received oral sex?
NP1FDDO3 126. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q427.** The last time you received oral sex from [Response to Q403], did you use a dental dam?
LNP1OD3 127. Last time use dental dam new female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q428.** Since your last visit on have you shared sex toys with [Response to Q403] without washing the sex toy before using it on you or her?
SX3TOYN1 128. Use sex toys with new partner 1 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q429.** About how many times have you used sex toys in this way with [Response to Q403] since your last visit?
SXTY3FN1 129. Frequency sex toy with new female partner 2
0 - 80 = range
88 = Refuse to Answer

- Q430.** Since your last visit on have you or [Response to Q403] touched each other's vagina without washing your fingers before touching the other partner?
NP1MAS3 130. Touched each other new female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q431.** About how many times have you or [Response to Q403] touched each other this way since your last visit?
NFP1MAS3 131. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer
- Q432.** Has [Response to Q403] told you that he/she has had an STD in the past three months?
NPSTD31 132. New partner 1 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q433.** Have you seen any symptoms or has [Response to Q403] told you that he/she has any symptoms, such as unusual discharge, odor, or painful urination?
NPT13SYM 133. Symptoms of new partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q434.** Have you had any other new partners since your last visit?
NONP_13 134. Any other new partners 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q435.** What is your new partner's name or initials?
NPTID3_2 104. Partner's name 20
- Q436.** What best describes [Response to Q435]'s race?
N3RACE_2 105. New partner 2 race 1
0 = Black/ African-American
1 = White/ Caucasian
2 = Native American/Alaskan Native
3 = Asian/Pacific Islander
4 = Hispanic/Latino(a)
5 = Other
88 = Refuse to Answer

Q437.	Please specify [Response to Q435]'s race?		
	SRC3_N2	105a. Specified race of new partner 2	50
Q438.	Would you call [Response to Q435] a main (regular) or a casual (non-regular) partner?		
	NPREL3_2	106. Main or casual partner new partner 2	1
		0 = Main	
		1 = Casual	
		88 = Refuse to Answer	
Q439.	Are you married or living with [Response to Q435]?		
	PLIV3_N2	107. Living with new partner 2	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q440.	Is [Response to Q435] HIV-infected?		
	NPHIV3_2	108. New partner 2 HIV status	1
		0 = No	
		1 = Yes	
		2 = Not sure but I think infected	
		3 = Not sure but I think uninfected	
		88 = Refuse to Answer	
Q441.	Have you disclosed your HIV status to [Response to Q435]?		
	N2STAT3	109. Discuss HIV status with new partner 2	1
		0 = No, this partner doesn't know my status	
		1 = No, I didn't tell but this partner knows my status	
		2 = Yes I told this partner my status	
		88 = Refuse to Answer	
Q442.	Did you talk about trichomonas with [Response to Q435]?		
	NP2_TV3	110. Talk about trich with new partner 2	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q443.	Is [Response to Q435] a		
	NP3_GEN2	111. Gender of new partner 2	1
		1 = Male	
		2 = Female	

- Q444.** Since your last visit on have you had vaginal sex with [Response to Q435]? (The type of sex when a man puts his penis in your vagina.)
- NP2VAG3** 112. New partner 2 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q445.** Since your last visit, about how many times have you had vaginal sex with [Response to Q435]?
- NP2VAGF3** 113. Freq of vaginal sex with new partner 2 2
- 0 - 80 = range
88 = Refuse to Answer
- Q446.** Since your last visit, how often did you use condoms with [Response to Q435] when you had vaginal sex?
- FCVX3_N2** 114. Frequency of condom use for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q447.** The last time you had vaginal sex with [Response to Q435], did you use a condom?
- LXCV3_N2** 115. Last time vaginal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q448.** Since your last visit on have you had anal sex with [Response to Q435]? (The type of sex when a man puts his penis in your butt.)
- N3P2ANAL** 116. Anal sex with new partner 2 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q449.** Since your last visit, about how many times have you had anal sex with [Response to Q435]?
- FAXP3_N2** 117. Freq of anal sex with new partner 2 2
- 0 - 80 = range
88 = Refuse to Answer

- Q450.** Since your last visit, how often did you use condoms with [Response to Q435] when you had anal sex?
FCAX3_N2 118. Frequency of condom use for anal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q451.** The last time you had anal sex with [Response to Q435], did you use a condom?
LXCAX3N2 119. Last time anal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q452.** Since your last visit on have you received oral sex from [Response to Q435]? (The type of sex when a man puts his mouth on your vagina.)
NP23ORAL 120. Oral sex with new partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q453.** Since your last visit, about how many times have your received oral sex from [Response to Q435]?
FOXP43N2 121. Frequency of oral sex with new partner 2 2
0 - 80 = range
88 = Refuse to Answer
- Q454.** Since your last visit, how often did you use dental dams with [Response to Q435] when you received oral sex?
FCOX3N2 122. Frequency of dental dam use for oral sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q455.** The last time you received oral sex from [Response to Q435] did you use a dental dam?
LXCX3N2 123. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q456.** Since your last visit on have you received oral sex from [Response to Q435]? (The type of sex when a woman puts her mouth on your vagina)
NP2FORA3 124. New partner 2 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q457.** Since your last visit, about how many times have you received oral sex from [Response to Q435]?
NP2FORF3 125. Frequency oral sex new female partner 2 2
0 - 80 = range
88 = Refuse to Answer
- Q458.** Since your last visit, how often did you use dental dams with [Response to Q435] when you received oral sex?
NP2FDDO3 126. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q459.** The last time you received oral sex from [Response to Q435], did you use a dental dam?
LNP2OD3 127. Last time use dental dam new female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q460.** Since your last visit on have you shared sex toys with [Response to Q435] without washing the sex toy before using it on you or her?
SX3TOYN2 128. Use sex toys with new partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q461.** About how many times have you used sex toys in this way with [Response to Q435] since your last visit?
SXTY3FN2 129. Frequency sex toy with new female partner 2
0 - 80 = range
88 = Refuse to Answer

- Q462.** Since your last visit on have you or [Response to Q435] touched each other's vagina without washing your fingers before touching the other partner?
NP2MAS3 130. Touched each other new female partner 2 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q463.** About how many times have you or [Response to Q435] touched each other this way since your last visit?
NFP2MAS3 131. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer
- Q464.** Has [Response to Q435] told you that he/she has had an STD in the past three months?
NPSTD32 132. New partner 2 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q465.** Have you seen any symptoms or has [Response to Q435] told you that he/she has any symptoms, such as unusual discharge, odor, or painful urination?
NPT23SYM 133. Symptoms of new partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q466.** Have you had any other new partners since your last visit?
NONP_23 134. Any other new partners 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q467.** What is your new partner's name or initials?
NPTID3_3 104. Partner's name 20
- Q468.** What best describes [Response to Q467]'s race?
N3RACE_3 105. New partner 3 race 1
0 = Black/ African-American
1 = White/ Caucasian
2 = Native American/Alaskan Native
3 = Asian/Pacific Islander
4 = Hispanic/Latino(a)
5 = Other
88 = Refuse to Answer

Q469.	Please specify [Response to Q467]'s race?		
	SRC3_N3	105a. Specified race of new partner 3	50
Q470.	Would you call [Response to Q467] a main (regular) or a casual (non-regular) partner?		
	NPREL3_3	106. Main or casual partner new partner 3	1
		0 = Main	
		1 = Casual	
		88 = Refuse to Answer	
Q471.	Are you married or living with [Response to Q467]?		
	PLIV3_N3	107. Living with new partner 3	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q472.	Is [Response to Q467] HIV-infected?		
	NPHIV3_3	108. New partner 3 HIV status	1
		0 = No	
		1 = Yes	
		2 = Not sure but I think infected	
		3 = Not sure but I think uninfected	
		88 = Refuse to Answer	
Q473.	Have you disclosed your HIV status to [Response to Q467]?		
	N3STAT3	109. Discuss HIV status with new partner 3	1
		0 = No, this partner doesn't know my status	
		1 = No, I didn't tell but this partner knows my status	
		2 = Yes I told this partner my status	
		88 = Refuse to Answer	
Q474.	Did you talk about trichomonas with [Response to Q467]?		
	NP3_TV3	110. Talk about trich with new partner 3	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q475.	Is [Response to Q467] a		
	NP3_GEN3	111. Gender of new partner 3	1
		1 = Male	
		2 = Female	

- Q476.** Since your last visit on have you had vaginal sex with [Response to Q467]? (The type of sex when a man puts his penis in your vagina.)
- NP3VAG3** 112. New partner 3 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q477.** Since your last visit, about how many times have you had vaginal sex with [Response to Q467]?
- NP3VAGF3** 113. Freq of vaginal sex with new partner 3 2
- 0 - 80 = range
88 = Refuse to Answer
- Q478.** Since your last visit, how often did you use condoms with [Response to Q467] when you had vaginal sex?
- FCVX3_N3** 114. Frequency of condom use for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q479.** The last time you had vaginal sex with [Response to Q467], did you use a condom?
- LXCV3_N3** 115. Last time vaginal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q480.** Since your last visit on have you had anal sex with [Response to Q467]? (The type of sex when a man puts his penis in your butt.)
- N3P3ANAL** 116. Anal sex with new partner 3 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q481.** Since your last visit, about how many times have you had anal sex with [Response to Q467]?
- FAXP3_N3** 117. Freq of anal sex with new partner 3 2
- 0 - 80 = range
88 = Refuse to Answer

- Q482.** Since your last visit, how often did you use condoms with [Response to Q467] when you had anal sex?
FCAX3_N3 118. Frequency of condom use for anal sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q483.** The last time you had anal sex with [Response to Q467], did you use a condom?
LXCAX3N3 119. Last time anal sex use condom 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q484.** Since your last visit on have you received oral sex from [Response to Q467]? (The type of sex when a man puts his mouth on your vagina.)
NP33ORAL 120. Oral sex with new partner 3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q485.** Since your last visit, about how many times have your received oral sex from [Response to Q467]?
FOXP43N3 121. Frequency of oral sex with new partner 3 2
0 - 80 = range
88 = Refuse to Answer
- Q486.** Since your last visit, how often did you use dental dams with [Response to Q467] when you received oral sex?
FCOX3N3 122. Frequency of dental dam use for oral sex 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q487.** The last time you received oral sex from [Response to Q467] did you use a dental dam?
LXCOX3N3 123. Last time oral sex use dental dam 1
0 = No
1 = Yes
8 = Refuse to Answer

- Q488.** Since your last visit on have you received oral sex from [Response to Q467]? (The type of sex when a woman puts her mouth on your vagina)
NP3FORA3 124. New partner 3 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q489.** Since your last visit, about how many times have you received oral sex from [Response to Q467]?
NP3FORF3 125. Frequency oral sex new female partner 3 2
0 - 80 = range
88 = Refuse to Answer
- Q490.** Since your last visit, how often did you use dental dams with [Response to Q467] when you received oral sex?
NP3FDDO3 126. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q491.** The last time you received oral sex from [Response to Q467], did you use a dental dam?
LNP3OD3 127. Last time use dental dam new female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q492.** Since your last visit on have you shared sex toys with [Response to Q467] without washing the sex toy before using it on you or her?
SX3TOYN3 128. Use sex toys with new partner 3 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q493.** About how many times have you used sex toys in this way with [Response to Q467] since your last visit?
SXTY3FN3 129. Frequency sex toy with new female partner 2
0 - 80 = range
88 = Refuse to Answer

- Q494.** Since your last visit on have you or [Response to Q467] touched each other's vagina without washing your fingers before touching the other partner? 1
- NP3MAS3** 130. Touched each other new female partner 3
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q495.** About how many times have you or [Response to Q467] touched each other this way since your last visit? 2
- NFP3MAS3** 131. Female partners touched
- 0 - 80 = range
88 = Refuse to Answer
- Q496.** Has [Response to Q467] told you that he/she has had an STD in the past three months? 1
- NPSTD33** 132. New partner 3 told respondent if they have an STD
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q497.** Have you seen any symptoms or has [Response to Q467] told you that he/she has any symptoms, such as unusual discharge, odor, or painful urination? 1
- NPT33SYM** 133. Symptoms of new partner
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q498.** Have you had any other new partners since your last visit? 1
- NONP_33** 134. Any other new partners
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q499.** What is your new partner's name or initials? 20
- NPTID3_4** 104. Partner's name
- Q500.** What best describes [Response to Q499]'s race? 1
- N3RACE_4** 105. New partner 4 race
- 0 = Black/ African-American
1 = White/ Caucasian
2 = Native American/Alaskan Native
3 = Asian/Pacific Islander
4 = Hispanic/Latino(a)
5 = Other
88 = Refuse to Answer

Q501.	Please specify [Response to Q499]'s race?		
	SRC3_N4	105a. Specified race of new partner 4	50
Q502.	Would you call [Response to Q499] a main (regular) or a casual (non-regular) partner?		
	NPREL3_4	106. Main or casual partner new partner 4	1
		0 = Main	
		1 = Casual	
		88 = Refuse to Answer	
Q503.	Are you married or living with [Response to Q499]?		
	PLIV3_N4	107. Living with new partner 4	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q504.	Is [Response to Q499] HIV-infected?		
	NPHIV3_4	108. New partner 4 HIV status	1
		0 = No	
		1 = Yes	
		2 = Not sure but I think infected	
		3 = Not sure but I think uninfected	
		88 = Refuse to Answer	
Q505.	Have you disclosed your HIV status to [Response to Q499]?		
	N4STAT3	109. Discuss HIV status with new partner 4	1
		0 = No, this partner doesn't know my status	
		1 = No, I didn't tell but this partner knows my status	
		2 = Yes I told this partner my status	
		88 = Refuse to Answer	
Q506.	Did you talk about trichomonas with [Response to Q499]?		
	NP4_TV3	110. Talk about trich with new partner 4	1
		0 = No	
		1 = Yes	
		8 = Refuse to Answer	
Q507.	Is [Response to Q499] a		
	NP3_GEN4	111. Gender of new partner 4	1
		1 = Male	
		2 = Female	

- Q508.** Since your last visit on have you had vaginal sex with [Response to Q499]? (The type of sex when a man puts his penis in your vagina.)
- NP4VAG3** 112. New partner 4 vaginal sex 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q509.** Since your last visit, about how many times have you had vaginal sex with [Response to Q499]?
- NP4VAGF3** 113. Freq of vaginal sex with new partner 4 2
- 0 - 80 = range
88 = Refuse to Answer
- Q510.** Since your last visit, how often did you use condoms with [Response to Q499] when you had vaginal sex?
- FCVX3_N4** 114. Frequency of condom use for vaginal sex 1
- 0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
88 = Refuse to Answer
- Q511.** The last time you had vaginal sex with [Response to Q499], did you use a condom?
- LXCV3_N4** 115. Last time vaginal sex use condom 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q512.** Since your last visit on have you had anal sex with [Response to Q499]? (The type of sex when a man puts his penis in your butt.)
- N3P4ANAL** 116. Anal sex with new partner 4 1
- 0 = No
1 = Yes
8 = Refuse to Answer
- Q513.** Since your last visit, about how many times have you had anal sex with [Response to Q499]?
- FAXP3_N4** 117. Freq of anal sex with new partner 4 2
- 0 - 80 = range
88 = Refuse to Answer

- Q514.** Since your last visit, how often did you use condoms with [Response to Q499] when you had anal sex?
FCAX3_N4 118. Frequency of condom use for anal sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q515.** The last time you had anal sex with [Response to Q499], did you use a condom?
LXCAX3N4 119. Last time anal sex use condom 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q516.** Since your last visit on have you received oral sex from [Response to Q499]? (The type of sex when a man puts his mouth on your vagina.)
NP43ORAL 120. Oral sex with new partner 4 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer
- Q517.** Since your last visit, about how many times have your received oral sex from [Response to Q499]?
FOXP43N4 121. Frequency of oral sex with new partner 4 2
- 0 - 80 = range
 - 88 = Refuse to Answer
- Q518.** Since your last visit, how often did you use dental dams with [Response to Q499] when you received oral sex?
FCOX3N4 122. Frequency of dental dam use for oral sex 1
- 0 = Never
 - 1 = Rarely
 - 2 = Sometimes
 - 3 = Most of the time
 - 4 = All of the time
 - 88 = Refuse to Answer
- Q519.** The last time you received oral sex from [Response to Q499] did you use a dental dam?
LXCOX3N4 123. Last time oral sex use dental dam 1
- 0 = No
 - 1 = Yes
 - 8 = Refuse to Answer

- Q520.** Since your last visit on have your received oral sex from [Response to Q499]? (The type of sex when a woman puts her mouth on your vagina)
NP4FORA3 124. New partner 4 female, oral sex 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q521.** Since your last visit, about how many times have you received oral sex from [Response to Q499]?
NP4FORF3 125. Frequency oral sex new female partner 4 2
0 - 80 = range
88 = Refuse to Answer
- Q522.** Since your last visit, how often did you use dental dams with [Response to Q499] when you received oral sex?
NP4FDDO3 126. Dental dams with new female partner 1
0 = Never
1 = Rarely
2 = Sometimes
3 = Most of the time
4 = All of the time
8 = Refuse to Answer
- Q523.** The last time you received oral sex from [Response to Q499], did you use a dental dam?
LNP4OD3 127. Last time use dental dam new female partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q524.** Since your last visit on have you shared sex toys with [Response to Q499] without washing the sex toy before using it on you or her?
SX3TOYN4 128. Use sex toys with new partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q525.** About how many times have you used sex toys in this way with [Response to Q499] since your last visit?
SXTY3FN4 129. Frequency sex toy with new female partner 2
0 - 80 = range
88 = Refuse to Answer

- Q526.** Since your last visit on have you or [Response to Q499] touched each other's vagina without washing your fingers before touching the other partner?
NP4MAS3 130. Touched each other new female partner 4 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q527.** About how many times have you or [Response to Q499] touched each other this way since your last visit?
NFP4MAS3 131. Female partners touched 2
0 - 80 = range
88 = Refuse to Answer
- Q528.** Has [Response to Q499] told you that he/she has had an STD in the past three months?
NPSTD34 132. New partner 4 told respondent if they have an STD 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q529.** Have you seen any symptoms or has [Response to Q499] told you that he/she has any symptoms, such as unusual discharge, odor, or painful urination?
NPT43SYM 133. Symptoms of new partner 1
0 = No
1 = Yes
8 = Refuse to Answer
- Q530.** Did participant complete the ACASI interview
ACASI 134. Help with interview 1
0 = With no or minimal assistance from study staff
1 = With assistance from study staff
2 = Study staff entered all the participants responses in ACASI
- Q531.** Interviewer's initials
STAFF 135. Staff completing interview 20

References

1. WHO. Global Prevalence and Incidence of Selected Curable Sexually Transmitted Infections. 2001.
2. CDC. Trichomoniasis Fact Sheet. 2007.
3. Sutton M, Sternberg M, Koumans EH, McQuillan G, Berman S, Markowitz L. The prevalence of *Trichomonas vaginalis* infection among reproductive-age women in the United States, 2001-2004. *Clin Infect Dis*. Nov 15 2007;45(10):1319-1326.
4. Cotch MF, Pastorek JG, 2nd, Nugent RP, Yerg DE, Martin DH, Eschenbach DA. Demographic and behavioral predictors of *Trichomonas vaginalis* infection among pregnant women. The Vaginal Infections and Prematurity Study Group. *Obstet Gynecol*. Dec 1991;78(6):1087-1092.
5. Rosenberg MJ, Davidson AJ, Chen JH, Judson FN, Douglas JM. Barrier contraceptives and sexually transmitted diseases in women: a comparison of female-dependent methods and condoms. *Am J Public Health*. May 1992;82(5):669-674.
6. Barbone F, Austin H, Louv WC, Alexander WJ. A follow-up study of methods of contraception, sexual activity, and rates of trichomoniasis, candidiasis, and bacterial vaginosis. *Am J Obstet Gynecol*. Aug 1990;163(2):510-514.
7. Pabst KM, Reichart CA, Knud-Hansen CR, et al. Disease prevalence among women attending a sexually transmitted disease clinic varies with reason for visit. *Sex Transm Dis*. Mar-Apr 1992;19(2):88-91.
8. Shuter J, Bell D, Graham D, Holbrook KA, Bellin EY. Rates of and risk factors for trichomoniasis among pregnant inmates in New York City. *Sex Transm Dis*. Jul 1998;25(6):303-307.
9. Sorvillo F, Smith L, Kerndt P, Ash L. *Trichomonas vaginalis*, HIV, and African-Americans. *Emerg Infect Dis*. Nov-Dec 2001;7(6):927-932.
10. Kissinger PJ, Dumestre J, Clark RA, et al. Vaginal swabs versus lavage for detection of *Trichomonas vaginalis* and bacterial vaginosis among HIV-positive women. *Sex Transm Dis*. Apr 2005;32(4):227-230.
11. Magnus M, Clark R, Myers L, Farley T, Kissinger PJ. *Trichomonas vaginalis* among HIV-Infected women: are immune status or protease inhibitor use associated with subsequent *T. vaginalis* positivity? *Sex Transm Dis*. Nov 2003;30(11):839-843.
12. Seth P, Wingood GM, Diclemente RJ. Exposure to alcohol problems and its association with sexual behaviour and biologically confirmed *Trichomonas vaginalis* among women living with HIV. *Sex Transm Infect*. Oct 2008;84(5):390-392.
13. Watts DH, Springer G, Minkoff H, et al. The occurrence of vaginal infections among HIV-infected and high-risk HIV-uninfected women: longitudinal findings of the women's interagency HIV study. *J Acquir Immune Defic Syndr*. Oct 1 2006;43(2):161-168.

14. Clark RA, Theall KP, Amedee AM, Kissinger PJ. Frequent douching and clinical outcomes among HIV-infected women. *Sex Transm Dis*. Dec 2007;34(12):985-990.
15. Wilson TE, Minkoff H, DeHovitz J, Feldman J, Landesman S. The relationship of cocaine use and human immunodeficiency virus serostatus to incident sexually transmitted diseases among women. *Sexually Transmitted Diseases*. Feb 1998;25(2):70-75.
16. Cu-Uvin S, Hogan JW, Warren D, et al. Prevalence of lower genital tract infections among human immunodeficiency virus (HIV)-seropositive and high-risk HIV-seronegative women. HIV Epidemiology Research Study Group. *Clinical Infectious Diseases*. Nov 1999;29(5):1145-1150.
17. Sorvillo F, Kovacs A, Kerndt P, Stek A, Muderspach L, Sanchez-Keeland L. Risk factors for trichomoniasis among women with human immunodeficiency virus (HIV) infection at a public clinic in Los Angeles County, California: implications for HIV prevention. *Am J Trop Med Hyg*. Apr 1998;58(4):495-500.
18. Niccolai LM, Kopicko JJ, Kassie A, Petros H, Clark RA, Kissinger P. Incidence and predictors of reinfection with *Trichomonas vaginalis* in HIV-infected women. *Sex Transm Dis*. May 2000;27(5):284-288.
19. Kissinger P, Secor WE, Leichliter JS, et al. Early repeated infections with *Trichomonas vaginalis* among HIV-positive and HIV-negative women. *Clin Infect Dis*. Apr 1 2008;46(7):994-999.
20. Van Der Pol B, Williams JA, Orr DP, Batteiger BE, Fortenberry JD. Prevalence, incidence, natural history, and response to treatment of *Trichomonas vaginalis* infection among adolescent women. *J Infect Dis*. Dec 15 2005;192(12):2039-2044.
21. McClelland RS, Sangare L, Hassan WM, et al. Infection with *Trichomonas vaginalis* increases the risk of HIV-1 acquisition. *J Infect Dis*. Mar 1 2007;195(5):698-702.
22. Laga M, Manoka A, Kivuvu M, et al. Non-ulcerative sexually transmitted diseases as risk factors for HIV-1 transmission in women: results from a cohort study. *Aids*. Jan 1993;7(1):95-102.
23. Sorvillo F, Kerndt P. *Trichomonas vaginalis* and amplification of HIV-1 transmission. *Lancet*. Jan 17 1998;351(9097):213-214.
24. Tuomala RE, O'Driscoll PT, Bremer JW, et al. Cell-associated genital tract virus and vertical transmission of human immunodeficiency virus type 1 in antiretroviral-experienced women. *J Infect Dis*. Feb 1 2003;187(3):375-384.
25. John GC, Nduati RW, Mbori-Ngacha DA, et al. Correlates of mother-to-child human immunodeficiency virus type 1 (HIV-1) transmission: association with maternal plasma HIV-1 RNA load, genital HIV-1 DNA shedding, and breast infections. *J Infect Dis*. Jan 15 2001;183(2):206-212.
26. Pearce-Pratt R, Phillips DM. Studies of adhesion of lymphocytic cells: implications for sexual transmission of human immunodeficiency virus. *Biology of Reproduction*. Mar 1993;48(3):431-445.

27. Wang CC, McClelland RS, Reilly M, et al. The effect of treatment of vaginal infections on shedding of human immunodeficiency virus type 1. *J Infect Dis.* Apr 1 2001;183(7):1017-1022.
28. Kissinger P, Amedee A, Clark RA, et al. Trichomonas vaginalis treatment reduces vaginal HIV-1 shedding. *Sex Transm Dis.* Jan 2009;36(1):11-16.
29. Thomason JL, Gelbart SM. Trichomonas vaginalis. *Obstet Gynecol.* Sep 1989;74(3 Pt 2):536-541.
30. Schwandt A, Williams C, Beigi RH. Perinatal transmission of Trichomonas vaginalis: a case report. *J Reprod Med.* Jan 2008;53(1):59-61.
31. Johnston VJ, Mabey DC. Global epidemiology and control of Trichomonas vaginalis. *Curr Opin Infect Dis.* Feb 2008;21(1):56-64.
32. Sena AC, Miller WC, Hobbs MM, et al. Trichomonas vaginalis infection in male sexual partners: implications for diagnosis, treatment, and prevention. *Clin Infect Dis.* Jan 1 2007;44(1):13-22.
33. Wilkinson D, Abdool Karim SS, Harrison A, et al. Unrecognized sexually transmitted infections in rural South African women: a hidden epidemic. *Bull World Health Organ.* 1999;77(1):22-28.
34. Krieger JN, Jenny C, Verdon M, et al. Clinical manifestations of trichomoniasis in men. *Ann Intern Med.* Jun 1 1993;118(11):844-849.
35. Krieger JN. Trichomoniasis in men: old issues and new data. *Sex Transm Dis.* Mar-Apr 1995;22(2):83-96.
36. Schwebke JR, Burgess D. Trichomoniasis. *Clin Microbiol Rev.* Oct 2004;17(4):794-803, table of contents.
37. Swygard H, Sena AC, Hobbs MM, Cohen MS. Trichomoniasis: clinical manifestations, diagnosis and management. *Sex Transm Infect.* Apr 2004;80(2):91-95.
38. Cotch MF, Pastorek JG, 2nd, Nugent RP, et al. Trichomonas vaginalis associated with low birth weight and preterm delivery. The Vaginal Infections and Prematurity Study Group. *Sex Transm Dis.* Jul 1997;24(6):353-360.
39. Miller WC, Swygard H, Hobbs MM, et al. The prevalence of trichomoniasis in young adults in the United States. *Sexually Transmitted Diseases.* Oct 2005;32(10):593-598.
40. Garcia A, Exposto F, Prieto E, Lopes M, Duarte A, Correia da Silva R. Association of Trichomonas vaginalis with sociodemographic factors and other STDs among female inmates in Lisbon. *Int J STD AIDS.* Sep 2004;15(9):615-618.
41. Crosby R, DiClemente RJ, Wingood GM, et al. Predictors of infection with Trichomonas vaginalis: a prospective study of low income African-American adolescent females. *Sex Transm Infect.* Oct 2002;78(5):360-364.
42. Morton AN, Wakefield T, Tabrizi SN, Garland SM, Fairley CK. An outreach programme for sexually transmitted infection screening in street sex workers using self-administered samples. *Int J STD AIDS.* Nov 1999;10(11):741-743.
43. Nessa K, Waris SA, Alam A, et al. Sexually transmitted infections among brothel-based sex workers in bangladesh: high prevalence of asymptomatic infection. *Sex Transm Dis.* Jan 2005;32(1):13-19.

44. Helms DJ, Mosure DJ, Metcalf CA, et al. Risk factors for prevalent and incident *Trichomonas vaginalis* among women attending three sexually transmitted disease clinics. *Sex Transm Dis*. May 2008;35(5):484-488.
45. Allsworth JE, Ratner JA, Peipert JF. Trichomoniasis and other sexually transmitted infections: results from the 2001-2004 National Health and Nutrition Examination Surveys. *Sex Transm Dis*. Dec 2009;36(12):738-744.
46. Shafir SC, Sorvillo FJ, Smith L. Current issues and considerations regarding trichomoniasis and human immunodeficiency virus in African-Americans. *Clin Microbiol Rev*. Jan 2009;22(1):37-45, Table of Contents.
47. Swygard H, Miller WC, Kaydos-Daniels SC, et al. Targeted screening for *Trichomonas vaginalis* with culture using a two-step method in women presenting for STD evaluation. *Sex Transm Dis*. Nov 2004;31(11):659-664.
48. Wiese W, Patel SR, Patel SC, Ohl CA, Estrada CA. A meta-analysis of the Papanicolaou smear and wet mount for the diagnosis of vaginal trichomoniasis. *Am J Med*. Mar 2000;108(4):301-308.
49. Kingston MA, Bansal D, Carlin EM. 'Shelf life' of *Trichomonas vaginalis*. *Int J STD AIDS*. Jan 2003;14(1):28-29.
50. Barenfanger J, Drake C, Hanson C. Timing of inoculation of the pouch makes no difference in increased detection of *Trichomonas vaginalis* by the InPouch TV method. *J Clin Microbiol*. Apr 2002;40(4):1387-1389.
51. Borchardt KA, Smith RF. An evaluation of an InPouch TV culture method for diagnosing *Trichomonas vaginalis* infection. *Genitourin Med*. Apr 1991;67(2):149-152.
52. Borchardt KA, Zhang MZ, Shing H, Flink K. A comparison of the sensitivity of the InPouch TV, Diamond's and Trichosel media for detection of *Trichomonas vaginalis*. *Genitourin Med*. Aug 1997;73(4):297-298.
53. Sood S, Mohanty S, Kapil A, Tolosa J, Mittal S. InPouch TV culture for detection of *Trichomonas vaginalis*. *Indian J Med Res*. Apr 2007;125(4):567-571.
54. Madico G, Quinn TC, Rompalo A, McKee KT, Jr., Gaydos CA. Diagnosis of *Trichomonas vaginalis* infection by PCR using vaginal swab samples. *J Clin Microbiol*. Nov 1998;36(11):3205-3210.
55. Caliendo AM, Jordan JA, Green AM, Ingersoll J, Diclemente RJ, Wingood GM. Real-time PCR improves detection of *Trichomonas vaginalis* infection compared with culture using self-collected vaginal swabs. *Infect Dis Obstet Gynecol*. Sep 2005;13(3):145-150.
56. Campbell L, Woods V, Lloyd T, Elsayed S, Church DL. Evaluation of the OSOM *Trichomonas* rapid test versus wet preparation examination for detection of *Trichomonas vaginalis* vaginitis in specimens from women with a low prevalence of infection. *J Clin Microbiol*. Oct 2008;46(10):3467-3469.
57. CDC. Sexually Transmitted Diseases Treatment Guidelines, 2006. *MMWR*. 2006;55:RR-11.
58. Forna F, Gulmezoglu AM. Interventions for treating trichomoniasis in women. *Cochrane Database Syst Rev*. 2003(2):CD000218.

59. Schwebke JR, Barrientes FJ. Prevalence of *Trichomonas vaginalis* isolates with resistance to metronidazole and tinidazole. *Antimicrob Agents Chemother*. Dec 2006;50(12):4209-4210.
60. Perez S, Fernandez-Verdugo A, Perez F, Vazquez F. Prevalence of 5-nitroimidazole-resistant *trichomonas vaginalis* in Oviedo, Spain. *Sex Transm Dis*. Feb 2001;28(2):115-116.
61. Schmid G, Narcisi E, Mosure D, Secor WE, Higgins J, Moreno H. Prevalence of metronidazole-resistant *Trichomonas vaginalis* in a gynecology clinic. *J Reprod Med*. Jun 2001;46(6):545-549.
62. UNAIDS. Report on the Global AIDS Epidemic. 2008.
63. Glynn M, et al. Estimated HIV prevalence in the United States at the end of 2003. *National HIV Prevention Conference*. 2005.
64. CDC. HIV and AIDS in the United States: A Picture of Today's Epidemic. 2008.
65. Hall HI, Song R, Rhodes P, et al. Estimation of HIV incidence in the United States. *Jama*. Aug 6 2008;300(5):520-529.
66. CDC. HIV/AIDS among Women. 2008.
67. McNaghten AD, et al. Gender disparity in HIV treatment and AIDS opportunistic illnesses (OI). *The XV International AIDS Conference*. 2004.
68. Ghys PD, Diallo MO, Ettiegne-Traore V, et al. Genital ulcers associated with human immunodeficiency virus-related immunosuppression in female sex workers in Abidjan, Ivory Coast. *J Infect Dis*. Nov 1995;172(5):1371-1374.
69. ter Meulen J, Mgaya HN, Chang-Claude J, et al. Risk factors for HIV infection in gynaecological inpatients in Dar es Salaam, Tanzania, 1988-1990. *East Afr Med J*. Dec 1992;69(12):688-692.
70. Van Der Pol B, Kwok C, Pierre-Louis B, et al. *Trichomonas vaginalis* infection and human immunodeficiency virus acquisition in African women. *J Infect Dis*. Feb 15 2008;197(4):548-554.
71. Sardana S, Sodhani P, Agarwal SS, et al. Epidemiologic analysis of *Trichomonas vaginalis* infection in inflammatory smears. *Acta Cytol*. Sep-Oct 1994;38(5):693-697.
72. Levine WC, Pope V, Bhoomkar A, et al. Increase in endocervical CD4 lymphocytes among women with nonulcerative sexually transmitted diseases. *J Infect Dis*. Jan 1998;177(1):167-174.
73. Fouts AC, Kraus SJ. *Trichomonas vaginalis*: reevaluation of its clinical presentation and laboratory diagnosis. *J Infect Dis*. Feb 1980;141(2):137-143.
74. Moodley P, Connolly C, Sturm AW. Interrelationships among human immunodeficiency virus type 1 infection, bacterial vaginosis, trichomoniasis, and the presence of yeasts. *J Infect Dis*. Jan 1 2002;185(1):69-73.
75. van de Wijgert JH, Morrison CS, Brown J, et al. Disentangling contributions of reproductive tract infections to HIV acquisition in African Women. *Sex Transm Dis*. Jun 2009;36(6):357-364.
76. Saxena SB, Jenkins RR. Prevalence of *Trichomonas vaginalis* in men at high risk for sexually transmitted diseases. *Sex Transm Dis*. Jul-Sep 1991;18(3):138-142.

77. Doherty IA, Schoenbach VJ, Adimora AA. Condom use and duration of concurrent partnerships among men in the United States. *Sex Transm Dis.* May 2009;36(5):265-272.
78. Funkhouser E, Hayes TD, Vermund SH. Vaginal douching practices among women attending a university in the southern United States. *J Am Coll Health.* Jan 2002;50(4):177-182.
79. Aral SO, Mosher WD, Cates W, Jr. Vaginal douching among women of reproductive age in the United States: 1988. *Am J Public Health.* Feb 1992;82(2):210-214.
80. Scholes D, Stergachis A, Ichikawa LE, Heidrich FE, Holmes KK, Stamm WE. Vaginal douching as a risk factor for cervical Chlamydia trachomatis infection. *Obstet Gynecol.* Jun 1998;91(6):993-997.
81. Tsai CS, Shepherd BE, Vermund SH. Does douching increase risk for sexually transmitted infections? A prospective study in high-risk adolescents. *Am J Obstet Gynecol.* Jan 2009;200(1):38 e31-38.
82. CDC. HIV/AIDS Surveillance Report, 2005. 2007;Vol. 17. Rev ed.
83. Royce RA, Sena A, Cates W, Jr., Cohen MS. Sexual transmission of HIV. *N Engl J Med.* Apr 10 1997;336(15):1072-1078.
84. Chuachoowong R, Shaffer N, Siriwasin W, et al. Short-course antenatal zidovudine reduces both cervicovaginal human immunodeficiency virus type 1 RNA levels and risk of perinatal transmission. Bangkok Collaborative Perinatal HIV Transmission Study Group. *J Infect Dis.* Jan 2000;181(1):99-106.
85. Kovacs A, Wasserman SS, Burns D, et al. Determinants of HIV-1 shedding in the genital tract of women. *Lancet.* Nov 10 2001;358(9293):1593-1601.
86. Hart CE, Lennox JL, Pratt-Palmore M, et al. Correlation of human immunodeficiency virus type 1 RNA levels in blood and the female genital tract. *J Infect Dis.* Apr 1999;179(4):871-882.
87. Cu-Uvin S, Caliendo AM, Reinert S, et al. Effect of highly active antiretroviral therapy on cervicovaginal HIV-1 RNA. *Aids.* Mar 10 2000;14(4):415-421.
88. Seck K, Samb N, Tempesta S, et al. Prevalence and risk factors of cervicovaginal HIV shedding among HIV-1 and HIV-2 infected women in Dakar, Senegal. *Sex Transm Infect.* Jun 2001;77(3):190-193.
89. Mostad SB, Overbaugh J, DeVange DM, et al. Hormonal contraception, vitamin A deficiency, and other risk factors for shedding of HIV-1 infected cells from the cervix and vagina. *Lancet.* Sep 27 1997;350(9082):922-927.
90. Ghys PD, Fransen K, Diallo MO, et al. The associations between cervicovaginal HIV shedding, sexually transmitted diseases and immunosuppression in female sex workers in Abidjan, Cote d'Ivoire. *Aids.* Oct 1997;11(12):F85-93.
91. McClelland RS, Baeten JM, Richardson BA, et al. A comparison of genital HIV-1 shedding and sexual risk behavior among Kenyan women based on eligibility for initiation of HAART according to WHO guidelines. *J Acquir Immune Defic Syndr.* Apr 15 2006;41(5):611-615.
92. Benki S, Mostad SB, Richardson BA, Mandaliya K, Kreiss JK, Overbaugh J. Cyclic shedding of HIV-1 RNA in cervical secretions during the menstrual cycle. *J Infect Dis.* Jun 15 2004;189(12):2192-2201.

93. Money DM, Arian YY, Remple V, et al. Genital tract and plasma human immunodeficiency virus viral load throughout the menstrual cycle in women who are infected with ovulatory human immunodeficiency virus. *Am J Obstet Gynecol.* Jan 2003;188(1):122-128.
94. Reichelderfer PS, Coombs RW, Wright DJ, et al. Effect of menstrual cycle on HIV-1 levels in the peripheral blood and genital tract. WHS 001 Study Team. *Aids.* Sep 29 2000;14(14):2101-2107.
95. Wang CC, McClelland RS, Overbaugh J, et al. The effect of hormonal contraception on genital tract shedding of HIV-1. *Aids.* Jan 23 2004;18(2):205-209.
96. Henin Y, Mandelbrot L, Henrion R, Pradinaud R, Coulaud JP, Montagnier L. Virus excretion in the cervicovaginal secretions of pregnant and nonpregnant HIV-infected women. *J Acquir Immune Defic Syndr.* Jan 1993;6(1):72-75.
97. Wright TC, Jr., Subbarao S, Ellerbrock TV, et al. Human immunodeficiency virus 1 expression in the female genital tract in association with cervical inflammation and ulceration. *Am J Obstet Gynecol.* Feb 2001;184(3):279-285.
98. Gumbi PP, Nkwanyana NN, Bere A, et al. Impact of mucosal inflammation on cervical human immunodeficiency virus (HIV-1)-specific CD8 T-cell responses in the female genital tract during chronic HIV infection. *J Virol.* Sep 2008;82(17):8529-8536.
99. Baeten JM, Mostad SB, Hughes MP, et al. Selenium deficiency is associated with shedding of HIV-1--infected cells in the female genital tract. *J Acquir Immune Defic Syndr.* Apr 1 2001;26(4):360-364.
100. LeGoff J, Weiss HA, Gresenguet G, et al. Cervicovaginal HIV-1 and herpes simplex virus type 2 shedding during genital ulcer disease episodes. *Aids.* Jul 31 2007;21(12):1569-1578.
101. Spinillo A, Zara F, Gardella B, Preti E, Mainini R, Maserati R. The effect of vaginal candidiasis on the shedding of human immunodeficiency virus in cervicovaginal secretions. *Am J Obstet Gynecol.* Mar 2005;192(3):774-779.
102. Kilmarx PH, Mock PA, Levine WC. Effect of Chlamydia trachomatis coinfection on HIV shedding in genital tract secretions. *Sex Transm Dis.* Jun 2001;28(6):347-348.
103. Cu-Uvin S, Hogan JW, Caliendo AM, Harwell J, Mayer KH, Carpenter CC. Association between bacterial vaginosis and expression of human immunodeficiency virus type 1 RNA in the female genital tract. *Clin Infect Dis.* Sep 15 2001;33(6):894-896.
104. Sha BE, Zariffard MR, Wang QJ, et al. Female genital-tract HIV load correlates inversely with Lactobacillus species but positively with bacterial vaginosis and Mycoplasma hominis. *J Infect Dis.* Jan 1 2005;191(1):25-32.
105. Coleman JS, Hitti J, Bukusi EA, et al. Infectious correlates of HIV-1 shedding in the female upper and lower genital tracts. *Aids.* Mar 30 2007;21(6):755-759.
106. Spinillo A, Debiaggi M, Zara F, De Santolo A, Polatti F, Filice G. Human immunodeficiency virus type 1-related nucleic acids and papillomavirus DNA in cervicovaginal secretions of immunodeficiency virus-infected women. *Obstet Gynecol.* Jun 2001;97(6):999-1004.

107. Graham SM, Holte SE, Peshu NM, et al. Initiation of antiretroviral therapy leads to a rapid decline in cervical and vaginal HIV-1 shedding. *Aids*. Feb 19 2007;21(4):501-507.
108. McClelland RS, Wang CC, Mandaliya K, et al. Treatment of cervicitis is associated with decreased cervical shedding of HIV-1. *Aids*. Jan 5 2001;15(1):105-110.
109. Kissinger P, Schmidt N, Mohammed H, et al. Patient-delivered partner treatment for *Trichomonas vaginalis* infection: a randomized controlled trial. *Sex Transm Dis*. Jul 2006;33(7):445-450.
110. Kanno M, Sobel JD. Late recurrence of resistant *Trichomonas vaginalis* vaginitis: relapse or re-infection? *Sex Transm Infect*. Jun 2003;79(3):260-261.
111. Tidwell BH, Lushbaugh WB, Laughlin MD, Cleary JD, Finley RW. A double-blind placebo-controlled trial of single-dose intravaginal versus single-dose oral metronidazole in the treatment of trichomonal vaginitis. *J Infect Dis*. Jul 1994;170(1):242-246.
112. Spence MR, Harwell TS, Davies MC, Smith JL. The minimum single oral metronidazole dose for treating trichomoniasis: a randomized, blinded study. *Obstet Gynecol*. May 1997;89(5 Pt 1):699-703.
113. McClelland RS, Lavreys L, Katingima C, et al. Contribution of HIV-1 infection to acquisition of sexually transmitted disease: a 10-year prospective study. *J Infect Dis*. Feb 1 2005;191(3):333-338.
114. Dunne RL, Dunn LA, Upcroft P, O'Donoghue PJ, Upcroft JA. Drug resistance in the sexually transmitted protozoan *Trichomonas vaginalis*. *Cell Res*. Aug 2003;13(4):239-249.
115. Peterman TA, Tian LH, Metcalf CA, et al. Persistent, undetected *Trichomonas vaginalis* infections? *Clinical Infectious Diseases*. Jan 15 2009;48(2):259-260.
116. Gatski M, Kissinger P. Observation of probable persistent, undetected *Trichomonas vaginalis* infections among HIV-positive women. *Clin Infect Dis*. In Press 2010.
117. Golden MR. Expedited partner therapy: moving from research to practice. *Sex Transm Dis*. Mar 2008;35(3):320-322.
118. CDC. *Expedited partner therapy in the management of sexually transmitted diseases*. 2006.
119. Schillinger JA, Kissinger P, Calvet H, et al. Patient-delivered partner treatment with azithromycin to prevent repeated *Chlamydia trachomatis* infection among women: a randomized, controlled trial. *Sex Transm Dis*. Jan 2003;30(1):49-56.
120. Golden MR, Whittington WL, Handsfield HH, et al. Effect of expedited treatment of sex partners on recurrent or persistent gonorrhea or chlamydial infection. *N Engl J Med*. Feb 17 2005;352(7):676-685.
121. Kissinger P, Mohammed H, Richardson-Alston G, et al. Patient-delivered partner treatment for male urethritis: a randomized, controlled trial. *Clin Infect Dis*. Sep 1 2005;41(5):623-629.
122. Cameron ST, Glasier A, Scott G, et al. Novel interventions to reduce re-infection in women with chlamydia: a randomized controlled trial. *Hum Reprod*. Apr 2009;24(4):888-895.

123. CDC. Legal Status of Expedited Partner Therapy (EPT). 2010.
124. CDC. Bacterial Vaginosis Fact Sheet. 2008.
125. Tokyol C, Aktepe OC, Cevrioglu AS, Altindis M, Dilek FH. Bacterial vaginosis: comparison of Pap smear and microbiological test results. *Mod Pathol*. Jul 2004;17(7):857-860.
126. Hillier SL. Diagnostic microbiology of bacterial vaginosis. *Am J Obstet Gynecol*. Aug 1993;169(2 Pt 2):455-459.
127. Livengood CH. Bacterial vaginosis: an overview for 2009. *Rev Obstet Gynecol*. Winter 2009;2(1):28-37.
128. Allsworth JE, Peipert JF. Prevalence of bacterial vaginosis: 2001-2004 National Health and Nutrition Examination Survey data. *Obstet Gynecol*. Jan 2007;109(1):114-120.
129. Warren D, Klein RS, Sobel J, et al. A multicenter study of bacterial vaginosis in women with or at risk for human immunodeficiency virus infection. *Infect Dis Obstet Gynecol*. 2001;9(3):133-141.
130. Plitt SS, Garfein RS, Gaydos CA, Strathdee SA, Sherman SG, Taha TE. Prevalence and correlates of chlamydia trachomatis, neisseria gonorrhoeae, trichomonas vaginalis infections, and bacterial vaginosis among a cohort of young injection drug users in Baltimore, Maryland. *Sex Transm Dis*. Jul 2005;32(7):446-453.
131. Ness RB, Hillier SL, Richter HE, et al. Douching in relation to bacterial vaginosis, lactobacilli, and facultative bacteria in the vagina. *Obstet Gynecol*. Oct 2002;100(4):765.
132. Fethers KA, Fairley CK, Hocking JS, Gurrin LC, Bradshaw CS. Sexual risk factors and bacterial vaginosis: a systematic review and meta-analysis. *Clin Infect Dis*. Dec 1 2008;47(11):1426-1435.
133. Schwebke JR, Desmond R. Risk factors for bacterial vaginosis in women at high risk for sexually transmitted diseases. *Sex Transm Dis*. Nov 2005;32(11):654-658.
134. Amsel R, Totten PA, Spiegel CA, Chen KC, Eschenbach D, Holmes KK. Nonspecific vaginitis. Diagnostic criteria and microbial and epidemiologic associations. *Am J Med*. Jan 1983;74(1):14-22.
135. Klebanoff MA, Schwebke JR, Zhang J, Nansel TR, Yu KF, Andrews WW. Vulvovaginal symptoms in women with bacterial vaginosis. *Obstet Gynecol*. Aug 2004;104(2):267-272.
136. Taha TE, Hoover DR, Dallabetta GA, et al. Bacterial vaginosis and disturbances of vaginal flora: association with increased acquisition of HIV. *Aids*. Sep 10 1998;12(13):1699-1706.
137. Sewankambo N, Gray RH, Wawer MJ, et al. HIV-1 infection associated with abnormal vaginal flora morphology and bacterial vaginosis. *Lancet*. Aug 23 1997;350(9077):546-550.
138. Chernes TL, Meyn LA, Krohn MA, Lurie JG, Hillier SL. Association between acquisition of herpes simplex virus type 2 in women and bacterial vaginosis. *Clin Infect Dis*. Aug 1 2003;37(3):319-325.

139. Wiesenfeld HC, Hillier SL, Krohn MA, Landers DV, Sweet RL. Bacterial vaginosis is a strong predictor of *Neisseria gonorrhoeae* and *Chlamydia trachomatis* infection. *Clin Infect Dis*. Mar 1 2003;36(5):663-668.
140. Purwar M, Ughade S, Bhagat B, Agarwal V, Kulkarni H. Bacterial vaginosis in early pregnancy and adverse pregnancy outcome. *J Obstet Gynaecol Res*. Aug 2001;27(4):175-181.
141. Gravett MG, Nelson HP, DeRouen T, Critchlow C, Eschenbach DA, Holmes KK. Independent associations of bacterial vaginosis and *Chlamydia trachomatis* infection with adverse pregnancy outcome. *Jama*. Oct 10 1986;256(14):1899-1903.
142. Ness RB, Kip KE, Hillier SL, et al. A cluster analysis of bacterial vaginosis-associated microflora and pelvic inflammatory disease. *Am J Epidemiol*. Sep 15 2005;162(6):585-590.
143. Sweet RL. Role of bacterial vaginosis in pelvic inflammatory disease. *Clin Infect Dis*. Jun 1995;20 Suppl 2:S271-275.
144. Ness RB, Hillier SL, Kip KE, et al. Bacterial vaginosis and risk of pelvic inflammatory disease. *Obstet Gynecol*. Oct 2004;104(4):761-769.
145. Nugent RP, Krohn MA, Hillier SL. Reliability of diagnosing bacterial vaginosis is improved by a standardized method of gram stain interpretation. *J Clin Microbiol*. Feb 1991;29(2):297-301.
146. Livengood CH, 3rd, Ferris DG, Wiesenfeld HC, et al. Effectiveness of two tinidazole regimens in treatment of bacterial vaginosis: a randomized controlled trial. *Obstet Gynecol*. Aug 2007;110(2 Pt 1):302-309.
147. Wendel KA, Erbeding EJ, Gaydos CA, Rompalo AM. *Trichomonas vaginalis* polymerase chain reaction compared with standard diagnostic and therapeutic protocols for detection and treatment of vaginal trichomoniasis. *Clin Infect Dis*. Sep 1 2002;35(5):576-580.
148. Franklin TL, Monif GR. *Trichomonas vaginalis* and bacterial vaginosis. Coexistence in vaginal wet mount preparations from pregnant women. *J Reprod Med*. Feb 2000;45(2):131-134.
149. Schwebke JR, Desmond R. A randomized trial of metronidazole in asymptomatic bacterial vaginosis to prevent the acquisition of sexually transmitted diseases. *Am J Obstet Gynecol*. Jun 2007;196(6):517 e511-516.
150. Martin HL, Richardson BA, Nyange PM, et al. Vaginal lactobacilli, microbial flora, and risk of human immunodeficiency virus type 1 and sexually transmitted disease acquisition. *J Infect Dis*. Dec 1999;180(6):1863-1868.
151. Wolner-Hanssen P, Krieger JN, Stevens CE, et al. Clinical manifestations of vaginal trichomoniasis. *Jama*. Jan 27 1989;261(4):571-576.
152. Demirezen S, Korkmaz E, Beksac MS. Association between trichomoniasis and bacterial vaginosis: examination of 600 cervicovaginal smears. *Cent Eur J Public Health*. Jun 2005;13(2):96-98.
153. Heller DS, Maslyak S, Skurnick J. Is the presence of *Trichomonas* on a Pap smear associated with an increased incidence of bacterial vaginosis? *J Low Genit Tract Dis*. Jul 2006;10(3):137-139.

154. Klebanoff MA, Carey JC, Hauth JC, et al. Failure of metronidazole to prevent preterm delivery among pregnant women with asymptomatic *Trichomonas vaginalis* infection. *N Engl J Med*. Aug 16 2001;345(7):487-493.
155. Kigozi GG, Brahmabhatt H, Wabwire-Mangen F, et al. Treatment of *Trichomonas* in pregnancy and adverse outcomes of pregnancy: a subanalysis of a randomized trial in Rakai, Uganda. *Am J Obstet Gynecol*. Nov 2003;189(5):1398-1400.
156. Wawer MJ, Sewankambo NK, Serwadda D, et al. Control of sexually transmitted diseases for AIDS prevention in Uganda: a randomised community trial. Rakai Project Study Group. *Lancet*. Feb 13 1999;353(9152):525-535.
157. Chesson HW, Blandford JM, Pinkerton SD. Estimates of the annual number and cost of new HIV infections among women attributable to trichomoniasis in the United States. *Sex Transm Dis*. Sep 2004;31(9):547-551.
158. Schwebke JR, Morgan SC, Pinson GB. Validity of self-obtained vaginal specimens for diagnosis of trichomoniasis. *J Clin Microbiol*. Jun 1997;35(6):1618-1619.
159. Fleming DT, Wasserheit JN. From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. *Sexually Transmitted Infections*. Feb 1999;75(1):3-17.
160. Sobel JD, Nagappan V, Nyirjesy P. Metronidazole-resistant vaginal trichomoniasis--an emerging problem. *New England Journal of Medicine*. Jul 22 1999;341(4):292-293.
161. Das S, Huengsborg M, Shahmanesh M. Treatment failure of vaginal trichomoniasis in clinical practice. *Int J STD AIDS*. Apr 2005;16(4):284-286.
162. Antonelli NM, Diehl SJ, Wright JW. A randomized trial of intravaginal nonoxynol 9 versus oral metronidazole in the treatment of vaginal trichomoniasis. *Am J Obstet Gynecol*. May 2000;182(5):1008-1010.
163. Woodcock KR. Treatment of trichomonal vaginitis with a single oral dose of metronidazole. *Br J Vener Dis*. Feb 1972;48(1):65-68.
164. Thin RN, Symonds MA, Booker R, Cook S, Langlet F. Double-blind comparison of a single dose and a five-day course of metronidazole in the treatment of trichomoniasis. *Br J Vener Dis*. Oct 1979;55(5):354-356.
165. Hager WD, Brown ST, Kraus SJ, Kleris GS, Perkins GJ, Henderson M. Metronidazole for vaginal trichomoniasis. Seven-day vs single-dose regimens. *Jama*. Sep 12 1980;244(11):1219-1220.
166. duBouchet L, Spence MR, Rein MF, Danzig MR, McCormack WM. Multicenter comparison of clotrimazole vaginal tablets, oral metronidazole, and vaginal suppositories containing sulfanilamide, aminacrine hydrochloride, and allantoin in the treatment of symptomatic trichomoniasis. *Sex Transm Dis*. Mar 1997;24(3):156-160.
167. Fleury FJ, Van Bergen WS, Prentice RL, Russell JG, Singleton JA, Standard JV. Single dose of two grams of metronidazole for *Trichomonas vaginalis* infection. *Am J Obstet Gynecol*. Jun 1 1977;128(3):320-323.

168. Gatski M, Mena L, Levison J, Clark RA, Henderson H, Schmidt N, Rosenthal SL, Martin DH, Kissinger P. Patient-delivered partner treatment and *Trichomonas vaginalis* repeat infection among HIV-infected women. *Sex Transm Dis*. In Press.
169. Monteiro CA, Bachmann LH, Desmond RA, et al. Incidence and risk factors for sexually transmitted infections among women in an Alabama HIV clinic. *AIDS Res Hum Retroviruses*. Jun 2004;20(6):577-583.
170. Bersoff-Matcha SJ, Horgan MM, Fraser VJ, Mundy LM, Stoner BP. Sexually transmitted disease acquisition among women infected with human immunodeficiency virus type 1. *J Infect Dis*. Oct 1998;178(4):1174-1177.
171. Kissinger P, Mena L, Levison J, et al. A randomized treatment trial: 2 gm STAT versus 7 day 500 mg BID dose of Metronidazole (MTZ) for the treatment of *Trichomonas vaginalis* among HIV-infected women. Presented at the *National STD Prevention Conference*. Atlanta, GA; March 8-11, 2010.
172. Sha BE, Chen HY, Wang QJ, Zariffard MR, Cohen MH, Spear GT. Utility of Amsel criteria, Nugent score, and quantitative PCR for *Gardnerella vaginalis*, *Mycoplasma hominis*, and *Lactobacillus* spp. for diagnosis of bacterial vaginosis in human immunodeficiency virus-infected women. *J Clin Microbiol*. Sep 2005;43(9):4607-4612.
173. Sobel JD, Nyirjesy P, Brown W. Tinidazole therapy for metronidazole-resistant vaginal trichomoniasis. *Clin Infect Dis*. Oct 15 2001;33(8):1341-1346.
174. Mammen-Tobin A, Wilson JD. Management of metronidazole-resistant *Trichomonas vaginalis*--a new approach. *Int J STD AIDS*. Jul 2005;16(7):488-490.