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Does offering HIV testing at the time of blood donation reduce transfusion-transmission risk and increase disclosure counseling? Results of a randomized controlled trial, São Paulo, Brazil

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Abstract

Background—In a randomized controlled trial (RCT) in a blood bank in São Paulo, we tested the hypotheses that offering client-centered HIV counseling and testing to blood donors would: 1) reduce the risk of HIV contamination in the blood supply by diverting higher risk, test-seeking donors away from donation, and 2) increase return for results and referrals to care.

Study Design and Methods—We randomly selected weeks between August, 2012 and May, 2013 when donors were offered HIV counseling and testing (N=6,298), leaving usual procedure weeks as control (N=5,569).

Results—Few candidate donors chose HIV testing (N=81, 1.3%). There was no significant difference in HSV-2 prevalence (a marker of sexual risk) among donors during intervention weeks compared to control (10.4% vs 11.1%, $p=0.245$). No donor choosing testing was HIV-infected, and there was no difference in HSV-2 prevalence between testers and donors (9.9% vs. 10.4%, $p=0.887$). Returning for positive results did not differ between testers and donors (3 of 3 vs. 58 of 80, $p=0.386$). A higher proportion of donors acknowledged that HIV testing was a strong motivation to donate during intervention weeks compared to control (2.6% vs. 2.0%, $p=0.032$).

Conclusion—The evidence of our RCT is that offering HIV counseling and testing at the time of donation would not change the risk of contamination in the blood supply, nor improve results disclosure and referral to care.

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Keywords

Blood donors; transfusion-transmissible infection risk; HIV counseling and testing; Brazil

Introduction

Multiple strategies reduce HIV transmission through blood transfusion^{1, 2}. The primary measure is screening blood for HIV antibodies³. However, antibody testing leaves a residual risk due to the time following infection before antibodies are detectable (i.e., “window period”)^{4–6}. Nucleic acid testing (NAT) shortens the window period, but does not eliminate it^{7, 8}. Moreover, the cost of NAT is prohibitive in the developing world, including countries where transfusion-transmission may account for 6% of infections^{9, 10}.

International guidelines^{1, 2} to reduce HIV transfusion-transmission risk also advise blood banks to eliminate paid donors, shift away from family replacement towards community-recruited donors, repeat donation, and excluding donors with risk factors for HIV. At our blood bank in São Paulo, Brazil, we conduct NAT testing; no blood is from paid donors; and we increased collection from community-recruited and repeat donors¹¹. Candidate donors are interviewed on risk factors for HIV (e.g., paying for sex, multiple partners, male-male sex, drug use) and excluded from donation for 12 months if answering yes to any question. Prevalence of HIV among donations decreased following these measures^{11, 12}.

Contrary to expectation, we observe higher HIV prevalence among donors from the community compared to family replacements^{11, 12}. Our research suggests that motivation to donate as a means of HIV testing may account for some of the higher prevalence¹³. We find test-seeking donors less likely than other donors to understand the window period and more likely to deny risk behavior during the intake interview. Test-seeking donors have higher trust in the blood bank for confidentiality, are less likely to know other places to test, and more likely to believe the results of the blood bank’s test over alternative HIV testing programs^{13, 14}. São Paulo has free public testing sites; however, barriers to their use include crowded conditions, group counseling, long waits for results, and long distances from where they live¹⁵. We also found that enhanced education on the window period did not deter test-seekers from donating¹⁶.

We measured strong desire to donate blood to be tested for HIV in 9% of our donors¹⁴. This compares to 2% in Zimbabwe¹⁷, 3% in Norway¹⁸, 6% in Hong-Kong¹⁹, and 3–15% in the US^{20, 21}. Test-seeking was present among 54% of HIV-positive donors in Paris, 26% in New York, and 19% in Montreal²². In China, test-seeking was associated with greater than two-fold odds of HIV infection²³. These findings question whether offering HIV counseling and testing to candidate donors would deter the higher risk, test-seekers away from contributing a unit of blood for transfusion.

Moreover, usual donation procedures do not provide adequate HIV counseling. Test-seekers realize they need to deny risk behaviors to be accepted for donation and have the tests performed. This denial precludes appropriate risk reduction counseling. The system of notification also engenders a low rate of obtaining test results. Typical of blood banks

elsewhere, our letters to seropositive donors do not disclose results to preserve confidentiality; rather, they advise returning to the blood bank. Also typical of blood banks^{24, 25}, we find 40% never return. Many initially HIV-reactive donors do not get confirmatory testing, never receive or understand their letter, and are not referred to care. In an era where evidence points towards earlier treatment as more beneficial to patients and their partners, lost opportunities to treat HIV are poignant^{26, 27}.

Nonetheless, there are long-held reasons for separating blood collection from HIV counseling and testing. The availability of free testing might attract persons at risk to donate blood, raising the risk of window period infection²⁸. Blood banks, as early adopters of new technologies to detect HIV (e.g., P24 antigen testing, NAT), are concerned about “magnet effects”²⁸. For example, as it became known that blood donation provided free NAT, persons acutely infected might be drawn to blood banks to test, offsetting some benefit on reducing the window period. Therefore, rigorous data on the benefit or harm in offering HIV testing at the time of blood donation are needed before reversing such policies.

We test two hypotheses in a randomized controlled trial (RCT) integrated into usual donor intake procedures at the largest blood bank in Brazil. First, we hypothesize that offering client-centered HIV counseling and testing to donor candidates in lieu of donating would reduce the risk of contamination in the blood supply by appealing to higher risk, test-seeking donors. To be feasible within an available sample size and time frame, we used HSV-2 serology as a surrogate bio-marker for sexual risk behavior^{29, 30}. Second, we hypothesize that donor candidates who chose HIV counseling and testing over donation would more likely return for results. We further gauged test-seeking motivation among donors in the study to assess a potential magnet effect. Thus, our RCT was designed to provide evidence on a means to improve blood safety and benefit the health of candidate donors while tracking potential harm that may result from offering HIV counseling and testing at the blood bank.

Methods

Overall trial design

This unblinded RCT tests the impact of offering HIV counseling and testing to candidate donors on potential risk for window period contamination in the blood supply. Procedures were integrated into routine blood collection at the Fundação Pro-Sangue/Hemocentro of São Paulo, Brazil. HIV counseling and testing was offered on randomly selected weeks from August, 2012 to May, 2013. Randomization was done in three blocks, drawing papers from a bag labeled with dates that became intervention weeks. The half remaining became control weeks. The trial endpoint was the prevalence of HSV-2 (as a biomarker of sexual risk for HIV) among donors during the intervention versus control periods. We also compared HSV-2 among donors who elected to test versus donation, rates of returning for results among sero-positive donors, and test-seeking motivation among persons donating. Participants were persons over 18 years presenting to donate blood during the study period and providing written informed consent.

Control

The control and intervention groups were treated as similar as possible to each other and to usual donors. All blood donor candidates underwent usual screening and collection procedures. After medical and risk interviews, candidates were invited to participate regardless of whether approved or deferred for donation. If approved, participants proceeded to the confidential unit exclusion (“CUE”) booth where they could privately mark their donation to not be used for transfusion without specifying a reason³¹. After CUE, the unit of blood was collected. Before leaving, participants completed a study-specific questionnaire on their knowledge, attitudes, and motivations towards donation. Their unit was screened for transfusion-transmissible infections, namely HIV, syphilis, HBV, HCV, HTLV I/II, and Chagas disease using the approved tests of the blood bank. For the study, HSV-2 serological testing (Bioelisa HSV- 2 IgG, Biokit, SA, Barcelona, Spain) was performed. If the participant was deferred from donation, they skipped CUE and blood collection and completed the study questionnaire. From deferred donors, 10 mL of venous blood was drawn to test for the same infections and HIV counseling was provided.

Intervention

The intervention group underwent the same procedures described above, except for the additional offering of client-centered HIV counseling and testing to approved donors in lieu of blood donation after they passed the health and risk screening. We considered when the offer of testing would best be done in terms of time demands and blood safety. Offering after screening best integrates with usual procedures, while offering testing first would entail counseling of many persons who would otherwise be deferred in a real-life setting, and might also result in a greater magnet effect. Donors choosing testing were provided pre-test counseling according to Brazilian certification standards. Testers then completed the study questionnaire and 10 mL of blood was drawn to test for the same infections listed above.

All persons donating in either arm received the usual information about HIV. Because approved donors deny behaviors related to HIV, information is general and not client risk-centered. For approved donors in the intervention arm who elected testing, a risk reduction counseling session was provided. Under non-study conditions, deferred donors are referred outside the blood bank for HIV counseling and testing; for the purpose of the study, they were provided these services on-site for both arms. Deferred donors are not included in analyses of the intervention’s outcomes.

Return of results

Results disclosure counseling, confirmatory testing, and referral to care followed usual blood bank procedures. If the donated unit was negative for all infections, results were sent to the donor by mail. If any test was reactive or inconclusive, the letter asked the donor to return for additional testing without disclosing results. Upon return, results were disclosed, referrals to care were made, and an additional sample was collected for confirmatory testing. For HIV, a Western Blot test was performed. Approved donors in the intervention arm who elected HIV counseling and testing in lieu of donation were given fixed appointments one-week later for disclosure counseling. Letters were also as per usual procedures.

Trial outcomes

The primary trial endpoint was the prevalence of HSV-2 among persons contributing a unit of blood for transfusion in the intervention versus control arm. The rationale was that the offering of HIV counseling and testing would remove higher risk, test-seeking donors from the pool of accepted donors.

We also compared the prevalence of HSV-2 among persons electing HIV counseling and testing versus those choosing to donate within the intervention arm to corroborate that riskier candidates would choose testing. We also compared the rate of return for test results between those opting to test versus those choosing to donate. To assess any magnet effect, we compared questions on test-seeking behavior among donors between study arms. Finally, to better understand why donors chose to test or donate, we re-contacted participants in the intervention arm for in-depth interviews.

Statistical methods

An *a priori* sample size was based on detecting a significant difference in HSV-2 prevalence among persons choosing to donate blood versus those choosing HIV counseling and testing within the intervention arm. This outcome required a larger sample size than comparison of HSV-2 prevalence among donors in the intervention versus control arm and therefore was the more conservative scenario. Our effect size was based on our previous study¹³ where HSV-2 prevalence among test-seeking donors was 21.3% with significantly higher odds of infection compared to non-test-seekers. Assuming that 7% of donors would choose testing (i.e., close to the 9% with strong test-seeking motivation), a sample size of 4,799 donors compared to 361 testers would provide 81% power to detect a significant difference of 6% in HSV-2 prevalence with a two-sided alpha of 0.05 using a chi-square test for difference in proportions. This calculation backs into 5,160 per arm (10,320 total). To account for clustering on randomization by week, we calculated the design effect on HSV-2 prevalence in our previous survey. Although the design effect was small (1.03), we increased our total sample size target to 12,000.

Differences in proportions between groups were assessed using the chi-square test treating the data as a simple random sample. We repeated comparisons adjusting for variables that differed between the study arms and accounting for clustering on week using multivariable logistic regression analysis for complex survey designs with standard commands in Stata.

Ethical considerations

The protocol was reviewed by the Institutional Review Boards (IRB) of the investigators in the US and Brazil. A Data Safety and Monitoring Board (DSMB) was established including Americans and Brazilians not associated with the study and who had no conflicts of interest. Members had expertise in blood banking, HIV counseling and testing, statistics, and medical ethics. The DSMB met prior to randomization, mid-point of subject accrual, and study end. At the mid-point, data were examined with respect to study outcomes to assess if sufficient information was available to halt enrollment early based on a positive or negative effect set *a priori* at $p < 0.001$, and to assess the futility in continuing in the event of little effect. The

DSMB also reviewed data on changes in blood supply compared to the previous year, deferral rates, transfusion-transmissible infections, and indicators of magnet effects.

Results

Recruitment and characteristics of intervention vs. control donors

All candidate donors presenting from August, 2012 through May, 2013 were offered study participation. Of 14,433 approached, 880 were ineligible, 1,565 declined (88.5% participation), 11,988 were randomized (6,348 intervention, 5,640 control), and 11,867 were available for analysis (99.0% of randomized; $n=50$ or 1.3% in the intervention arm vs. 71 or 0.8% in the control arm [$p=0.010$] did not have an HSV-2 test result or departed the blood bank prior to blood draw for unknown reasons; see Fig. 1). The primary analysis was conducted according to random allocation; that is, by intent-to-treat in offering HIV counseling and testing in lieu of blood donation during intervention weeks. There were more participants in the intervention due to the chance of more intervention weeks randomly occurring during donor recruitment campaigns. Recruitment stopped when the study had virtually achieved the *a priori* sample size of 12,000 (98.9%) with concurrence of the DSMB that further data collection would unlikely change the null primary outcome. Mid-point analysis resulted in the DSMB concurring with continuation of the study to the pre-determined sample size gauging potential risks against the benefit of a statistically more powerful final analysis.

Persons in the intervention arm were older than those in the control (mean 35.4 years vs. 35.3 years, respectively, $p=0.003$), single marital status (58.0% vs. 55.4%, $p=0.022$), and first-time donors (22.7% vs. 21.0%, $p=0.052$) (Table 1). More persons were deferred during the intervention weeks than control (13.7% vs. 10.8%, Table 2), a difference that was significant ($p=0.005$) after controlling for age, marital status, and first-time donation. There was no difference in HSV-2 seropositivity between deferred and non-deferred donors ($p=0.118$), with the non-significant tendency towards deferred donors having lower prevalence than non-deferred donors (9.4% vs. 10.7%).

Primary trial outcome: HSV-2 prevalence

Figure 2 shows HSV-2 seropositivity by study arm and by those opting for testing versus donation within the intervention arm. Only 81 (1.5%) donor candidates offered HIV counseling and testing accepted instead of donation. There was no significant difference in HSV-2 prevalence among donors in the intervention compared to control arm (10.4% vs. 11.1%, $p=0.245$). Controlling for differences by arm (i.e., age, marital status, and previous donation) did not change the lack of association (AOR 0.95, 95% CI 0.84 – 1.08, $p=0.431$), nor did adjustment for clustering by week ($p=0.458$). Within the intervention arm, there was no difference in HSV-2 prevalence among those accepting donation compared to those opting for testing instead of donation (10.4% vs. 9.9%, $p=0.886$). The lack of association did not change when controlling for age, marital status, or previous donation (AOR 1.05, 95% CI 0.50 – 2.21, $p=0.902$), or clustering ($p=0.898$).

Secondary outcome: returning for results

Among those accepting testing instead of donation, two were positive for syphilis; one was indeterminate for HIV (later confirmed negative); all returned for results. Among donors, the rate of returning for positive results was 4 of 6 (66.7%) for HIV, 40 of 53 (75.5%) for syphilis, 5 of 6 (83.3%) for HBV, and 9 of 15 (60.0%) for HCV. The difference in the rate of return for results between testers and donors was not significant ($p=0.386$).

Secondary outcome: “magnet effect”

As noted above, the rate of deferral after intake screening was higher during intervention weeks compared to control (Table 2). Additionally, three indicators of test-seeking motivation were reported significantly more often by donors during the intervention weeks compared to control, a finding that held after controlling for other differences in the study arms. For example, 2.6% of donors during the intervention period compared to 2.0% during control ($p=0.032$) said yes to the question “Did you come to donate blood today because you wanted to be tested for HIV?” In fact, more persons ($n=138$) said their motivation was to get tested yet donated blood anyway than those who opted for testing ($n=81$). There were no differences in test results among donors during the intervention versus control periods.

In-depth call back interviews of candidate donors offered testing

After completion of the trial, we contacted 40 participants for further information on their reasons for choosing or not choosing testing over donation. Sampling was done consecutively starting with the most recent participants; 52 letters were sent to achieve the 40 respondents. Twenty donors in the intervention arm had serologically positive results yet declined testing. Of these, 19 were positive for syphilis, 1 for HBV; 2 of the syphilis positive donors were also positive for HBV. When asked why they donated instead of testing, nearly all said their primary intention was to donate blood, expressing the altruistic desire to help someone. Others indicated they saw donation as a means of regular “cleaning”, certifying that they were free of disease. But, even in these cases, the tests were seen as a “side benefit”, and the most important thing was that the blood be used for patients in need. Many coupled this sentiment with the belief that they were not infected: “Because I was certain that everything was fine, I donated”. Or that if they “passed” the intake questions, they were safe to donate. Despite “passing” the intake questions, 5 donors acknowledged that they were aware or suspected they may have an infection. Of these, only 1 was aware of the transfusion route of transmission.

We also interviewed 20 participants who were serologically negative but chose testing instead of donating. In line with the primary aim of the trial, several respondents had doubts about their infection status and realized that testing instead of donating would be safer with respect to transfusion transmission. One said she chose to test “because my husband presented two weeks ago with small blisters on his intimate part, so I thought it better to test before donation in order to not contaminate anyone, not to harm.” A few articulated test-seeking as their reason to donate and the offering of the test was sufficient. For example, one participant said “I had health problems and knew that it was easier and faster, given difficulties in getting medical services, to have a better return of test results by donating.” Nonetheless, the predominant response as to why they chose to test was because they wanted

to participate in research that could improve blood donation services and testing instead of donating was something different from past visits. Several indicated that their primary motivation to donate blood was to help others therefore participating in research without donating this time was a satisfactory way to meet their aim. While some misunderstood that they could be a part of the study whether they chose to donate or test, many respondents indicated they understood the choice. For example, “As I have always donated blood, I thought there would be no problem if I set aside donating this time and just participate in the research [by testing].”

Discussion

Our RCT indicates that offering HIV counseling and testing at the time of blood donation would not change the risk of contamination in the blood supply. The offer did not draw higher-risk persons away from donating, as indicated by the biological marker for sexual risk (HSV-2) showing no difference between donations made when the offer was in place versus usual procedures. Even if the program were brought to larger scale, it would fail to produce the desired effect because those who chose to test showed a tendency towards lower HSV-2 prevalence compared to those who donated.

Post-trial interviews revealed that although the desire to get test results was evident in many blood donors, they also harbor the altruistic motivation to donate blood to help someone. The two motivations are not mutually exclusive for volunteers and the availability of free testing for HIV does not satisfy all their reasons for donating. Even for many who suspected their risk, donating blood for someone in need was seen as more important than getting their test results. The over-riding motivation of altruism was echoed by participants who chose testing: the act of participating in research provided enough satisfaction to set aside donating blood. This last finding was antithetical to the purpose of our study; the test was offered to address the more self-interested motivation of learning one's HIV status and yet it appealed more to those whose motivations were altruistic.

Our study also indicates that offering testing to donors would not improve results disclosure and referral to care of persons with HIV. Offering testing to over 6,000 blood donors did not steer a single HIV-infected person to counseling; all were detected among donors.

Significant differences in “magnet effect” indicators raise the concern that offering HIV counseling and testing may cause harm. More persons acknowledged test-seeking during the weeks when testing was offered, yet the majority donated blood anyway. Against a magnet effect is that we found no difference in HSV-2 between study arms. It is also possible that candidate donors offered HIV testing were subsequently more disposed to admitting test-seeking. Another possible explanation is that the randomization produced an imbalance in more intervention weeks falling on campaigns for new donors. We also acknowledge imbalances in age, marital status, and previous donation as a limitation of our study.

While we designed the trial to be as close as “real life” as possible in how a counseling and testing program would be integrated into a blood bank, we acknowledge that not all parts of the study would feature into actual programs. Donors might be told or understand that HIV

counseling and testing is available before screening. Additional questions on attitudes towards donation and testing were not routine. Moreover, HSV-2 may not have been as specific a marker for HIV risk behavioral as we hoped, particularly as the current study found lower prevalence and weaker association with test-seeking than previously.¹³ Statistical power is another potential limitation. We based our sample size estimates on data from the same population, with pre-existing measures of HSV-2 prevalence (the outcome), test-seeking behavior (the point of the intervention), the magnitude of difference in HSV-2 prevalence between test-seekers and non-test-seekers (the effect), and a design effect by clustering on week. While the sample size of 12,000 was virtually met, several predictions fell short. HSV-2 prevalence was lower than previously measured (e.g., 21.3% among test-seekers in 2005/2006¹³ vs. 9.9% among testers here) and fewer test-seekers opted to test (7% predicted versus 1.3%). While these factors would threaten the power to detect the predicted effect size, the point is moot as the observed effect was in the *opposite direction*. That is, no sample size would show a positive association of HSV-2 with opting to test and ultimately no evidence in favor of a reduction in risk in the donor pool.

Our negative findings have the silver lining of siding against blood banks committing resources to become HIV counseling and testing sites. The separation of collecting blood for transfusion from testing and linking persons with HIV to care was implemented early in the epidemic. The interim has witnessed a reduced window period risk through NAT and increasing benefits of early treatment of HIV^{6, 32}. We felt this favorable shift in the risk:benefit ratio justified re-examination of integrating HIV counseling and testing into blood donation. Our data do not support this integration. Additionally, a primary motivation for those opting for testing over donation was to help improve blood donation services. Such a motivation may be a reason why offering testing did not draw off the more risky donors and why the offer will not have large impact on blood safety. We previously thought that offering testing at blood banks might dissuade riskier persons from donating while also seizing an opportunity for early HIV care. We now believe that this offer would achieved neither purpose.

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Figure 1. Enrollment, random allocation, and analysis of participants in a randomized control trial of offering HIV counseling and testing at the time of blood donation to reduce transfusion-transmitted infection risk and improve results disclosure, São Paulo, Brazil, 2012–2013.

Figure 2.
Prevalence of herpes simplex virus type II (HSV-2) among candidate blood donors. São Paulo, Brazil, 2012–2013.

Table 1

Characteristics of blood donor candidates participating in a randomized control trial of offering HIV counseling and testing at the time of blood donation to reduce transfusion-transmitted infection risk and improve results disclosure, São Paulo, Brazil, 2012–2013 (N=11,867).

Characteristic	Intervention N (%)	Control N (%)	p-value
Sex:			0.954
Female	2,886 (45.8)	2,549 (45.2)	
Male	3,412 (54.2)	3,020 (54.2)	
Race/ethnicity/color:			0.921
White	3,241 (57.8)	3,241 (58.2)	
Mixed	1,725 (27.4)	1,484 (26.7)	
Black	701 (11.1)	631 (11.3)	
Asian	122 (1.9)	109 (2.0)	
Amerindian	41 (0.7)	36 (0.7)	
Other, don't know, declined	67 (1.1)	68 (1.2)	
Age years, mean (SD)	35.4 (10.4)	35.3 (10.3)	0.003
Monthly income (1 R\$ = US \$ 0.43):			0.695
Up to R\$ 1,000	1,230 (19.6)	1,109 (20.0)	
R\$ 1,001 – 3,000	2,831 (45.2)	2,449 (44.1)	
R\$ 3,001 – 6,000	1,375 (21.9)	1,229 (22.2)	
Above R\$ 6,000	831 (13.3)	762 (13.7)	
Employment status:			0.918
Unemployed	685 (10.9)	609 (10.9)	
Employed, student, retired	5,613 (89.1)	4,960 (89.1)	
Marital status:			0.022
Single, never married	3,653 (58.0)	3,087 (55.4)	
Married	2,142 (34.0)	2,024 (36.3)	
Separated, divorced	441 (7.0)	414 (7.4)	
Widowed	60 (1.0)	44 (0.8)	
Previous blood donation:			0.052
Never before	1,428 (22.7)	1,167 (21.0)	
One to 3 times before	1,988 (31.6)	1,756 (31.6)	
Four or more times before	2,875 (45.7)	2,639 (47.5)	
Did you come to donate blood today to help a friend or relative?			0.555
Yes	875 (13.9)	794 (14.3)	
No	5,420 (86.1)	4,767 (85.7)	

Some categories do not add up to total due to missing data.

Table 2

Potential “magnet effects” among persons presenting for blood donation during a randomized control trial of offering HIV counseling and testing, São Paulo, Brazil, 2012–2013 (N=10,333).

Variable	Intervention N (%)	Control N (%)	p-value *
Candidate donors (excluding testers, N=11,786):			
Deferred from donation (all reasons)	852 (13.7)	601 (10.8)	0.005
Blood donors (N=10,333):			
Agree with: “I believe that blood donation is a good, fast and anonymous way to get my [HIV] ‡ test results”	2,967 (55.7)	2,635 (53.4)	0.013
Agree with: “I donate to get [HIV]‡ test results”	958 (17.9)	809 (16.3)	0.041
Answered yes to: “Did you come to donate blood today because you wanted to be tested for HIV?”	138 (2.6)	99 (2.0)	0.032
Serological test results (other than HSV-2):			
Anti-HIV antibody	3 (0.1)	3 (0.1)	0.898
Anti-syphilis antibody	26 (0.5)	27 (0.5)	0.653
Hepatitis B surface antigen	1 (0.02)	5 (0.1)	0.115
Anti-hepatitis C antibody	7 (0.1)	8 (0.2)	0.670
Any of the above	37 (0.7)	43 (0.8)	0.339

* Adjusting for differences in age, marital status, previous donation, and for clustering on randomization block.

‡ That the question referred to HIV testing was evident from the sequence of in the questionnaire although not verbatim in these items.