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The Contraceptive CHOICE Project: Reducing Barriers to Long-Acting Reversible Contraception

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Abstract

OBJECTIVE—To introduce and promote the use of long-acting reversible methods of contraception (LARC; intrauterine contraceptives and subdermal implant) by removing financial and knowledge barriers.

STUDY DESIGN—The Contraceptive CHOICE Project is a prospective cohort study of 10,000 women 14-45 years who want to avoid pregnancy for at least one year and are initiating a new form of reversible contraception. Women screened for this study are read a script regarding LARC to increase awareness of these options. Participants choose their contraceptive method that is provided at no cost. We report the contraceptive choice and baseline characteristics of the first 2,500 women enrolled August 2007 through December 2008.

RESULTS—Sixty-seven percent of women enrolled (95% confidence interval: 65.3, 69.0) chose long-acting methods. Fifty-six percent selected intrauterine contraception and 11% selected the subdermal implant.

CONCLUSION—Once financial barriers were removed and LARC methods were introduced to all potential participants as a first-line contraceptive option, two-thirds chose LARC.

Keywords

long-acting reversible contraception; family planning

BACKGROUND AND OBJECTIVE

Of the 6 million pregnancies that occur each year in the United States, approximately half are unintended.1 Among women who experience an unintended pregnancy, half report using a contraceptive method in the month when the pregnancy occurred.2 Because most women use a contraceptive method with adherence requirements, the majority of pregnancies result from incorrect or inconsistent method use rather than from method failure.[3] Despite their proven safety, effectiveness, and cost-effectiveness less than 3% of women in the U.S. use a long-acting reversible method of contraception (LARC), which includes intrauterine

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contraception (IUC) and subdermal implants.[4] Reasons for lack of use include women's knowledge of and attitudes towards the methods,[5, 6] practice patterns among providers,[7, 8] and high initial up-front cost associated with these methods.[9]

In response to the under-utilization of LARC, the Contraceptive CHOICE Project (CHOICE) was developed to promote the use of long-acting methods in the St. Louis region. Our primary objective is to provide no-cost contraception to a large number of women in our region and to promote the use of long-acting reversible contraception (LARC = intrauterine contraception (IUC) and the subdermal implant). To accomplish this objective, we sought to remove two major barriers to LARC use: financial obstacles and lack of patient awareness of LARC method safety and efficacy. By increasing the acceptance and use of LARC, CHOICE seeks to reduce unintended pregnancy at the population level in the St. Louis region. In this analysis, we describe baseline contraceptive method choice and the demographic, reproductive, and behavioral characteristics of the first 2,500 participants enrolled.

MATERIALS AND METHODS

The Contraceptive CHOICE Project is a prospective cohort study of 10,000 women in the St. Louis region. Each participant is provided the contraceptive method(s) of her choice at no cost to her for three years duration. The CHOICE protocol was approved by the Washington University in St. Louis School of Medicine Human Research Protection Office prior to initiation of participant recruitment.

CHOICE is a convenience sample of women in the St. Louis region. Participants are recruited at specific clinic locations and via general awareness about CHOICE through their medical providers, newspaper reports, study flyers, and word of mouth. Recruitment sites include university-affiliated clinics and providers, two facilities providing abortion services, and community clinics that provide family planning, obstetric, gynecologic, and/or primary care. Women are eligible to participate if they are 14-45 years of age, reside in or seek clinical services in designated recruitment sites in the St. Louis region, have been sexually active with a male partner in the past six months or anticipate sexual activity in the next six months, have not had a tubal ligation or hysterectomy, do not desire pregnancy in the next year, and are not currently using a contraceptive method or are interested in starting a new reversible contraceptive method.

Women are screened for eligibility in person at a recruitment site or on the telephone by calling the CHOICE telephone number. Every screening encounter is conducted by a trained staff person who provides a brief scripted introduction to LARC methods: levonorgestrel intrauterine contraception (LNG-IUC), copper intrauterine contraception (copper IUC), and the subdermal implant (See Appendix A). The screener asks a series of questions to determine eligibility and, when eligible, offers the opportunity to enroll in CHOICE. Using a standardized data collection form, the screener documents each eligibility criterion, the final eligibility status, and whether the woman enrolls in the project that day or is scheduled to enroll on a future date. For women scheduled to enroll, the screener collects contact information to facilitate reminder calls prior to the enrollment appointment. Thus, all women screened are introduced to LARC methods regardless of their initial contraceptive preference or whether they are ultimately enrolled.

Enrollment in CHOICE occurs during a 1.5 to 2 hour in-person process. Prior to obtaining informed consent to participate in CHOICE, women undergo pregnancy testing to rule out pregnancy. Those identified with an occult pregnancy are counseled about options and offered the opportunity to participate in CHOICE after resolution of the pregnancy.

Approximately 74% (1845/2500) of CHOICE enrollments occur at the university-based recruitment site. At this site contraceptive counseling is provided by research assistants who are trained contraceptive counselors. Among the remaining 26% (655/2500) of enrollments, clinic staff and or health care providers at the clinical facility provide the counseling. Our goal was to promote LARC, but to also offer the CHOICE Project to as many outpatient facilities in our region as possible. All women undergo contraceptive counseling prior to providing informed consent.

Given space constraints and logistical issues, research staff could not provide the counseling at all recruitment sites. Thus, the content of the contraceptive counseling session varies by recruitment site. The clinic staff that provides the counseling at the community clinic sites is not engaged in the research protocol; the counseling is considered part of routine family planning care that she receives during her clinic visit prior to enrollment in CHOICE. Counseling at the university-affiliated recruitment site includes a non-biased description of all contraceptive methods available including method effectiveness, advantages and disadvantages. To assist the participant in making an informed decision, research staff attempt to dispel misinformation or myths about contraceptive methods and to answer any questions or concerns regarding each method. During this session, the research assistant collects clinical information using a standardized form to identify contraindications or conditions that may influence the use of a particular contraceptive method. Once the woman has chosen her method, the counselor obtains the approval of the clinician for the chosen method regardless of recruitment location. If a method is medically contraindicated, the clinician consults with the participant to identify a more suitable contraceptive method; otherwise participants receive their initial method of choice.

After contraceptive counseling is completed, informed consent is obtained to participate in CHOICE by engaged research staff at the recruitment location. For women under the age of 18 years, we obtain their assent and the consent of one parent or legal guardian. For minors who do not know the whereabouts of their parent or legal guardian or are fearful of their parent or legal guardian's knowledge of her seeking contraception, we have obtained Human Research Protection Office approval to waive parental consent. Emancipated minors are consented as adults.

Following informed consent, research staff administers a standardized survey instrument and collects detailed contact information. Comprehensive contact information (e.g., residence address, telephone, cell phone, email) is documented for the participant and two additional contacts (e.g., partner, relative, or friend) to increase the likelihood of sustained contact with the participant during the 3-year follow-up period. The participant is then screened for sexually transmitted infections (STIs; *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Trichomonas vaginalis*, and syphilis) and HIV, and the chosen contraceptive method is provided. Participants are compensated for their time with a $15.00 gift card.

Once pregnancy is ruled out, women who choose a LARC method undergo insertion by a trained clinician at the time of enrollment. Emergency contraception is offered to patients who have had recent unprotected intercourse, and "bridge methods" such as oral contraceptive pills (OCPs), vaginal ring, transdermal patch, depo-medroxyprogesterone acetate (DMPA), or condoms are offered to women when pregnancy cannot be excluded. Participants are encouraged to immediately initiate their contraceptive method,[10-12] and can return in 3-4 weeks for a repeat pregnancy test and LARC insertion, if desired.

Following the enrollment session participants are interviewed by phone 3, 6, 12, 18, 24, 30, and 36-months post-enrollment using standardized survey instruments. They are compensated with a $10.00 gift card for every completed survey. Participants are initially

notified by mail or e-mail two weeks prior to their next follow-up contact, and are then called to schedule the interview. Participants are screened again for *C. trachomatis* and *N. gonorrhoeae* at the 12, 24 and 36-month contacts.

The baseline and follow-up survey instruments collect comprehensive information on demographic characteristics, past and current reproductive history including contraceptive experience (e.g., continuation, side effects, reasons for discontinuation or non-compliance, and satisfaction), menstrual bleeding patterns, sexual behavior with male and female partners, main and casual sex partners, pregnancy, incident STI, and experiences of discrimination and violence. During both scheduled and interim contacts research staff also collect and record clinically relevant data including complaints, complications, side effects, method expulsions and removals, pregnancies and outcomes, and STI occurrence and treatment.

CHOICE provides all contraceptive methods at no cost to the participant through two processes. Women who choose a LARC method can receive the method at their enrollment site or can request that their regular healthcare provider insert the method. CHOICE has established a network of private providers who refer patients to CHOICE for enrollment. Research staff travels to these physician offices or recruitment sites with LARC methods and provide the clinician with the method for insertion.

CHOICE has partnered with two community affiliates to provide OCPs, vaginal ring, transdermal patch, or DMPA to participants. Following enrollment, every participant, regardless of method choice, receives a CHOICE prescription card that documents her participation in CHOICE and allows her to obtain her OCPs, vaginal ring, or transdermal patch on a monthly basis at a local pharmacy chain located throughout the St. Louis region. Participants who are established patients of the local family planning clinic may obtain their monthly refills or DMPA at selected family planning clinics in the St. Louis area. On a monthly basis, the pharmacy chain and local family planning clinic provide CHOICE with claims data documenting the date and methods dispensed for each participant and are subsequently reimbursed.

In this report, we provide a baseline descriptive analysis of the first 2,500 women enrolled in the CHOICE Project. We also compare the demographic and behavioral characteristics of women who chose a LARC method (IUC or implant) to those of women who chose the DMPA injection, OCPs, vaginal ring, transdermal patch, or diaphragm. We examine whether participants differed by LARC or non-LARC contraceptive method choice. Comparisons were made using Chi-square for categorical variables, Student's t-test for continuous variables, and logistic regression for multivariable analyses. To analyze the predictors of choosing LARC at enrollment, we used Poisson regression with robust error variance. This regression technique allows for a conservative estimation of the relative risk when the outcome of interest occurs more than 10% of the time, as in the case of LARC acceptance in this analysis.[13] Univariate analysis for each of the nine categorical covariates that were not correlated was performed; independent predictors, with unadjusted alpha of 0.05, or confounders, with greater 10% change in related variable's beta estimate, were included in the final multivariable model to estimate relative risk of choosing a LARC method at enrollment. Statistical analyses were conducted using SAS Software (v.9.1., SAS Institute, Cary, NC).

RESULTS

From August 2007 through December 2008, we screened 4,107 women for eligibility. Eighty-six percent (3,522) met the eligibility criteria to participate in the study and were

offered the opportunity to enroll. The most common reasons for ineligibility included a desire to continue with their current contraceptive method (84%) or had not been and were not planning on being sexually active with a man (11%). Of the 3,522 eligible women, 2,500 enrolled. After adjusting for age, eligible women were significantly more likely to enroll if they self-reported their race as white compared to black (RR_{adj}=1.8; 95%CI: 1.5, 2.1), or currently using a contraceptive method and interested in switching to a new method compared to women not currently using a contraceptive method (RR_{adj}=1.3; 95%CI: 1.1, 1.5).

The demographic and reproductive characteristics of study participants are shown in Table 1. The average age of participants was 25 years (range 14 to 45 years); over 63% were 25 years or less including 99 (4%) who were minors less than 18 years. Forty-nine percent of participants were white, and 44% were black. Forty-two percent of participants reported no insurance; more than half of all participants reported difficulty paying for transportation, housing, food, or medical care during the past 12 months or currently receive public assistance. Overall, 26% of the study participants were recruited at an abortion clinic or community family planning clinic.

Forty-one percent of women were nulliparous; 54% of parous women reported having two or more children. Forty-five percent of participants reported a history of abortion. Almost sixty percent of participants reported five or more sexual partners in their lifetime and 28% reported a diagnosis of an STI in the past. Over 100 (4.8%) participants were positive for either *C. trachomatis, N. gonorrhoeae*, or trichomoniasis at their enrollment visit.

Among women who were not using a contraceptive method or were willing to start a new method at the time of enrollment, more than two-thirds (67%, 95% confidence interval: 65.3%, 69.0%)) chose a long-acting reversible contraceptive method (Table 1). Among LARC users, 47% chose a levonorgestrel IUC, 9% chose a copper IUC, and 11% chose the etonorgestrel subdermal implant. With regard to other contraceptive methods, 6% chose DMPA, 27% chose combined hormonal methods (12% OCPs, 12% vaginal ring, and 3% transdermal patch).

We compared LARC users to users of other reversible methods of contraception (Table 2). LARC users were significantly more likely to be recruited at an abortion clinic (RR_{adj}=1.2; 95%CI: 1.1, 1.2), report greater parity (RR_{adj}=1.1; 95%CI: 1.1, 1.2), or a history of abortion (RR_{adj}=1.1; 95%CI: 1.1, 1.2). Women who reported black or other race (RR_{adj}=0.9; 95%CI: 0.8, 0.9), being single or never married (RR_{adj}=0.9; 95%CI: 0.8, 0.9), or one or no lifetime partners (RR_{adj}=0.8; 95%CI: 0.8, 0.9) were less likely to choose LARC than other reversible contraceptive methods.

COMMENT

In the U.S., currently less than 3% of women use a long-acting reversible contraceptive method. In this initial planned analysis of CHOICE, 56% chose IUC and 11% chose a subdermal implant. Thus, two-thirds of participants who were not using a contraceptive method or were willing to switch to a new method chose LARC. The overwhelming selection of LARC methods among the first 2,500 women enrolled in CHOICE is evidence of a greater than expected interest in the use of the most effective, reversible methods of contraception to prevent pregnancy. Our project demonstrates the potential for much greater use of LARC methods that are “forgettable” and therefore effectiveness is not dependent on patient adherence. We attribute the high LARC rates to several factors: 1) providing a brief, standardized script explaining LARC to all women screened; 2) removing financial barriers;

and 3) offering and providing IUCs to all eligible women including young women, nulliparous women, and women with a history of an STI.

Our multivariable analysis suggests that although we found statistically significant demographic and behavioral predictors of LARC acceptance, the associations are small and unlikely to be clinically meaningful. We believe these initial results suggest there is not a particular type of woman who selects LARC; rather LARC methods are acceptable and wanted by a diverse group of women who are considering a new method of contraception.

Barriers to obtaining contraception, particularly LARC, include patient and physician lack of knowledge, financial constraints, and logistical barriers to receiving and effectively using a desired method. One major limitation to the provision of LARC, specifically IUC, is the lack of education and persistence of inaccurate knowledge. Previous studies have shown that misperceptions about IUC are common among both patients and providers. Patients are frequently unaware of LARC, and are often unfamiliar with the safety and efficacy of these methods.[5, 6, 14, 15] Both healthcare providers and patients have misperceptions regarding IUC safety, particularly the risk of infection and infertility, and are unable to identify appropriate candidates for LARC methods.[7, 8, 14, 15]

Additional obstacles to effective use of contraception include financial and procedural barriers. Previous studies have found a reduction of the financial barrier is associated with increased use of IUC. Providing complete insurance coverage for the most effective forms of contraception has been shown to increase IUC use substantially,[16] and streamlining clinical access by allowing same-day insertions was associated with increased IUC utilization.[17]

CHOICE attempts to minimize these barriers through improved access and increased patient knowledge. All participants receive a brief, scripted introduction to LARC methods (Appendix A) during the screening process and receive contraceptive counseling. The majority of participants undergo individualized, evidence-based contraceptive counseling regarding all reversible methods of contraception. Financial barriers are removed by provision of all methods at no cost to the participant. Access to contraceptive methods is improved by immediate start of OCPs, vaginal ring, transdermal patch, and DMPA, and IUC insertion without waiting for STI testing results.

One methodological concern may be the utilization of an observational cohort study as the study design. Since one of our main outcomes is participant satisfaction, it is essential that we allow participants to choose rather than randomly assign their contraceptive method as choice of a method may be associated with satisfaction and continuation.[18] It is possible that our study has attracted women with a baseline interest in LARC greater than that among women in the general population. If true, the uptake of LARC within our study would be artificially high. If our study had included all women who were screened and eligible as well as women continuing their current method, and if these women subsequently enrolled and used their existing method, we estimate the lowest LARC acceptance rate would have been 42% (1,678/4,013 eligible women). Although lower than the 67% LARC uptake we present in our cohort, the recalculated rate remains substantially higher than the current uptake of LARC in the U.S. We anticipated a lower LARC utilization rate among women enrolled at the community clinics, as provider myths and misperceptions may persist; however we did not observe a significant difference in the selection of LARC versus other methods at the family planning and community clinics compared to the university clinic. It is possible that the community sites willing to participate in the CHOICE Project are more accepting of LARC and so we failed to see a difference between our university site and the participating community sites. Although this is a preliminary report of our first 2,500 participants

enrolled, the number of participants choosing LARC methods is stable. The percentage choosing a LARC method has not changed since our first 1,000 enrollees were recruited.

Our study has a number of strengths. We deliberately limited our inclusion criteria to women willing to initiate a new contraceptive method. We believe it would not be informative to compare women who are satisfied with their existing contraceptive method with women who are starting a new, unfamiliar method. This eligibility criterion seeks to minimize the selection bias that would accompany enrollment of continuous and satisfied users. Other strengths include a large sample size and a diverse group of women in terms of race/ethnicity, marital status, and socioeconomic status which strengthens the generalizability of our findings to populations at greatest need for contraception. Our data are collected using well-designed, tested, and standardized instruments administered by trained interviewers.

Our ultimate goal is to evaluate whether widespread use of LARC methods will result in a decrease in unintended pregnancies. We will assess this outcome by determining if rates of teen pregnancy and repeat abortions (proxy measures for unintended pregnancy) decrease in our region.

In conclusion, by removing the financial barrier to all contraceptive methods, introducing LARC methods as a first-line contraceptive option, and addressing misperceptions regarding LARC methods, CHOICE has provided almost 1,700 of the first 2,500 participants with a long-acting reversible method of contraception. Widespread use of LARC may dramatically reduce unintended pregnancy while reducing long-term costs associated with contraception. Future analyses will investigate continuation, satisfaction, complications, and pregnancy rates among LARC users compared to women using shorter-acting contraceptive methods and identify possible subgroups of women who are more likely to select LARC or specific LARC methods.

APPENDIX A

Brief Scripted Introduction to LARC Methods

One of our objectives is to be sure women are aware of all contraceptive options, especially the most effective, reversible, long-acting methods. These methods include intrauterine contraception (the IUD or IUC) and the subdermal implant called Implanon.

- IUD or IUC are completely reversible contraceptive methods placed in the uterus. There are two types of IUD. One is hormonal and lasts up to 5 years (Mirena). The other, ParaGard, is non-hormonal, contains copper, and can last up to 10 years. Both may be removed at any time if you wish to become pregnant or want to switch to a new method. They are very safe and have the highest satisfaction and continuation rates of any contraceptive method.
- Implanon is a single flexible plastic rod placed under the skin of your upper arm. It is hormonal and lasts up to 3 years. It may also be removed if you wish to become pregnant or would like to switch to a different method.

Do you have any questions about these methods?

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Table 1

Demographic and Behavioral Characteristics of the First 2,500 Women Enrolled in the Contraceptive CHOICE Project

	Total	
	n	%
Recruitment Clinic		
University-affiliated	1845	73.8
Abortion	444	17.8
Family planning/community health	211	8.4
Participant Demographic Characteristics		
Race		
Black	1086	43.7
White	1209	48.7
Other	190	7.6
Hispanic ethnicity	114	4.6
Age		
<18	99	4.0
18-20	426	17.0
21-25	1053	42.1
>25	922	36.9
Marital status		
Single/never married	1592	63.7
Married/living with a partner	737	29.5
Separated/divorced/widowed	169	6.8
Trouble paying for transportation, housing, medical expenses or food in past 12 months	968	39.0
Currently receives food stamps, WIC, welfare, or unemployment	719	28.9
Trouble paying for basic necessities in past 12 months *or* currently receives public assistance	1281	51.7
Participant Behavioral Characteristics		
Lifetime sexual partners		
0-1	364	14.6
2-4	671	26.8
5-9	849	34.0
10+	616	24.6
Gravidity, mean (SD)		2.0 (2.1)
Parity, mean (SD)		0.9 (1.2)
History of abortion	1128	45.1
Any STI diagnosis in lifetime*	702	28.4
Any STI at baseline**	119	4.8
Contraception		

	Total	
	n	**%**
Method chosen at enrollment		
Long-Acting Reversible Contraceptive Methods	1678	67.1
Levonorgestrel IUC	1171	46.8
Copper IUC	233	9.3
Subdermal Implant	274	11.0
Shorter-acting Contraceptive Methods	822	32.9
Depo-medroxyprogesterone acetate	154	6.2
Oral contraceptive pills	306	12.2
Vaginal ring	292	11.7
Transdermal patch	68	2.7
Diaphragm	2	0.1

* *Chlamydia trachomatis, Neisseria gonorrhoeae, Trichomonas vaginalis*, Syphilis, Herpes or HIV

** Chlamydia trachomatis, Neisseria gonorrhoeae, Trichomonas vaginalis

Table 2

Demographic and Behavioral Characteristics by Contraceptive Method Chosen at Enrollment and the Relative Risk of Choosing Long-Acting Reversible Contraception.

	Total n=2,500		LARC n=1,678	Other n=822		Unadjusted RR (95%CI)	Adjusted RR (95%CI)
	n	%	%	%	P		
Recruitment Clinic					<0.001		
University	1845	73.8	70.3	81.0		Referent	Referent
Abortion	444	17.8	21.8	9.5		1.3 (1.2, 1.4)	1.2 (1.1, 1.2)
Family planning/community health	211	8.4	7.9	9.5		0.9 (0.9, 1.1)	1.0 (0.9, 1.1)
Participant Demographic Characteristics							
Race					0.065		
Black	1086	43.7	44.0	43.1		1.0 (0.9, 1.1)	0.9 (0.8, 0.9)
White	1209	48.7	49.2	47.5		Referent	Referent
Other	190	7.6	6.8	9.4		0.9 (0.8, 0.9)	0.9 (0.8, 0.9)
Hispanic ethnicity	114	4.6	4.6	4.5	0.917		
Age							
<18	99	4.0	3.5	4.9	<0.001	0.8 (0.7, 0.9)	1.1 (0.9, 1.3)
18-20	426	17.0	14.4	22.4		0.7 (0.7, 0.8)	0.9 (0.8, 1.0)
21-25	1053	42.1	39.8	46.8		0.8 (0.8, 0.9)	1.0 (0.9, 1.0)
>25	922	36.9	42.3	25.9		Referent	Referent
Marital status					<0.001		
Single/never married	1592	63.7	58.2	75.1		0.8 (0.7, 0.8)	0.9 (0.8, 0.9)
Married/living with a partner	737	29.5	33.6	21.0		Referent	Referent
Separated/divorced/widowed	169	6.8	8.2	3.9		1.0 (1.0, 1.2)	1.0 (0.9, 1.0)
Trouble paying for transportation, housing, medical expenses or food in past 12 months	968	39.0	40.6	35.8	0.023		
Currently receives food stamps, WIC, welfare, or unemployment	719	28.9	32.6	21.3	<0.001		
Trouble paying for basic necessities in past 12 months *or* currently receives public assistance	1281	51.7	55.7	43.5	<0.001	1.2 (1.1, 1.2)	1.1 (1.0, 1.1)
Participant Behavioral Characteristics							
Lifetime sexual partners					<0.001		
0-1	364	14.6	12.3	19.2		0.9 (0.8, 0.9)	0.8 (0.8, 0.9)

	Total n=2,500		LARC n=1,678	Other n=822		Unadjusted RR (95%CI)	Adjusted RR (95%CI)
	n	%	%	%	P		
2-4	671	26.8	25.9	28.7		Referent	Referent
5-9	849	34.0	35.5	30.8		1.1 (1.1, 1.2)	1.0 (0.9, 1.1)
10+	616	24.6	26.3	21.3		1.1 (1.1, 1.2)	1.0 (0.9, 1.1)
Gravidity, mean (SD)	2.0 (2.1)		2.4 (2.2)	1.2 (1.7)	<0.001		
Parity, mean (SD)	0.9 (1.2)		1.1 (1.2)	0.5 (0.9)	<0.001	1.1 (1.1, 1.2)	1.1 (1.1, 1.2)
History of abortion	1128	45.1	49.5	36.1	<0.001	1.2 (1.1, 1.3)	1.1 (1.1, 1.2)
Any STI diagnosis in lifetime*	702	28.4	30.3	24.5	0.002	1.1 (1.1, 1.2)	1.0 (0.9, 1.0)
Any STI at baseline**	119	4.8	4.9	4.5	0.670		

Note: LARC = long-acting reversible contraceptive methods; Other = depo-medroxyprogesterone acetate, oral contraceptive pills, vaginal ring,transdermal patch, diaphragm; RR = Relative Risk

** Chlamydia trachomatis, Neisseria gonorrhoeae, Trichomonas vaginalis*, Herpes, Syphilis or HIV

** Chlamydia trachomatis, Neisseria gonorrhoeae, Trichomonas vaginalis