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Interventions to Increase Male Attendance and Testing for Sexually Transmitted Infections at Publicly-Funded Family Planning Clinics

David Fine, Ph.D.[a,*,1], **Lee Warner, Ph.D.**[b], **Sarah Salomon, M.P.H.**[a,2], **David M. Johnson, M.P.H.**[c]

[a]Cardea Services, Seattle, Washington [b]Division of Reproductive Health, Centers for Disease Control and Prevention (CDC), Atlanta, Georgia [c]Department of Health and Human Services, Office of Population Affairs, Rockville, Maryland

Abstract

Purpose: We assessed the impact of staff, clinic, and community interventions on male and female family planning client visit volume and sexually transmitted infection testing at a multisite community-based health care agency.

Methods: Staff training, clinic environmental changes, in-reach/outreach, and efficiency assessments were implemented in two Family Health Center (San Diego, CA) family planning clinics during 2010–2012; five Family Health Center family planning programs were identified as comparison clinics. Client visit records were compared between preintervention (2007–2009) and postintervention (2010–2012) for both sets of clinics.

Results: Of 7,826 male client visits during the time before intervention, most were for clients who were aged <30 years (50%), Hispanic (64%), and uninsured (81%). From preintervention to postintervention, intervention clinics significantly increased the number of male visits (4,004 to 8,385; Δ = +109%); for comparison clinics, male visits increased modestly (3,822 to 4,500; Δ = +18%). The proportion of male clinic visits where chlamydia testing was performed increased in intervention clinics (35% to 42%; $p < .001$) but decreased in comparison clinics (37% to 33%; $p < .001$). Subgroup analyses conducted among adolescent and young adult males yielded similar findings for male client volume and chlamydia testing. The number of female visits declined nearly 40% in both comparison (21,800 to 13,202; −39%) and intervention clinics (30,830 to 19,971; −35%) between preintervention and postintervention periods.

Conclusions: Multilevel interventions designed to increase male client volume and sexually transmitted infection testing services in family planning clinics succeeded without affecting female client volume or services.

[*]Address correspondence to: David Fine, Ph.D., 740 17th Avenue East, Seattle, WA 98112. dnfine@outlook.com (D. Fine).
[1]Fine was Director of Research and Evaluation at Cardea Services during the study. He retired from the agency December 2016.
[2]Salomon was a Research Manager at Cardea Services during the study. Her present work address is: Foundation for Healthy Generations, 419 Third Avenue West, Seattle, WA 98119.

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Keywords

Male reproductive health; Sexually transmitted infections; Family planning; Chlamydia; Adolescents

Family planning has been named one of the 10 greatest public health achievements of the 20th century [1]. The federal Title X national family planning program, established by the Public Health Service Act of 1970 [2], is the only grant program dedicated solely to providing individuals with comprehensive family planning and related preventive reproductive health services [3]. The program has historically filled a need for reproductive health and contraceptive services for low-income and uninsured individuals and served primarily females. Over the last 40 years, males have comprised a small but increasing proportion of clients visiting federally funded family planning clinics.

In the mid-1990s reproductive health visits by male clients began to increase, as almost all publicly funded family planning clinics provided services to males, including testing and treatment for sexually transmitted infections (STIs) and reproductive health counseling [4]. In addition, for the past 15 years, the Department of Health and Human Services Office of Population Affairs, the federal agency managing Title X, has funded initiatives for improving family planning information, education, and clinical services targeting males. These programs have been successful, as the proportion of family planning visits by males more than quadrupled from 2% to 9% between 2002 and 2014 [5,6]. Often when males have accessed care, however, their reproductive health services have been neither comprehensive nor integrated into their broader health care needs [7]. Studies have sought to identify clinic-based interventions to improve male client reproductive health knowledge and increase safer sex behaviors [8,9].

Targeted STI screening of higher risk males, such as those seeking reproductive health services, enrolled in job training programs, or who are socially disadvantaged, may be an effective public health prevention strategy [10–12]. For example, many clinic-based STI testing programs addressing *Chlamydia trachomatis* have focused on adolescent and young adult women and their male sex partners [13]. In these programs, the rates of genital chlamydial infections among men are moderately high, particularly in young adult and racial minority males [14]. A broad set of interventions has been identified that show promise for improving the mix of family planning clinic users by sex and provision of STI testing [15,16].

Based on prior research, we implemented a 5-year field intervention study designed to increase the number of males seeking services at family planning clinics. Our objective was to assess the impact of staff, clinic, and community-level interventions on male and female family planning clinic volume for selected clinics that did and did not implement project interventions. We evaluated whether interventions increased visits by males to family planning clinics, increased provision of chlamydia testing services of male clients, and affected the census of female clients and receipt of chlamydia testing services by adolescent and young adult women served at those clinics.

Methods

Study design

The Department of Health and Human Services/Office of Population Affairs funded five family planning grantees in 2009 to expand male reproductive health services via staff and clinic innovation interventions within both the clinics and the surrounding community. As a project grantee, Family Health Centers (FHCs) of San Diego, CA, included 15 clinics that provided family planning, reproductive health, or STI-related services. Of these, we enrolled two family planning clinic programs as intervention sites and also identified five other FHC family planning programs with similar client populations and family planning service models to serve as comparison sites. Intervention sites were chosen in collaboration with FHC management and factored in medical director support and staff capacity to commit to training and intervention activities. Five interventions, described in the following section, were initiated beginning in 2010, at the two intervention clinics:

1. In-reach: Clinic staff members were trained on using in-reach strategies with their female clients by encouraging women to inform male partners, friends, and relatives about reproductive health services. Promotoras, middle-aged women who were well-respected community members, were used at one intervention site in a predominantly Hispanic community. These part-time volunteers approached males and couples in the clinic waiting room and at the building entrance to inform them about the availability of male reproductive health services. For males expressing interest, the promotoras arranged clinic appointments and shared contact information with the project coordinator, who proceeded to make reminder calls in advance of scheduled appointments. At the second intervention site, the clinic's outreach worker provided community outreach and clinic in-reach. For the latter, the worker approached male clients in the waiting area. If interested, the worker would suggest having a further confidential conversation about STI services in a separate room, as needed.
2. Outreach: Clinic staff made presentations to community-based organizations and local health, social service, and correctional agencies about available male reproductive health services at FHC.
3. Clinic efficiency: Patient flow analyses were implemented to help program managers identify and resolve service bottlenecks for clients transitioning between clinic stations and to reduce wait times. Intervention sites did not receive additional resources to increase staff or program hours.
4. Staff training: Staff members were provided training on the "culture of men" and providing services to male clients. The training included gender differences in communication and decision-making, influences of socialization on male sexual health, and the possible impact of male stereotyping on services. Staff reviewed clinic visit components, including determining service needs, contraceptive options, medical history, sexual health assessment, sexually transmitted disease services, preventive health services, and risk counseling. Clinical staff also received skill-based training on conducting male genital exams, including

documentation of normal growth and development and other common genital findings.

5. Clinic environment: Staff assessed intervention sites' physical settings to identify possible areas for improvements, for example, incorporating male-appropriate brochures and materials in waiting rooms and medical posters in exam rooms. Clinic intake forms, policies, and protocols were updated to better reflect male clients and their health care needs.

Data sources

For primary analyses, we accessed all 20,711 de-identified male family planning client clinic visit records from the administrative client information system for the seven participating clinics in FHC's network (i.e., two interventions and five comparisons) from 2007 through 2012. In addition, we accessed 85,803 de-identified clinic visit records for female clients aged 15–24 years from the same clinics for the same years. This age range selected for female clients represents a priority clinical population for prevention of both STIs and unintended pregnancies [17,18]. Two periods were compared between intervention and comparison clinics: (1) 2007–2009, before interventions were implemented and (2) 2010–2012, during and after interventions were implemented (herein referred to as "preintervention" and "postintervention") periods, respectively. Computerized visit records were extracted by agency information managers and routed to the coordinating center (Cardea Services, Seattle, WA) via secure and encrypted electronic file transfer. Measures included clinic identifier, visit calendar quarter and year (recoded as preintervention vs. postintervention period), and condition (comparison vs. intervention clinic); client demographic and visit characteristics (sex, age, and race/ethnicity, federal poverty level [Client federal poverty level is based on self-reported annual income that is then compared with the most recent HHS guidelines. Unemancipated minors who wish to receive services on a confidential basis must be considered according to their own resources.]), insurance status, and client visit status (new or continuing client [A new client visit was defined as an individual who had not been to any FHC clinic nor received any FHC health program services prior to that family planning visit; a continuing visit indicated that the individual had had one or more prior visits for any type of health service anywhere in the FHC system of clinics.]); chlamydia test performed; and chlamydia test results. We developed a joint race/ethnicity measure [19] where records identified as Hispanic ethnicity–regardless of race–were assigned to race/ethnicity's Hispanic category.

Statistical analysis

Descriptive statistics were calculated for all measures. We compared male and female client volume by intervention status and period. STI service delivery, operationalized as chlamydia testing, was stratified by client demographics, visit characteristics, intervention status, and period. We used Pearson's chi-squared test or Fisher's exact tests to assess differences in proportions. Bivariate and multivariate log-binomial regression procedures were used to assess the relationship between chlamydia testing and client demographic and visit characteristics, intervention status, and time period [20,21]. Multivariate procedures were implemented separately for visit records within preintervention and postintervention periods.

Covariates (age, race/ethnicity, poverty, insurance coverage, and client visit status) for multivariate analyses were selected based on bivariate results. Prevalence ratios (PRs) and 95% confidence intervals (CIs) were calculated to evaluate factors associated with chlamydia testing. A two-sided p value < .05 was considered statistically significant. We performed analyses using SPSS, version 19 (Chicago, IL) [22].

Human participant protection

Overall study procedures were approved by the Washington State Institutional Review Board and, locally, by the University of California, San Diego, Human Research Protections Program. The study was based on an analysis of de-identified data from the administrative and client information systems of the FHCs. Protocols for informed consent were not required.

Results

Baseline male visit characteristics

Of 7,826 reproductive health visits by males to family planning clinics operated by FHCs before intervention, total visit volume by males between comparison and intervention clinics was comparable (Table 1). Overall, most visits were by males who were adolescents or young adults (aged < 30 years), Hispanic, residing in households below 100% of the federal poverty level and lacking health insurance. Visits at intervention clinics relative to comparison clinics were less common among men aged < 20 years (5% vs. 18%) and those who were insured (12% vs. 27%). Rates of chlamydia testing were comparable between comparison and intervention (37% vs. 35%) clinics.

Condition differences between preintervention and postintervention periods

Male client visit characteristics.—From preintervention to postintervention, the overall number of visits by males attending FHC clinics, regardless of condition, increased 65%, from 7,826 to 12,885 (Table 2). The number of comparison clinic visits by males increased modestly from preintervention to postintervention (2007–2009[pre]: 3,822 visits; 2010–2012[post]: 4,500 visits; Δ = +18%), while visits by males at intervention clinics more than doubled (pre: 4,004; post: 8,385; Δ = +109%; p < .001 for difference in percent increase between conditions). Among planned subgroup analyses, the number of visits by adolescents at comparison clinics decreased 11% between preintervention and postintervention periods (pre: 699; post: 625) but increased 145% at intervention clinics (pre: 192; post: 470; p < .001). In addition, the number of visits by Hispanic males attending comparison clinics increased 8% (pre: 2,287; post: 2,471; Δ = +8%), while visits at intervention clinics more than doubled (pre: 2,605; post: 5,531; Δ = +112%; p < .001). For client status, the number of new client visits by males at comparison clinics decreased 17% (pre: 1,259; post: 1,051), while such visits at intervention clinics increased 62% (pre: 1,047; post: 1,697; p < .001). Finally, all male visit characteristics in Table 2 showed statistically significant condition (comparison vs. intervention clinic) differences on pre/post change in client volume.

Male chlamydia testing services.—At comparison clinics, the number of chlamydia tests performed among male clients increased modestly between preintervention and

postintervention periods (pre: 1,413 tests; post: 1,496 tests; Δ = +6%) while the number of such tests at intervention clinics more than doubled (pre: 1,392; post: 3,504; Δ = +152%; $p < .001$ for difference in percent increase between conditions) (Table 2). Besides changes in test volume, there were also condition and period differences in the percentage of visits where a chlamydia test was done (Table 3). At comparison clinics, the percentage of visits by males where chlamydia testing was performed decreased by 11% from preintervention to postintervention periods (37% to 33%, respectively; $p < .001$ for difference in percentage change between periods); conversely, the percentage of male visits with a chlamydia test at intervention clinics increased by 20% (pre: 35%; post: 42%; $p < .001$). Among adolescents aged < 20 years, at comparison clinics the percentage of visits that included a chlamydia test was stable from preintervention to postintervention (41% to 42%, respectively; $p = .58$); while the percentage of visits at intervention clinics where chlamydia testing was performed during adolescent male visits increased by 36% (pre: 33%; post: 45%; $p = .004$). Similar group differences were found for young adult male clients aged 20–29 years, that is, no change over time for the comparison clinics and a 16% increase in testing at intervention clinics (pre: 38%; post: 44%; $p < .001$).

These overall differences in chlamydia testing were also found in subanalyses limited to males at their initial clinic visit as newly enrolled FHC clients. At comparison clinics, the number of chlamydia tests performed among new clients decreased 17% between preintervention and postintervention periods while the number of such tests at intervention clinics increased 62% ($p < .001$). In terms of percentage differences, at comparison clinics the proportion of new male clients tested for chlamydia remained stable from preintervention to postintervention periods (47 to 44%, respectively; $p = .149$); the proportion tested for chlamydia among new clients' initial visits at intervention clinics increased 25% (pre: 51%; post: 64%; $p < .001$; data not hown). In subgroup analyses of male clients aged < 30 years, the proportion of new male visits at comparison clinics where a chlamydia test was performed was stable (pre: 50%, post: 53%; $p = .252$), while at intervention clinics chlamydia testing among new male clients aged < 30 increased 21% (pre: 53%, post: 64%; $p < .001$; data not shown).

In multivariate analyses with preintervention records condition was not significantly related to the likelihood that a chlamydia test was provided during male visits (adjusted PR = .99; 95% CI = .93–1.06; data not shown). In multivariate results for the period when innovations were implemented (2010–2012), relative to comparison clinics, intervention clinics showed significantly higher chlamydia testing rates at male family planning visits (33% vs. 42%; adjusted PR = 1.24; 95% CI = 1.18–1.30) (Table 4).

Impact of clinic interventions on female visit volume and services provided

Finally, we assessed the impact of male-centered interventions at FHC clinics on clinic visit volume and rate of chlamydia testing among female clients aged 15–24 years. Between the preintervention and postintervention periods, the number of family planning visits by female clients aged 15–24 years declined 39% at comparison clinics (pre: 21,800 visits; post: 13,202 visits) and 35% at intervention clinics (pre: 30,830; post: 19,971). Beyond visit volume, at comparison clinics the likelihood of chlamydia testing among visits for new

female clients aged 15–24 years remained stable from preintervention to postintervention period (26% vs. 28%, respectively; $p = .175$ for difference in percent increase between periods) but increased significantly at intervention clinics between periods (pre: 18%; post: 36%; $p < .001$).

Discussion

This study revealed that, relative to comparison family planning clinics in FHC's network, the volume of male client visits increased significantly at FHC clinics where staff, program, and clinic environmental interventions specifically promoting male services were implemented. At intervention clinics, the increase was particularly large for adolescents and continuing clients who had a prior health care service history in this network of clinics.

Besides increasing male client volume, intervention clinics increased the provision of chlamydia testing for males, especially among adolescent and new clients. Male family planning clients attending intervention sites were 24% more likely to be tested for chlamydia when community, clinic, and staff innovations were implemented. This increased likelihood of STI testing at intervention sites was a function of two factors: the overall increase in male client attendance at clinics and clinicians expanding the proportion of their male clients where a chlamydia test was ordered.

Most importantly, given the long-standing commitment, these clinics have made under federal Title X funding to provide family planning services for women, interventions designed to increase the number of visits by males did not differentially affect the volume of visits or receipt of chlamydia testing by female clients. Thus, given the context that the overall number of visits by female clients attending Title X clinics have been markedly declining over the past decade [5], concerns that increasing delivery of services to male clients at family planning clinics would come at the expense of providing female clients full access to reproductive health care were unfounded.

The project focused on increasing access to family planning clinics by males, and upon entering the system, to enhance STI testing and treatment, provide ongoing counseling about STI and pregnancy prevention, and meet general reproductive health needs. Recent research has highlighted the importance of identifying high-risk young men in need of STI services. Risk has been operationalized via individuals' sexual network characteristics, for example, men with multiple concurrent sex partners [23], as well as broader service system characteristics, for example, adolescent males in juvenile detention facilities [10]. Although screening has resulted in identifying significant numbers of males requiring treatment, it has been challenging to link male screening to community-level STI morbidity among women [24].

Lessons learned and future research

Future research regarding the design and implementation of program innovations could build on four lessons learned from this study. First, routine administrative information systems are underutilized but highly cost-efficient sources of information that can be used to assess intervention effectiveness. These systems are also limited to existing client demographics

and service outputs, such as the number and type of STI tests performed. Having easily accessible, de-identified data on client demographics and receipt of clinical services will become increasingly important as health care systems shift from simply monitoring service delivery to evaluating the effectiveness of programs and interventions.

Second, future work could enhance the measures available in administrative information systems for monitoring client health and informing program direction. Where feasible, the focus on client characteristics and services could be further expanded to include client sexual history and recent sexual behaviors (e.g., number of recent sex partners, condom and contraceptive use).

Third, although the intervention was not designed to address female chlamydia screening, we observed that chlamydia testing increased significantly during adolescent and young adult female family planning visits within the two clinics where interventions emphasized STI testing for male clients. While this shift cannot be directly attributed to innovations focused on male client service delivery, this unexpected finding reinforces the need to monitor how changes in male family planning service delivery might impact the volume of female clients and their access to STI services.

Fourth, based on our assessment of project implementation, future efforts to expand male family planning clients and STI services must recognize that implementing systemic changes require commitment from management and front line personnel, ongoing communication, and significant shifts in agency culture to address challenges. Potential challenges range from staff concerns about how female clients would view the increased presence of male clients on-site to the need for additional training on male genital exams. These efforts are part of a broad and empirically based effort to improve reproductive health services for male and female clients across current and potential providers of family planning services in the United States (Program managers interested in replicating our study's clinic assessment and intervention activities to increase male family planning clients can find the project toolkit at: http://www.cardeaservices.org/resourcecenter/getting-ready-for-male-reproductive-health-services.) [25].

Limitations and strengths

Our findings are subject to at least five limitations. First, we relied on the agency's existing administrative information system, which lacked key measures related to use of family planning services such as sexual orientation, clinical exam findings, or sexual risk behaviors. In addition, data were collected at the visit level and could not be aggregated to client summaries; thus, we were unable to account for the effect of repeat visits by clients. Second, we did not measure the amount or intensity of male-centered interventions–either at clinics where they were implemented or at comparison clinics. Third, the nonrandomized observational design limits our ability to conclusively attribute intervention effects to project interventions [26]. Fourth, we could not determine which of the intervention's five components may have accounted for changes in male client volume or STI testing. Finally, our work was limited to a single set of family planning clinics in San Diego and may not be generalizable to other family planning clinics or the general population.

Several strengths of the study design should be noted. First, the reliance on a single health care agency within a relatively small geographic area with common protocols and administrative information systems to identify intervention and comparison clinics strengthened the rigor of our approach. Second, we were able to utilize existing administrative information systems to efficiently assess client characteristics and services over an extended timeframe. Third, since our evaluation used de-identified administrative data, it involved neither active consent by clients nor the opportunity for nonparticipation, which reduced threats to external validity, as biases related to clients' awareness of participating in a field study were avoided [27]. Fourth, the use of routinely collected information allowed us to assess the impact of study interventions on female family planning client volume and receipt of services post hoc, in addition to male services. Monitoring female clients' receipt of STI services is also critical in the context of the mission of maintaining women's access to reproductive health services.

Family planning clinics within San Diego's FHCs implemented program and community innovations that showed significant increases in the frequency of male reproductive health client visits and STI testing, particularly among adolescent and young adult males. As important, these results did not adversely affect female family planning visit volume or receipt of chlamydia testing. For family planning programs, particularly those embedded in larger health care agencies, the tested interventions may be a promising approach to increasing male clinic attendance and STI testing. However, further research is needed to assess the efficacy of specific elements in our multiple-component intervention.

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IMPLICATIONS AND CONTRIBUTION

Family planning clinics within San Diego's Family Health Centers implemented program and community interventions that showed significant increases in the frequency of male reproductive health client visits and chlamydia testing. These effective innovations contribute to the practice literature on increasing clinical services to adolescent and young adult males.

Table 1

Comparison of baseline male client characteristics between intervention and comparison clinics; Family Health Centers' family planning clinics, San Diego, CA

Characteristic	All	Comparison clinics	Intervention clinics
	N (%)	N (%)	N (%)
Male visits, total	7,826 (100)	3,822 (100)	4,004 (100)
Age, years			
<20	891 (11)	699 (18)	192 (5)
20–29	3,086 (39)	1,462 (38)	1,624 (41)
30–39	1,949 (25)	811 (21)	1,138 (28)
>39	1,900 (24)	850 (22)	1,050 (26)
Race/ethnicity			
Asian/Native Hawaiian and other Pacific Islander	175 (2)	139 (4)	36 (1)
Black (non-Hispanic)	739 (10)	549 (15)	190 (5)
Hispanic	4,892 (64)	2,287 (62)	2,605 (66)
Multiple/other	137 (2)	81 (2)	56 (1)
White (non-Hispanic)	1,695 (22)	652 (18)	1,043 (27)
Poverty status (% FPL)			
<100% FPL	6,207 (81)	3,116 (83)	3,091 (79)
100%–125% FPL	689 (9)	295 (8)	394 (10)
126%–150% FPL	318 (4)	136 (4)	182 (5)
>150% FPL	495 (6)	231 (6)	264 (7)
Insurance			
Uninsured	6,340 (81)	2,806 (73)	3,534 (88)
Insured, public/private	1,486 (19)	1,016 (27)	470 (12)
Client visit status			
New	2,306 (30)	1,259 (33)	1,047 (26)
Continuing	5,520 (70)	2,563 (67)	2,957 (74)
Chlamydia test performed			
No	5,021 (64)	2,409 (63)	2,612 (65)
Yes	2,805 (36)	1,413 (37)	1,392 (35)

FPL = federal poverty level.

Table 2

Comparison of number of visits by male clients between preintervention (2007–2009) and postintervention (2010–2012) periods for comparison and intervention clinics, by characteristic; Family Health Center's family planning clinics, San Diego, CA

Characteristic[c]		Comparison sites			Intervention sites		
	Total	Pre[b]	Post[b]	Δ[a]	Pre[b]	Post[b]	Δ[a]
	N	N	N	%	N	N	%
Total male visits	20,711	3,822	4,500	+18	4,004	8,385	+109
Age, years							
<20	1,986	699	625	−11	192	470	+145
20–29	7,484	1,462	1,607	+10	1,624	2,791	+72
30–39	5,381	811	881	+9	1,138	2,551	+124
>39	5,860	850	1,387	+63	1,050	2,573	+145
Race/ethnicity							
Asian/Native Hawaiian and other Pacific Islander	451	139	146	+5	36	130	+261
Black (non-Hispanic)	1,920	549	599	+9	190	582	+206
Hispanic	12,894	2,287	2,471	+8	2,605	5,531	+112
Multiple/other	424	81	136	+68	56	151	+170
White (non-Hispanic)	4,682	652	1,050	+61	1,043	1,937	+86
Poverty status, <100% FPL							
<100% FPL	16,855	3,116	3,765	+21	3,091	6,883	+123
100%–125% FPL	1,678	295	325	+10	394	664	+69
126%–150% FPL	805	136	178	+31	182	309	+70
>150% FPL	1,150	231	207	−10	264	448	+70
Insurance, uninsured							
Uninsured	16,162	2,806	2,651	−6	3,534	7,171	103
Insured, public/private	4,538	1,016	1,849	+81	470	1,203	+156
Client status							
New	5,054	1,259	1,051	−17	1,047	1,697	+62
Continuing	15,657	2,563	3,449	+35	2,957	6,688	+126
Chlamydia test							
No	12,906	2,409	3,004	+25	2,612	4,881	+87

Characteristic[c]	Total	Comparison sites			Intervention sites		
		Pre[b]	Post[b]	Δ[a]	Pre[b]	Post[b]	Δ[a]
	N	N	N	%	N	N	%
Yes	7,805	1,413	1,496	+6	1,392	3,504	+152

FPL = federal poverty level.

[a]Relative percentage change from preintervention to postintervention period.

[b]Pre: before interventions, 2007–2009; post: during interventions, 2010–2012.

[c]Significant condition differences were found for all Table 2 measures on preintervention/postintervention volume, $p < .05$.

Table 3

Comparison of percentage of male visits with a chlamydia test between preintervention (2007–2009) and postintervention (2010–2012) periods for comparison and intervention clinics, by characteristic; Family Health Center's family planning clinics, San Diego, CA (n = 20,711)

Characteristic[d]	Percentage of visits with chlamydia test provided					
	Comparison sites			Intervention sites		
	Pre[b]	Post[b]	Δ[a]	Pre[b]	Post[b]	Δ[a]
	%[c]	%[c]	%	%[c]	%[c]	%
Total visits with chlamydia test (%)	37	33	−11	35	42	+20
Age, years						
<20	41	42	+2	33	45	+36
20–29	40	41	+3	38	44	+16
30–39	37	34	−8	34	43	+26
>39	29	20	−31	30	38	+27
Race/ethnicity						
Asian/Native Hawaiian and other Pacific Islander	30	25	−17	36	40	+11
Black (non-Hispanic)	43	42	−2	36	46	+28
Hispanic	37	35	−5	37	44	+19
Multiple/Other	31	26	−16	25	36	+44
White (non-Hispanic)	34	27	−21	31	35	+13
Poverty status, <100% FPL						
<100% FPL	37	33	−11	35	43	+23
100%–125% FPL	38	36	−5	36	40	+11
126%–150% FPL	44	37	−16	36	41	+16
>150% FPL	37	39	+5	36	38	+6
Insurance, uninsured						
Uninsured	40	40	0	35	42	+20
Insured, public/private	30	24	−20	31	40	+29
Client status						
New	47	44	−6	51	64	+25
Continuing	32	30	−6	29	36	+24

FPL = federal poverty level.

[a]Relative percentage change from preintervention to postintervention period for the percentage of male visits with a chlamydia test.

[b]Pre: before interventions, 2007–2009; post: during interventions, 2010–2012.

[c]For each characteristic's response category, the percentage of male visits within that time period (pre/post) with a chlamydia test.

[d]Significant condition differences were found for all Table 3 measures on preintervention/postintervention percent tested for chlamydia, $p < .05$.

Table 4

Log-binomial regression of the likelihood of chlamydia testing being performed at male family planning visits, postintervention period (2010–2012); Family Health Centers' family planning clinics, San Diego, CA, 2007–2012

Characteristic	No.[a]	Percent[b]	% Chlamydia test	Univariate		Multivariate	
				PR[c]	95% CI[c]	aPR[c]	95% CI[c]
Male visits, postintervention	12,885	100	39	–		–	
Age (years)							
<20	1,095	9	43	1.36	1.26–1.48	1.33	1.23–1.43
20–29	4,398	34	43	1.35	1.27–1.43	1.18	1.11–1.25
30–39	3,432	27	40	1.27	1.19–1.35	1.13	1.07–1.20
>39	3,960	31	32	Reference		Reference	
Race/ethnicity							
Asian/NHOPI	276	2	32	1.01	.85–1.21	1.05	.88–1.25
Black (non-Hispanic)	1,181	9	44	1.39	1.28–1.51	1.42	1.32–1.53
Hispanic	8,002	63	41	1.29	1.22–1.37	1.28	1.21–1.35
Multiple/other	287	2	31	.97	.81–1.17	1.04	.87–1.23
White (non-Hispanic)	2,987	24	32	Reference		Reference	
Poverty status (% FPL)[c]						–	
<100% FPL	10,648	83	39	Reference			
100%–125% FPL	989	8	39	.99	.89–1.09		
126%–150% FPL	487	4	40	1.02	.91–1.14		
>150% FPL	655	5	39	.99	.91–1.07		
Insurance							
Uninsured	9,822	76	42	Reference		Reference	
Insured	3,052	24	30	.73	.68–.77	.81	.76–.87
Client visit status							
New	2,748	21	56	1.64	1.57–1.71	1.66	1.59–1.73
Continuing	10,137	79	34	Reference		Reference	
Condition							
Comparison sites	4,500	35	33	Reference		Reference	
Intervention sites	8,385	65	42	1.26	1.18–1.34	1.24	1.18–1.30

aPR = adjusted prevalence ratio; FPL = federal poverty level; NHOPI = Native Hawaiian and other Pacific Islander; PR = prevalence ratio; 95% CI = 95% confidence interval.

[a] Counts for some characteristics (race/ethnicity, insurance and poverty) will not sum to 12,885 due to missing data.

[b] Percentages may not sum to 100% for some characteristics due to rounding.

[c] FPL univariate results were not statistically significant. FPL excluded from multivariate analysis.

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