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Reproductive Health Outcomes of Insured Women Who Access Oral Levonorgestrel Emergency Contraception

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Abstract

Objectives—To assess the level of risk for women who seek emergency contraception through various clinical routes and the opportunities for improved care provision.

Methods—This study looked at a retrospective cohort to assess contraception and other reproductive health outcomes among women aged 15-44 who accessed oral levonorgestrel emergency contraception through an office visit or the call center at Kaiser Permanente Northern California from 2010 to 2011.

Results—Of 21,421 prescriptions, 14,531(67.8%) were accessed through the call center. In the subsequent 12 months, 12,127(56.6%) women had short-acting contraception (pills, patches, rings, depot medroxyprogesterone) dispensed and 2,264(10.6%) initiated very effective contraception (intrauterine contraception, implants, sterilization). Initiation of very effective contraception was similar for women who accessed it through the call center -1,569(10.8%) and office visits – 695(10.1%) (adjusted OR 1.02 95% confidence interval (CI) 0.93-1.13). In the subsequent 6 months, 2,056(9.6%) women became pregnant. Women who accessed emergency contraception through the call center were less likely to become pregnant within 3 months of accessing emergency contraception than woman who accessed it through office visits (adjusted OR 0.82 95% CI 0.72-0.94); however they were more likely to become pregnant within 4-6 months (adjusted OR 1.37 95%CI 1.16-1.60). Among women who were tested for chlamydia and gonorrhea, 689(7.8%) and 928(7.9%) were positive in the 12 months before and after accessing emergency contraception, respectively.

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Conclusions—Protocols to routinely address unmet need for contraception at every call for emergency contraception and all office visits including visits with primary care providers should be investigated.

Introduction

Increasing timely access to emergency contraception is important as it can prevent pregnancy after unprotected intercourse and it is more effective the sooner it is administered. [1,2] While Plan B One-Step®(levonorgestrel) was approved for over the counter sale for consumers of all ages in 2013; many women still obtain oral emergency contraception through a clinician to obtain medical advice and/or to avoid out-of-pocket costs. As a result, providers have created more convenient access routes such as on-call services to allow patients to obtain a prescription without an in-person visit with a clinician.

Women who seek emergency contraception may be at increased risk for unintended pregnancy immediately after an act of unprotected intercourse and in the subsequent months, and they may be at increased risk for sexually transmitted infections. In the 2006-2008 National Survey of Family Growth, 10% of women age 15-44 reported having ever used emergency contraception at least once. Little is known about women who seek emergency contraception, their subsequent initiation of ongoing contraception, health visits, sexually transmitted infections, and pregnancy, and whether women who access emergency contraception though more convenient access routes, in which a full range of services is not available, have similar outcomes as women who access it through office visits. Our objective was to gain an understanding of the level of risk for women who seek emergency contraception through various clinical routes and assess opportunities for improved care provision.

Materials and Methods

We performed a retrospective cohort study of women at Kaiser Permanente Northern Californian, a large integrated health delivery care system, in which the insurance plan, inpatient and ambulatory services, and providers are organized under one network that provides all services to health plan members with few exceptions (emergencies and referrals for highly specialized care). Kaiser Permanente serves over 1 million adult women annually who represent approximately 30% of the insured population in the region. [3] One of the ways women in this system can obtain a prescription for emergency contraception without an in-person office visit is through the regional appointment and advice call centers. These calls are managed by registered nurses who follow standardized protocols. Patients who meet criteria (unprotected sex and requesting emergency contraception) are given a prescription authorized by a physician. The nurses can also schedule subsequent appointments and in some cases follow additional protocols such as one for initiating oral contraceptives.

We included women age 15-44 at Kaiser Permanente Northern California with at least one prescription for oral levonorgestrel emergency contraception between January 1, 2010 and December 31, 2011. We excluded Ella (Ulipristal acetate) as it was added to formulary in July 2011 and use was very limited during the study period. Data for the study was

abstracted from Kaiser Permanente's comprehensive electronic medical record. Oversight and approval to conduct this study was provided by the Institutional Review Board of the Kaiser Foundation Research Institute.

The first prescription for emergency contraception during the study period was considered the index prescription and index date. Women in the cohort were categorized into one of two groups – women who were dispensed emergency contraception through: 1) an in-person office visit; or 2) the regional appointment and advice call center (call center). We excluded women who accessed prescriptions for emergency contraception through other routes that do not involve an in-person visit including telephone appointments or direct communication through secure message (email) with physicians, or pharmacy refill requests through the pharmacy call centers as these encounter types are heterogeneous and the numbers were two small to make independent comparisons with the other study groups. Women were also excluded if they did not have KPNC membership for a total of 6 months before or after the index prescription.

Information was extracted on the index prescription for emergency contraception including provider type for the prescription and time from prescription order to pick-up at a pharmacy. Baseline demographic characteristics of women in the cohort including age, race, and low neighborhood income, which was defined as residence in a neighborhood in which 20% or more of households were below the Federal Poverty level, and length of health plan membership were extracted. Information on short acting hormonal contraception (oral contraceptives, transdermal patch, vaginal ring, and Depo-medroxyprogesterone) and additional emergency contraception dispensed, as well as office visits, and gonorrhea and chlamydia tests in the 12 months before and after the index prescription was extracted electronically.

The primary outcome of interest, initiation of very effective contraception (intrauterine contraceptive, implant, or sterilization – surgical or transcervical) on the index date or in the subsequent 12 months was abstracted. Secondary outcomes included new short acting contraception dispensed, chlamydia and gonorrhea tests andpregnancies (live births, induced abortions, miscarriages/ectopics/other loss, and other evidence of pregnancy –e.g. a positive pregnancy test). Pregnancies were categorized as early or late (live birth where the pregnancy was initiated within 3 months(early) or 4-6 months (late) or induced abortions, miscarriages or other losses that occurred within 90 days (early) or 91-180 days (late) after the index date. Pregnancy intentions were assessed among women with a live birth using a question on a prenatal intake questionnaire which asked if the pregnancy was wanted at the time of conception or at all. If a woman had more than one pregnancy, only one was counted with live birth as the highest priority.

The study was powered to have sufficient sample size to be able to detect a significant difference in the proportion of women who initiated a very effective contraceptive in the subsequent 12 months in the two study groups. We estimated using a two group continuity corrected chi-square test with 0.05 significance and a two-sided test that a sample size of 7,616 women in each group will allow us to detect a 30% difference in the proportion of

women in each group initiating very effective contraception assuming 2% of women in the office visit group initiate a very effective method.

Baseline characteristics, primary, and secondary outcomes were summarized in frequency tables by access route. Associations between baseline characteristics and access route were assessed using the chi-square p-values for categorical variables and the t-test p-values for continuous variables. Logistic regression analyses were used to assess the association between emergency contraception access route and: 1) initiation of very effective contraception; 2) early pregnancy; and 3) late pregnancy. In addition to emergency contraception access route, we included baseline variables with significantly different distributions in the study groups and are also known factors associated with contraceptive choice and unintended pregnancy in the literature. The models included age, race, and low neighborhood income, any prior hormonal method of contraception dispensed, live birth, and abortion in the 12 months prior to accessing emergency contraception. Chart review of 2% (500 charts) revealed 97% of electronically abstracted data was consistent with chart review (two-sided 95% confidence interval (CI) 95.5-98.5%). Analyses were conducted using SAS version 9.03.

Results

There were 30,143 individual women with at least one prescription for emergency contraception. The demographics of women who were excluded because of health plan membership of less than 6 months or inability to match to an encounter on the index date (not shown) were similar to the demographics of the analysis cohort except they were younger (mean age 25.8 years) and more likely to live in lower income neighborhoods.

Of the 21,421 women with an index prescriptions, 14,531 (67.8 %) were accessed through the call center; prescriptions ordered through the call center were more likely to be dispensed compared to prescriptions ordered through office visits (92.4% vs. 79.3%, p<. 001) (Table 1). A lower proportion of women who accessed emergency contraception through the call center were adolescents than through office visits (8.1% vs. 29.2%. p<.001). A higher proportion of women who accessed emergency contraception through the call center were Hispanic and African-American than through office visits (32.4% and 18.9% vs. 23.8% and 16.5% respectively, p<.001). Over half of emergency contraception prescribed through office visits was ordered by primary care providers (44.9%) or pediatric providers (11.2%) (Table 1).

In the 12 months before accessing emergency contraception, 92.6% of women had not had emergency contraception dispensed and 40.7% of women had any prior short acting contraceptive dispensed (Table 2). Women who access it through the call center were more likely to have had a prior short acting contraceptive dispensed than women who access it through office visits (45.9% vs. 29.8%, p<.001). Most women (89.9%) had an in-person office visit in either Obstetrics or Gynecology or primary care in the 12 months before accessing emergency contraception. A higher proportion of women who accessed it through call center had a prior in-person visit in Obstetrics and Gynecology in the prior 12 months compared to women who accessed it through an office visit (66.3 vs. 44.8%, p<.001) (Table

2). Among women age 25 and younger and all women who had a chlamydia and gonorrhea test done in the 12 months before accessing emergency contraception, 9.4% and 7.8% respectively had at least one positive test (Table 2).

In the 12 months after accessing emergency contraception, 47.6% of women had additional emergency contraception dispensed one or more times (Table 3). Forty-seven percent of women who did not have a short acting contraceptive in the prior 12 months had anew short acting contraceptive method dispensed either on the day or in the subsequent 12 months after emergency contraception was accessed; women who accessed emergency contraception through office visits were more likely to have it dispensed either on the day or in the subsequent 12 months after accessing emergency contraception than women who access it through the call center (54.4% vs. 37.7%, <.001p<.001). In the 12 months after accessing emergency contraception, 10.6% of women initiated a very effective contraceptive method; the proportion of women who initiated a very effective method was similar whether they access emergency contraception with or without an in-person visit (Table 3).

The majority of women had an office visit in Obstetrics and Gynecology (67.2%) or primary care or pediatrics (90.6%) in the 12 months after accessing emergency contraception; women who accessed emergency contraception through the call center were more likely to have an Obstetrics and Gynecology visit in the subsequent 12 months than women who accessed it through office visits (70.7% vs 59.9%, p <.001) (Table 3). Among women age 25 and younger and all women who had a chlamydia and gonorrhea test done on the day or in the subsequent 12 months after accessing emergency contraception, 9.5% and 7.9% respectively had a positive test (Table 3).

In the 6 months after accessing emergency contraception,2,056(9.6%) women experienced a pregnancy (Table 3). Of the 1,104 pregnancies that occurred within 3 months, 717 (64.9%) were abortions and live births that were reported as unwanted at the time of conception. While a similar proportion of women who accessed emergency contraception through the call center and office visits experienced an early pregnancy, women who accessed emergency contraception through the call center were less likely to have an abortion than women who accessed emergency contraception through office visits (1.9% vs. 3.2%, p<. 001). Among the 952 (4.4%) pregnancies that occurred 4 to 6 months after accessing emergency contraception, the proportion of women who experienced a late pregnancy was higher for women who accessed emergency contraception through the call center than through office visits (5.0% vs. 3.3%, p<.001). Five-hundred and fifty (57.8%) late pregnancies ended in abortions and live births that were reported as unwanted at the time of conception.

Multiple logistic regression analysis showed that women who accessed emergency contraception through the call center were equally as likely to initiate a very effective method of contraception than women who accessed emergency contraception through office visits after controlling for baseline variables (OR 1.02; 95% CI 0.93 – 1.13) (Table 4). Adolescents were less likely to initiate a very effective method (OR 0.80; 95% CI 0.68 – 0.94). Women who accessed emergency contraception through the call center were less likely to experience an early pregnancy than women who accessed emergency contraception

through an office visit after controlling for baseline variables (OR 0.82; 95% CI 0.72 – 0.94); however women who accessed emergency contraception through the call center were more likely to experience a late pregnancy than women who accessed emergency contraception through office visits after controlling for baseline variables (OR 1.37; 95% CI 1.16– 1.60). (Table 4).

Discussion

Our data from an insured community-based population revealed increased risk for unintended pregnancy and sexually transmitted infections in the subsequent 6 -12 months among women who accessed emergency contraception through the call center or an office visit, despite access to care. Interventions to increase the initiation of effective ongoing contraception for women who access emergency contraception are needed; however given the considerable access to care as evidenced by the proportion of women who had visits in obstetrics and gynecology and primary care before and after accessing emergency contraception, protocols to routinely address unmet need for contraception at all calls for emergency contraception and every office visit, including visits with primary care providers should be investigated.

Women who accessed emergency contraception through the call center were equally as likely to initiate very effective contraception in the subsequent 12 months as women who accessed emergency contraception through an office visit. The overall proportion of women who initiated intrauterine contraception and implants (9.6%) is modest considering estimates that about 9% of women in Kaiser Permanente Northern California and nationally currently use these methods, however much higher initiation rates have been demonstrated in the CHOICE trial that promoted long acting reversible contraception without cost.[4,5]

Women who accessed emergency contraception through office visits were however more likely to have a new short acting contraception dispensed in the subsequent 12 months; with the largest difference being on the day emergency contraception was accessed. Women who accessed emergency contraception through the call center did not catchup to women who had accessed it through office visits in terms of the proportion with a new dispensed prescription for short acting contraception, even though they were more likely to have an office visit in Obstetrics and Gynecology in the subsequent 12 months than women who accessed emergency contraception through an office visit. Women accessing emergency contraception through office visits may have been seeking contraception or providers may have been more likely to offer it to patients during an office visit than during telephone treatment. Opportunity for contraceptive counseling may be limited during phone encounters; however, it may be a teachable moment and emergency contraception telephone treatment protocols should attempt to incorporate counseling and immediate access to prescriptions for an ongoing contraceptive method.

After controlling for baseline characteristics, women who accessed emergency contraception through the call center were less likely to have an early pregnancy, suggesting a short-term protective effect of convenient access; however, this effect appeared to diminish over time and women who accessed emergency contraception through the call center were more likely

to experience a late pregnancy. The proportion of pregnancies that ended in abortions and births that were reported as unwanted at the time of conception in the subsequent 4-6 months in women who accessed emergency contraception through either route is indicative of overall ongoing unmet need for contraception among these women.[6]

The rate of positive gonorrhea or chlamydia tests among women who were tested in the 12 months before and after access emergency contraception through either route was 2 times the rate for women tested at Kaiser overall (3.9%) and in the range of rates seen among women attending public family planning clinics, suggesting a higher risk population as well.[7] Higher proportions of African-American and Hispanic women accessed emergency contraception through the call center compared to through office visits, suggesting that women who accessed emergency contraception through the call center may be even higher risk. These findings add to other studies that suggest that women who use emergency contraception are more likely to be from demographic groups that are higher risk and indicate that testing for chlamydia and gonorrhea should be routinely offered to women seeking emergency contraception.[8]

Our study has several strengths. The study was performed within an integrated health care delivery system allowing us to capture services received and outcomes. Though this is an insured population, it is a community based and has broad diversity with respect to age and race/ethnicity. Our study also has limitations. This is a retrospective cohort study, information on timing of unprotected intercourse, whether the prescriptions were advance provision, timing of administration of dispensed emergency contraception, and pregnancies that may have been terminated out of network, is not available in the electronic health record, therefore we could not calculate emergency contraception efficacy. [9] Despite these limitations, this study provides insight into longer term outcomes of women who access emergency contraception.

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Table 1
Characteristics of Women Accessing Emergency Contraception by Encounter Type

Characteristic	Call Center*	Office Visit*	Total	P value ℱ
	n=14,531 (67.8)	n=6,890 (32.2)	N=21,421	
Age, mean years (sd)	27.1 (6.7)	24.1 (7.3)	26.1 (7.0)	<.001
	(n)%	(n)%	(N)%	
15-18	1,170 (8.1)	2,011 (29.2)	3,181 (14.9)	<.001
19-24	4,746 (32.7)	2,101 (30.5)	6,847 (32.0)	
25-29	3,673 (25.3)	1,177(17.1)	4,850 (22.6)	
30-39	4,202 (28.9)	1,337 (19.4)	5,539 (25.9)	
40-45	740 (5.1)	264 (3.8)	1,004 (4.7)	
Race/ethnicity				<.001
Hispanic	4,488 (32.4)	1,539 (23.8)	6,027 (29.7)	
African-American	2,611 (18.9)	1,066 (16.5)	3,677 (18.1)	
White	4,138 (29.9)	2,630 (40.6)	6,768 (33.3)	
Asian/PI	2,129 (15.4)	1,035 (16.0)	3,164 (15.6)	
Multiracial/Other	478 (3.5)	211 (3.3)	689 (3.4)	
Low income residence**	2,191 (15.4)	832 (12.2)	3,023 (14.2)	<.001
12 months of membership before Index date	12,615 (86.8)	5,915 (85.9)	18,530 (86.5)	.05
12 months of membership after Index date	12,700 (87.4)	6,083 (88.3)	18,783 (87.7)	.06
Encounter provider type				
Obstetrics and gynecology	250 (1.7)	2,895 (42.0)	3,145 (14.7)	<.001
Internal/family medicine	118 (0.8)	3,094 (44.9)	3,212 (15.0)	
Pediatrics/adolescent medicine	22 (0.2)	771 (11.2)	793 (3.7)	
Call Center/Emergency/other	14,140 (97.3)	129 (1.9)	14,269 (66.6)	
Days from order to pharmacy pick up				
Same day	9,033 (62.2)	4,168 (60.5)	13,201 (61.6)	<.001
Next day	2,898 (19.9)	233 (3.4)	3,131 (14.6)	
2-5 days	804 (5.5)	342 (5.0)	1,146 (5.4)	
>5 days	575 (4.0)	676 (9.8)	1,251 (5.8)	
Not dispensed	1221(8.4)	1,471 (21.4)	2,692 (12.6)	

*Regional appointment and advice call Center; Office visit is an in-person visit;

**Residence in census tract with 20% of incomes below Federal poverty level

Missing data: Race: 1096 (5.1), Low income residence: 122 (0.6), Provider Type: 2 (.01)

ℱStatistical tests: chi-square p-values for categorical variables and the t-test p-values for continuous variables.

Table 2

Contraception and Reproductive Health in the 12 months Prior to Accessing Emergency Contraception

	Call Center	Office Visit	Total	P value[†]
	n=14,531	n=6,890	N= 21,421	
	(n) %	(n) %		
PRIOR EMERGENCY CONTRACEPTION DISPENSED				
None	13,257 (91.2)	6,580 (95.5)	19,837 (92.6)	<.001
Once	699 (4.8)	189 (2.7)	888 (4.1)	
Twice	253 (1.7)	57 (0.8)	310 (1.4)	
Three or more times	322 (2.2)	64 (0.9)	386 (1.8)	
PRIOR SHORT-ACTING CONTRACEPTION DISPENSED				
Oral contraceptives	5,517 (38.0)	1,692 (24.6)	7,209 (33.7)	<.001
Patch	136 (0.9)	50 (0.7)	186 (0.9)	.12
Ring	571 (3.9)	151 (2.2)	722 (3.4)	<.001
Depot medroxyprogesterone	832 (5.7)	257 (3.7)	1,089 (5.1)	<.001
More than one method	380 (2.6)	97 (1.4)	477 (2.2)	<.001
Any method	6,665 (45.9)	2,050 (29.8)	8,715 (40.7)	<.001
PRIOR OFFICE VISITS				
Obstetrics and Gynecology				
None	4,900 (33.7)	3,804 (55.2)	8,704 (40.6)	<.001
One	3,304 (22.7)	929 (13.5)	4,233 (19.8)	
Two	2,240 (15.4)	590 (8.6)	2,830 (13.2)	
Three or more	4,087 (28.1)	1,567 (22.7)	5,654 (26.4)	
Primary Care[*] or Pediatric				
None	3,169 (21.8)	1,603 (23.3)	4,772 (22.3)	.09
One	3,525 (24.3)	1,670 (24.2)	5,195 (24.3)	
Two	2,641 (18.2)	1,206 (17.5)	3,846 (18.0)	
Three or more	5,196 (35.8)	2,411 (35.0)	7,607 (35.5)	
Any visit (OBGYN/Primary care/Pediatric)				
None	1,239 (8.5)	916 (13.3)	2,155 (10.1)	<.001
One	1,938 (13.3)	1,138 (16.5)	3,076 (14.4)	
Two	2,138 (14.7)	1,026 (14.9)	3,164 (14.8)	
Three or more	9,216 (63.4)	3,810 (55.3)	13,026 (60.8)	
PRIOR CHLAMYDIA AND GONORRHEA TESTING				
Age 25 or younger				
Chlamydia/Gonorrhea test done	4,076 (61.5)	1,968 (44.9)	6,044 (54.9)	<.001
Positive test	358 (8.8)	209 (10.6)	567 (9.4)	.02
All ages				

	Call Center	Office Visit	Total	P value[Ŧ]
	n=14,531	n=6,890	N= 21,421	
	(n) %	(n) %		
Chlamydia/Gonorrhea test done	6,291 (43.3)	2,587 (37.6)	8,878 (41.5)	<.001
Positive test	455 (7.2)	234 (9.1)	689 (7.8)	.004
Live birth	1,394 (9.6)	701 (10.2)	2,095 (9.8)	.18
Induced Abortion	1,060 (7.3)	523 (7.6)	1,583 (7.4)	.44

[*] Regional appointment and advice call Center; Office visit is an in-person visit;

[**] Primary care includes internal medicine or family medicine; Pediatrics includes adolescent medicine

[Ŧ] Statistical tests: chi-square p-values.

Table 3

Contraception and Reproductive Health On The Day Of or In The 12 months After Accessing Emergency Contraception

	Call Center*	Office Visit*	Total	P value †
	n=14,531	n=6,890	N= 21,421	
	(n) %	(n) %	(N) %	
ADDITIONAL EMERGENCY CONTRACEPTION DISPENSED				
None	6,528 (44.9)	4,697 (68.2)	11,225 (52.4)	<.001
One	4,428 (30.5)	1,463 (21.2)	5,891(27.5)	
Two	1,766 (12.2)	389 (5.7)	2,155 (10.1)	
Three or more	1,809 (12.5)	341 (5.0)	2,150 (10.0)	
NEW SHORT-ACTING CONTRACEPTION DISPENSED (ANY METHOD)**				
All	7878 (54.2)	4249 (61.7)	12,127 (56.6)	<.001
Dispensed on the index date	1,121 (7.7)	2,287 (33.2)	3408 (15.9)	<.001
Dispensed after the index date	6,757 (46.5)	1,962 (28.5)	8719 (40.7)	<.001
Women without prior contraceptive dispensed (n)	7,861	4,837	12,678	
All	2,966 (37.7)	2,636 (54.4)	5,602 (44.2)	<.001
Dispensed on the index date	396 (5.0)	1,584 (32.7)	1,980 (15.6)	<.001
Dispensed after the index date	2,570 (32.7)	1,052 (21.7)	3,802 (30.0)	<.001
INITIATION OF VERY EFFECTIVE CONTRACEPTION				
Any very effective method	1,569 (10.8)	695 (10.1)	2,264 (10.6)	0.11
Intrauterine contraception	1,345 (9.3)	558 (8.1)	1,903 (8.8)	.005
Implant	141 (1.0)	100 (1.5)	241(1.1)	.002
Sterilization	94 (0.7)	42 (0.6)	136 (0.6)	.75
OFFICE VISITS				
Obstetrics and gynecology	10,272 (70.7)	4,124 (59.9)	14,396 (67.2)	<.001
Primary care or pediatric visit	11,118 (76.5)	5,156(74.8)	16,274 (76.0)	.01
Any visit (OBGYN/Primary care/Pediatric)	13,286 (91.4)	6,139 (89.1)	19,425 (90.7)	<.001
CHLAMYDIA AND GONORRHEA TESTING				
Age 25 or younger				
Chlamydia/Gonorrhea done	4,508 (68.0)	3,653 (83.4)	9,017 (72.8)	<.001
Positive test	457 (10.1)	335 (9.2)	855 (9.5)	.14
All ages				
Chlamydia/Gonorrhea test done	7,152 (49.2)	4,608 (66.9)	11,760 (54.9)	<.001
Positive test	560 (7.8)	368 (8.0)	928 (7.9)	.76
PREGNANCY				
Early[a]				
Any pregnancy	737 (5.1)	367 (5.3)	1,104 (5.2)	.43
Induced abortion	281 (1.9)	220 (3.2)	501 (2.3)	<.001

	Call Center*	Office Visit*	Total	P value ℱ
	n=14,531	n=6,890	N= 21,421	
	(n) %	(n) %	(N) %	
Miscarriage/ectopics/loss	52 (0.4)	29 (0.4)	81 (0.4)	.48
Other evidence of pregnancy	150 (1.0)	39 (0.6)	189 (0.9)	<.001
Live birth	254 (1.8)	79 (1.2)	333 (1.6)	.009
Live birth–unwanted at conception ℱ***	157 (66.8)	59 (78.7)	216 (69.7)	.06
Late[b]				
Any pregnancy	724 (5.0)	228 (3.3)	952 (4.4)	<.001
Induced abortion	274 (1.9)	81 (1.2)	355 (1.7)	<.001
Miscarriage/ectopic/loss	67 (0.5)	19 (0.3)	86 (0.4)	.05
Other evidence of pregnancy	122 (0.8)	43 (0.6)	165 (0.8)	.09
Live birth	261 (1.8)	85 (1.2)	346 (1.6)	.002
Live birth–unwanted at conception ℱ***	141 (57.1)	54 (72.0)	195 (60.6)	.04

*Regional appointment and advice call Center; Office visit is an in-person visit;

**Oral contraceptive, patch, ring, or Depot medroxyprogesterone dispensed to women who did not have a prior prescription

[a]Early pregnancy – pregnancy initiated within 3 months (estimated delivery date consistent with conception between 0 to 90 days after accessing EC or pregnancy terminated (induced or spontaneous) within 90 days after accessing EC.

[b]Late pregnancy – pregnancy initiated 4- 6 months (estimated delivery date consistent with conception between 91 to 180 days of accessing EC or pregnancy terminated (induced or spontaneous) 91-180 days after accessing EC.

ℱ***Live birth-unwanted at conception - Among pregnancies that ended in a live birth, percent that reported at prenatal intake that pregnancy was unwanted at the time of conception or at all.

ℱStatistical tests: chi-square p-values

Table 4

Multiple lLogistic Regression Analysis of Factors Associated with Initiation of Very Effective Contraception and Pregnancy

Characteristic	Initiation of Very Effective Contraception N=2,264	P value	Early Pregnancy N=1,104	P value	Late Pregnancy N=952	P value
	aOR (95%CI)		aOR (95% CI)		aOR (95% CI)	
Age group (years)						
15-18	**0.80 (0.68–0.94)**	**.007**	**0.61 (0.49 - 0.76)**	**<.001**	**0.72 (0.56 – 0.91)**	**.007**
19-24	ref		ref		ref	
25-29	1.03 (0.91 – 1.17)	.60	1.17 (0.99 – 1.37)	.06	1.12 (0.95 – 1.33)	.18
30-39	**1.35 (1.21 – 1.52)**	**<.001**	1.04 (0.89 – 1.22)	.62	0.99 (0.84 – 1.18)	.92
40-45	**1.70 (1.38 – 2.07)**	**<.001**	**0.59 (0.40 – 0.84)**	**.005**	**0.44 (0.27 – 0.68)**	<.001
Race/ethnicity						
Hispanic	1.05 (0.94 – 1.18)	.39	**1.62 (1.38 -1.91)**	**<.001**	**1.77 (1.47–2.13)**	**<.001**
African-American	0.96 (0.84 – 1.09)	.53	**1.83 (1.53 - 2.18)**	**<.001**	**2.53 (2.09 – 3.07)**	**<.001**
White	ref		ref		ref	
Asian/PI	**0.62 (0.53 – 0.73)**	**<.001**	0.98 (0.79 – 1.21)	.85	1.05 (0.82 – 1.34)	.69
Multiracial/Other	0.88 (0.74 – 1.06)	.18	0.83 (0.62 – 1.09)	.20	0.87 (0.62 – 1.20)	.41
Low income residence**	1.06 (0.93 – 1.20)	.39	1.10 (0.93 - 1.30)	.25	0.91 (0.76 - 1.09	.32
Prior contraception dispensed*	0.92 (0.84– 1.01)	.09	0.91 (0.80 – 1.03)	.12	0.97 (0.85 – 1.11)	.64
Live birth*	**3.5 (3.16 – 3.96)**	**<.001**	0.83 (0.67 – 1.02)	.09	**1.41 (1.12 – 1.66)**	**.002**
Abortion*	**1.66 (1.42– 1.92)**	**<.001**	**1.34 (1.09 – 1.64)**	**.004**	**2.41 (2.00 – 2.89)**	**<.001**
Access route						
Office visit	ref		ref		ref	
Call center	1.02 (0.93 – 1.13)	.66	**0.82 (0.72–0.94)**	**.004**	**1.37 (1.16 – 1.60)**	<.001

± Adjusted odds ratio – models included age, race/ethnicity, and low-income residence (yes/no) at index date, contraception dispensed (yes/no), live birth (yes/no), and abortion (yes/no) in the 12 prior to the index date*, and access route. Estimates in boldface significance level p≤0.05.

* Contraception dispensed, live birth, or abortion in the 12 months prior to accessing emergency contraception.

** Residence in census tract with 20% of incomes below Federal poverty level