Published in final edited form as:

J Pediatr Adolesc Gynecol. 2018 April ; 31(2): 122–127. doi:10.1016/j.jpag.2017.11.002.

A retrospective chart review of contraceptive use among adolescents with opioid use disorder

Caitlin J. Handy, BA^a, Hannah L.H. Lange, MPH^b, Brittney E. Manos, BA^b, Elise D. Berlan, MD, MPH^{a,c}, and Andrea E. Bonny, MD^{a,b,c}

^aThe Ohio State University College of Medicine, 370 W 9th Ave, Columbus, OH 43210

^bThe Research Institute at Nationwide Children's Hospital, 700 Children's Drive, Columbus, OH 43205

^cDivision of Adolescent Medicine, Nationwide Children's Hospital, 700 Children's Drive, Columbus, OH 43205

Abstract

Study Objectives—To describe contraceptive use among female adolescents initiating outpatient treatment for opioid use disorder.

Design—Retrospective chart review.

Setting—Outpatient clinic providing medication-assisted treatment for substance use disorders to adolescents and young adults.

Participants—Non-pregnant female adolescents presenting for treatment from January 1, 2013 to January 31, 2016 (N=123).

Intervention—None.

Main Outcome Measures—Prescription contraceptive use at baseline and initiation of a new method within 90 days.

Results—Of 123 females presenting for treatment of opioid use disorder, 113 (91.9%) reported sexual activity and 80 (65.0%) were not using prescription contraception at intake. Previous pregnancy was reported by 43 (34.9%) and 20 (16.3%) were positive for a sexually transmitted infection. Contraceptive counseling was not documented for 73 (59.3%) patients. Among patients

Corresponding Author: Hannah L.H. Lange, MPH, The Research Institute at Nationwide Children's Hospital, 700 Children's Drive, Columbus, OH 43205, Phone: (614) 722-3465, FAX: (614) 355-3583, hannah.lange@nationwidechildrens.org.

Conflict of Interest/Financial Disclosures:

Dr. Berlan receives honoraria from Merck & Co for being a Nexplanon trainer. There are no other potential conflicts of interest to report. The content of this manuscript is solely the responsibility of the authors.

This work received support from Research Data & Computing (RDC) Services at Nationwide Children's Hospital, the Center for Clinical and Translational Science at The Ohio State University (CTSA UL1TR001070), and the Ohio State University College of Medicine Bennett Research Scholarship awarded to Ms. Handy. No funding source had any influence on the design of the study or the content of the manuscript.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

off prescription contraception at baseline, 56 of 80 (70.0%) initiated a method within the study window. Significant predictors (odds ratio; 95% confidence interval) of contraceptive initiation included prior pregnancy (8.6; 1.39–52.99), education < high school diploma/GED (7.4; 1.63–33.41), and return for follow up visit (9.8; 2.18–43.69).

Conclusion—Young women presenting for opioid use disorder treatment were at high risk of adverse reproductive health outcomes. The majority was sexually active and not using prescription contraception. Findings underscore the need for contraceptive counseling in this patient population. Optimally, these services would be provided in conjunction with substance use treatment. Improved contraceptive counseling documentation will allow evaluation of effective contraceptive counseling strategies for adolescents with opioid use disorders and may serve to inform future interventions.

Keywords

adolescent medicine; opioid use disorder; contraception; reproductive health

Introduction

Opioid use among adolescents has rapidly become a major public health concern.^{1, 2} Recently, the nonmedical use of prescription opioids by adolescents surpassed use of all other illicit substances except marijuana; over 10% of high school seniors report use of prescription opioids for nonmedical purposes.^{1, 3, 4} Substance misuse among adolescents and young adults is associated with high risk sexual behavior. As compared to their non-using counterparts, adolescents who report substance misuse are almost 4 times as likely to report sexual intercourse in the past 3 months.⁵ Additionally, substance misuse is associated with earlier sexual debut and increased number of sexual partners.⁶ The nonmedical use of prescription drugs specifically is associated with higher instances of unprotected sex in the last 3 months and increased frequency of exchange and group sex among young adults.^{7, 8}

Although substance misuse is associated with high rates of unplanned pregnancy and poor pregnancy outcomes, little research has been done on patterns of contraceptive use and counseling among adolescent patients in substance use treatment programs.⁹ Safe and highly effective long acting reversible contraception (LARC) methods such as intrauterine devices (IUD) and the contraceptive implant are recommended as first-line contraceptives for adolescents.^{10, 11} Lack of patient familiarity has been found to be a major barrier to initiation of contraception in general and LARC in particular.¹² Contraceptive counseling describing the most effective methods first (i.e., efficacy-based contraceptive counseling) can reduce knowledge barriers and promote LARC initiation in adolescent populations.¹³ While efficacy-based counseling has been assessed and endorsed in the general adolescent population, there is no research evaluating it among adolescents with substance use disorders who have demonstrably higher sexual risk behaviors.

The Medication Assisted Treatment of Addiction (MATA) clinic at Nationwide Children's Hospital provides outpatient care to adolescents and young adults with moderate to severe opioid use disorders. The objective of this study was to describe contraceptive use among female adolescents initiating outpatient treatment for opioid use disorder.

Materials and Methods

Subjects and Setting

A retrospective chart review was conducted of all female patients who completed an intake visit at the MATA clinic, from January 1, 2013 to June 30, 2016, for the treatment of moderate to severe opioid use disorder. As previously described, the MATA clinic provides outpatient buprenorphine/naloxone (BUP/NAL) substitution therapy to adolescents and young adults, ages 14–25, with opioid use disorders while managing comorbid mental health and medical conditions.¹⁴ A full substance abuse assessment is conducted on all patients at intake, and diagnosis is confirmed using the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) criteria.¹⁵ Patients suitable for outpatient therapy according to the American Society of Addiction Medicine's *Patient Placement Criteria for the Treatment of Substance-Related Disorders*¹⁶ are counseled to start BUP/NAL at home 18 to 24 hours after last opioid use. Patients are initially seen for follow up every 7 to 14 days. Program metrics of success include: urine drug screens (UDS) positive for BUP/NAL, UDS negative for other drugs of abuse, and participation in an acceptable drug rehabilitation program (e.g. intensive outpatient therapy, individual counseling, 12-step meetings). After several months of consistent success, visits are typically spaced 3 to 4 weeks apart. Intervals greater than 4 weeks between clinic visits are rare.

At intake MATA visit, sexual and pregnancy histories are obtained, and sexually transmitted infection (STI) screening and hepatitis serology are routinely performed. A witnessed point of care UDS is collected at each MATA clinic visit which includes testing for amphetamine, benzodiazepine, buprenorphine, cocaine, methadone, methamphetamine, opioids, oxycodone, and tetrahydrocannabinol (THC). Urine specimen temperature, pH, bleach, nitrate, and creatinine are assessed to identify possible adulteration. In female patients, a urine pregnancy test is also performed at each visit.

Counseling regarding contraception is included in the psychosocial assessment performed by clinic social workers during the intake visit. Contraceptive use is reassessed at follow up visits with additional counseling provided as needed. All prescription contraceptive methods can be initiated in the MATA clinic except for IUD which are placed after referral to the affiliated Young Women's Contraceptive Services Program.

In January of 2015, MATA clinic social workers underwent a two-day training program on efficacy-based contraceptive counseling adapted from the Contraceptive CHOICE Project.¹³ Prior to this training, social workers were providing brief contraceptive counseling involving questions about current use of contraception and whether patients desired to continue this method or initiate a new method. Standard counseling did not include systematic discussion of all available contraceptive options. In contrast, the structured model used in the Contraceptive CHOICE Project seeks to eliminate knowledge barriers about contraceptive options through evidence-based counseling, beginning with the most effective methods first (i.e. efficacy-based counseling).¹⁷ Social workers underwent training in "LARC First," a CHOICE model that can be tailored to adolescents.¹⁸ The LARC First curriculum uses a patient-centered approach to provide unbiased information about all contraceptive options.

After receiving this efficacy-based contraceptive counseling training, MATA social workers planned to replace their standard contraceptive counseling with efficacy-based counseling.

Data Collection

Data were extracted from the institution's electronic health records database. Before study initiation, the research protocol was reviewed and deemed exempt by the Nationwide Children's Hospital Institutional Review Board. The institution's Data Resource Center provided a list of eligible patients via a secure portal. To protect confidentiality of sensitive information, all patient identifiers were removed from the study database, which was maintained on a password protected secure institutional server.

We reviewed each patient's intake visit to the MATA clinic and all subsequent visits within 90 days. This 90-day window was chosen based on our prior data which found that loss to follow-up was common in this period immediately following intake (primarily due to failure to return for scheduled appointments).¹⁴ As such, we felt this was a critical period of opportunity to provide contraceptive care. Information was collected on demographic characteristics, substance use and substance abuse treatment history, medical and reproductive health history, contraceptive use, and receipt of contraceptive counseling. Results were documented for intake hepatitis serology and STI screening and for witnessed point of care UDS at each visit during the study period. Patients were classified based on their opioid of use as (a) heroin-only, (b) prescription (Rx) opioid-only, or (c) combined heroin + Rx opioid.

Data Analysis

The main study outcome was prescription contraceptive use. The study sample was dichotomized into those on and off prescription contraception at baseline. For both groups, initiation of a new method (within 90 days) was defined as documentation of: injection for depot medroxyprogesterone acetate (DMPA), prescription for combined hormonal contraceptives (CHC), or procedure for LARC. Chi-square and Student's t tests were utilized to compare characteristics of those on and off prescription contraception at baseline.

We further examined associations of demographic, substance use, sexual history, and medical characteristics with initiation of prescription contraception among those off prescription contraception at baseline. Given that contraceptive counseling practices changed in January of 2015, both year of intake (pre-2015 and post-2015) and type of contraceptive counseling received were explored for association with contraceptive initiation. Treatment variables such as opioid abstinence $[(\# \text{ negative UDS for opioids} \div \text{total UDS for opioids}) \times 100]$, BUP/NAL compliance $[(\# \text{ positive UDS for BUP/NAL} \div \text{total UDS for BUP/NAL}) \times 100]$, and return for follow up visit in the MATA clinic were also examined. Predictors associated with contraceptive initiation at p-value <0.10 in bivariate analyses were eligible for multivariate logistic regression modeling predicting prescription contraceptive initiation within 90 days among those off prescription contraception at baseline. All data were analyzed with SAS® software, Version 9.3 of the SAS System for Windows 7, copyright © 2011 SAS Institute Inc.

Results

During the study period, 123 non-pregnant females presented to the MATA clinic for initiation of outpatient treatment for opioid use disorder (Table 1). Mean age of patients was 19.3 (± 1.7) years. The majority were white non-Hispanic (95.1%), resided in Franklin County, Ohio (54.5%), and were publically insured (66.7%). Over half of the patients reported education <high school/GED (60.2%) and combined heroin + Rx opioid use (74.0%). A documented mental health diagnosis of depression, anxiety, or bipolar disorder was evident in 54.5%. Current sexual activity was reported by 91.9%. Previous pregnancies and STI were common among this patient population; 35% had at least one lifetime pregnancy, 16.3% were positive for an STI at intake, and 30.1% were Hepatitis C antibody positive. One in three patients asked about intimate partner violence reported a positive history. Although frequently endorsed among those who were asked, transactional sex was not documented in the majority of patients.

Contraceptive counseling was poorly documented overall. Efficacy-based contraceptive counseling was documented in 18.7% of patient records. Standard contraceptive counseling was documented in 21.9% of patient records, leaving 59.3% with no contraceptive counseling documentation.

At baseline, 43/123 (35.0%) patients were on some form of prescription contraception and 80/123 (65.0%) were not (Table 1). Patients on and off prescription contraception were similar in all variables examined except reported history of intimate partner violence and documentation of contraceptive counseling. A significantly higher percentage of patients off prescription contraception at baseline reported a history of intimate partner violence. Documentation of contraceptive counseling was significantly lower among those on hormonal contraception at baseline.

Among those on prescription contraception at baseline ($n=43$), there was a fairly equal distribution of LARC, DMPA, and CHC (Table 2). During the 90-day study window, 2 of these patients switched from CHC to LARC, 1 from CHC to DMPA, and 1 discontinued LARC without initiating another method. Among patients off prescription contraception at baseline, 56/80 (70.0%) initiated prescription contraception within the 90-day study window; of these, 5 initiated LARC, 35 DMPA, and 16 CHC (Table 2). The majority of patients who initiated either DMPA or CHC did so at the intake visit (70.6% DMPA, 68.8% CHC) while only 1 of the 5 LARC initiations (20%) occurred at intake.

Characteristics associated with initiation of prescription contraception were examined among those off prescription contraception at baseline. In unadjusted analyses, the following variables were associated with initiation of prescription contraception at p -value < 0.10 : level of education, prior mental health diagnosis, opioid of use, prior pregnancy, return for follow up visit, and BUP/NAL compliance (Table 3). Type of contraceptive counseling received was poorly documented and was not associated with initiation of prescription contraception. In addition, no difference was observed in the percentage of patients initiating prescription contraception before and after the January 2015 efficacy-based contraceptive counseling training.

In final multivariate logistic regression modeling adjusting for age (Table 4), level of education, prior pregnancy, and follow up visit were independently associated with initiation of prescription contraception. Patient characteristics associated with increased odds of initiating prescription contraception were: education level less than high school degree (OR 7.4), history of pregnancy (OR 8.6), and return for follow up visit (OR 9.8).

Discussion

Consistent with prior literature, young women presenting to the MATA clinic for treatment of opioid use disorder were at high risk of adverse reproductive health outcomes. In the general population, approximately 25% of adolescents will become pregnant at least once before age 20.¹⁹ In the study population, 35% reported having at least one lifetime pregnancy. Positive STI screens were high, and approximately one in three patients asked reported a history of intimate partner violence.

The majority of patients was not using prescription contraception at intake. A recent systematic review of women aged 15–44 years concluded that prevalence of contraceptive use was 25% lower among those with opioid and other substance use disorders as compared to control populations.²⁰ The study authors also found that women with opioid use disorders were more likely to rely on less effective contraceptives (such as condoms) as opposed to prescription methods. Although we found low prevalence of prescription contraception use at baseline, LARC use was higher among MATA patients (11%) than has been reported in the general population of females aged 15–24 (5%).²¹ This could be due in part to the high percentage of MATA patients reporting previous pregnancy, as LARC are sometimes placed post-partum.

Among patients not using prescription contraception at intake, DMPA was the most common method initiated. Although more effective than CHC, DMPA is not as effective as LARC. Patients interested in LARC are often required to return for device insertion at a follow up appointment. This has previously been described as a barrier to LARC among women with substance use disorders.²² DMPA may be easily administered at the intake visit, likely contributing to its higher prevalence of initiation in our study cohort. In order to maintain efficacy, however, patients must return every 3 months for subsequent injections. Accordingly, the rigid adherence requirements for DMPA maintenance may pose a particular challenge to adolescents with opioid use disorder. However, a recent retrospective analysis of claims and encounter data for women 16–45 years found no significant association between substance use disorder and contraceptive adherence regardless of contraceptive method selected.²³

Although most patients who initiated prescription contraception did so at the intake visit, returning for at least one follow up visit was independently associated with prescription contraception initiation. Under optimal conditions, contraceptive initiation would occur at the intake visit due to difficulties retaining adolescents in opioid use treatment.¹⁴ Thus, a contraceptive method that requires consideration for procedural eligibility, stocking of devices, and the time and personnel to perform a procedure may prove uniquely restrictive for adolescents with substance use disorders. In addition to these placement delays, the

presence of significant withdrawal symptoms at time of presentation sometimes precludes satisfactory provision of contraception regardless of method. Regardless of these potential barriers, providers should strive for same day, onsite availability of all contraceptive methods in this patient population.

Although contraceptive counseling is considered standard of care in the MATA clinic, almost 60% of patients had no contraceptive counseling documented in their medical record. It is unclear in these cases whether counseling did not occur or was merely not recorded. As suggested by our findings, patients already using a contraceptive method at baseline may be less likely to receive counseling on all available options. Prior research has shown that mean time needed to complete efficacy-based contraceptive counseling is 13 minutes per patient.¹⁷ Whether time constraints impacted provision of contraceptive counseling was not evaluated in the current study but should be examined in the future. In addition, quality assurance measures to ensure provision and documentation of contraceptive counseling for all patients are indicated.

The present study is limited by the retrospective nature of data collection which is dependent on accurate documentation in the medical record. Prescriptions for CHC were considered CHC initiation, but prescription pick up from a pharmacy was unable to be verified. It is also possible that some patients sought contraceptive care elsewhere during the study period; however, clinical experience finds that MATA clinic patients rarely seek routine medical care elsewhere and a limited number have other primary care providers. Formal evaluation of adherence to prescribed contraceptive method was beyond the scope of this study.

In summary, the low rate of prescription contraceptive use at baseline, in conjunction with high rates of pregnancy and STI, underscores the need for contraceptive and reproductive health counseling among adolescents with opioid use disorders. Optimally, these services would be provided in conjunction with substance use treatment intake. Improved documentation of contraceptive counseling will allow evaluation of effective contraceptive counseling strategies for adolescents with opioid use disorders and may serve to inform future interventions.

Acknowledgments

This work received support from Research Data & Computing (RDC) Services at Nationwide Children's Hospital, the Center for Clinical and Translational Science at The Ohio State University (CTSA UL1TR001070), and the Ohio State University College of Medicine Bennett Research Scholarship awarded to Ms. Handy.

References

1. Meier EA, Troost JP, Anthony JC. Extramedical use of prescription pain relievers by youth aged 12 to 21 years in the United States: National estimates by age and by year. *Arch Pediatr Adolesc Med*. 2012; 166:9. [PubMed: 21893637]
2. Substance Abuse and Mental Health Services Administration. Results from the 2010 National Survey on Drug Use and Health: Summary of national findings. NSDUH Series. 2011:H-41.
3. McCabe SE, West BT, Teter CJ, et al. Medical and nonmedical use of prescription opioids among high school seniors in the United States. *Arch Pediatr Adolesc Med*. 2012; 166:9. [PubMed: 21893637]

4. Substance Abuse and Mental Health Services Administration. Results from the 2013 National Survey on Drug Use and Health: Summary of national findings. NSDUH Series. 2014:H-48.
5. Anderson JE, Mueller TE. Trends in sexual risk behavior and unprotected sex among high school students, 1991–2005: the role of substance use. *J Sch Health*. 2008; 78:11.
6. Cavazos-Rehg PA, Krauss MJ, Spitznagel EL, et al. Type of contraception method used at last intercourse and associations with health risk behaviors among U.S. adolescents. *Contraception*. 2010; 82:6.
7. Benotsch EG, Koester S, Luckman D, et al. Non-medical use of prescription drugs and sexual risk behavior in young adults. *Addict Behav*. 2011;36. [PubMed: 21937169]
8. Mateu-Gelabert P, Guarino H, Jessell L, et al. Injection and sexual HIV/HCV risk behaviors associated with nonmedical use of prescription opioids among young adults in New York City. *J Subst Abuse Treat*. 2015; 48:1. [PubMed: 25239857]
9. Gutierrez SE, Barr A. The relationship between attitudes toward pregnancy and contraception use among drug users. *J Subst Abuse Treat*. 2003; 24:1. [PubMed: 12646325]
10. Ott MA, Sucato GS. Committee on Adolescence. Contraception for adolescents. *Pediatrics*. 2014; 134:4. [PubMed: 24918218]
11. Committee on Adolescent Health Care Long-Acting Reversible Contraception Working Group, The American College of Obstetricians and Gynecologists. Committee opinion no 539: Adolescents and long-acting reversible contraception: Implants and intrauterine devices. *Obstet Gynecol*. 2012; 120:4.
12. Kumar N, Brown JD. Access barriers to long acting reversible contraceptives for adolescents. *J Adolesc Health*. 2016; 59:3. [PubMed: 27338662]
13. Secura GM, Madden T, McNicholas C, et al. Provision of no-cost, long-acting contraception and teenage pregnancy. *N Engl J Med*. 2014; 371:14.
14. Matson SC, Hobson G, Abdel-Rasoul M, et al. A retrospective study of retention of opioid-dependent adolescents and young adults in an outpatient buprenorphine/naloxone clinic. *J Addict Med*. 2014; 8:3.
15. American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-5. Arlington, VA: American Psychiatric Association; 2013.
16. American Society of Addiction Medicine. ASAM Patient placement criteria for the treatment of substance-related disorders. Chevy Chase, MD: American Society of Addiction Medicine; 2001.
17. Madden T, Mullersman JL, Omvig KJ, et al. Structured contraceptive counseling provided by the Contraceptive CHOICE Project. *Contraception*. 2013; 88:2.
18. LARC First. The Contraceptive CHOICE Project (online). 2013. Available from: <http://www.larcfirst.com/>
19. Teen pregnancy in the United States. Fast facts. The National Campaign to Prevent Teen and Unplanned Pregnancy (online). 2016. Available from: <https://thenationalcampaign.org/resource/fast-facts-teen-pregnancy-united-states>
20. Terplan M, Hand DJ, Hutchinson M, et al. Contraceptive use and method choice among women with opioid and other substance use disorders: a systematic review. *Prev Med*. 2015;80. [PubMed: 25964078]
21. Branum AM, Jones J. Trends in long-acting reversible contraception use among U.S. women aged 15–44. *NCHS Data Brief*. 2015:188.
22. Black KI, Day CA. Improving access to long-acting contraceptive methods and reducing unplanned pregnancy among women with substance use disorders. *Subst Abuse*. 2016; 10:S1.
23. Griffith G, Kumaraswami T, Chrysanthopoulou SA, et al. Prescription contraception use and adherence by women with substance use disorders. *Addiction*. 2017; doi: 10.1111/add.13840

Table 1

Patient characteristics by prescription (Rx) contraceptive use at baseline.

Characteristic	All Subjects (N=123)	On Rx Contraception at Baseline (n=43)	Off Rx Contraception at Baseline (n=80)	p-value ^a
Age, mean±SD, years	19.3±1.7	19.3±1.8	19.3±1.7	.94
Age at First Opioid Use, mean±SD, years	15.2±2.1	15.4±2.0	15.1±2.1	.51
Race, % (n)				.42
White Non-Hispanic	95.1 (117)	93.0 (40)	96.2 (77)	
Other	4.9 (6)	7.0 (3)	3.7 (3)	
Insurance, % (n)				.58
Private	26.0 (32)	30.2 (13)	23.8 (19)	
Public	66.7 (82)	65.1 (28)	67.5 (54)	
None	7.3 (9)	4.6 (2)	8.7 (7)	
County of Residence, % (n)				.93
Franklin County, Ohio	54.5 (67)	55.8 (24)	53.7 (43)	
Other Ohio County	43.9 (54)	41.9 (18)	45.0 (36)	
Non-Ohio County	1.6 (2)	2.3 (1)	1.2 (1)	
Level of Education, % (n)				.23
<High School/GED	60.2 (74)	67.4 (29)	56.2 (45)	
High School/GED	39.8 (49)	32.6 (14)	43.7 (35)	
Opioid of Use, % (n)				.20
Prescription (Rx) Opioid Only	13.8 (17)	16.3 (7)	12.5 (10)	
Heroin Only	12.2 (15)	18.6 (8)	8.7 (7)	
Combined Rx Opioid/Heroin	74.0 (91)	65.1 (28)	78.7 (63)	
Prior Mental Health Diagnosis, % (n) ^b				.87
Yes	54.5 (67)	53.5 (23)	55.0 (44)	
No	45.5 (56)	46.5 (20)	45.0 (36)	
Currently Sexually Active, % (n)				.69
Yes	91.9 (113)	90.7 (39)	92.5 (74)	
No	5.7 (7)	7.0 (3)	5.0 (4)	
Missing	2.4 (3)	2.3 (1)	2.5 (2)	
Lifetime Number of Pregnancies, % (n)				.42
0	65.0 (80)	58.1 (25)	68.7 (55)	
1	21.1 (26)	23.3 (10)	20.0 (16)	
2+	13.8 (17)	18.6 (8)	11.2 (9)	
Sexually Transmitted Infection, n (%) ^c				.38
Yes	16.3 (20)	20.9 (9)	13.7 (11)	
No	70.7 (87)	69.8 (30)	71.2 (57)	
Missing	13.0 (16)	9.3 (4)	15.0 (12)	
Gender of Partners, % (n)				1.00
Male	82.1 (101)	83.7 (36)	81.2 (65)	
Female	0.8 (1)	0.0 (0)	1.2 (1)	

Characteristic	All Subjects (N=123)	On Rx Contraception at Baseline (n=43)	Off Rx Contraception at Baseline (n=80)	p-value ^a
Both	10.6 (13)	9.3 (4)	11.2 (9)	.03
Missing	6.5 (8)	7.0 (3)	6.2 (5)	
Intimate Partner Violence, % (n)				
Yes	29.3 (36)	18.6 (8)	35.0 (28)	
No	55.3 (68)	69.8 (30)	47.5 (38)	.44
Missing	15.4 (19)	11.6 (5)	17.5 (14)	
Transactional Sex, % (n)				
Yes	8.1 (10)	4.7 (2)	10.0 (8)	
No	4.9 (6)	2.3 (1)	6.2 (5)	<.001
Missing	87.0 (107)	93.0 (40)	83.7 (67)	
Hepatitis C Antibody, % (n)				
Positive	30.1 (37)	34.9 (15)	27.5 (22)	
Negative	47.1 (58)	44.2 (19)	48.7 (39)	<.001
Missing	22.8 (28)	20.9 (9)	23.7 (19)	
Contraceptive Counseling, % (n)				
Efficacy-based	18.7 (23)	7.0 (3)	25.0 (20)	
Standard	21.9 (27)	7.0 (3)	30.0 (24)	<.001
Not Documented	59.3 (73)	86.0 (37)	45.0 (36)	

^aCalculated using Student's t test, chi-square, or Fisher's exact test, as appropriate.

^bDepression, anxiety, or bipolar disorder.

^cPositive screen for *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Trichomoniasis vaginalis*, Human Immunodeficiency Virus, or *Treponema pallidum*.

^dDue to the high number of missing values statistical testing was not performed on this variable.

Table 2

Contraceptive use after intake^a by baseline prescription (Rx) contraceptive use.

Contraceptive Method, % (n)	On Rx Contraception at Baseline (n=43)		Off Rx Contraception at Baseline (n=80)	
	Baseline	After Intake ^a	Baseline	After Intake ^a
Long Acting Reversible Contraception ^b	32.6 (14)	37.2 (16)	0.0 (0)	6.2 (5)
Depot Medroxyprogesterone Acetate	37.2 (16)	39.5 (17)	0.0 (0)	43.7 (35)
Combined Hormonal Contraception ^c	30.2 (13)	21.0 (9)	0.0 (0)	20.0 (16)
No Rx Method ^d	0.0 (0)	2.3 (1) ^e	100.0 (80)	30.0 (24)

^a Initiation of a new method within 90-days of intake. This includes patients who presented to the clinic off prescription contraception, but left the intake visit having received a method.

^b Includes intrauterine devices and implants.

^c Includes pill, patch, and ring methods.

^d Includes condoms, withdrawal, and none.

^e Patient had been on long acting reversible contraception at intake.

Table 3

Un-adjusted associations of patient characteristics with initiation of prescription (Rx) contraception among those off Rx contraceptive at baseline (N=80).^a

Characteristic	Initiated Rx Contraception (n=56)	Did Not Initiate Rx Contraception (n=24)	p-value
Age, mean±SD, years	19.4±1.7	19.0±1.6	0.38
Education, % (n)			0.03
<High School/GED	64.2 (36)	37.5 (9)	
High School/GED	35.7 (20)	62.5 (15)	
Prior Mental Health Diagnosis, % (n)			0.02
Yes	46.4 (26)	75.0 (18)	
No	53.6 (30)	25.0 (6)	
Opioid of Use, % (n)			0.03
Rx Opioid	16.1 (9)	4.2 (1)	
Heroin	3.6 (2)	20.8 (5)	
Rx Opioid/Heroin	80.4 (45)	75.0 (18)	
Prior Pregnancy, % (n)			<0.01
Yes	41.1 (23)	8.3 (2)	
No	58.9 (33)	91.7 (22)	
Contraceptive Counseling, % (n)			0.12
Efficacy-based	19.6 (11)	37.5 (9)	
Standard	35.7 (20)	16.7 (4)	
Not Documented	44.6 (25)	45.8 (11)	
Intake Year, ^b % (n)			0.59
Pre-2015	60.7 (34)	54.2 (13)	
Post-2015	39.3 (22)	45.8 (11)	
Follow Up Visit, % (n)			<0.01
Yes	89.3 (50)	62.5 (15)	
No	10.7 (6)	37.5 (9)	
BUP/NAL Compliance, ^c mean±SD	66.5±34.9	49.5±41.9	0.07

^a Other variables examined which were not associated with initiation of prescription contraception included: age at first opioid use, race, county of residence, insurance, presence of sexually transmitted infection at intake, Hepatitis C antibody status, and opioid abstinence.

^b Social Workers were trained in efficacy-based contraceptive counseling in January 2015.

^c Defined as (# positive urine drug screens for buprenorphine/naloxone ÷ total urine drug screens for buprenorphine/naloxone) × 100.

Table 4

Multivariable logistic regression model^a predicting initiation of prescription contraception among subjects off prescription contraceptive at baseline (N=80).

Parameter	Odds Ratio	95% Confidence Interval
Education		
<High School/GED	7.4	1.63–33.41
High School/GED	Reference	-
Prior Pregnancy		
Yes	8.6	1.39–52.99
No	Reference	-
Follow Up Visit		
Yes	9.8	2.18–43.69
No	Reference	-

^aAdjusted for age.