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U.S. family physicians' intrauterine and implantable contraception provision: results from a national survey

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Abstract

Objective—Establish a current cross-sectional national picture of IUD and implant provision by U.S. family physicians, and ascertain individual, clinical site, and scope of practice level associations with provision.

Study Design—Secondary analysis of data from 2,329 family physicians recertifying with the American Board of Family Medicine in 2014.

Results—Overall, 19.7% of respondents regularly inserted IUDs and 11.3% regularly inserted and/or removed implants. Family physicians provided these services in a wide range of clinical settings. In bivariate analysis almost all of the individual, clinical site and scope of practice characteristics we examined were associated with provision of both methods. In multivariate analysis the scope of practice characteristics showed the strongest association with both IUD and implant provision. For IUDs this included providing prenatal care with [adjusted odds ratio (aOR) 3.26, 95% confidence interval (95% CI) 1.93-5.49] or without (aOR 3.38, 95% CI 1.88-6.06) delivery, performance of endometrial biopsies (aOR 16.51, 95% CI 11.97-22.79), and implant insertion and removal (aOR 8.78, 95% CI 5.79-13.33). For implants it was: providing prenatal care and delivery (aOR 1.77, 95% CI 1.15-2.74), office skin procedures (aOR 3.07, 95% CI 1.47-6.42),

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endometrial biopsies (aOR 3.67, 95% CI 2.41-5.59) and IUD insertion (aOR 8.58, 95% CI 5.70-12.91).

Conclusions—While a minority of family physicians regularly provided IUDs and/or implants, those who provided did so in a broad range of outpatient settings. Individual and clinical site characteristics were not largely predictive of provision. This connotes potential for family physicians to increase IUD and implant access in a variety of settings. Provision of both methods was strongly associated with scope of practice variables including performance of certain office procedures as well as prenatal and/or obstetrical care.

Keywords

Long-acting reversible contraception; LARC; Intrauterine contraceptive device; IUD; Contraceptive implants; Primary care; Family physicians

1.0 Introduction

Long acting reversible contraceptives (LARC), including copper and levonorgestrel intrauterine devices (IUDs) and the single-rod etonogestrel implant (“implant”), are safe and effective with high levels of user satisfaction and continuation [1]. Adolescents and adults using LARC have decreased rates of unplanned pregnancies [2-4]. Demand for LARC is rising; utilization in the United States increased nearly five-fold between 2002 and 2013 [5]. With this recent upsurge in popularity, there is increasing need for clinicians to provide IUDs and implants [4, 6].

A number of studies have described successful efforts at increasing LARC provision at specialty clinical sites such as family planning clinics [7, 8]. Future efforts should focus on expanding access in the primary care setting as well. For example, many family physicians (FPs) care for women of reproductive age and provide full-scope reproductive healthcare including LARC. The American Academy of Family Physicians designates the insertion and removal of both IUDs and implants within the curricular guidelines for graduate family medicine training [9]. The majority of family medicine residents report that they are likely to provide LARC in practice [10], yet in 2008 only 24% of FPs inserted an IUD in the prior year [11].

We lack comprehensive information about the proportion and characteristics of FPs who currently provide LARC. Therefore, we sought to 1) establish a current cross-sectional national picture of LARC provision by U.S. FPs, and 2) identify individual, clinical site and scope of practice characteristics associated with FPs who do and do not provide LARC. These data may be used to provide a baseline from which to analyze change in LARC provision in family medicine, identify gaps in care, and ascertain potential leverage points for interventions to increase LARC provision by FPs.

2.0 Methods

This is a secondary analysis of de-identified data collected by the American Board of Family Medicine (ABFM). The American Academy of Family Physicians and the Albert Einstein College of Medicine Institutional Review Boards both approved this study.

2.1 Sample

In order to maintain board certification the ABFM requires FPs to take the Maintenance of Certification for Family Physicians (MC-FP) Exam every seven to ten years. As part of the exam registration process, FPs are required to complete a questionnaire about themselves and their practice site(s) as well as one of four randomly assigned question sets. One of the four question sets is the Procedure Set. In this analysis we used data from the subset of FPs who registered for the ABFM MC-FP Exam in 2014 and were assigned and answered the Procedure Set. The Procedure Set asked about performance of numerous clinical procedures within FPs' scope of practice. If a physician registered for both the spring and fall 2014 examinations, in order to reflect respondents' most current information, we included their data from the fall only.

Since we were interested in FPs providing LARC in the outpatient setting, we excluded FPs who 1) reported their primary practice site as being an emergency department, hospice, hospital, nursing home, ambulatory surgical center or patient's home; or 2) did not perform direct patient care; or 3) did not care for woman of reproductive age. Each of these questions was explicitly asked in the MC-FP Exam registration questionnaire. We also excluded physicians whose practice address could not be geocoded.

2.2 Characteristics and Variables

For our dependent variables we used respondents' answers to the following two questions: "Do you regularly perform IUD insertion?" and "Do you regularly perform implantable long-acting contraception insertion or removal?". We used "yes" answers to reflect providing IUD and implants respectively.

Independent variables assessed in this analysis fell into three categories: individual characteristics, clinical site characteristics and clinical scope of practice. Individual characteristics included physician age, gender, race, degree type, whether a member of residency faculty and number of years in practice.

Clinical site characteristics included geographic location, whether the practice site was located in an underserved area, site ownership, size and mix of specialties. To ascertain geographic location, we used ArcGIS version 10.2 (ESRI Inc., Redlands, CA) to geocode the primary practice address to latitude and longitude coordinates and then linked to the corresponding census tract. We then assigned rural/urban status using the Rural Urban Commuting Area (RUCA) codes of the practice site[12]. We collapsed the codes into urban, "large rural," "small rural" and "isolated" for analysis. Location in an underserved area was defined as a practice site located in a Health Professional Shortage Area, Medically Underserved Area or serving a Medically Underserved Population as defined by the Health Resources and Services Administration[13]. Clinical site ownership was collapsed from

sixteen into the following five categories: ‘hospital-affiliated/ integrated health network’ included any hospital owned, academic or faculty practices, health maintenance organizations, military or VA sites; ‘public’ included non-federal government clinics, federally qualified health centers, Indian Health Service and public health service; and ‘miscellaneous’ included industrial, institutional or mental health settings.

Clinical scope of practice variables included performing prenatal care without delivery, prenatal care with delivery, and/or certain office procedures. All office procedure questions were asked as part of the Procedure Set.

2.3 Analysis

We characterized our data using descriptive statistics. Chi-square and t-tests were used to compare FPs providing and not providing IUDs and/or implants (each examined separately). We constructed two separate logistic regression models to determine adjusted associations between performance of either IUD insertion or implant insertion and removal and the individual, clinical site and clinical scope of practice variables mentioned above. For each regression model we began with all variables from our bivariate analysis included as we theorized their possible association with IUD or implant provision. We then used a backwards elimination method in PROC LOGISTIC which removed non-significant variables one by one until model fit, as measured by changes in overall model deviance, was no longer improved by removing further variables. In this manuscript we present the most parsimonious model. Regression diagnostics including Hosmer and Lemeshow Goodness of Fit test and c statistics further assessed model fit. All analyses were conducted in SAS version 9.3 (Cary, NC).

3.0 Results

In 2014, 2,790 of the 11,220 FPs who registered for the ABFM MC-FP exam answered the Procedure Set. There were no statistically significant differences in age, gender, race, ethnicity or years in practice between FPs who answered the Procedure Set and FPs who answered any of the other randomly assigned question sets (data not shown). Of the FPs who took the Procedure Set, 2,329 met our inclusion criteria. Since answering the registration questions and Procedure Set was a required component of registering for the exam, the response rate was 100%.

The mean age of our sample was 52 years. The majority were male and worked in urban locations. Almost half (42.8%) practiced in underserved areas. Examining their clinical scope of practice, the majority regularly provided office skin procedures (82.2%), while the minority provided prenatal care without delivery (3.9%), prenatal care with delivery (6.8%), endometrial biopsies (22.9%), IUDs insertions (19.7%) and/or implant insertions and removals (11.3%). (Table 1)

3.1 Associations with IUD Insertion (Tables 1 & 2)

In bivariate analysis, all of our variables were associated with IUD insertion except for ethnicity, years in practice and primary practice site mix. In our adjusted model individual level variables that remained significant included female gender (aOR 1.71, 95% CI

1.25-2.33) and being a member of residency faculty (aOR 1.67, 95% CI 1.12-2.47). As compared to FPs practicing more than 20 years, those in practice 11-20 years (aOR 1.49, 95% CI 1.05-2.13) and less than 11 years (aOR 1.60, 1.07-2.40) were more likely to insert IUDs. The only clinical site characteristic that remained significant in the adjusted model was practice size of greater than 5 providers compared to solo practices (aOR 1.78, 95% CI 1.10-2.86). As for clinical scope of practice variables, prenatal care with (aOR 3.26, 95% CI 1.93-5.49) or without (aOR 3.38, 95% CI 1.88-6.06) delivery remained significant in the adjusted model. IUD insertion was also associated with performing endometrial biopsies (aOR 16.51, 95% CI 11.97-22.79) and implant insertions and removals (aOR 8.78, 95% CI 5.79-13.33). Model fit and discrimination were good with a non-significant Hosmer and Lemeshow test and a c-statistic of 0.92.

3.2 Associations with Implantable Contraception Provision (Tables 1 & 2)

In bivariate analysis all characteristics were associated with implant provision aside from: race, ethnicity, and practice mix. In multivariate analysis the only individual characteristic remaining significant was white race (aOR .64, 95% CI .42-.98). Adjusted clinical site characteristics remaining significant were: as compared to a group private practice, clinical site ownership either solo private practice (aOR 2.43, 95% CI 1.33-3.79), hospital/integrated health network (aOR 1.67, 95% CI 1.10-2.53) or public (aOR 1.95, 95% CI 1.18-3.23). As for clinical scope of practice, provision of prenatal care with delivery (aOR 1.77, 95% CI 1.15-2.74), office skin procedures (aOR 3.07, 95% CI 1.47-6.42), endometrial biopsies (aOR 3.67, 95% CI 2.41-5.59), and IUD insertion (aOR 8.58, 95% CI 5.70-12.91) remained significant. Model fit was good with a non-significant Hosmer and Lemeshow test and a c-statistic of 0.90.

4.0 Discussion

In this large national sample of FPs, we found that although relatively few FPs provided IUDs and/or implants, those who provided did so in a broad range of outpatient practice settings. Individual and clinical site characteristics were largely not associated with LARC provision. This connotes FPs' potential to increase LARC access across a range of clinical settings. LARC provision had strong association with scope of practice variables. This included the performance of certain office procedures as well as prenatal and/or obstetrical care. This leads us to suggest that interventions to increase FPs' LARC provision may be more successful if they first focus on clinical sites and/or individual FPs who provide prenatal care, obstetrical care, skin procedures and/or endometrial biopsies but not LARC.

FPs contribution to improving LARC access may be particularly consequential in medically underserved areas. Disparities in access to reproductive health care are established in the literature [14-18]. Given the high proportion of FPs we identified working in underserved areas, FPs are well positioned to address this gap in care.

Our study has some limitations. This is a cross-sectional study thus we are unable to ascertain the temporal association between our dependent and predictor variables. Our data collection tool asked whether FPs inserted IUDs, but not whether they removed IUDs. With LARC provision we must consider both insertion and removal. However, since IUD

insertion is a more complicated procedure than removal, we may safely assume that clinicians who are able to insert IUDs also have the ability to remove them. Of note, the question prompt regarding implants referenced both insertion and removal. However, the wording for implants referred to “implantable long-acting contraception.” It is possible that some FPs understood the question as asking about LARC methods in general, not just implants. Additionally, in the question prompts FPs were allowed to define “regularly” [with regard to IUD insertion and implant insertion and removal] for themselves. Thus we likely undercounted FPs who seldom or irregularly provided LARC. A strength of our study is the unique comprehensiveness of the data. Since FPs were required to answer these questions for their ABFM MC-FP exam, respondents were representative of U.S. board certified FPs in practice for at least seven years.

Despite these limitations, our analysis has established a baseline cross-sectional national view of LARC provision by U.S. FPs. While LARC insertion and removal is a requirement of family medicine training [9], and studies show that family medicine residents intend to provide LARC [10, 19], we found that a minority of FPs do so in practice. This apparent gap between FPs’ LARC training and practice requires further investigation. We were disappointed to find that there is a possible decrease in FPs’ overall IUD provision in the six years since the last national study of this kind [11]. We were encouraged, however, that in our study being a more recent graduate is associated with slightly higher rates of inserting IUDs. Given the need for more clinicians to provide LARC, it is imperative to support trainings, continuing medical education efforts and other post-residency interventions to increase IUD and implant provision by FPs. In this analysis we identify potential leverage points. Specifically, we suggest that interventions may be most successful if they first focus on clinical sites and/or individual FPs who currently provide prenatal care, obstetrical care, skin procedures and/or endometrial biopsies but not LARC.

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Bibliography

- [1]. Peipert JF, Zhao Q, Allsworth JE, et al. Continuation and satisfaction of reversible contraception. *Obstetrics and gynecology*. 2011; 117:1105–13. [PubMed: 21508749]
- [2]. Blumenthal PD, Voedisch A, Gemzell-Danielsson K. Strategies to prevent unintended pregnancy: increasing use of long-acting reversible contraception. *Human reproduction update*. 2011; 17:121–37. [PubMed: 20634208]
- [3]. Trussell J, Wynn LL. Reducing unintended pregnancy in the United States. *Contraception*. 2008; 77:1–5. [PubMed: 18082659]
- [4]. Kavanaugh ML, Jerman J, Ethier K, Moskosky S. Meeting the contraceptive needs of teens and young adults: youth-friendly and long-acting reversible contraceptive services in U.S. family planning facilities. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*. 2013; 52:284–92. [PubMed: 23298980]
- [5]. Branum AM, Jones J. Trends in long-acting reversible contraception use among U.S. women aged 15–44. *NCHS data brief*. 2015:1–8. [PubMed: 25714042]
- [6]. Potter JE, Hopkins K, Aiken AR, et al. Unmet demand for highly effective postpartum contraception in Texas. *Contraception*. 2014; 90:488–95. [PubMed: 25129329]

- [7]. Biggs MA, Harper CC, Malvin J, Brindis CD. Factors influencing the provision of long-acting reversible contraception in California. *Obstet Gynecol.* 2014; 123:593–602. [PubMed: 24499746]
- [8]. Harper CC, Rocca CH, Thompson KM, et al. Reductions in pregnancy rates in the USA with long-acting reversible contraception: a cluster randomised trial. *Lancet.* 2015
- [9]. Recommended Curriculum Guidelines for Family Medicine Residents: Women's Health and Gynecologic Care. AAFP Reprint No 282: American Academy of Family Physicians. 2014
- [10]. Schubert FD, Herbitter C, Fletcher J, Gold M. IUD Knowledge and Experience Among Family Medicine Residents. *Family medicine.* 2015; 47:474–7. [PubMed: 26039766]
- [11]. Rubin SE, Fletcher J, Stein T, Segall-Gutierrez P, Gold M. Determinants of intrauterine contraception provision among US family physicians: a national survey of knowledge, attitudes and practice. *Contraception.* 2011; 83:472–8. [PubMed: 21477692]
- [12]. [accessed September 3, 2015] <http://depts.washington.edu/uwruca/index.php>
- [13]. [accessed September 3, 2015] <http://datawarehouse.hrsa.gov/geoAdvisor/ShortageDesignationAdvisor.aspx>
- [14]. Chuang CH, Hwang SW, McCall-Hosenfeld JS, Rosenwasser L, Hillemeier MM, Weisman CS. Primary care physicians' perceptions of barriers to preventive reproductive health care in rural communities. *Perspectives on sexual and reproductive health.* 2012; 44:78–83. [PubMed: 22681422]
- [15]. Ayoola AB, Zandee GL, Johnson E, Pennings K. Contraceptive use among low-income women living in medically underserved neighborhoods. *Journal of obstetric, gynecologic, and neonatal nursing : JOGNN / NAACOG.* 2014; 43:455–64.
- [16]. Gomez AM, Fuentes L, Allina A. Women or LARC first? Reproductive autonomy and the promotion of long-acting reversible contraceptive methods. *Perspectives on sexual and reproductive health.* 2014; 46:171–5. [PubMed: 24861029]
- [17]. Owen CM, Goldstein EH, Clayton JA, Segars JH. Racial and ethnic health disparities in reproductive medicine: an evidence-based overview. *Seminars in reproductive medicine.* 2013; 31:317–24. [PubMed: 23934691]
- [18]. Dehlendorf C, Rodriguez MI, Levy K, Borrero S, Steinauer J. Disparities in family planning. *American journal of obstetrics and gynecology.* 2010; 202:214–20. [PubMed: 20207237]
- [19]. Romero D, Maldonado L, Fuentes L, Prine L. Association of reproductive health training on intention to provide services after residency: the family physician resident survey. *Family medicine.* 2015; 47:22–30. [PubMed: 25646874]

Implications

These data provide a baseline from which to analyze change in IUD and implant provision in family medicine, identify gaps in care, and ascertain potential leverage points for interventions to increase LARC provision by FPs. Interventions may be more successful if they first focus on sites and/or family physicians who already provide prenatal care, obstetrical care, skin procedures and/or endometrial biopsies.

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Table 1

Individual, clinical site and scope of practice characteristics associated with family physicians providing IUDs and/or implantable contraception, unadjusted model

	Total number of family physicians answering MC-FP Procedure Set N=2329	Subset of family physicians who insert IUDs n=458	Subset of family physicians who insert & remove implants n=263
	N (%)	n (%) ^a	n (%) ^a
Individual Characteristics			
Gender ^b		*	*
Female	857 (36.8)	221 (25.8)	120 (14.0)
Male	1473 (63.2)	237 (16.1)	143 (9.7)
Race		*	
Non-white	488 (21.0)	73 (15.0)	49 (10.0)
White	1841 (79.0)	385 (20.9)	214 (11.6)
Ethnicity			
Hispanic	152 (6.5)	25 (16.4)	15 (9.9)
Non- Hispanic	2177 (93.5)	433 (19.9)	248 (11.4)
Member of Residency Faculty		*	*
Yes	339 (14.6)	153 (45.1)	96 (28.3)
No	1990 (85.4)	305 (15.3)	167 (8.4)
Years in Practice			
21 or more	961 (41.3)	169 (17.6)	95 (9.9)
11 – 20	779 (33.5)	170 (28.1)	98 (12.5)
10 or fewer	589 (25.3)	119 (20.2)	70 (11.9)
Clinical Site Characteristics			
Geographic Location		*	**
Urban	2059 (88.4)	392 (19.0)	227 (11.0)
Large rural	136 (5.8)	24 (17.6)	10 (7.4)
Small rural	77 (3.3)	22 (28.6)	15 (19.5)
Isolated	57(2.4)	20 (35.1)	11 (19.3)
Located in Underserved Area ^c		*	*
Yes	997 (42.8)	234 (23.5)	138 (13.8)
No	1332 (57.2)	224 (16.8)	125 (9.4)
Ownership		*	*
Group, private practice	958 (41.1)	175 (18.3)	80 (8.4)
Solo, private practice	370 (15.9)	38 (10.3)	35 (9.5)
Hospital/Integrated health network	584 (25.1)	149 (25.5)	94 (16.1)
Public	226 (9.7)	81 (35.8)	47 (20.8)
Miscellaneous	126 (5.4)	11 (9.7)	6 (4.8)
Size		*	*
Solo	411 (17.6)	43 (10.5)	39 (9.5)

	Total number of family physicians answering MC-FP Procedure Set N=2329	Subset of family physicians who insert IUDs n=458	Subset of family physicians who insert & remove implants n=263
	N (%)	n (%) ^a	n (%) ^a
2-5 providers	806 (34.6)	126 (15.6)	72 (8.9)
6 or more providers	1172 (50.3)	289 (24.7)	212 (18.1)
Mix			
Single specialty	1585 (68.0)	302 (19.1)	192 (12.1)
Multi-specialty	744 (31.9)	156 (21.0)	71 (9.5)
Clinical Scope of Practice Characteristics			
Prenatal Care		*	*
No prenatal care, no deliveries	2079 (89.3)	282 (13.6)	155 (7.5)
Provides prenatal care, no deliveries	91 (3.9)	55 (60.4)	31 (34.1)
Provides prenatal care and deliveries	159 (6.8)	121 (76.1)	77 (48.4)
Skin Procedures		*	*
Yes	1915 (82.2)	433 (22.6)	254 (13.3)
No	414 (17.8)	25 (6.0)	9 (2.2)
Endometrial Biopsies		*	
Yes	534 (22.9)	359 (67.2)	201 (37.6)
No	1795 (77.1)	99 (5.5)	62 (3.5)
IUD Insertions			*
Yes	458 (19.7)	--	205 (44.8)
No	1871 (80.3)	--	58 (3.0)
Implant Insertions and Removals		*	
Yes	263 (11.3)	205 (44.8)	--
No	2066 (88.7)	253 (12.2)	--

^a Percents presented here are row percents. Denominator used to calculate percent in these columns is row specific based on row "n" from total respondents.

^b Only male and female gender-identity options were available.

^c Location in an underserved area was defined as a practice site located in a Health Professional Shortage Area, Medically Underserved Area, or serving a Medically Underserved Population as defined by the Health Resources and Services Administration.

* p=<.01 as compared to those who do not either insert IUD or insert and remove implants.

** p=<.05 as compared to those who do not either insert IUD or insert and remove implants.

Table 2

Characteristics associated with family physicians inserting IUDs and/or inserting and removing implantable contraception, adjusted model^a

	Adjusted OR for IUDs (95% confidence interval)	Adjusted OR for implants (95% confidence interval)
Gender		
Male	REF	--
Female	1.71 (1.25-2.33)	--
Race		
Non-White	--	REF
White	--	0.64 (0.42-0.98)
Member of Residency Faculty		
No	REF	REF
Yes	1.67 (0.42-0.98)	1.42 (0.96-2.11)
Years in Practice		
21 or more	REF	--
11 – 20	1.49 (1.05-2.13)	--
10 or fewer	1.60 (1.07-2.40)	--
Ownership		
Group, private practice	--	REF
Solo, private practice	--	2.43 (1.33-3.79)
Hospital/Integrated health network	--	1.67 (1.10-2.53)
Public	--	1.95 (1.18-3.23)
Miscellaneous	--	0.93 (0.38-2.27)
Size		
Solo	REF	--
2-5 providers	1.37 (0.84-2.25)	--
6 or more providers	1.78 (1.10-3.86)	--
Mix		
Single specialty	--	REF
Multi-specialty	--	1.45 (1.01-2.09)
Prenatal Care		
No prenatal care, no deliveries	REF	REF
Provides prenatal care, no deliveries	3.38 (1.88-6.06)	1.36 (0.76-2.44)
Provides prenatal care and deliveries	3.26 (1.93-5.49)	1.77 (1.15-2.74)
Performs Skin Procedures		
No	REF	REF
Yes	1.64 (0.97-2.77)	3.07 (1.47-6.42)
Performs Endometrial Biopsies		
No	REF	REF
Yes	16.51 (11.97-22.79)	3.67 (2.41-5.59)
Performs Implant Insertions and Removals		
No	REF	--

	Adjusted OR for IUDs (95% confidence interval)	Adjusted OR for implants (95% confidence interval)
Yes	8.78 (5.79-13.33)	--
Performs IUD insertions		
No	--	REF
Yes	--	8.58 (5.70-12.91)

^aModels were built by starting with all variables listed in Table 2. Variables were removed in a backwards selection process (separately for IUD and implant) until removing any further variables did not improve model fit. Variables with results shown are those that remained in the final model for either IUD or implant.

Table 3

Predictors of family physicians inserting intrauterine devices (IUDs) and/or inserting and removing implantable contraception, adjusted model *

	Adjusted OR for IUDs (95% confidence interval)	Adjusted OR for implants (95% confidence interval)
Gender		
Male	REF	--
Female	1.79 (1.31-2.47)	--
Race		
Non-White	--	REF
White	--	0.67 (0.44-1.03)
Member of Residency Faculty		
No	REF	--
Yes	1.70 (1.14-2.54)	--
Years in Practice		
>30	REF	REF
21 – 30	0.57 (0.33-0.97)	1.99 (1.05-3.76)
11 – 20	0.98 (0.58-1.65)	2.07 (1.10-3.87)
<11	1.05 (0.60-1.84)	2.30 (1.19-4.44)
Ownership		
Group, private practice	--	REF
Solo, private practice	--	2.42 (1.43-4.11)
Hospital	--	2.14 (1.40-3.29)
Integrated health network	--	1.36 (0.70-2.67)
Public	--	1.97 (1.18-3.29)
Miscellaneous	--	0.96 (0.39-2.35)
Size		
Solo	REF	--
2-5 providers	1.37 (0.84-2.25)	--
6-20 providers	1.87 (1.14-3.08)	--
>20 providers	1.61 (0.93-2.80)	--
Mix		
Single specialty	--	REF
Multi-specialty	--	1.39 (0.96-2.03)
Prenatal Care		
No prenatal care, no deliveries	REF	REF
Provides prenatal care, no deliveries	3.40 (1.90-6.10)	1.35 (0.75-2.43)
Provides prenatal care and deliveries	3.37 (1.99-5.69)	1.76 (1.14-2.72)
Performs Skin Procedures		
No	REF	REF
Yes	1.63 (0.96-2.77)	3.14 (1.50-6.59)
Performs Endometrial Biopsies		
No	REF	REF

	Adjusted OR for IUDs (95% confidence interval)	Adjusted OR for implants (95% confidence interval)
Yes	16.88 (12.21-23.35)	3.90 (2.54-5.95)
Performs Implant Insertions and Removals		
No	REF	--
Yes	9.04 (5.94-13.75)	--
Performs IUD insertions		
No	--	REF
Yes	--	8.92 (5.93-13.43)

* Models were built by starting with all variables listed in Table 2. Variables were removed in a backwards selection process until removing any further variables did not improve model fit.