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## Factors associated with provision of long-acting reversible contraception among adolescent health care providers

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### Abstract

**Purpose**—To identify provider and practice characteristics associated with long-acting reversible contraception (LARC – progesterone contraceptive implants or IUDs [intrauterine devices]) provision among adolescent health care providers.

**Methods**—We analyzed physician characteristics and self-reported provision of LARC using chi-square analyses. Multivariate logistic regressions identified factors predicting provision of any form of LARC, as well as progesterone contraceptive implants or IUDs specifically.

**Results**—In logistic regressions, residency training in obstetrics/gynecology or family medicine (rather than internal medicine/pediatrics) was the strongest predictor of LARC provision, particularly for IUDs. Practicing in suburban (rather than urban) and hospital-based (rather than private) settings was associated with lower and higher likelihoods of providing LARC respectively.

**Conclusions**—Exposure to procedural women’s health training was the strongest predictor LARC provision. Increasing the number of providers offering this type of contraception may have broad reaching consequences for adolescent pregnancy prevention, and may be most easily accomplished via contraceptive implants.

### Keywords

adolescent; contraception; long-acting reversible contraception; health care provider; intrauterine device; contraceptive implant

### Background

Adolescent pregnancy is associated with an increased risk of suboptimal health outcomes for both mother and child.(1) Despite some success in efforts to reduce the teen pregnancy rate, the United States continues to have one of the highest adolescent pregnancy rates of any developed nation.(1,2) Long-acting reversible contraceptive (LARC) methods such as contraceptive implants and intrauterine devices (IUDs) are the most effective pregnancy

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#### Implications and contributions

Increased use of LARC may help mitigate the ongoing problem of unintended adolescent pregnancy. This study implies that limited number of physicians offering LARC may bear some responsibility for adolescents’ underutilization. Formal procedural women’s health training predicted LARC provision, suggesting that provider training may improve adolescents’ access to LARC services.

prevention options for women of all ages.(3) Studies suggest that much of the recent decline in adolescent pregnancy in the United States may be attributable to improved contraceptive use, especially of more effective methods.(4) The Institute of Medicine has identified expanding young women's access to these methods as a promising strategy to address their national priority of preventing unintended pregnancy.(5)

Adolescents do not routinely use LARC methods despite their demonstrated effectiveness, (6) and the reasons for this are not well understood. One recent study showed that over 60% of adolescent women choose to contracept using LARC after receiving evidence-based contraceptive counseling and in the absence of financial barriers.(7) This suggests that provider counseling and access barriers may be major factors contributing to the low use of these methods. Lack of clinicians training and comfort in placing these devices for adolescent patients may be another factor perpetuating underutilization.(6)

The goal of our study was to investigate the prevalence of self-reported LARC provision among a group of adolescent health care providers, and to identify provider and practice characteristics that may predict provision of LARC to adolescent patients.

## Methods

The data collection methods for this survey have been described in detail elsewhere.(8) For this study, we explored providers' self-reported provision of LARC methods. We defined LARC providers as those who stated that they personally provided either contraceptive implants or IUDs as part of their routine clinical services. We excluded nurse practitioners (for whom we did not have procedural women's health training information), physicians whose residency training was in psychiatry or emergency medicine, or providers who denied offering any contraceptive services as part of their regular practice.

We explored LARC provision with respect to provider and practice characteristics using chi-square analyses. Providers were dichotomized into two groups based on their residency training or additional post-residency procedural women's health training. These groups primarily differentiated between providers whose residency training typically would include procedural women's health care (obstetrics/gynecology and family medicine – OB/FM) and those whose residency typically would not include such training (internal medicine, pediatrics, and combined medicine-pediatrics – IM/Peds).(9)

We then conducted multivariate logistic regression analyses to identify factors that predicted any LARC provision, as well as provision of contraceptive implants or IUDs specifically. We performed sensitivity analyses to assess whether provision of contraceptive implants could be influenced by potential exposure during training, defined as having finished residency in 2006 or later (after FDA approval of Implanon®).

All data analyses were done with STATA 11.0, and the University of Rochester Research Subjects Review Board approved this study.

## Results

Of the 917 U.S. clinician members of SAHM with email addresses, 87% (n=797) received the survey invitation. There were 430 survey participants, resulting in a response rate of 54%. Respondent characteristics are reported in a prior publication,(8) and demographics can be seen in Table 1.

Thirty-two percent of our analytic sample reported providing either form of LARC as a contraceptive option. Among the OB/FM-trained group, 88% reported providing some form

of LARC compared to 26% in the IM/Peds group. Forty-seven percent of the OB/FM group reported placing contraceptive implants compared to 24% of the IM/Peds group (data not shown). In logistic regression models (Table 2), presumed exposure to procedural women's health training was the strongest predictor of LARC provision for both contraceptive implants and IUDs. Practice location and primary clinical site were also associated with LARC provision. Controlling for potential exposure to contraceptive implants during training did not change our results.

## Discussion

Only a third of our sample reported providing any LARC services, although rates were much higher among providers with procedural women's health training during or after residency. Exposure to this training was the strongest predictor of any type of LARC provision. However, striking differences emerged between the provision of contraceptive implants and IUDs. OB/FM providers were somewhat more likely to provide contraceptive implants but considerably more likely to provide IUDs than their IM/Peds peers. The skills and equipment necessary to insert IUDs may explain some of this difference, as these can present real barriers to providers who lack procedural gynecologic training, or who practice in settings with few resources.<sup>(10)</sup> Contraceptive implants, in contrast, require minimal instruction beyond the FDA-mandated manufacturer training, and no special materials beyond the implant inserters themselves.

Limitations of this survey's findings have been discussed previously,<sup>(8)</sup> and include lack of generalizability to all providers offering reproductive health services to adolescents. Specific limitations to these analyses include the small sample size of OB/FM-trained clinicians and our use of residency type to reflect exposure to procedural women's health training.

## Conclusions

A third of the providers in our sample reported providing LARC services, and provider residency training appears to be a significant factor in the provision of both contraceptive implants and IUDs. Our results further suggest that exposure to procedural women's health training is a larger factor for insertion of IUDs than for contraceptive implants.

Reported contraceptive implant placement is lower overall than we might have expected, suggesting an underutilization of implants by adolescent health care providers. As these implants require few procedural skills, it may be easier to increase provider training in contraceptive implants than IUDs. While training will not guarantee an increase in LARC access, it certainly cannot occur without this. Improving access to LARC by increasing the number of providers offering the contraceptive implant would improve LARC access overall and may have broad reaching consequences for adolescent pregnancy prevention.

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## Abbreviations

<b>FDA</b>	US Food and Drug Administration
<b>AAP</b>	American Academy of Pediatrics
<b>SAHM</b>	Society for Adolescent Health and Medicine
<b>LARC</b>	Long Acting Reversible Contraception
<b>IUD</b>	Intrauterine Device
<b>OB/FM</b>	obstetrics/gynecology and family medicine
<b>IM/Peds</b>	internal Medicine, pediatrics, and combined medicine-pediatrics

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**Table 1**

Provider and practice characteristic (chi-square analyses)

	Analytic Sample (n=385)	LARC Providers (n=124)	p-value
	n (%)	n (%)	
<b>Provider Characteristics</b>			
Female	260 (67.89)	85 (69.67)	0.609
Age (years)			0.407
24–39	113 (29.35)	39 (31.45)	
40–49	100 (25.97)	37 (29.84)	
50–59	122 (31.69)	35 (28.23)	
60 or older	50 (12.99)	13 (10.48)	
Race			0.414
White	306 (79.69)	100 (81.30)	
Black	37 (9.64)	13 (10.57)	
Asian	27 (7.03)	5 (4.07)	
Other	14 (3.54)	5 (4.07)	
Latino/Hispanic	18 (4.71)	6 (4.96)	0.877
Residency training			<0.001
OB/FM	45 (11.90)	35 (28.69)	
IM/Peds	333 (88.10)	87 (71.31)	
<b>Practice Characteristics</b>			
Practice Location			<0.001
Urban	286 (74.48)	109 (87.20)	
Suburban	78 (20.31)	11 (8.80)	
Rural	20 (5.21)	5 (4.00)	
Primary Clinical Site			0.004
Private Practice	54 (14.03)	6 (4.80)	
Academic Medical Center	125 (32.47)	42 (33.60)	
Hospital-Based Clinic	135 (35.06)	50 (40.00)	
Other	71 (18.44)	27 (21.60)	

Analytic sample includes providers who met inclusion and exclusion criteria. Cells may not add to overall sample number due to variation in response rates to various questions.

**Table 2**

Factors associated with LARC provision (logistic regressions)

	Any LARC Method	Contraceptive Implants	IUDs
	OR (95% CI)	OR (95% CI)	OR (95% CI)
<b>Characteristics</b>			
Residency training			
OB/FM (ref: IM/Peds)	19.40 (5.58–67.37) **	4.46 (1.72–11.54) *	83.83 (15.31–458.97) **
Practice location			
Suburban (Urban)	0.20 (0.07–0.57) *	0.27 (0.10–0.73) *	0.08 (0.01–0.57) *
Rural (Urban)	0.15 (0.17–1.28)	0.17 (0.18–1.69)	0.21 (0.16–2.60)

\* p-value &lt;0.05

\*\* p-value &lt;0.001

Other variables included in the logistic regression model and not significant include: provider gender, age, race, ethnicity, clinic setting, and adolescent medicine fellowship completion