



# Evidence-based IUD Practice:

## Family Physicians and Obstetrician-Gynecologists

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**BACKGROUND AND OBJECTIVES:** Family physicians and obstetrician-gynecologists provide much of contraceptive care in the United States and have a shared goal in preventing unintended pregnancy among patients. We assessed their competency to offer women contraceptives of the highest efficacy levels.

**METHODS:** We conducted a national probability survey of family physicians and obstetrician-gynecologists ( $n=1,192$ ). We measured counseling and provision practices of intrauterine contraception and used multivariable regression analysis to evaluate the importance of evidence-based knowledge to contraceptive care.

**RESULTS:** Family physicians reported seeing fewer contraceptive patients per week than did obstetrician-gynecologists and were less likely to report sufficient time for counseling. While 95% of family physicians believed patients were receptive to learning about intrauterine contraception, fewer than half offered counseling or the method. Only half were trained to competence to offer intrauterine contraception, while virtually all obstetrician-gynecologists were. Both family physicians and obstetrician-gynecologists were unlikely to have adequate knowledge of the women who would be good candidates for intrauterine contraception—as gauged by the Centers for Disease Control and Prevention Medical Eligibility Criteria for contraception—and consequently did not offer the method to a wide range of eligible patients.

**CONCLUSIONS:** Most family physicians providing contraceptive care were not offering methods with top-tier effectiveness, although they reported interest in updating contraceptive skills through training. Obstetrician-gynecologists had technical skills to offer intrauterine contraception but still required education on patient selection. Greater hands-on training opportunities for family physicians, and complementary education on eligible method candidates for obstetrician-gynecologists, can increase access to intrauterine contraception by women seeking contraceptive care.

(Fam Med 2012;44(9):637-45.)

The Institute of Medicine (2011) has recommended counseling and provision of all FDA-approved contraceptives as essential preventive care for women.<sup>3</sup> It is important to ensure that family physicians be adequately prepared through residency training and continuing medical education to offer patients a broad range of contraceptive methods.

While a wide array of contraceptives are available, long-acting reversible contraceptives with top-tier effectiveness<sup>4,5</sup> remain unfamiliar to many women.<sup>6,7</sup> Intrauterine contraception (IUC) is used by only 5% of women in the United States compared to 20%–30% in some European countries.<sup>8,9</sup> Most young women have not heard of IUC; those who have heard about it from a provider are 2.7 times more likely to be interested in the method.<sup>10</sup> Research has documented low rates of counseling or provision.<sup>11–13</sup> Virtually all contraceptive providers offer oral contraceptive pills and condoms; however, these methods have high failure and discontinuation rates, especially among low-income populations.<sup>14–18</sup> Unlike user-dependent methods, IUC has a typical use effectiveness over 99%, similar to its

Nearly one half of pregnancies are unintended, with young and low-income women at greatest risk.<sup>1</sup> Many women receive contraceptive care from family

physicians as part of well woman care or related care for other medical problems. Family physicians have wide geographic distribution and often practice in underserved areas.<sup>2</sup>

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perfect use efficacy.<sup>5</sup> The Institute of Medicine has included expanding access to long-acting reversible methods as a national priority.<sup>19</sup>

A recent study documented low IUC knowledge and provision among family physicians.<sup>12</sup> Many providers are not aware of a large body

of evidence on available IUCs, the copper IUD and the levonorgestrel-releasing system,<sup>11,20,21</sup> and outdated concerns persist.<sup>12,22,23</sup> Guidelines

**Table 1: Physician Characteristics and Intrauterine Contraception Practices**

	Family Medicine (n=261)	Obstetrics- Gynecology (n=344)	Total (n=605)
<b>Clinician characteristics</b>			
Age, mean years (linearized SE)**	47 (.59)	49 (.57)	48 (.43)
Gender, %			
Male	59	56	58
Female	41	44	42
Race/ethnicity, %			
White	74	72	73
African-American	5	5	5
Hispanic/Latino	3	8	5
Asian/Pacific Islander	15	13	14
Multi-racial/other	4	3	3
<b>Practice setting and patient population</b>			
Practice setting, %			
Private office	78	81	79
Community clinic	8	4	7
Hospital-based practice	14	16	15
Urban, %***	66	85	73
Region***			
Northeast	12	19	15
South	25	37	29
Midwest	33	29	29
West	30	21	26
Contraceptive patients week, mean (linearized SE)	7 (1.5)	22 (1.0)	13 (1.0)
Medicaid patients seen, %	80	77	79
<b>Training</b>			
Family planning training, %*	84	90	86
Inserted IUC in residency, %***	63	94	74
Comfortable inserting IUC, %***	42	99	64
Comfortable inserting single-rod implant, %***	11	43	23
<b>Contraceptive counseling</b>			
Enough time for contraceptive counseling, %***	70	87	76
Patients receptive to learning about IUC, %*	95	98	96
Routinely discuss IUC with patients, %***	47	79	59
<b>Contraceptives offered to patients</b>			
Emergency contraceptive pills, %***	65	82	72
Oral contraceptive pills, %***	94	99	96
Injectable, %***	87	97	90
Implant, %***	12	50	26
IUC, %***	48	95	65

IUC—intrauterine contraception

\*  $P \leq .05$ , \*\*  $P \leq .01$ , \*\*\*  $P \leq .001$

from the Centers for Disease Control and Prevention (CDC), US *Medical Eligibility Criteria for Contraceptive Use*, indicate that, contrary to the beliefs of many physicians, women with PID history, as well as adolescents and nulliparous women, can use IUC.<sup>24</sup>

In this study, we used data from a national survey to analyze evidence-based practices for IUC among physicians in family medicine and obstetrics-gynecology. This study builds on previous provider research and is the first to examine both types of physicians together who provide most reproductive health care in the United States.<sup>2</sup> Our study also evaluated contraceptive counseling, along with provision, which is an important aspect of patient-centered contraceptive care. The research objective was to identify specific knowledge and practice patterns among physicians from these two medical disciplines, which may require varied approaches in training and education to translate evidence to clinical practice.

## Methods

We conducted a national probability survey of physicians in family medicine and obstetrics-gynecology in 2008–2009. We used the American Medical Association's Physician Masterfile, a comprehensive database updated weekly, which includes members and nonmembers. Stratified probability samples of 600 family physicians and 600 obstetrics-gynecologists were drawn, using a random number generator. Duplicate names were dropped, and 1,192 unique surveys were mailed. To be eligible, physicians had to spend most of their time in direct patient care, to have completed residency, and to provide family planning or HIV/STI services. Ineligible respondents (n=129) were removed from response rate calculations. A total of 610 eligible physicians responded. We assumed the proportion ineligible among respondents (21.1%) was similar among nonrespondents (n=453) and adjusted the

denominator for the response rate (610/1,192–129–78).<sup>25</sup> Our aim was for a sample size of at least 500 eligible respondents to achieve population estimates with  $\pm 5\%$  precision. For a detailed description of methodology, see Henderson et al.<sup>26</sup>

We sent selected physicians a letter explaining the study, followed by a survey and cover letter, return envelope, and \$20 cash by US Priority Mail. A reminder postcard was sent 1 week later and another survey to nonrespondents in 3 weeks. Research staff made a maximum of four reminder calls. The study was approved by the University of California, San Francisco Committee on Human Research.

The survey instrument was developed through formative qualitative interviews with clinicians and items validated from previous research.<sup>11,21,27,28</sup> Survey items covered physician characteristics, professional training, practice factors, patient population, and contraceptive care. A series of patient vignettes, including a nulliparous adolescent, a nulliparous unmarried young adult (age 24), and a parous married 24-year old, were presented to physicians for their recommendations.

## Outcome Measures: Counseling and Provision of IUCs

Physicians were asked about the frequency of counseling female contraceptive patients on IUC, using a 4-point Likert scale (never, sometimes, usually, always). We created a dichotomous variable for routine counseling which was usually or always versus sometimes or never. For contraceptive provision, the survey asked which methods the physicians currently offered and included the levonorgestrel-releasing system (Mirena®) and the copper IUD (ParaGard®). We combined the two devices to one variable measuring provision of IUC (yes/no).

The main predictor variable was physician's professional training (family medicine, obstetrics-gynecology). We also measured residency training in IUC insertion.

Independent variables included demographic factors (age, race/ethnicity, gender), practice setting (private office, community clinic, hospital-based practice/other), location (urban versus rural), region (West, Midwest, Northeast, South), and patient population (patient volume, Medicaid patients).

We evaluated physician knowledge based on the World Health Organization medical eligibility criteria for contraceptive use—in place at the time of the survey—from which the CDC criteria were subsequently adapted.<sup>29</sup> We created two scale variables to capture knowledge.<sup>11</sup> The first was a nine-item scale variable on knowledge of eligible IUC candidates, with a reliability coefficient of 0.79 estimated by Cronbach's alpha. Physicians were asked if they would consider IUC (yes, no, don't know) for different patients, each considered appropriate in evidence-based guidelines: nulliparous, adolescents, unmarried, immediate postpartum (prior to discharge), immediate post-abortion (before leaving clinic), history of ectopic pregnancy, STI in past 2 years, history of pelvic inflammatory disease (PID), and HIV-infected women.<sup>24,29</sup> Physicians responding yes for these patients were considered to have more accurate, evidence-based views of eligible women.

Knowledge of method indications was measured through questions on whether the physician would consider IUC (yes, no, don't know) for patients with conditions allowed by medical eligibility criteria.<sup>24,29</sup> For the copper IUD these conditions included: fibroids without distortion of uterine cavity, diabetes, obesity, smoker, and history of hypertension. For the levonorgestrel-releasing system, we used the same list as the copper IUD, as well as menorrhagia, dysmenorrhea, and iron deficiency anemia. This 13-item scale variable for evidence-based knowledge had a reliability coefficient of 0.95.

To assess IUC risk attitudes, we created a six-item scale variable on how often physician concerns about issues would prevent him/her from

recommending IUC: uterine perforation at insertion, expulsion, STIs, PID, infertility, and bleeding pattern changes. Responses (never, sometimes, usually, always) were reverse-coded for scale construction of low risk perception. The scale reliability coefficient on perception of risk was 0.80.

### Analysis

The analysis population included physicians who responded to the questions on counseling and provision of IUC. We presented frequencies by physician specialty and estimated odds ratios through bivariate and multivariable analyses, with 95% confidence intervals. We applied stratification design in analyses to account for disproportionate sampling of physicians by specialty. The design-based Pearson chi-square test for overall categorical differences and the Wald test for mean differences were calculated. We conducted multivariable logistic regression analysis to estimate the variation in each outcome variable, routine counseling and provision of IUC, with physician factors, evidence-based knowledge, and attitudes. To create the three scale variables measuring

evidence-based knowledge and attitudes, we followed procedures used in previous research to create reliable and valid scales.<sup>11</sup> Significance was reported at  $P \leq .05$ . Stata 11.1 (Stata Corp., College Station, TX) was used for analyses.

### Results

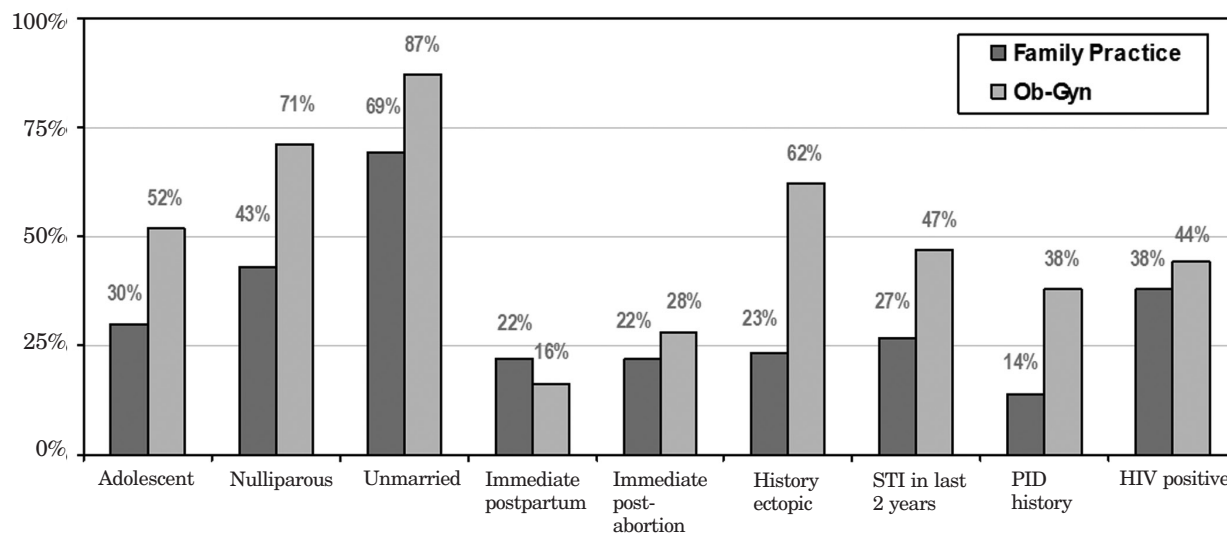
There were 610 eligible physician respondents, 263 from family medicine and 347 from obstetrics-gynecology, with a response rate of 62%. Respondents tended to be slightly younger than nonrespondents, and family physicians were slightly less likely to respond than obstetrician-gynecologists. Results showed significant practice differences between family physicians and obstetrician-gynecologists. Family physicians were less likely to be practicing in urban areas, and saw relatively fewer contraceptive patients. Most family physicians reported training in family planning, but their residency training was less likely to include IUC insertions (63%) than that of obstetrician-gynecologists (94%), and a far lower proportion of family physicians reported that they were comfortable doing insertions (42% versus 99%).

About half of family physicians (47%) routinely discussed IUC with contraceptive patients. However, 96% of physicians believed that their patients would be receptive to learning about IUC, with no differences by specialty. Most physicians reported sufficient time to counsel patients on contraceptive options, although fewer family physicians did. While there was little difference in oral contraceptive provision, there were large differences in IUC (48% of family physicians compared to 95% of obstetrician-gynecologists). There was also a large gap in providing the single-rod etonogestrel implant, another long-acting contraceptive. Many physicians wanted implant training, 29% of family physicians and 31% of obstetrician-gynecologists; 30% of family physicians desired IUC training compared to only 1.5% of obstetrician-gynecologists.

Almost all physicians considered IUC a safe method overall (98%), and most considered it to be underused. More than half of physicians considered cost to be an important obstacle to IUC provision.

Physicians were asked whether they would consider IUC for various patients, all appropriate candidates

**Figure 1: Percentage of Physicians Who Would Consider Intrauterine Contraception for the Following Patients**



STI—sexually transmitted infection  
PID—pelvic inflammatory disease

**Table 2: Evidence-based Knowledge and Attitudes on Intrauterine Contraception Among Contraceptive Providers, by Specialty**

Scales Based on WHO Medical Eligibility Criteria	Family Medicine	OB-GYN	Total
<b>IUC candidate scale***</b>			
Would consider IUC for following patients:	%	%	%
Teenager***	30	52	38
Nulliparous***	43	71	53
Unmarried***	69	87	76
Immediate postpartum	22	16	19
Immediate post-abortion	22	28	25
History of ectopic***	23	62	38
History of STI in last 2 years***	27	47	34
History of PID ***	14	38	23
HIV positive	38	44	40
<b>IUC knowledge scale***</b>			
LNG system—would consider for patient with:			
Menorrhagia***	47	96	65
Dysmenorrhea***	45	90	62
Iron-deficiency anemia***	58	95	72
Fibroids without distortion of the uterine cavity***	40	90	59
Diabetes***	55	91	68
Obesity***	57	95	71
Smoker***	52	92	67
History of hypertension***	56	93	70
<b>Copper T380A—would consider for patient with:</b>			
Fibroids without distortion of the uterine cavity***	36	68	48
Diabetes***	58	88	70
Obesity***	64	93	75
Smoker***	65	94	76
History of hypertension***	66	94	77
<b>Perception of risk scale***</b>			
Concerns prevent IUC recommendation			
Sexually transmitted infections**	43	30	38
Pelvic inflammatory disease**	51	40	47
Infertility	29	24	27
Expulsion**	8	2	6
Uterine perforation at insertion***	12	3	9
Changes in bleeding pattern***	29	16	24

\*  $P \leq .05$ , \*\*  $P \leq .01$ , \*\*\*  $P \leq .001$ 

WHO—World Health Organization, IUC—intrauterine contraception, PID—pelvic inflammatory disease, HIV—human immunodeficiency virus, LNG—levonorgestrel-releasing intrauterine system

according to guidelines (Table 2). Figure 1 shows that most physicians considered women at highest risk of unintended pregnancy, the young,

nulliparous, and post-abortion, as inappropriate. Obstetrician-gynecologists lacked awareness of appropriate IUC candidates, although family

physicians measured lower on the scale variable ( $P \leq .001$ ). For the patient vignettes, only 12% of physicians reported they would offer the

**Table 3: Routine Counseling on intrauterine Contraceptives for Female Contraceptive Patients: Multivariable Logistic Regression Results**

Routinely Counsel Patients on IUC	Odds Ratio Unadjusted	95% CI	Odds Ratio Adjusted	95% CI
<b>Clinician Characteristics</b>				
Specialty				
MD obstetrician-gynecologist (reference)	—	—	—	—
MD family medicine	0.24***	0.17, 0.35	0.53*	0.29, 0.97
Trained in IUC insertions in residency	4.79***	2.44, 5.89	2.18**	1.24, 3.84
Age (years)	0.97***	0.95, 0.98	0.95***	0.93, 0.98
White (non-Hispanic)	1.46	0.98, 2.15	1.30	0.78, 2.16
Gender				
Male (reference)	1.28	0.89, 1.84	0.77	0.47, 1.25
Female				
<b>Practice Setting</b>				
Practice setting				
Private office (reference)	—	—	—	—
Community clinic	1.19	0.55, 2.56	1.16	0.43, 3.15
Hospital-based practice	1.45	0.86, 2.47	0.93	0.99, 1.02
Urban location	1.44	0.96, 2.16	1.15	0.66, 2.02
<b>Region</b>				
West (reference)	—	—	—	—
Midwest	0.46**	0.28, 0.78	0.45*	0.24, 0.88
Northeast	0.53*	0.29, 0.95	0.49	0.23, 1.02
South	0.49**	0.30, 0.81	0.42*	0.22, 0.81
Female contraceptive patients (#/week)	1.04***	1.02, 1.06	1.01	0.99, 1.02
Has Medicaid patients	1.32	0.86, 2.04	1.68	0.89, 3.09
<b>IUC Knowledge/Attitudes</b>				
Low perception of risks	2.34***	1.75, 3.11	1.20	0.85, 1.69
Expansive view IUC candidates	4.25***	2.90, 6.24	2.61***	1.68, 4.06
High level of knowledge	3.09***	2.37, 4.02	1.74***	1.27, 2.40
Number of observations <sup>1</sup>	600		560	
F (14, 549)			6.92***	

IUC—intrauterine contraception

CI—confidence interval

\*  $P \leq .050$ , \*\*  $P \leq .010$ , \*\*\*  $P \leq .001$ <sup>1</sup> Number of observations vary with missing data on independent variables.

levonorgestrel-releasing system to a nulliparous adolescent—39% to a nulliparous unmarried 24-year-old (25% family physicians, 52% obstetrician-gynecologists) and 71% to a parous married 24-year-old (60% family physicians, 90% obstetrician-gynecologists).

Family physicians had low familiarity with medical conditions

allowed for each device (Table 2). For example, half or less would consider the levonorgestrel-releasing system for a patient with diabetes, obesity, or smoking. Obstetrician-gynecologists had higher knowledge of the use of each device with medical conditions ( $P \leq .001$ ).

Low familiarity among family physicians was accompanied by a

higher score on the risk perceptions scale ( $P \leq .001$ ). Risks in all areas measured, such as PID, expulsions, or perforation, were higher concerns for family physicians, other than the risk of infertility, which was seen as equally high by specialty (Table 2). Interestingly, perceptions of the more technical risks, such as perforation



**Table 4: Provision of Intrauterine Contraceptives to Female Contraceptive Patients: Multivariable Logistic Regression Results**

Provide IUC to Patients	Unadjusted Odds Ratio	95% CI	Adjusted Odds Ratio	95% CI
<b>Clinician Characteristics</b>				
Specialty				
MD obstetrician-gynecologist (reference)	—	—	—	—
MD family medicine	0.05***	0.03, 0.09	0.07***	0.03, 0.17
Trained in IUC insertions in residency	4.26***	2.74, 6.64	1.54	0.83, 2.84
Age (years)	0.98	0.97, 1.01	0.98	0.95, 1.01
White (non-Hispanic)	1.07	0.70, 1.64	1.31	0.65, 2.65
Gender—female	1.72**	1.16, 2.55	1.33	0.75, 2.37
<b>Practice Setting</b>				
Practice setting				
Private office (reference)	—	—	—	—
Community clinic	2.74*	1.06, 7.08	7.06 <sup>a</sup>	1.51, 42.9
Hospital-based practice	1.64	0.92, 2.93	1.54	0.72, 3.29
Urban location	1.43	0.94, 2.18	0.70	0.36, 1.34
Region				
West (reference)	—	—	—	—
Midwest	0.63*	0.36, 1.08	0.55	0.26, 1.13
Northeast	0.53*	0.29, 0.98	0.24**	0.09, 0.62
South	0.51*	0.30, 0.86	0.17***	0.07, 0.40
Female contraceptive patients (#/week)	1.11***	1.07, 1.15	1.03	1.00, 1.08
Has Medicaid patients	1.31	0.83, 2.06	2.34*	1.13, 4.83
<b>IUC Knowledge/Attitudes</b>				
Low perception of risks	1.97***	1.49, 2.62	1.18	0.81, 1.71
Expansive view IUC candidates	3.21***	2.18, 4.73	1.66*	1.03, 2.68
High level of knowledge	3.83***	2.88, 5.09	1.93**	1.31, 2.81
Number of observations	561			
F (16, 544)	7.32***			

IUC—intrauterine contraception

\*  $P \leq .050$ , \*\*  $P \leq .010$ , \*\*\*  $P \leq .001$

<sup>a</sup> Cell size too small to yield stable estimate

at insertion or expulsion, were low among both specialties.

Multivariable logistic regression results for counseling showed that family physicians were less likely to discuss IUC with patients than obstetrician-gynecologists; however, IUC residency training increased the practice significantly (Table 3). Younger physicians and those with evidence-based views of appropriate candidates, as well as knowledge of method indications, were

significantly more likely to counsel patients on IUC. While a low-risk perception was associated with counseling in the unadjusted models, it was also correlated with evidence-based views of candidates and knowledge and did not retain significance in multivariable models. For IUC provision, professional skills and training were important, as were evidence-based patient selection and knowledge (Table 4).

## Discussion

Family physicians are front-line providers in women's preventative care, with growing importance for contraception.<sup>3</sup> Costs are currently a barrier to IUC, although the Patient Protection and Affordable Care Act (2010) may increase contraceptive coverage.<sup>30,31</sup> These national data identified common areas for education and training among family physicians and obstetrician-gynecologists, as well as

certain specialty-specific needs. Results highlighted evidence-based patient selection as an educational need for all physicians. IUC use is still concentrated among parous and married women.<sup>32,33</sup> Fewer than half of clinicians considered nulliparous women, adolescents, or history of PID as IUC candidates, contrary to medical eligibility criteria.<sup>24</sup> Physicians were also largely unaware of the practice of immediate post-abortion and postpartum IUC insertions. An educational component for family physicians and obstetrician-gynecologists focused on the wide range of women who are eligible to use IUC may significantly increase access to the method, including for those women currently bypassed as poor candidates for use.

Education on updated method indications is also needed for family physicians. Our study showed that for common conditions, such as obesity, family physicians were unnecessarily restrictive about IUC use. This is particularly notable for conditions that may be contraindications to combined hormonal pills, including diabetes, hypertension, and smoking. Family physicians see women for a wide variety of medical needs, and it is a necessary skill to connect other medical problems to appropriate contraception. The belief that IUC is not appropriate can deny these women the opportunity to use a high-efficacy method. Counseling is essential given low method awareness; women trust their providers for contraceptive information.<sup>7</sup> Time constraints for counseling can exist in family medicine settings. Integrating IUC into care will take more time initially, including purchasing and setting up instruments and supplies; clinicians have reported that the practice becomes more efficient with experience.<sup>34</sup> Results showed that counseling was more likely to occur with improved physician knowledge, as well as technical competency.

This study points to increased hands-on training for advancing family physicians' insertion skills and evidence-based knowledge of

available devices. More than 60% of family physicians inserted IUC in residency, but far fewer reported current competency. Improvements in residency training are necessary to prepare physicians. A recent study showed higher rates of IUC training in family medicine residencies (80%), which holds promise for future providers.<sup>35</sup> Our results showed more frequent counseling among younger physicians. For practicing physicians, continued hands-on opportunities throughout the career, including continuing medical education, could help to build and maintain insertion skills and updated knowledge. Among obstetrician-gynecologists, training is needed in certain areas, such as immediate postpartum or immediate post-abortion. Our data also showed most physicians are not yet skilled in the single-rod implant, a highly effective method with few contraindications.<sup>24,36</sup> The importance of hands-on training for provision is consistent with previous research.<sup>37-39</sup> This study has limitations. Social desirability bias can affect survey reporting, so that practice appears more in line with professional norms than it may be. Patient vignettes are considered to have high validity as a measure of physician practice.<sup>40</sup> Measures of IU knowledge and provision may be unbiased, but reports of contraceptive counseling or skills could be inflated. The response rate was relatively high for a physician survey,<sup>41,42</sup> but we may have had respondents who were more interested in contraceptive care.

## Conclusions

Family physicians see IUC as underused among their patients and are interested in gaining skills. Low provision of contraceptives with top-tier effectiveness contributes to high unintended pregnancy. Study results suggest a need for improved medical education to ensure that women are not restricted from a full range of effective methods. An expanded focus on training in family medicine residency programs is critical, as well as continuing education programs

that disseminate evidence-based guidelines and address contraceptive tiers of effectiveness. In the future, there will be even greater need for primary care providers to be able to offer women contraceptive care. To do so, current scientific evidence must be translated into clinical practice through hands-on training and didactics on the CDC Medical Eligibility Criteria. With appropriate education and training, family physicians, as well as reproductive health specialists, can update their practices to offer all women quality and evidence-based contraceptive care.

**ACKNOWLEDGMENTS:** This project was funded by NIH/National Institute of Child Health and Human Development R01 HD046027 and the William and Flora Hewlett Foundation. The project was also supported by an NIH/NICHD Mentored Research Scientist Development Award in Population Research K01HD054495 (JH), NIH/NICHD Grant K24 HD057086 (TR), and NIH/NCRR/OD UCSF-CTSI Grant KL2 RR024130 (CD). Its contents are solely the responsibility of the authors. Preliminary findings were presented at the 2009 American Public Health Association Annual Meeting, Philadelphia, PA. Financial Disclosures: Dr Harper and Dr Raine received grant support through UCSF from Teva Pharmaceutical Industries for research work on Plan B and Plan B One-Step emergency contraception in the past. Dr Speidel is a consultant for WomanCare Global and Medicines360, both of which are nonprofit organizations.

We would like to thank Maya Blum and Laura Stratton.

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## References

- Finer LB, Henshaw SK. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspect Sex Reprod Health* 2006;38:90-6.
- Scholle SH, Chang JC, Harman J, McNeil M. Trends in women's health services by type of physician seen. *Women's Health Issues* 2002;12:165-77.
- Institute of Medicine. Clinical preventive services for women: closing the gaps. Washington, DC: The National Academies Press, July 19, 2011.
- World Health Organization. Comparing typical effectiveness of contraceptive methods. Geneva: World Health Organization, 2006.



5. Trussell J. The essential of contraception: efficacy, safety, and personal consideration. In: Hatcher RA, Trussell J, Nelson AL, Cates W, Stewart FH, Kowal D, eds. *Contraceptive Technology*, 19th edition. New York: Ardent Media, 2007:19-47.
6. Whitaker AK, Johnson LM, Harwood B, Chappetta L, Creinin MD, Gold MA. Adolescent and young adult women's knowledge of and attitudes toward the intrauterine device. *Contraception* 2008;78:211-7.
7. Kaye K, Suellentrop K, Soup C. The fog zone: how misperceptions, magical thinking, and ambivalence put young adults at risk of unplanned pregnancy. Washington, DC: The National Campaign to Prevent Teen and Unplanned Pregnancy, 2009.
8. Mosher WD, Jones J. Use of contraception in the United States: 1982-2008. National Center for Health Statistics. *Vital Health Stat* 23 2010 Aug(29):1-44.
9. United Nations Department of Economic and Social Affairs Population Division. World contraceptive use 2005. [www.un.org/esa/population/publications/contraceptive2009/WallChart\\_WCU2009.xls](http://www.un.org/esa/population/publications/contraceptive2009/WallChart_WCU2009.xls). Accessed August 8, 2011.
10. Fleming K, Sokoloff A, Raine TR. Attitudes and beliefs about the IUD among teenagers and young women. *Contraception* 2010;82:178-82.
11. Harper CC, Blum M, Thiel de Bocanegra H, et al. Challenges in translating evidence to practice. *Obstet Gynecol* 2008;111:1359-69.
12. 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.
13. Raine TR, Foster-Rosales A, Upadhyay UD, et al. One-year contraceptive continuation and pregnancy in adolescent girls and women initiating hormonal contraceptives. *Obstet Gynecol* 2011;117:363-71.
14. Kost K, Singh S, Vaughan B, Trussell J, Bankole A. Estimates of contraceptive failure from the 2002 National Survey of Family Growth. *Contraception* 2008;77:10-21.
15. Landry DJ, Wei J, Frost JJ. Public and private providers' involvement in improving their patients' contraceptive use. *Contraception* 2008;78:42-51.
16. Frost JJ, Darroch JE. Factors associated with contraceptive choice and inconsistent method use, United States, 2004. *Perspec Sex Reprod Health* 2008;40:94-104.
17. Frost JJ, Singh S, Finer LB. US women's one-year contraceptive use patterns, 2004. *Perspect Sex Reprod Health* 2007;39:48-55.
18. Vaughan B, Trussell J, Kost K, Singh S, Jones R. Discontinuation and resumption of contraceptive use: results from the 2002 National Survey of Family Growth. *Contraception* 2008;78:271-83.
19. Institute of Medicine. Initial national priorities for comparative effectiveness research. Report Brief. June 2009. Institute of Medicine of the National Academies. [www.iom.edu/ce/priorities](http://www.iom.edu/ce/priorities). Accessed September 30, 2011.
20. Postlethwaite D, Shaber R, Mancuso V, Flores J, Armstrong M. Intrauterine contraception: evaluation of clinician practice patterns in Kaiser Permanente Northern California. *Contraception* 2007;75:177-84.
21. Stanwood NL, Garrett JM, Konrad TR. Obstetrician-gynecologists and the intrauterine device: a survey of attitudes and practice. *Obstet Gynecol* 2002;99:275-80.
22. Dehlendorf C, Ruskin R, Darney P, Vittinghoff E, Grumbach K, Steinauer J. The effect of patient gynecologic history on clinician contraceptive counseling. *Contraception* 2010;82:281-5.
23. Madden T, Allsworth JE, Hladky KJ, Secura GM, Peipert JF. Intrauterine contraception in Saint Louis: a survey of obstetrician and gynecologists' knowledge and attitudes. *Contraception* 2010;81:112-6.
24. Centers for Disease Control and Prevention. United States medical eligibility criteria for contraceptive use, 2010. *MMWR* 2010;59(RR04):1-6.
25. The American Association for the Public Opinion Research. Standard definitions: final dispositions of case codes and outcome rates for surveys, sixth edition. Deerfield, IL: American Association for Public Opinions Research, 2009.
26. Henderson JT, Sawaya GF, Blum M, Stratton L, Harper CC. Pelvic examinations and access to oral hormonal contraception. *Obstet Gynecol* 2010;116:1257-64.
27. Henderson JT, Raine T, Schalet A, Blum M, Harper CC. "I wouldn't be this firm if I didn't care": preventive clinical counseling for reproductive health. *Patient Educ Couns* 2011;82:254-9.
28. Harper CC, Henderson JT, Schalet A, Becker D, Stratton L, Raine TR. Abstinence and teens: prevention counseling practices of health care providers serving high-risk patients in the United States. *Perspect Sex Reprod Health* 2010;42:125-32.
29. World Health Organization. Medical eligibility criteria for contraceptive use, fourth edition. Geneva: World Health Organization, 2010.
30. Patient Protection and Affordable Care Act, Pub. L. No. 111-148, 110 Stat. 2033, 2010.
31. Thompson KM, Speidel JJ, Saporta V, Waxman NJ, Harper CC. Contraceptive policies affect post-abortion provision of long-acting reversible contraception. *Contraception* 2011;83:41-7.
32. Kavanaugh ML, Jerman J, Hubacher D, Kost K, Finer L. Characteristics of women in the United States who use long-acting reversible contraceptive methods. *Obstet Gynecol* 2011;117:1349-57.
33. Thompson KM, Foster DG, Harper CC. Increased use of intrauterine contraception in California, 1997-2007. *Women's Health Issues* 2011;21:425-30.
34. Morse J, Freedman L, Speidel JJ, Thompson KMJ, Stratton L, Harper CC. Post-abortion contraception: qualitative interviews on counseling and provision of long-acting reversible contraceptive methods. *Perspect Sex Reprod Health* 2012;44:100-6.
35. Herbitter C, Greenberg M, Fletcher J, Query C, Dalby J, Gold M. Family planning training in US family medicine residencies. *Fam Med* 2011;43(8):574-81.
36. Darney P, Patel A, Rosen K, Shapiro L, Kaunitz AM. Safety and efficacy of a single-rod etonogestrel implant (Implanon): results from 11 international clinical trials. *Fertil Steril* 2009;91:1646-53.
37. Goodman S, Hendlish SK, Benedict C, Reeves MF, Foster-Rosales A. Impact of immediate post-abortion insertion of intrauterine contraception on repeat abortion. *Contraception* 2008;78:143-8.
38. Wesson J, Gmach R, Gazi R, et al. Provider views on the acceptability of an IUD checklist screening tool. *Contraception* 2006;74:382-8.
39. Hubacher D, Villchez R, Gmach R, et al. The impact of clinician education on IUD uptake, knowledge, and attitudes: results of a randomized trial. *Contraception* 2006;73:628-33.
40. Peabody JW, Luck J, Glassman P, Dresselhaus TR, Lee M. Comparison of vignettes, standardized patients, and chart abstraction: a prospective validation study of three methods for measuring quality. *JAMA* 2000;283:1715-22.
41. Hauptman PJ, Sindler J, Hussain Z, Biener L, Burroughs TE. Physician attitudes toward end-stage heart failure: a national survey. *Am J Med* 2008;121:127-35.
42. Lawrence RE, Curlin FA. Physicians' beliefs about conscience in medicine: a national survey. *Acad Med* 2009;84:1276-82.