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Copper Intrauterine Device for Emergency Contraception: Clinical Practice Among Contraceptive Providers

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Abstract

Objective—The copper intrauterine device (IUD) is the most effective emergency contraceptive available but is largely ignored in clinical practice. We examined clinicians' recommendation of the copper IUD for emergency contraception in a setting with few cost obstacles.

Methods—We conducted a survey among clinicians (n=1,246; response rate 65%) in a California State family planning program, where U.S. Food and Drug Administration-approved contraceptives are available at no cost to low-income women. We used multivariable logistic regression to measure the association of intrauterine contraceptive training and evidence-based knowledge with having recommended the copper IUD for emergency contraception.

Results—The large majority of clinicians (85%) never recommended the copper IUD for emergency contraception, and most (93%) required two or more visits for an IUD insertion. Multivariable analyses showed insertion skills were associated with having recommended the copper IUD for emergency contraception, but the most significant factor was evidence-based knowledge of patient selection for IUD use. Clinicians who viewed a wide range of patients as IUD candidates were twice as likely to have recommended the copper IUD for emergency contraception. While over 93% of obstetrician–gynecologists were skilled in inserting the copper IUD, they were no more likely to have recommended it for emergency contraception than other physicians or advance practice clinicians.

Conclusion—Recommendation of the copper IUD for emergency contraception is rare, despite its high efficacy and long-lasting contraceptive benefits. Recommendation would require clinic flow and scheduling adjustments to allow same-day IUD insertions. Patient-centered and high-quality care for emergency contraception should include a discussion of the most effective method.

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Introduction

The copper-releasing intrauterine device (IUD) can be used safely for emergency contraception (EC) up to 5 days after unprotected intercourse, reducing the risk of pregnancy by over 99 percent.[1] Few contraceptive providers, however, inform women about the copper IUD when they present for EC, even though its efficacy is significantly higher than that of levonorgestrel or ulipristal-acetate emergency contraceptive pills.[2–5] Pills have several advantages, including convenience and availability during extended pharmacy hours outside of a clinic setting (levonorgestrel without a prescription to those 17 and over). Copper IUDs also have associated risks and side effects, including heavy bleeding and expulsion, although some of the risks are smaller among skilled providers; results from a major trial on the copper IUD for EC showed no perforations or infections.[4] While scientific and public health efforts helped to increase the availability of emergency contraceptive pills, the pill formulations do not provide ongoing protection, and increased access to emergency contraceptive pills has not yet led to lower pregnancy rates.[6–8] Not only does the copper IUD confer greater protection from the one act of unprotected intercourse, it also offers protection for at least 10 years.[9] Scientific evidence on the effectiveness and safety of the copper IUD is well-established, but the method has been largely left out of EC initiatives and is rarely promoted for use after unprotected intercourse.

Women in the US, especially young women at elevated risk of unintended pregnancy, are unlikely to know about intrauterine contraception (IUC), even as ongoing contraception;[10] those who hear about it from their providers are almost three times as likely to be interested in the method.[11] Surveys of women seeking EC or pregnancy testing have shown that more than 10% would accept a copper IUD.[12,13] Most women seeking EC are in need of regular contraception, and evidence now supports use of the copper IUD among women in the US at highest risk of unintended pregnancy, including adolescents, unmarried and nulliparous women.[14]

An evidence-based approach would offer women information and access for the most effective methods, as well as educating them about a range of contraceptive options. While offering the copper IUD for EC is still an innovative approach in the US, there are some contraceptive providers who do make it available to their patients. This study assessed clinicians' professional training, skills, knowledge, and practices, to identify factors that were associated with having recommended the copper IUD for EC.

Materials and Methods

We conducted an analysis of a 2006 survey of contraceptive providers participating in the California State program, Family PACT (Planning, Access, Care and Treatment), which offers complete coverage for contraceptives to women up to 200% of poverty level. The survey included in the sample all clinicians serving 100 or more female contraceptive patients per year; a self-administered written survey was sent to 1,246 clinicians, identified by unique study identification numbers. The survey sample size was designed to provide sufficient power to calculate differences between physicians and non-physicians in the general provision of IUC (see Harper, et al.[15] for detailed methodology). For the purposes of this analysis using logistic regression to assess the recommendation of the copper IUD for EC, with the assumptions of a one-tailed test and significance of 0.05, we had a power of 90% to detect a difference in the outcome by the predictor IUD insertion skills (18% very comfortable insertion copper IUD), adjusting for the other covariates in the model. The survey was pre-tested and included items from published clinician surveys on intrauterine contraception.[16,17] An information letter was sent, and then two weeks later the survey was mailed with a cover letter. A reminder postcard was sent later that week, and another survey

to non-respondents in four weeks. Providers were telephoned up to four times with reminders to complete the survey. Upon survey completion, they were mailed a box of See's chocolates. The study was approved by the Institutional Review Board at the University of California, San Francisco, the Committee of Human Research (H11760-28435-03).

Measures

Clinicians were asked how many times they had recommended the copper IUD for EC, and the outcome measure was categorized dichotomously (yes, no) for having recommended it. The survey also collected data on IUC training, competency, knowledge and counseling and provision practices. The number of IUDs inserted in core training/residency is measured; current comfort level in inserting copper IUDs (very comfortable, somewhat comfortable, a little comfortable, not at all comfortable); IUC available at practice (yes, no); frequency of IUC counseling for contraceptive patients (always, most of the time, some of the time, rarely, never); sufficient experience to counsel patients on copper IUD (strongly agree, agree, disagree, strongly disagree); time to counsel patients on contraceptive options (strongly agree, agree, disagree, strongly disagree); and patients receptive to learning about IUC (strongly agree, agree, disagree, strongly disagree).

We used a 9-item scale variable to measure the clinicians' views on patient selection for IUC use, which was highly associated in previous analyses with clinician provision of intrauterine contraception to patients.[15] We asked clinicians whether the following women were suitable candidates: nulliparous, immediate post-partum, immediate post-abortion, adolescents, history of ectopic pregnancy, STD in past 2 years, PID in past 5 years, current bacterial vaginosis, and human immunodeficiency virus (HIV) positivity. Items correspond to eligible candidates according to the CDC *Medical Eligibility Criteria* for contraception, so if a provider responded that they were suitable candidates, then their knowledge of eligible candidates was more evidence-based.[14] The internal consistency or reliability of the scale, 0.77, was measured through Cronbach's alpha.[18] We also measured clinician knowledge of IUC of basic method characteristics, and benefits and side effects with a 12-item scale on side effects, including bleeding patterns; the scale reliability coefficient was 0.86.

The survey included demographic (age, gender) and professional characteristics of the clinicians (obstetrician-gynecologist physician or mid-level practitioner, family medicine/other physician or mid-level practitioner), and practice setting (private office, public or non-profit), urban location, patient volume (number of female contraceptive patients annually).

Analysis

The outcome variable we assessed was clinician's recommendation of the copper IUD for EC to patients, coded dichotomously (yes/no), and the analyses are limited to respondents with data on this variable (n=788). We presented clinician recommendation of copper IUD for EC to patients, by demographic, professional and practice characteristics, as well as by IUC knowledge and skills, using chi-square tests for categorical variables and t-tests for continuous variables. We analyzed clinician and practice factors associated with recommendation of the copper IUD for EC to patients using multivariable logistic regression analysis. We included predictor variables that are conceptually relevant and important in previous research on clinician practices with IUC, including demographic variables, practice setting, patient volume, and IUC training and knowledge. We estimated two models, with the first one focused on clinician core training and professional practice and the second on current skills and clinical practice. Stata/SE 11.1 was used for analyses. (Stata Corp, College Station, TX). Reported differences are significant at the $p \leq 0.05$ level.

Results

A total of 816 clinicians responded to the survey, including 399 physicians and 402 advance practice clinicians; the response rate was 65%. Contraceptive providers participating in the survey included physicians (49%), nurse practitioners (36%) and physician assistants (15%). The largest specialties were obstetrics and gynecology (35%), family medicine (37%), and women's health (12%). An analysis of respondents compared to non-respondents, based on claims data showed no differences by professional title, urban location, or intrauterine contraceptive patients (for full description, see Harper et al.[15]) The large majority of contraceptive providers (85%) reported that they had never recommended the copper IUD for EC (Table 1). A total of 15% of clinicians had recommended the IUD for EC: 13% had recommended the method 1–10 times, and only 1.7% had recommended the method over 10 times. Few demographic or professional characteristics were associated with clinician recommendation of the copper IUD for EC: Age, number of practice years, gender, race/ethnicity were not associated.

Interestingly, there was little difference by specialty in having recommended a copper IUD for EC, and obstetrician-gynecologists, despite their advanced clinical skill level in IUC insertion, were no more likely than others to recommend it to their patients: 13% of obstetrician-gynecologists, 15% of other physicians, 18% of advance practice clinicians (APC) in obstetrics-gynecology (ob-gyn) or women's health, and 12% of other advance practice clinicians (p=0.237). However, clinicians in public clinics (19%) as compared to private offices (11%) were more likely to have recommended the copper IUD for EC to patients (p=0.002), as were those with a larger contraceptive patient volume (p≤0.001).

Sixty percent of clinicians reported they were very comfortable inserting the copper IUD, with large differences by specialty: 93% of obstetrician-gynecologists, 39% of other physicians, 75% of advance practice clinicians in ob-gyn or women's health and 39% of other advance practice clinicians (p≤0.001). Comfort level in copper IUD insertion was significantly associated with recommending it for EC: 18% of clinicians who felt very comfortable with copper IUD insertions had recommended it for EC to patients, compared to 7% of those with low comfort levels (p=0.001). While the number of IUDs inserted during residency or core training was not directly associated with recommending the copper IUD for EC, the level of training was strongly predictive of current comfort in insertions: 93% who inserted over 50 IUDs in training felt very comfortable inserting copper IUDs, 67% who inserted under 50, and 32% who did not insert any in residency or core training (p≤0.001).

Most providers (85%) reported sufficient time to counsel patients on contraception and 92% believed their patients were receptive to learning about IUC; however, there was no difference in having recommended the copper IUD to patients for EC by sufficient counseling time (p=0.961) and beliefs about patient interest (p=0.937). Surprisingly, clinicians who routinely counseled their patients on IUC were no more likely to have discussed it with them as a method of EC than clinicians who counseled patients less frequently (p=0.285). However, clinicians who reported they had sufficient *experience* to counsel patients on the copper IUD were significantly more likely to have recommended it for EC, although the proportion was still low (16% v. 7%; p=0.007). Providers who had a more evidence-based view of eligible IUC candidates were significantly more likely to have recommended the copper IUD for EC (p≤0.001). However, familiarity with method side effects and attributes surprisingly was not associated with greater recommendation of the IUD for EC (p=0.50).

There were some clear structural obstacles to providing the copper IUD for EC, including cumbersome protocols and clinic flow challenges. The number of visits required for IUD insertion in most practices offering the method was high: 75% required two visits and 18% required three or more; only 7% offered insertions in one visit. Those few practices that offered IUC in one visit were far more likely to have recommended the copper IUD for EC (34% v. 15%; p=0.002). Among those providers who offered patients IUC, almost half reported they were hindered by availability of the IUD at the visit (46%) and 36% also reported they were hindered by scheduling difficulties. It was also still common practice among those offering IUDs to require women to be on their menses for an insertion (38%). Many tests were required as well: 80% of those providing IUDs always required a Pap test within the past year; 70% always required a Chlamydia test in the past 3 months for women over 25 years of age and 84% always required the test for women 25 years or younger; and 38% always required a hemoglobin test in the past 3 months.

Results from multivariable logistic regression analysis of the factors associated with recommending the copper IUD for EC are presented in Table 2. The first model focusing on professional training and practice type showed that a high number of IUC insertions during core training or residency and contraceptive patient volume were associated with recommending the copper IUD for EC, while private practice was negatively related. The second model included current IUC competency and evidence-based knowledge, and showed that evidence-based views of eligible candidates for the copper IUD was the most significant factor, with odds of recommending EC twice as high for clinicians with expansive views of candidates. The level of expertise with copper IUD insertions was also significantly associated with recommending the copper IUD for EC. Copper IUD insertions skills, in turn, were significantly associated with IUC training, the ob-gyn/women's health specialty, evidence-based knowledge of IUC, and a higher contraceptive patient volume (data not shown).

Discussion

These data showed that contraceptive providers infrequently recommend the copper IUD for emergency contraception to their patients. While it is still not routine practice for contraceptive providers to offer patients IUC as ongoing contraception, there are certain factors shown to be associated with provision of the most effective reversible contraceptives in previous research, including younger age, training as a physician, training during residency or core training, a specialty in ob-gyn and/or women's health, high contraceptive patient volume, a high level of knowledge of method attributes and side effects, and an expansive view of IUC candidates.[15,17,19] While some of these factors were associated with having recommended the copper IUD for EC, some of our results were unexpected. The obstetrician-gynecologists, who were the clinicians with the highest skill levels in contraception, were not any more likely than other clinicians to have recommended the copper IUD as EC, despite their extensive training in copper IUD insertions. Nor were younger clinicians or those who frequently counseled patients on IUC as contraception. These results indicate a need to emphasize the use of the copper IUD for EC in clinician training and education. Patient-centered and high-quality care for emergency contraception should include a discussion of the most effective method.

In terms of counseling women on side effects and what to expect, the information would be the same in the case of the copper IUD for EC. That is, for some women the copper IUD can have pain and cramping in insertion, and then can entail heavier menstrual bleeding.[20] There is a slightly increased risk of infection at insertion,[21] a small risk of perforation,[4,22] and a 2–10% risk of expulsion in the first year, which is higher among adolescents and nulliparous women.[23]

Skills levels inserting the copper IUD were important for both general provision and for the purposes of EC.[15] The most significant factor associated with recommendation of the IUD for EC, however, was evidence-based and expansive views of women who would be eligible for intrauterine contraception. One of the most important elements to include in educational efforts for clinicians, including those in the ob-gyn specialty, would be an emphasis on the wider range of candidates who qualify for use of intrauterine contraception according to the CDC *Medical Eligibility Criteria*.[14]

Many young women are still not aware of the copper IUD and its high level of effectiveness, even as an ongoing method of contraception; however, when given the information, some women have expressed preference for the copper IUD over emergency contraceptive pills.[12,13,24] Given the high efficacy of the copper IUD and its potential for lasting protection, it may be possible to reduce pregnancy rates, even with a modest proportion of women at risk of unintended pregnancy choosing this EC method. It is timely to include the copper IUD as EC in larger context of increased professional attention to intrauterine contraception in the U.S.[25]

A limitation of this survey was that the providers were asked whether they recommended the copper IUD for EC; it is possible that more providers have in fact offered their patients the method, but would not see themselves as recommending it, since that would be directive.

Changes in clinical practice would be required to offer same-day provision of the copper IUD, which is not yet common practice. These data showed fewer than 10% of practices were offering same-day provision, which was consistent with other survey estimates.[26] Multiple visit protocols for IUC provision serve as a roadblock to using the copper IUD for EC. Another significant barrier to same-day provision -cost and contraceptive policies-[26] should be ameliorated by the recent Institutes of Medicine Report on Women's Health[27] and the decision of the Health and Human Services to improve contraceptive coverage policies. The copper IUD is not cost-effective for one-time use for EC; it is an appropriate method for women also interested in a regular method of contraception. The method becomes cost-effective in a year, and by 5 years of use is the most cost-effective contraceptive available.[28]

These data showed important missed opportunities among contraceptive providers, including highly trained obstetrician-gynecologists, for offering women at risk of unintended pregnancy the most effective method available for EC, the copper IUD. An emphasis in clinician training on the use of the copper IUD for EC may help to address high unintended pregnancy rates. The study also showed the relevance of updating contraceptive providers on the evidence and more expansive current criteria for IUC candidates as set out by CDC *Medical Eligibility Criteria*.

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Table 1

Clinician Recommendation of the Copper Intrauterine Device for Emergency Contraception (n=788)

Characteristics	Recommended IUD for Emergency Contraception	
	Yes	No
TOTAL, %	**14.6**	**85.4**
DEMOGRAPHIC CHARACTERISTICS		
Age, mean years (SD)	48.4 (11)	48.6 (11)
Gender, %		
Female	15.6	84.4
Male	12.5	87.5
PROFESSIONAL AND PRACTICE CHARACTERISTICS		
Professional title, %		
Obstetrician–gynecologist	12.8	87.2
Family medicine or other physician	14.5	85.5
Advanced practice clinician: women's health or ob-gyn	18.5	81.5
Advanced practice clinician: other	11.6	88.4
Practice type[*], %		
Private	11.1	88.9
Public	18.9	81.1
Urban practice location, %	14.6	85.3
Contraceptive patient volume[†], mean annual (SD)	1,685	1020
IUD SKILLS, EVIDENCE-BASED KNOWLEDGE, AND PRACTICE		
Number of IUDs inserted in residency or core training, %		
0	12.3	87.7
Less than 50	15.1	84.9
50 or more	18.3	81.7
Comfortable inserting copper IUDs[†], %		
No	5.9	94.1
Little	11.3	88.7
Somewhat	15.7	84.3
Very	18.0	82.0
View IUC as safe, %	14.9	85.1
Yes	8.9	91.1
No		
View patients as receptive to learning about IUC, %		
Yes	14.9	85.1
No	14.5	14.5
IUC SKILLS, EVIDENCE-BASED KNOWLEDGE, AND PRACTICE		
Routinely counsel contraceptive patients on IUC, %		
Yes	15.7	84.3
No	12.9	87.1

Characteristics	Recommended IUD for Emergency Contraception	
	Yes	No
Sufficient experience to counsel on copper IUDs[*], %		
Yes	16.3	83.7
No	7.3	92.7
IUC available at practice[‡], %		
Yes	16.5	83.5
No	11.3	88.7
Evidence-based patient selection scale[†], mean (SD)	.29 (.6)	−.05 (.6)
Evidence-based method attributes scale, mean (SD)	.04 (.5)	−.01 (.6)
Number of visits required for IUC insertion[*], %		
1	34.4	65.6
2 or more	15.4	84.6

SD, standard deviation; IUD, intrauterine device; ob-gyn, obstetrician–gynecologist; IUC, intrauterine contraception.

[*] $p \leq 0.01$;

[†] $p \leq 0.001$;

[‡] $p \leq 0.05$

Table 2

Copper Intrauterine Device for Emergency Contraception Recommended by Clinician: Multivariable Logistic Regression Results (Odds Ratios)

	Model 1		Model 2	
Recommend IUD as Emergency Contraception	**Odds Ratio**	**[95% CI]**	**Odds Ratio**	**[95% CI]**
Demographic				
Age (years)	1.00	[0.98 1.02]	1.00	[0.98 1.03]
Gender				
Male (reference)				
Female	.91	[0.51 1.64]	0.77	[0.42 1.43]
Training and practice type				
Title				
Advanced practice clinician: family or other (reference)				
Advanced practice clinician: ob-gyn	1.53	[0.81 2.86]	1.30	[0.66 2.53]
Family or other physician	1.57	[0.80 3.87]	1.82	[0.88 3.76]
Ob-gyn	1.30	[0.55 3.04]	1.10	[0.43 2.68]
Residency and core training, no. of IUD insertions				
0 (Reference)				
Less than 50	1.28	[0.77 2.13]	1.01	[0.57 1.79]
Greater than 50	2.18*	[1.03 4.61]	1.68	[0.74 3.77]
Female contraceptive patients (no. per yr)	1.02†	[1.00 1.03]	1.01	[1.00 1.02]
Provider type				
Public (reference)				
Private	0.56*	[0.33 0.95]	0.70	[0.39 1.23]
Urban location	1.09	[0.61 1.94]	1.03	[0.56 1.87]
Current IUD skills and knowledge				
Comfortable inserting copper IUDs				
No or little	--			
Somewhat	--		2.19*	[1.05 4.58]
Very	--	--	2.44*	[1.02 5.85]
Evidence-based view of IUD candidates	--	--	2.08‡	[1.35 3.20]
Knowledge of method attributes	--	--	1.14	[0.77 1.72]
Number of observations§	762		733	
Likelihood ratio chi square (df)	27(13)		50 (17)	

IUD, intrauterine device; ob-gyn, obstetrician–gynecologist; df, degrees of freedom.

* p≤0.050

† p≤0.010

‡ p≤0.001

§ Number of model observations varies with missing data on predictor variables