

Original research article

Impact of formal family planning residency training on clinical competence in uterine evacuation techniques[☆]

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Abstract

Background: The goal of this study was to assess the impact of formal opt-out family planning training on clinical competence in uterine evacuation.

Study Design: Residents who participated in newly established, routine opt-out family planning training completed surveys before and after their rotations. The surveys asked residents to report clinical experience and competence in family planning.

Results: One hundred ninety-six pre- and postrotation questionnaires were collected for a total response rate of 63%. After completing the rotation, residents reported higher competence in medical abortion, manual uterine aspiration, electric uterine aspiration and dilation and evacuation ($p < .001$). Residents also reported increased clinical experience with methods of termination, postabortion contraception, including intrauterine contraception, ultrasound and perioperative pain management.

Conclusions: Participation in a formal opt-out family planning rotation results in increased clinical exposure to family planning and in reported competence in pregnancy termination.

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1. Introduction

Because of a high incidence of unintended pregnancy in the United States (approximately half of all pregnancies), elective abortion is the most common surgical procedure among U.S. reproductive-aged women [1,2]. Despite this, training in comprehensive family planning has not been routinely included in obstetrics and gynecology (ob–gyn) residency programs until recently [3–6]. In 1992, only 12% of ob–gyn residency programs included abortion as a routine component of training [5]. This proportion increased after 1996 when the Accreditation Council for Graduate Medical Education (ACGME) required ob–gyn programs to include access to abortion training [4,5,7]. In a 2004 study, 51% of ob–gyn residency programs included integrated training in

elective abortion, and an additional 39% of programs offered optional training in abortion [4].

The Kenneth J. Ryan Residency Training Program in Abortion and Family Planning (Ryan Program) is a national program based at the Bixby Center for Reproductive Health Research and Policy at the University of California, San Francisco. The Ryan Program was founded in 1999 to assist ob–gyn residency programs with financial support and technical expertise to formally integrate abortion training into residency. As of 2006, 36 residency programs in the United States and Canada had established Ryan Program training, which was either a family-planning-specific rotation or integrated into another rotation. All Ryan Programs require opt-out training for their residents; that is, the family planning training is a required part of the resident rotation schedule, but individual residents may opt out of all or parts of the abortion training.

We expect the introduction of Ryan Program training to have multiple short- and long-term outcomes, one of which is improved resident competence in the clinical knowledge and skills related to contraception and abortion. Through

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integrated family planning training, residents should be exposed to more clinical situations requiring contraception counseling and management, and they should gain skills including early pregnancy ultrasound, techniques of uterine aspiration, medical abortion and pain management. This article addresses clinical experience and competence in these areas, as assessed by residents in 18 Ryan Programs.

2. Materials and methods

To assess the effects of routine abortion and contraception training on self-reported clinical experience and competence, we recruited a convenience sample of ob–gyn residents who participated in routine opt-out family planning rotations at Ryan Program sites from 2000 to 2006. We included data only from residents who completed both pre- and postrotation surveys and whose program directors had completed both baseline and 1-year reports so that we could estimate the number of residents trained during that year and could report details of training at those programs.

Comprehensive evaluation of all program sites was formally initiated in 2003, but some evaluation data were collected from programs as early as 2000. Prior to 2005, paper surveys were distributed to residents by the Ryan Program director at each site. Beginning in 2005, residents were asked to complete web-based surveys. Residents completed prerotation surveys on the first day and postrotation surveys on the last day of their family planning or integrated rotations. Before 2005, surveys were kept confidential and de-identified after matching. After 2005, the surveys were anonymous, and residents provided the last four digits of their pager numbers in order to match pre- and postrotation surveys. Survey completion indicated consent to participate in the study. The study was approved by the University of California, San Francisco Institutional Review Board.

The pre- and postrotation surveys consisted of 19 and 23 questions, respectively. These survey questions were selected based on previous surveys developed to assess ob–gyn resident training [8], 5-point Likert scales were used whenever possible, and none were previously validated. Fifteen paired questions enabled comparison of pre- and postrotation responses and controlled for variability. Residents were asked to report their clinical and didactic exposure to abortion procedures and contraceptive methods. The postrotation survey inquired specifically about experience during the rotation and excluded prior experience. They were also asked to rate their competence in techniques of pregnancy termination using a 5-point Likert scale, with 5 indicating *very competent* and 1 denoting *not at all competent*. Residents reported attitudes regarding intention to provide elective abortion after residency using a 5-point Likert scale, where 1=*certainly yes*, 2=*probably yes*, 3=*undecided*, 4=*probably no* and 5=*certainly no*.

To maintain confidentiality, we categorized Ryan Program sites into three regions — (a) West, (b) Midwest/South and (c) Northeast — based on the U.S. Census regions [9]. The Canadian program site was categorized as Midwest. The results were analyzed using SPSS version 15.0. We generated descriptive statistics and used the Wilcoxon signed-rank test, the Mann–Whitney *U* test and the chi-square test to compare pre- and postrotation data. *p* values <.05 were considered significant.

3. Results

A total of 160 prerotation surveys and 144 postrotation surveys have been collected from 24 of the 36 program sites. The other 12 did not complete any resident surveys; 9 are graduated programs that predated the resident evaluation and 3 are new and have not yet begun. Of the 24 programs that participated in resident evaluation, 18 met the inclusion criteria by having at least one resident complete both the pre- and postrotation surveys and a program director complete both the baseline and 1-year follow-up surveys. We matched 196 pre- and postrotation questionnaires representing 98 residents from these 18 program sites. After adjusting for an average opt-out rate of 25%, an estimated 155 residents have been trained at these 18 programs. Thus, our response rate for this analysis is approximately 98/155 (63%).

The 18 residency programs were distributed throughout the United States and 1 in Canada. Prior to initiating Ryan Program training, no program had a rotation dedicated to abortion and family planning. After establishing training, 7 programs had created family-planning-specific rotations, 11 had integrated training into other rotations and all programs considered training routine and opt-out. Residency programs trained residents in family planning during all postgraduate years and integrated training into a variety of rotations and clinical sites, with differing amounts of resident training time (Table 1).

At the beginning of the rotation, 9% of residents had no previous experience in any type of pregnancy termination, and 91% had performed at least one type of abortion procedure. Resident experience with all methods of pregnancy termination increased during the rotation (Table 2). The mean numbers of medical and first-trimester surgical termination cases increased ($p<.001$), and there was a trend toward a significant increase in dilation and evacuation (D&E; $p=.07$). Residents had the most experience with electric uterine aspiration (EUA; 24.7) and least with D&E (2.4). Of the residents who did at least one D&E during the rotation, the mean number of cases managed was 4.5 (range=1–20). Residents who participated in the rotation during Postgraduate Years (PGYs) 2, 3 and 4 managed more D&E cases (mean=3.1 vs. mean=0.4) than PGY 1 residents ($p<.001$).

After completing the rotation, the mean reported self-competence in all techniques of pregnancy termination

Table 1
Description of abortion training in 18 Ryan Program sites

Variable	Value
Location of residency program, n (%)	
West	4 (22)
Midwest/South	8 (44)
Northeast	6 (33)
Year in which training is performed ^a , n (%)	
PGY 1	5 (19)
PGY 2	11 (42)
PGY 3	9 (35)
PGY 4	1 (4)
Rotation in which abortion training is included, n (%)	
Family planning	7 (39)
Gynecology	5 (28)
Reproductive endocrinology	3 (17)
Outpatient	2 (12)
ER/Medicine	1 (6)
Total time spent in rotation, mean (range)	
Total length of rotation (weeks)	6.6 (4–10)
Number of days per week	2.1 (0.5–5)
Total time spent training (days), n (%)	
2.5–10	9 (50)
11–20	7 (39)
>20	2 (11)

^a Some programs offered training lasting more than 1 year.

Table 2
Comparison of resident clinical and didactic experience and competence in pregnancy termination before and after dedicated family planning training (N=98)

Variable	Prerotation	Postrotation	p value
Procedures ^a , mean (range)			
Medical abortion	2.4 (0–46)	7.3 (0–40) ^b	<.001
MUA	3.2 (0–40)	10.2 (0–50) ^b	<.001
EUA	8.0 (0–50)	24.7 (0–70) ^b	<.001
D&E	1.8 (0–10)	2.4 (0–20) ^b	.07
Residents performing ≥10 and ≥20 procedures, n (%)			
≥10			
Medical abortion	7 (7)	24 (25)	
MUA	14 (14)	51 (52)	
EUA	27 (28)	73 (75)	
D&E	2 (2)	5 (5)	
≥20			
Medical abortion	3 (3)	2 (2)	
MUA	9 (9)	10 (10)	
EUA	14 (14)	60 (62)	
D&E	0 (0)	1 (1)	
Mean competence in performing procedure ^{a,c}			
Medical abortion	1.7	4.5	<.001
MUA	1.6	4.3	<.001
EUA	2.5	4.7	<.001
D&E	1.7	2.8	<.001
Residents receiving didactic training, n (%)			
Medical abortion	59 (60)	82 (84)	<.001
MUA	30 (31)	81 (83)	<.001
EUA	30 (31)	72 (74)	<.001
D&E	25 (26)	74 (76)	<.001

^a N for proportions in these two sections ranges from 95 to 98.

^b These means include residents who managed zero cases.

^c A 5-point Likert scale (from 1=not at all competent to 5=very competent) was used.

increased (p<.001); these included manual uterine aspiration (MUA), EUA, medical abortion and D&E. Higher competence (rankings of 4 and 5 vs. ≤3) was associated with managing more medical abortion cases (mean=8.0 vs. mean=1.6, p<.001) and having done more MUA (mean=11.6 vs. mean=1.4, p<.001) and EUA (mean=26.0 vs. mean=11.7, p=.01). There was no association between higher competence and resident training year or days spent training.

A sensitivity analysis was performed to examine the possible effects of response bias by assuming that all residents who did not respond reported the mean number of terminations and mean competence ratings at baseline and had no change in either as a result of the rotation. With these assumptions, there were still significant increases in both the number of and competence in all abortion methods after the rotation (at the same significance values) except for D&E.

After the rotation, residents reported increased clinical experience in early pregnancy ultrasound, pain management during uterine aspiration and postabortion contraception (Table 3). Prior to the rotation, 40% of residents routinely provided postabortion contraception, as compared with 97% postrotation (p<.001).

The rotation also affected residents' intention to offer elective abortions after residency. The proportion of residents who indicated *certainly yes* regarding future provision of elective abortion increased from 17% to 47% (p<.001). Residents who were undecided prior to the rotation

Table 3
Comparison of resident clinical experience with contraception, ultrasound and pain management before and after dedicated family planning training (N=98)

Variable	Prerotation, n (%)	Postrotation, n (%)	p value
Experience with postabortion contraception			
Contraception in general	49 (50)	95 (97)	<.001
Copper intrauterine device	28 (29)	79 (81)	<.001
Levonorgestrel intrauterine device	15 (15)	77 (79)	<.001
Depo-Provera	38 (39)	65 (66)	<.001
Diaphragm/Cervical cap	16 (16)	46 (47)	<.001
Emergency contraception	27 (28)	85 (87)	<.001
Hormonal patch	32 (33)	68 (69)	<.001
NuvaRing	29 (30)	53 (54)	<.001
Oral contraceptives	41 (42)	64 (65)	.001
Ultrasound for abortion procedures			
Yes, routinely use ultrasound	48 (49)	91 (93)	<.001
Preoperatively	47 (48)	90 (92)	<.001
Intraoperatively	23 (24)	91 (93)	<.001
Postoperatively	20 (20)	87 (88)	<.001
Medications used during terminations			
Cervical block	65 (66)	93 (95)	<.001
NSAID ^a	52 (53)	89 (91)	<.001
Narcotic — oral	23 (24)	64 (65)	<.001
Sedative — oral	11 (11)	36 (37)	<.001
Narcotic — intravenous	51 (52)	58 (59)	NS
Sedative — intravenous	60 (61)	72 (73)	.07
General anesthesia	12 (12)	11 (11)	NS

^a Nonsteroidal anti-inflammatory drug.

($n=10$) decreased by 6, and all became more likely to provide. No participating resident said they would not perform elective abortions.

4. Discussion

After participating in family planning training, residents reported increased clinical experience with contraception and pregnancy termination, as well as increased competence in first- and second-trimester termination techniques.

By statistically comparing residents' pre- and postrotation experiences and sense of competence, we were able to confirm our expectations of increased clinical experience in family planning. However, we noticed variations in training in specific procedures. Residents were more likely to have been exposed to EUA than to medical abortion and MUA, both of which can be logistically difficult to establish in outpatient hospital settings. Residents were least likely to have done D&E, which is not surprising since focused D&E training is typically added at later stages of Ryan Program development. Although only 12% of all abortions are performed in the second trimester, it is critical for ob-gyns to be prepared to offer D&E, the safest of the second-trimester termination options [10,11] and a critical skill for therapeutic abortion or emergent second-trimester evacuation. The Ryan Program is addressing this issue by working with programs to expand training to include D&E.

While our response rate of 63% is high, our data may overestimate the effect of training on competence or intention to provide abortions as a result of responding resident enthusiasm or the level of organization at particular Ryan Programs. However, including nonrespondents in the analyses and assuming that the rotation did not change their experience or competence did not affect our results, supporting our conclusion. Participation in our study requires frequent reminders to busy faculty members and residents, and we are currently attempting to streamline our data collection system to reach 100% response rate.

Our measurement of competence relied on self-report by residents, was not previously validated and was based on global self-assessment. Ideally, we would have assessed competence by observing procedures using previously validated instruments, but no such instrument exists for pregnancy termination procedures. These limitations may have contributed to an overestimation of actual competence, but we think that they provide a reasonable estimate of competence for the following reasons. First, resident self-assessment correlates well with observer assessment of competence when evaluating surgical skills in directly observed surgical procedures, which may be transferable to global assessment [12]. Second, there was correlation between the number of procedures preformed and self-reported competence, suggesting that comfort and confidence grow with experience.

The study results indicate that routine opt-out training provides an effective opportunity for ob-gyn residents to receive didactic and clinical training in family planning. Given the high prevalence of unintended pregnancy, the increased training in contraception will better equip residents to help patients use effective contraception. The skills gained in uterine evacuation are transferable to clinical settings other than elective abortion. For example, competence in uterine evacuation techniques, perioperative pain management and ultrasound will better equip residents to manage pregnancy loss, especially in outpatient settings. Given the shortage of abortion providers [1] and the need for more physicians to include these services in their practices, the rotations' effect of increasing residents' intentions to provide is also important.

Inspired by the competency initiatives of the Council on Resident Education in Obstetrics and Gynecology and ACGME, the Ryan Program is working to systematically evaluate short- and long-term outcomes of family planning training. The future research directions of the Ryan Program include assessing the effects of abortion training on resident competence using direct observation and validated competency tools, evaluating didactic knowledge in abortion and contraception, studying the effects of exposure to family planning on residents who opt out of parts of the rotation and following residents prospectively into practice to assess the long-term effects of training. In this study, we have shown that exposure to a dedicated rotation in abortion and family planning improves clinical exposure to uterine aspiration, contraception, ultrasound and pain management. Although training is focused on these specific skills, the benefits of the training transcend these skills and allow the practitioner to improve overall patient care.

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