
Norplant Prescribing in Family Practice

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Background. This study describes the Norplant prescribing experience, training, and attitudes of South Carolina family practice and general practice (FP/GP) physicians.

Methods. A survey was mailed to all FP/GP physicians licensed in South Carolina, with two follow-up mailings to nonrespondents.

Results. Responses were received from 520 physicians, representing 43% of all licensed FP/GP physicians and 73% of all board-certified FP physicians. Norplant had been inserted by 39% of the respondents, and fewer than 10% reported encountering complications during the insertion process. Norplant removal was reported by 135 physicians, averaging 4.4 removals per year. Complications during removal were reported by 52% of physicians, with the most common problem being difficulty finding the capsules. Some degree of training in Nor-

plant insertion was reported by 82% of physicians; 69% reported having had some training, formal or informal, in removal; but only 57% reported having received formal training either during residency or at a workshop. Training reduced insertion time but did not affect removal time or the number of complications encountered. Formal training was more likely to prepare physicians to successfully manage procedural complications.

Conclusions. FP/GP physicians are important providers of Norplant. Improved training is needed to ensure that insertion is performed properly and to disseminate effective removal techniques.

Key words. Norplant; levonorgestrel; drug implants; contraceptive agents, female; family physicians; physician practice patterns. (*J Fam Pract* 1996; 42:267-272)

Use of the Norplant system of six subdermal contraceptive implants has been widely promoted for birth control. International^{1,2} and American³⁻⁷ research has documented Norplant's high level of acceptance among women. Practitioners have pointed out the desirability of Norplant for women who have poor experience with other contraceptives.⁸ Approximately 1 million women in the United States have received Norplant since it became available in this country in January 1991.⁹ Most women utilize the implants for several years, with up to 55% retaining them for the full 5-year life of the contraceptive.¹⁰

As Norplant users reach the end of the 5-year life span of the implants, the need for removals will increase. Recently, concern has arisen about the difficulty of removing Norplant implants and the amount of training physicians receive to perform this procedure. In a survey of family practice physicians in Ohio, Tafelski and Taylor¹¹ found that only 35% of those inserting Norplant had been trained in a formal instructional setting, and 32% described themselves as "self-taught," ie, having received neither formal nor informal instruction.

Anecdotal evidence and limited published data suggest that the removal procedure can be difficult and time consuming. The levonorgestrel-releasing silastic implants may not show on radiographs and, if improperly inserted, may be difficult to palpate prior to removal. Although one study reported that removals averaged 3 minutes,¹² a large clinic with extensive provider training found that over one half of all removals required more than 30 minutes to complete, with nearly 20% taking an hour or more.⁶

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The Tafelski and Taylor¹¹ study cited above is the only survey of community-based family physicians with regard to Norplant reported to date in the literature. This study found that 53% of family practice physicians "offered" Norplant. However, only 25% of responding physicians inserted Norplant themselves, with the remainder referring patients to another practitioner. Among physicians who offered Norplant, satisfaction with the contraceptive's performance, particularly with respect to "reliability, convenience, and long-term cost-effectiveness," was high. Among those not satisfied with Norplant, side effects and difficulty removing the implants were the primary reasons for disapproval. Tafelski and Taylor¹¹ recognized the limitations imposed on their data by the relative newness of the implant at the time of their survey and called for additional research in other geographic locales and among physicians with greater Norplant experience.

The research described here is a descriptive study of the Norplant prescribing experience and attitudes of South Carolina physicians in family and general practice. This study has two purposes. First, it identifies the percentage of family and general practice physicians who prescribe Norplant and records their experience inserting and removing it. Second, by relating the training reported by these community-based physicians to their experience, the study explores current needs for professional education.

Methods

A cross-sectional descriptive survey design was employed on the population of family practice and general practice (FP/GP) physicians licensed in South Carolina (n=1201). Names, addresses and specialties of physicians were obtained from the directory of licensed physicians published by the State Board of Medical Examiners.¹³ Each physician received a cover letter explaining the intent of the survey and the importance of the contribution of each physician to this project. A short survey form, which could be folded and mailed, was provided. Survey forms contained no identifying information. Each physician received a postcard that could be used to request a copy of study findings, regardless of participation in the survey. Three mailings of the survey/response card package, mailed approximately 1 month apart, were conducted beginning in July 1994.

Results

Response Rate

Surveys were returned by 520 physicians, for an overall response rate of 43%. The response rate for board-

Table 1. Characteristics of 520 Physician Respondents, by Norplant Prescribing Practice

Characteristic	% of Physicians Who	
	Prescribe Norplant (n=200)	Do Not Prescribe Norplant (n=320)
Sex		
Male	34.7	65.3
Female†	57.0	43.0
Age, y		
<35	70.5	29.5
35-44	38.6	61.4
45-55	32.0	68.0
≥56†	16.2	83.8
Specialty		
Family practice	41.0	59.0
General practice†	19.6	80.4

NOTE: Not all respondents answered all questions.

†P<.001.

certified family physicians was 73% (256/350). Respondents did not differ significantly from the population by sex; 85% of respondents vs 86% of all FP/GP physicians were male. The proportion of family practice physicians among respondents was higher than that among all FP/GP physicians (90% vs 82%, respectively). Two certified nurse midwives and two family nurse practitioners indicated that they completed the survey for their physician preceptor. Three fourths of the respondents answering the question about practice setting (396/496) described their work setting as solo practice or a family practice group. Remaining respondents described their practice as a federal or state facility (11%); faculty (7%); multispecialty group practice (5%); residency (3%); or administration (1%).

Norplant Prescribing

Overall, 200 (39%) of the 520 respondents reported prescribing Norplant for women seeking contraception. Female physicians, younger physicians, and those who listed their specialty as family rather than general practice were more likely than others to prescribe Norplant (Table 1). The number of insertions physicians performed or supervised per month ranged from less than 1 to as many as 45 with a mean of 1.9. Only seven respondents (4%) performed 10 or more insertions per month; most were performing one per month (Table 2). Nearly all physicians estimated that insertions took half an hour or less.

Among physicians performing insertions, the majority (82%) reported receiving some training in the procedure, including observing another physician. Physicians who reported some degree of training in inserting Norplant estimated less time for a typical insertion than did

Table 2. Norplant Insertions and Removals Performed by Physicians

Physician Variables	No. (%) of Physicians Who Perform	
	Insertions	Removals
Length of time to perform procedure, min		
1-15	83 (46.4)	12 (9.3)
16-30	85 (47.5)	63 (48.8)
>30*	11 (6.1)	54 (41.9)
Experience in a typical procedure		
No complications	156 (90.2)	61 (48.0)
Complications*	17 (9.8)	66 (52.0)
Reported training in performing the procedure		
Residency	38 (19.0)	20 (14.8)
Workshop or in-service	75 (37.5)	51 (37.8)
Other physician	50 (25.0)	22 (16.3)
None†	37 (18.5)	42 (31.1)
Mean number of procedures per physician per year	23.2‡	4.4

*P<.001.

†P<.03.

‡Projection based on number of procedures performed per month.

physicians who reported no training (Table 3). Formal training during residency or at a workshop or in-service was reported by only 57% of respondents. An additional 24 physicians reported having received training but never having performed the procedure.

Physicians were asked, "What complications, if any, do you typically encounter when inserting Norplant?" and were given space to describe these complications. Fewer than 10% reported encountering procedural complications at insertion. Among physicians describing complications (9/13 responses), the most commonly cited were bruising (60%), followed by infection (13%), puncture of the skin by the trochar (13%), and miscellaneous

Table 3. Effect of Training on Time Required for Insertion and Removal of Norplant

Time Required, min	No. (%) of Physicians Reporting	
	Training*	No Training
Insertion		
1-15	74 (48.7)	9 (33.3)
16-30	72 (47.4)	13 (48.1)
>30†	6 (3.9)	5 (18.5)
Removal		
1-15	9 (10.1)	3 (7.5)
16-30	45 (50.6)	18 (45.0)
>30‡	35 (39.3)	19 (47.5)

*Includes training in a workshop or in-service, during residency, or by means of observing another physician.

†P=.011.

‡P=NS.

Table 4. Effect of Time Required for Removal on Physician Attitudes and Behaviors Regarding Norplant

Physician Variables	No. (%) of Physicians Requiring	
	≤30 Min for Removal	>30 Min for Removal
Report "typical" complications		
Yes	26 (36.2)	39 (72.2)
No*	46 (63.9)	15 (27.8)
No. of removals until "comfortable" with the procedure		
1-5	59 (78.7)	26 (50.0)
5-10	14 (18.7)	22 (42.3)
10-20†	2 (2.7)	4 (7.7)
Professional fee for removal compared with insertion fee		
Lower	32 (47.8)	12 (22.6)
Same	28 (41.8)	30 (56.6)
Higher‡	7 (10.4)	11 (20.8)
Attitude toward Norplant§		
More favorable	11 (14.7)	5 (9.1)
Unchanged	49 (65.3)	26 (47.3)
Less favorable‡	15 (20.0)	24 (43.6)

*P<.001.

†P=.004.

‡P=.014.

§Based on experience with Norplant.

NOTE: Percentages may add to greater than 100% because of rounding.

problems (13%). Two physicians noted that they occasionally drop an implant, requiring them to open a new pack. The likelihood that a physician would report complications during a typical insertion procedure was not associated with whether the physician had been trained in Norplant insertion (Table 3.)

A total of 135 (24%) physicians reported having removed Norplant. Among the 200 physicians who reported inserting Norplant, 124 (62%) had removed it. An additional 11 physicians had removed the implants without ever having performed insertions. Physicians reported an average of 4.4 removals per year. While the majority of physicians reported that a typical removal was accomplished in 30 minutes or less, a substantial minority (42%) reported that the procedure required more than half an hour to complete (Table 2). Respondents who described a "typical" removal as complicated, which parallels responses to the same question regarding insertion, were likely to report that the procedure required increased time (Table 4). Physicians reporting that a typical removal took longer than 30 minutes were more likely to report that it takes 5 to 20 removals to become comfortable with the procedure, that their fee for Norplant removal was higher than their fee for insertion, and that their experience with removal had made them have a less favorable attitude toward the use of Norplant for contraception (Table 4).

Of the 135 physicians who performed removals, training in the removal process was reported by 93 (69%), of whom 53% had received formal training through a residency or in-service. Nearly one in three physicians performing removals (31%) reported no training. Five physicians had received training but had not yet performed a removal. Training in Norplant removal did not reduce the physicians' reports of how much time the removal procedure required, how many removals a physician would have to perform to feel "comfortable" with the procedure, or the number and type of procedural complications.

More than one half (52%) of responding physicians reported encountering complications during a "typical" removal. These physicians were more likely than others to indicate that a procedure took longer than 30 minutes. Seventy-one physicians described the complications they encountered during removal, 63% of whom referred to difficulty finding the capsules. Explanations included excessively deep insertion of the rods (11 respondents), excess fibrous tissue around the capsules (8 respondents), scarring of the insertion site (5 respondents), and swelling (3 respondents). Other reported complications included bruising (10 respondents), bleeding (5 respondents), and references to the time required for removal (4 respondents). Reported complications were not associated with the number of removals required for the physicians to feel "comfortable" with the procedure or reported fees for Norplant removal; however, complications did adversely affect physicians' overall attitude toward the contraceptive (Table 5).

Training did not reduce the likelihood that a physician would report complications during a typical removal. Methods of training, however, differed with respect to whether they addressed commonly encountered complications. The majority of physicians trained at an in-service or workshop reported that their training had addressed complications (33/42; 79%), followed by those trained during residency (11/15; 73%) and those who had observed another physician (14/21; 67%). Physicians reporting no training were least likely to state that they were adequately prepared for the complications encountered (8/22; 36%).

Only nine of the 135 physicians who had performed Norplant removals no longer offered this service at the time of the survey. Physicians who had stopped removing Norplant were more likely than physicians who still performed the procedure to state that their experience with removal resulted in a less favorable attitude toward Norplant; 71% of those who stopped vs 28% of those who continued reported a less favorable attitude ($P=.027$). Other than self-reported attitude, there was no apparent reason for discontinuation among the small sample of

Table 5. Effect of Reported Complications on Attitudes Toward Norplant

Physician Variables	No. (%) of Physicians Experiencing Complications*	
	None	Some
No. of removals until "comfortable" with procedure		
1-5	42 (70.0)	42 (64.6)
5-10	16 (26.7)	19 (29.2)
10-20†	2 (3.3)	4 (6.2)
Professional fee for removal compared with insertion fee		
Lower	26 (46.4)	17 (27.9)
Same	24 (42.9)	34 (55.7)
Higher‡	6 (10.7)	10 (16.4)
Attitude toward Norplant‡		
More favorable	8 (13.1)	8 (11.9)
Unchanged	41 (67.2)	32 (47.8)
Less favorable§	12 (19.7)	27 (40.3)

*Based on physician responses to the question, "What complications, if any, do you typically encounter when removing Norplant inserts?"

† $P=NS$.

‡Based on experience with Norplant.

§ $P=.037$.

dissatisfied physicians. A high proportion of physicians who no longer remove Norplant reported complications at removal (67%) and that removals typically took more than 30 minutes (71%); however, there was no statistical difference between this group of physicians and those who still remove implants with respect to these variables.

Discussion

Previous work by Tafelski and Taylor¹¹ found that 25% of family practice physicians in Ohio insert Norplant; in South Carolina, 39% currently offer this service. This difference may be due to regional factors: 12 of South Carolina's 46 counties do not have an obstetrician-gynecologist, increasing the importance of family physicians to women's health. Alternatively, the 1994 date of the South Carolina survey may have allowed time for more family physicians to learn about this technology.

Family physicians perceived Norplant insertion to be easier than removal. While only 1 in 10 respondents noted any complications "typically" encountered when inserting Norplant, complications at removal were reported by more than one half of all responding physicians. Implants were reported to be hard to find, to become embedded in fibrous tissue, and to break while the physician is attempting removal. One respondent noted that finding the implants is sometimes "embarrassingly and tediously slow." Similar difficulties were reported in a recent international study of Norplant removal.¹⁴ Perhaps because of these

problems, removal is more time consuming than insertion. While only a few physicians have stopped removing Norplant, physicians who report complications with removal and physicians who report a typical removal taking more than 30 minutes tend to have less favorable attitudes about Norplant. Because experience with complications adversely affects physician opinion of Norplant as a means of contraception, difficulty with removal may be anticipated to influence whether physicians recommend it to their patients.¹⁵

Four of the five respondents inserting Norplant (82%) report some training in the procedure, with "training" broadly defined to include observing another physician ("see one, do one"). Fewer physicians (69%) report any training, formal or informal, in Norplant removal. The relatively high proportion of physicians willing to insert Norplant without training may be due to the apparent simplicity of insertion. Training does not reduce the already low proportion of physicians who report complications with insertions, although it does shorten the time required. Even formal training, such as might occur during residency or in a workshop or in-service, does not reduce perceived insertion problems. Absence of a link between training and insertion complications may have two explanations. First, insertion may be an easy process, unlikely to pose difficulty. Second and more probably, if insertion is done incorrectly, complications may not be evident until removal. Difficulty in locating implants was a reported complication of removal, with most problems stemming from inappropriate insertion depth. An increased emphasis on formal insertion training may reduce the frequency of complications at removal.

No type of training affected either the amount of time required for removal or the proportion of physicians reporting complications at removal. There is, however, a strong relationship between the type of training received and whether that training adequately prepared the physician for difficulties encountered. Formal training programs were more likely than informal observation or perusal of educational materials to address complications. Removal is not a simple procedure, although the development and dissemination of new removal techniques¹⁶⁻¹⁸ may reduce its difficulty.

The study contains several limitations. First, the overall response rate (43%) was low. Although a majority of board-certified family practitioners in South Carolina (73%) responded to the survey, uncertified family and general practitioners are poorly represented in the data. The prescribing habits and experience of nonresponding physicians remain unknown. Second, it would have been desirable to ask what proportion of implants removed by physicians were inserted by the same physicians. It may be easier for physicians to remove Norplant from women

whose complete course of contraception has been under their care because they are familiar with the placement procedures used. However, with patient mobility and Norplant's 5-year life span, it is probable that physicians will continually be faced with the challenge of removing implants inserted by other professionals.

Additional research is needed in several areas. First, as noted above, general practice physicians and family physicians who are not board-certified are not well represented in studies reported to date. Further exploration of the opinions of these physicians is needed. Next, the difficulty physicians encounter removing implants inserted by different physicians or nonphysician practitioners also should be addressed. Training programs focusing specifically on locating and grasping improperly inserted implants may be required. Third, research should compare the effectiveness of different training models. While the present study did not find major differences among training types with respect to procedural complications experienced, formal training was found to be more likely than informal training or self-instruction to address the difficulties of Norplant removal.

It is clear that educational programs are needed to prepare family physicians for Norplant insertion and removal. Physicians whose training has not prepared them to deal with removal may become reluctant to offer Norplant as a method of contraception. If this should occur, Norplant may fall into virtual disuse, much as has happened with the intrauterine device. In light of the desirability of Norplant as a contraceptive option for many patients,⁷ abandoning it because of inadequate physician training would be an unnecessary and unfortunate outcome.

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