

# Condom Use Among Women Choosing Long-Term Hormonal Contraception

By Linda F. Cushman, Diana Romero, Debra Kalmuss, Andrew R. Davidson, Stephen Heartwell and Marvin Rulin

**Context:** Women who rely on long-term hormonal contraception may neglect to use condoms, and thus increase their risk of contracting sexually transmitted diseases, including AIDS.

**Methods:** Data from a prospective, multisite study were collected to examine the probability of condom use among 1,073 new users of either the contraceptive implant or injectable; users were interviewed when they accepted their method and again six months to one year later. Multivariate logistic regression analyses identified factors that significantly predicted the likelihood of dual method use.

**Results:** Condom use dropped markedly among women who adopted long-term hormonal contraception. The proportion who always used condoms in the previous three months fell from 21% at the time of adoption to 11% at follow-up. Among women with one sexual partner, this decrease was from 20% to 10%; however, among those with more than one partner, use increased from 25% to 31%. The factors significantly predicting dual method use included previous condom use (odds ratio of 2.5), receipt of AIDS-specific counseling (odds ratio of 1.6), the perception of being at some risk of AIDS at baseline (odds ratio of 1.4) and having had more than one sexual partner over the study period (odds ratio of 5.4). In addition, injectable users, teenagers and black women were more likely than other women to use condoms with their hormonal method.

**Conclusions:** Although condom use among all women declined markedly once they initiated long-term hormonal contraception, frequency of condom use varied by subgroup and was associated with several factors. Most importantly, women with more than one sexual partner and those who received a message during counseling on the need to continue using condoms were more likely than others to use condoms in conjunction with the implant or injectable.

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In the early 1990s, the U.S. Food and Drug Administration approved subdermal contraceptive implants and the injectable contraceptive depot medroxy progesterone acetate (DMPA), adding two long-term methods to the array of contraceptives currently available. A primary concern associated with these highly effective methods is that, as has been documented among women who have been sterilized,<sup>1</sup> their use will lead women to decrease condom use. Thus, users of these methods could be placed at increased risk of acquiring sexually transmitted diseases (STDs), including AIDS.

For example, in a study of early implant acceptors, nearly half of those who had used condoms in the past (21% of the total sample) planned to “rarely” or “never” use them in the future.<sup>2</sup> Similarly, a recent longitudinal study of DMPA users revealed that only 18% consistently used condoms.<sup>3</sup>

Another study documented that simultaneous use of a condom was less likely among implant users than among pill users.<sup>4</sup> Other researchers found no differences in condom use between adolescents who relied on the implant and the pill; however, both groups rarely used condoms consistently.<sup>5</sup>

These and other studies suggest that the concern about condom use among users of long-term hormonal methods is well-founded; many women who adopt these new methods will decrease their condom use, and although some will use condoms regularly, the majority will not. At this juncture, determining the factors associated with dual-method use would be useful in efforts to promote condom use among long-term contraceptive clients; we attempt to identify these factors here.

Our study tests several hypotheses. We anticipated that condom use in conjunc-

tion with a long-term contraceptive would be positively associated with having more than one sexual partner; similar studies, however, have shown conflicting results on this point.<sup>6</sup> In addition, we hypothesized that condom use would be more likely among women who perceived that they had some chance, as opposed to no chance, of contracting HIV.

Furthermore, we expected women whose counseling included the specific message that condoms were still necessary to protect against STDs, including AIDS, to be more likely than others to use condoms. Finally, in accordance with findings from previous studies,<sup>7</sup> we expected younger women and black women to be more likely than others to use condoms. We formulated no directional hypothesis regarding the effect of education, Medicaid status and hormonal method choice on the likelihood of condom use.

## Methods

### Analytic Approach

We conducted a multivariate analysis of condom use among implant and DMPA users to identify which key variables predicted dual-method use. These variables included the frequency of condom use in the three months prior to adopting the long-term method; the messages received

Linda F. Cushman is associate clinical professor of public health, Diana Romero is a doctoral candidate and research assistant, Debra Kalmuss is associate professor of public health and Andrew R. Davidson is professor of public health, all at the Center for Population and Family Health, Columbia University School of Public Health, New York. Stephen Heartwell is associate professor of public health in the Department of Obstetrics and Gynecology and is director of the Division of Maternal Health and Family Planning at the University of Texas Southwestern Medical Center, Dallas. Marvin Rulin is professor in the Department of Obstetrics, Gynecology and Reproductive Sciences at Magee Women's Hospital, Pittsburgh. The research on which this article is based was supported by grant R01-HD29638 from the National Institute of Child Health and Human Development and by grant 93-1071 from The Henry J. Kaiser Family Foundation.

during counseling before use began; and the woman's perceived level of risk of contracting HIV. The model also contained the variables of contraceptive choice (either the implant or DMPA) and several social and demographic variables, such as age, race or ethnicity, educational attainment and Medicaid status. We used multiple logistic regression techniques to estimate the odds of condom use for women with a given characteristic relative to those without that characteristic, while controlling for all other variables in the model.

### The Sample

Data for this analysis were gathered as part of a larger study of the determinants of implant and DMPA choice among low-income, urban clinic clients and of their satisfaction and continuation with the methods. The sample was recruited from three large urban hospitals that accommodate several of the largest clinic-based family planning programs in the country: Magee Women's Hospital in Pittsburgh, the University of Texas Southwestern Medical Center in Dallas, and Presbyterian Hospital in New York City.

Baseline in-person interviews were conducted when respondents first received their desired contraceptive method. At the New York and Texas clinic sites, interviewers were bilingual in English and Spanish; the questionnaire and all other study materials were available in both languages. Follow-up telephone interviews were conducted with implant users at six months postinsertion or at removal, whichever came first. DMPA users were reinterviewed one year following their first injection.

Eligibility criteria for participation in the study included being at least 15 years of age, having already received the mandatory contraceptive counseling for family planning clients at all three sites and having selected a new method of contraception at the clinic. Data collection began in May 1993 and continued through October 1994; 86% of implant users and 84% of DMPA users completed the follow-up interview. Women lost to follow-up did not differ significantly from those who were successfully reinterviewed with regard to age, race or ethnicity, parity, income, educational attainment and employment status.

The final sample for our analysis consists of the 1,073 women—710 implant users and 363 DMPA users—who completed both the baseline and follow-up interviews, and who were sexually active at both rounds of data collection. At the six-month follow-up, only about 8% of implant acceptors had had the implant re-

moved. These women were not included in follow-up analyses. Fifty-eight percent of DMPA users had stopped relying on their method one year after initiating use;<sup>8</sup> for these respondents, all follow-up questions regarding condom use referred to the period during which they were still relying on their long-term hormonal method.

Overall, respondents were relatively young: Their mean age was 23 years, and more than two-thirds (69%) were younger than age 25. The racial and ethnic distribution was representative of the populations served by the clinic sites—63% were Hispanic, 24% black and 13% white. The majority of respondents (88%) reported they had a regular male partner, and 56% were currently married to or were living with that partner. Other demographic characteristics of the sample indicated overall low socioeconomic status. (The social and demographic characteristics of the sample are described in greater detail elsewhere.<sup>9</sup>)

### Measures

Frequency of condom use during reliance on the implant or DMPA was designated as the outcome variable. Respondents were asked whether they always, sometimes, rarely or never used condoms; however, since frequency of condom use was low, we recoded the item to a dichotomous variable for the multivariate analysis, with zero representing no condom use at all and one representing at least some condom use. (This approach has been used successfully by other researchers.<sup>10</sup>)

The counseling variable reflected a baseline item that asked respondents, all of whom received counseling, whether their counselor specifically mentioned that they would need to use condoms with their new hormonal method to protect against HIV infection (coded one if they said the counselor did and zero if they reported she did not).

STD risk was assessed with two measures. The first item indicated whether a woman had more than one sexual partner (coded one) or only one sexual partner (coded zero). The second measure, collected at baseline, was the woman's *perceived* risk of infection with HIV, coded one if she perceived there was "some" chance (i.e., a strong chance, some chance or not much chance) and zero if she thought she had "no chance."

We dichotomized the age variable to distinguish between 15–19-year-olds (coded as one) and those aged 20 and older (coded as zero); educational attainment was dichotomized as having earned a high school diploma or GED (coded as one) and not having done so (coded as

**Table 1. Percentage distribution of implant and injectable users, by frequency of condom use at baseline and at follow-up, according to number of partners, New York, Dallas and Pittsburgh, 1993–1994**

Frequency of condom use	All women	1 partner	>1 partner
<b>Baseline</b>	(N=1,073)	(N=1,030)	(N=43)
Always	21	20	25
Sometimes/rarely	40	40	52
Never	39	40	23
<b>Follow-up</b>	(N=1,014)	(N=981)	(N=33)
Always	11	10	31
Sometimes/rarely	26	25	44
Never	64	65	25
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

*Notes:* Differences in overall frequency of condom use at baseline and at follow-up are significant at  $p < .001$  (Wilcoxon signed-rank test). Differences in condom use by number of sexual partners at baseline and follow-up are significant at  $p < .001$ .

zero). Respondents who received Medicaid benefits were coded as one, while those who did not were coded as zero. We measured race and ethnicity with a series of dummy variables that distinguished between whites, blacks and Hispanics. Finally, we coded the contraceptive choice measure as one for those who chose the implant and zero for those who elected to use the injectable.

### Results

The overall frequency of condom use declined significantly among respondents after they initiated long-term hormonal contraceptive use ( $p < .001$ , see Table 1). Although the proportion of women who always used condoms during the three months prior to beginning implant or DMPA use was relatively low (21%), it dropped to half that level once they were relying on either hormonal method (11%). Similarly, while 39% of the sample never used condoms in the three months prior to adopting their long-term method, 64% reported never doing once they were using their new hormonal method.

Interestingly, this change in condom use was most likely to occur among women who said that at baseline they always used condoms; more than three-quarters (77%) of respondents in this group decreased or stopped their condom use subsequent to initiating use of the implant or the injectable (not shown). As expected, women in the remaining baseline condom-use groups—those who only sometimes or rarely used condoms—were also more likely to decrease, rather than increase, their reliance on the condom by the time of the follow-up interview (not shown).

An analysis of the data by number of partners reveals an important pattern. Although

**Table 2. Percentage of implant and injectable users who also used condoms, and adjusted odds ratios (and 95% confidence intervals) predicting condom use, by selected characteristics (N=1,986)**

Characteristic	% using condom	Adjusted odds ratio
<b>Frequency of condom use at baseline</b>		
Rarely/some-times/always	45	2.45*** (1.79, 3.35)
Never	22***	1.00
<b>Received HIV-specific counseling</b>		
Yes	41	1.57** (1.13, 2.19)
No	25***	1.00
<b>Perceived some HIV risk at baseline</b>		
Yes	41	1.35* (1.00, 1.81)
No	29***	1.00
<b>No. of sexual partners over study period</b>		
>1	75	5.41*** (2.09, 13.96)
1	35***	1.00
<b>Hormonal method chosen</b>		
Implant	32	0.67** (0.49, 0.90)
Injectable	42**	1.00
<b>Age</b>		
15–19	50	1.89*** (1.36, 2.62)
≥20	30***	1.00
<b>High school diploma/GED</b>		
Yes	35	0.86 (0.62, 1.19)
No	37	1.00
<b>Medicaid recipient</b>		
Yes	40	1.07 (0.79, 1.45)
No	31**	1.00
<b>Race/ethnicity</b>		
Black	60	na
White	27	na
Hispanic	30***	na
Hispanic vs. black	na	0.42*** (0.29, 0.60)
White vs. black	na	0.32*** (0.19, 0.54)
White vs. Hispanic	na	0.77 (0.47, 1.24)

\*p<.05. \*\*p<.01. \*\*\*p<.001. Notes: Odds ratios are adjusted for all variables in the model. na=not applicable.

at baseline women with more than one partner used condoms more frequently than those with only one, differences between these groups were notably larger at follow-up. Specifically, at baseline 20% of women with one partner and 25% of those with more than one reported they always used condoms. By follow-up, this proportion fell to 10% among women with one partner, but it rose to 31% among those with more than one partner. Similarly, at baseline 40% of women with one partner and 23% of those with more than one reported never using condoms; at follow-up, however, the proportion never using condoms increased to 65% among women with only one partner, but it remained nearly constant (at 25%) among those with more than one partner.

The bivariate relationships between the independent variables and condom use at follow-up are presented in the left-hand column of Table 2. At least occasional con-

dom use at follow-up was significantly and positively associated with several variables, including condom use at baseline; the receipt of an AIDS-specific message in counseling; having had more than one sexual partner during the study period; perceiving at least some risk of HIV at baseline; choosing the injectable over the implant; and all social and demographic factors, except for educational attainment.

The results of the multiple logistic regression analysis predicting the likelihood of condom use at follow-up are presented in the right-hand column of Table 2. These adjusted odds ratios are consistent with the bivariate data: At least some condom use in conjunction with a long-term hormonal method is more likely among women who used condoms prior to method initiation (odds ratio of 2.5), as well as among women who received a specific message regarding condom use during contraceptive counseling (odds ratio of 1.6), those who perceived at baseline that they had some HIV risk (odds ratio of 1.4) and those who had had more than one sexual partner during the study period (odds ratio of 5.4).

The adjusted data also reveal that teenagers were more likely to practice dual-method use than older women, that blacks were more likely to do so than either Hispanics or whites, and that injectable users were more likely to also occasionally use condoms than were implant users.

### Discussion and Conclusions

This study documents a clear decline in women’s condom use subsequent to their initiation of long-term hormonal contraceptive use. Several factors related to these observed changes in condom use have important implications for family planning service providers.

First, as might be expected, women who reported some condom use at baseline were more likely than those who had never used condoms to report dual-method use. Family planning counselors are already aware that women who do not use condoms prior to initiating a long-term method are unlikely to become condom users without direct intervention. However, since changes (i.e., decreases) in condom use after initiation of a long-term method were most likely to occur among the minority of women who always used condoms at baseline, even these women may present a substantial challenge for counselors.

For example, many of the women who always used condoms at baseline may have been doing so primarily for contraceptive purposes; indeed, some may have had little knowledge about STDs or may not have

been concerned about them. Thus, women for whom the condom is a main (or a frequent) contraceptive method, like their counterparts who have never used condoms, may require intensive counseling on the continued necessity of using condoms for STD protection after adoption of a long-term hormonal method. Such counseling would be most important for prior condom users with known risk factors for HIV.

The suggestion that all contraceptive counseling include messages regarding correct and consistent condom use for STD protection is not new. However, the data here offer preliminary empirical support that this counseling increased condom use among users of long-term hormonal contraception: Implant and injectable users who at baseline reported that their counseling had included the specific message that condoms were still necessary to protect against HIV were nearly 60% more likely to use a condom than were similar women who did not get such counseling.

It is important to note that these data controlled for STD risk factors and are not retrospective. Clients were asked about their counseling experiences at their baseline interview when the session took place, thus eliminating the possibility that by follow-up, condom users might simply have been more likely than nonusers to remember a preinitiation counseling message.

The analysis also revealed the encouraging finding that the women most likely to be at risk for contracting STDs were significantly more likely than other women to use condoms along with their hormonal method. The impact of having more than one partner was particularly striking, suggesting that women are willing to use condoms when a higher risk is evident.

Moreover, the large discrepancy at follow-up between women with one partner and those with more than one suggests that much of the observed decline in condom use after adoption of a long-term method occurs among monogamous women. From their perspective, reducing or stopping condom use is likely, and often correctly, perceived as appropriate, particularly if the relationship is long-standing and the woman previously used condoms for contraceptive purposes. Thus, family planning counselors must assist this group in determining their actual STD risk, if any, as well as their potential future risk of contracting an STD.

Our study has several limitations. First, the sample included only low-income clinic clients, which limits the generalizability of the results. Moreover, since contraceptive counseling was mandated at all three

sites, receipt of this counseling was not a randomized intervention in the project. The inclusion of a comparison group would have strengthened the study design.

Follow-up data were collected at different postinitiation points for implant users (six months) and DMPA users (one year); this no doubt yielded more recall bias among DMPA users. Because the number of women who reported having had more than one sexual partner during both rounds of data collection was quite small, any results comparing these women to those with one sexual partner should be considered preliminary. Among the few women who reported more than one partner during the study period, we did not distinguish between consecutive and concurrent partners.

We recognize that our decision to dichotomize the condom-use variable was not optimal for identifying women at extremely low risk of STDs (i.e., those who always used condoms); however, too few women always used condoms at both survey rounds to permit an analysis of always used versus sometimes, rarely or never used, which would have been the preferable approach. Further, our analysis did not include a measure of the length of a couple's relationship, which has been shown to be associated with the likelihood of condom use.<sup>11</sup>

Finally, our only indicators of risk for STDs were more than one sexual partner over the study period and perceived risk of infection with HIV; our analysis did not

examine other risk factors, such as intravenous drug use or whether respondents' partners had had multiple sexual partners. Moreover, women's perceptions regarding their risk of HIV infection could have changed over the study period. Nonetheless, their perception of risk measured at baseline likely influenced their decision to use condoms once they adopted their new hormonal method.

Despite these limitations, this study nonetheless reveals that condom use declined among women relying on long-term hormonal contraception and identifies several predictors of condom use that are relevant for family planning counselors and providers. We suggest that future research in this area focus on the content and impact of counseling messages, and on condom use among women in the other high-risk categories that were not included in our analysis.

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