

# Women's Efforts to Prevent Pregnancy: Consistency of Oral Contraceptive Use

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**Context:** An understanding of determinants of inconsistent pill-taking could be useful to service providers who are trying to help women prevent unwanted pregnancy. This article explores the predictors of inconsistent use in a nationally representative sample of U.S. women aged 15–44.

**Methods:** Data on 1,485 pill users participating in the 1995 National Survey of Family Growth are used to describe users' characteristics, and logistic regression analyses are conducted to identify factors that predict inconsistent use (defined as missing two or more pills in a three-month period) among both users of the pill only and dual method users.

**Results:** While 85% of pill users rely solely on the pill, 15% also use another method. Overall, 16% of users are inconsistent in their pill-taking (16% of those using the pill alone and 20% of dual method users). Among users of the pill only, Hispanic and non-Hispanic black women have a significantly increased likelihood of inconsistent use (odds ratios, 2.5 and 2.1, respectively), as do those who recently began use (2.7) and those who have had an unintended pregnancy (1.6). For dual method users, the odds are significantly elevated among women whose income is less than 250% of the federal poverty level (4.3) and among new users (4.5).

**Conclusion:** Service providers may need to better address consistency of pill-taking among women who have characteristics associated with inconsistent use.

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Oral contraceptives are the most popular reversible contraceptive method available in the United States. In 1995, at least 44 million U.S. women aged 15–44 had ever used the pill, and more than 10 million women (27% of those practicing contraception) were current users.<sup>1</sup> Among new users, an estimated 8% become pregnant accidentally during the first year of use, and the rate is higher for poor women. In general, the rate of contraceptive failure has been highest among young women, poor women and members of racial or ethnic minorities.<sup>2</sup>

The efficacy of oral contraceptives is associated with women's use-related behaviors, especially the consistency with which they take pills.<sup>3</sup> Recent evidence suggests that use-related behaviors play an important role in the incidence of unintended pregnancy among women in general. More than half of U.S. women of reproductive age have had an unintended pregnancy, and almost half of unintended pregnancies occur during a month in which women report using a reversible method of contraception.<sup>4</sup>

In a 1996 national telephone survey, only 73% of women at risk for unplanned pregnancy reported using a contraceptive method every time they had sex; 12% said they never used a method, and 13% said they used one some or most of the time.

Further, of the 42% who said they had ever had an unplanned pregnancy, fewer than three-quarters reported using contraceptives all of the time.<sup>5</sup>

Fortunately, increasing attention is being devoted to measuring and understanding the consistency of contraceptive use. The most accurate measurement of the consistency of pill use requires electronically monitored pill dispensers.<sup>6</sup> However, the electronic devices are complex and expensive, and have been available only on a small scale. Therefore, current measures of consistency rely on retrospective self-reports of pill-taking behavior or counts of the number of pills left in the package when it is brought back to the clinic for purposes of measuring consistency.

The majority of studies on the consistency of pill use have been based on non-representative samples. In a clinic-based study of 1,167 pill users who were followed up for an average of eight months, 58% reported that they did not take their pills every day.<sup>7</sup> Of 6,676 pill users in convenience samples drawn from five European countries, 19% reported that they missed at least one pill per cycle, and 10% said that they missed at least two.<sup>8</sup> Among 992 women who initiated pill use at physicians' offices, 47% reported missing one or more pills during the next two cycles, and 22% reported missing at least two.<sup>9</sup> These find-

ings are consistent with a number of earlier studies from non-Western countries. For example, 37% of a nationally representative sample of pill users in Egypt reported missing pills in the previous month.<sup>10</sup>

One study has suggested that self-reported consistency of pill-taking may be related to education, age, pregnancy intentions and contraceptive knowledge.<sup>11</sup> Another indicates that significant factors include type of employment, marital status, parity, adequacy of information received from providers, ability to read and understand the package insert, and experience of side effects.<sup>12</sup> Whether women have a regular daily routine in general also may affect contraceptive consistency.<sup>13</sup>

This article presents the first nationally representative data on consistency of pill use in the United States, obtained from in-person interviews of women aged 15–44. The analysis was designed to describe consistency of use and to identify predictors of inconsistent use.

## Data and Methods

Data for this analysis come from Cycle 5 of the National Survey of Family Growth (NSFG), a periodic household survey of U.S. women that investigates topics related to childbearing and reproductive health. Cycle 5 was conducted from January through October 1995 by the National Center for Health Statistics and its contractor, the Research Triangle Institute. A national sample of 10,847 women aged 15–44 in the civilian noninstitutionalized

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**Table 1. Percentage distribution of sexually active women aged 15–44 who used oral contraceptives throughout the three months prior to interview, by whether they also used another contraceptive method (and standard errors), according to selected characteristics, 1995 National Survey of Family Growth (N=1,485)**

Characteristic	Pill only	Pill and another method	All
<b>Total</b>	<b>84.8</b>	<b>15.2 (1.05)</b>	<b>100.0</b>
<b>DEMOGRAPHIC</b>			
<b>Age</b>			
15–19	65.7	34.3 (4.54)*	100.0
20–24	78.3	21.7 (2.31)*	100.0
25–44	90.7	9.3 (1.06)	100.0
<b>% of poverty level</b>			
<250	81.8	18.3 (1.85)	100.0
≥250	86.6	13.4 (1.22)	100.0
<b>Educational level</b>			
<high school graduate	80.5	19.5 (3.88)	100.0
High school graduate/GED	85.6	14.4 (1.63)	100.0
At least some college	85.2	14.8 (1.50)	100.0
<b>Race/ethnicity</b>			
Hispanic	93.2	6.8 (2.02)	100.0
Non-Hispanic black	71.1	28.9 (3.23)*	100.0
Non-Hispanic white and other	85.9	14.1 (1.26)*	100.0
<b>Marital status</b>			
Never-married	72.5	27.5 (1.95)*	100.0
Formerly married	85.0	15.0 (2.80)*	100.0
Currently married	95.1	4.9 (0.85)	100.0
<b>Employment</b>			
Not employed	83.5	16.6 (2.19)	100.0
Employed	85.2	14.8 (1.14)	100.0
<b>Residence</b>			
Central city of SMSA†	81.9	18.1 (1.99)	100.0
Other area of SMSA	87.7	12.3 (1.27)	100.0
Not SMSA	82.4	17.6 (2.40)	100.0
<b>REPRODUCTIVE</b>			
<b>Parity</b>			
0	79.5	20.5 (1.74)*	100.0
1	87.3	12.7 (1.77)*	100.0
≥2	93.7	6.3 (1.21)	100.0
<b>Intends future birth</b>			
Yes/uncertain	82.8	17.2 (1.34)*	100.0
No	89.3	10.7 (1.49)	100.0
<b>Frequency of intercourse</b>			
<once a week	78.7	21.3 (2.08)*	100.0
≥once a week	87.5	12.5 (1.24)	100.0
<b>Unintended pregnancies</b>			
≥1	88.2	11.8 (1.30)	100.0
0	82.8	17.2 (1.49)*	100.0
<b>Duration of current pill use (mos.)</b>			
3–6	77.3	22.7 (4.48)	100.0
>6	85.3	14.7 (1.11)	100.0

\*Difference between this and all other subgroups in the category is statistically significant at p<.05. †Standard metropolitan statistical area. Note: For some categories, data were not available for all women.

population of the United States were interviewed in their homes by trained interviewers using laptop computers. The response rate for the survey was 79%. Data are adjusted for nonresponse on the basis of known characteristics of the nonrespondents, and the results provide national estimates.<sup>14</sup>

The survey collected a month-by-month

history of women's contraceptive use from January 1991 through the month of interview. After recording salient events on this part of the Life History Calendar (a survey tool designed as a memory aid), respondents were asked to recall up to four contraceptive methods that they had used in each month, and to record those on the calendar as well. A woman's current contraceptive use status is based on her reported method use for the month of her interview.

Because of the potential importance of consistent use of contraceptive methods, the 1995 NSFG included method-specific questions to measure self-reported consistency. Our analysis is based on the item addressed to oral contraceptive users about pills they may have skipped. The measure used in the NSFG is simply the total number of pills women report having missed (not necessarily consecutively) in the three months before the survey.

Women who had used the pill during at least one of the three calendar months before the interview and who had had sexual intercourse during the three-month period were asked the following question: "During [the past three calendar months] how many pills that you were supposed to take did you miss?" Possible answers were none, one, and two or more. If a respondent said she had missed inert pills, the interviewer was instructed to ask her whether she had missed taking any of her active pills (that is, the pills containing the medication).

For this analysis, we defined inconsistent pill-taking as having missed two or more pills in the three-month period. Be-

cause it is not restricted to consecutively missed active pills, this definition does not necessarily denote actual increased risk of pregnancy, but suggests that a woman may have been at greater risk at some time.

Evidence from earlier research indicates that women's reports of having missed two or more pills are relatively accurate. A study comparing self-reports and data from an electronic monitoring system over three cycles showed that for 44% of the months in which women reported missing one pill, the electronic data indicated that one pill had actually been missed; for another 54% of those months, the electronic device recorded more than one missed pill. By contrast, for 92% of the months in which women said they had missed two or more pills, the electronic data confirmed their reports; for the remaining months, women actually missed fewer pills than they reported.<sup>15</sup>

Our analysis includes only women who had used the pill in all three calendar months prior to their interview. Estimates of inconsistency thus refer uniformly to the number of pills missed during three months of usage. Moreover, since the relatively few oral contraceptive users who took the pill for only one or two months in the three-month period prior to interview are excluded, the influence of initiation or discontinuation of pill use in that period is minimized.

In all, 1,735 women were asked the question on consistency of current pill use; 1,532 of them had used the pill for three months or longer. Of these, 47 women were excluded because they were missing data on consistency of use, yielding a sample of 1,485. For the multivariate analyses, another 18 who were missing data on frequency of intercourse and two who were missing data on unintended pregnancy also were excluded.

We conducted separate analyses for women who used oral contraceptives only and those who used the pill and another method (dual method users), because hypothetically, a woman's consistency of pill use and her use of a second method may be codetermined. For example, if an oral contraceptive user misses two or more pills, she may follow the instructions that are printed in the package insert and were given by her provider to use a second method to ensure protection against unwanted pregnancy. Or a woman who uses the pill for contraception and the condom for protection against sexually transmitted diseases (STDs) might assume that the condom will provide her with full protection against unwanted pregnancy and

thus might not comply perfectly with a strict regimen for taking oral contraceptives.

Dual method users may miss two or more pills and be classified as inconsistent users even while behaving as consistent contraceptive users overall. However, it is impossible to tell from the data whether dual method users who missed two or more pills in a row protected themselves by using a second method. Similarly, to the extent that condoms were used as the second method, and were used strictly for STD protection, the problem of endogeneity would be absent; in such cases, condom use was determined by factors other than needing a backup method to protect against pregnancy. However, no information is available about the purpose, timing and other characteristics related to use of the second method.

In the analysis of users of the pill only, we assume that our consistency measure closely approximates overall contraceptive consistency because women with an inconsistent pill-taking pattern did not compensate with other methods. For this group, we assume that missing two or more pills is likely to increase the risk of pregnancy. For dual method users, we cannot assume that missing two or more pills implies greater pregnancy risk on the whole; these women may have fully protected themselves against unwanted pregnancy with a backup method. We analyze dual method users separately to learn about the pill-taking behavior of this unique group of users.

Our analysis explores whether inconsistent contraceptive use is linked to a variety of demographic and reproductive variables, as previous work has suggested. Given findings about differentials in contraceptive failure rates, we would expect inconsistent pill-taking to be associated with poverty, belonging to a racial or ethnic minority group, and young age. We would also expect that less education may be associated with inconsistency, since a woman's ability to read and understand the information included in the oral contraceptive package may be affected by her level of education. To the extent that having experienced an unintended pregnancy may reflect a lack of a planned routine in daily living, we might expect a history of unintended pregnancy to be associated with current inconsistency. Other variables are included to explore possible underlying relationships. The results discussed below are statistically significant at the 5% confidence level unless otherwise described.

## Results

### Bivariate Analysis

Fifteen percent of sexually active U.S. women who use the pill also use another method (Table 1). The following subgroups are significantly more likely than other women to use an additional method along with the pill: women in their teens or early 20s, non-Hispanic black women,

never-married women, childless women, women who intend a future birth, women who have intercourse infrequently and women who have never had an unintended pregnancy. Some of these characteristics are also associated with risk for STDs; therefore, it is likely that most women who use two methods use the condom for STD protection.

**Table 2. Number of sexually active women aged 15–44 who used oral contraceptives throughout the three months prior to interview, and percentage of these women who used the pill inconsistently (and standard errors), by whether another method was also used, according to selected characteristics**

Characteristic	All		Pill only		Pill and another method	
	No. (in 000s)	% inconsistent	No. (in 000s)	% inconsistent	No. (in 000s)	% inconsistent
<b>Total</b>	<b>8,581</b>	<b>16.4 (1.19)</b>	<b>7,278</b>	<b>15.7 (1.30)</b>	<b>1,303</b>	<b>20.3 (3.08)</b>
<b>DEMOGRAPHIC</b>						
<b>Age</b>						
15–19	819	23.3 (4.18)	539	23.9 (5.42)	281	22.3 (8.23)
20–24	2,437	15.1 (2.04)	1,907	13.4 (2.36)	529	21.2 (4.98)
25–44	5,325	16.0 (1.37)	4,832	15.8 (1.43)	493	18.3 (4.45)
<b>% of poverty level</b>						
<250	3,199	18.9 (1.77)	2,615	16.4 (1.88)	584	30.1 (5.28)*
≥250	5,382	15.0 (1.42)	4,663	15.4 (1.53)	719	12.4 (3.17)
<b>Educational level</b>						
<high school graduate	914	21.1 (3.86)	735	18.4 (3.87)	178	32.1 (11.90)
High school graduate/GED	2,876	15.3 (1.74)	2,461	14.9 (1.80)	415	17.8 (5.42)
At least some college	4,791	16.2 (1.48)	4,082	15.8 (1.69)	710	18.9 (3.65)
<b>Race/ethnicity</b>						
Hispanic	734	25.7 (4.11)*	684	25.7 (4.48)*	50	25.8 (13.19)
Non-Hispanic black	1,002	20.9 (2.91)	712	21.7 (3.26)	290	18.9 (6.69)
Non-Hispanic white and other	6,845	14.8 (1.25)	5,882	13.9 (1.34)	964	20.5 (3.45)
<b>Marital status</b>						
Never-married	3,505	16.1 (1.65)	2,541	14.8 (1.92)	964	19.7 (3.65)
Formerly married	908	14.5 (3.31)	771	13.7 (3.50)	137	18.8 (9.12)
Currently married	4,168	17.1 (1.56)	3,965	16.8 (1.58)	202	24.4 (7.31)
<b>Employment</b>						
Not employed	2,015	17.0 (2.38)	1,682	15.0 (2.61)	334	27.1 (6.29)
Employed	6,566	16.3 (1.26)	5,596	16.0 (1.40)	969	18.0 (3.18)
<b>Residence</b>						
Central city of SMSA†	2,531	17.3 (1.84)	2,072	15.5 (1.80)	459	25.8 (5.55)
Other area of SMSA	4,164	17.3 (1.77)	3,652	17.1 (1.90)	512	18.7 (4.76)
Not SMSA	1,886	13.4 (2.34)	1,554	13.0 (2.52)	332	15.3 (4.71)
<b>REPRODUCTIVE</b>						
<b>Parity</b>						
0	4,522	16.0 (1.57)	3,597	15.0 (1.84)	925	20.0 (3.43)
1	1,913	18.3 (2.22)	1,670	17.9 (2.39)	242	21.2 (6.98)
≥2	2,146	15.7 (2.16)	2,011	15.3 (2.21)	135	21.1 (8.68)
<b>Intends future birth</b>						
Yes/uncertain	5,950	16.3 (1.39)	4,928	15.4 (1.53)	1,022	21.0 (3.50)
No	2,631	16.7 (1.81)	2,350	16.5 (1.90)	281	18.0 (5.77)
<b>Frequency of intercourse</b>						
<once a week	2,634	16.3 (1.98)	2,073	16.6 (2.22)	561	15.6 (4.01)
≥once a week	5,840	16.6 (1.38)	5,108	15.5 (1.48)	732	24.2 (4.13)
<b>Unintended pregnancies</b>						
≥1	3,203	19.6 (1.91)	2,824	19.1 (1.95)	379	23.4 (6.09)
0	5,363	14.6 (1.36)	4,439	13.6 (1.58)	924	19.1 (3.32)
<b>Duration of current pill use (mos.)</b>						
3–6	544	35.0 (5.78)*	420	31.2 (6.42)*	123	48.1 (11.34)*
>6	8,037	15.2 (1.13)	6,857	14.8 (1.23)	1,180	17.4 (3.16)

\*Difference between this subgroup and the subgroup with the low proportion is statistically significant at  $p < .05$ . †Standard metropolitan statistical area. Notes: Table is based on weighted data. Inconsistent use is defined as having missed two or more pills in the previous three months. Some numbers do not add to totals because of missing data or rounding.



**Table 3. Logistic regression coefficients and odds ratios indicating the likelihood of inconsistent pill use, for users of the pill only and for dual method users, by selected characteristics (N=1,465)**

Characteristic	Users of pill only		Dual method users	
	Coef-ficient	Odds ratio	Coef-ficient	Odds ratio
<b>DEMOGRAPHIC</b>				
<b>Age</b>				
15-19	0.75	2.12	-0.77	0.47
20-24	-0.06	0.94	-0.20	0.82
25-44	ref	1.00	ref	1.00
<b>% of poverty level</b>				
<250	0.08	1.08	1.46**	4.32
≥250	ref	1.00	ref	1.00
<b>Educational level</b>				
<high school graduate	-0.45	0.64	1.13	3.09
High school graduate/GED	-0.29	0.75	-0.06	0.94
At least some college	ref	1.00	ref	1.00
<b>Race/ethnicity</b>				
Hispanic	0.92**	2.51	-0.14	0.87
Non-Hispanic black	0.73**	2.08	-0.20	0.82
Non-Hispanic white and other	ref	1.00	ref	1.00
<b>Marital status</b>				
Never-married	-0.36	0.69	-0.47	0.62
Formerly married	-0.42	0.66	-0.62	0.54
Currently married	ref	1.00	ref	1.00
<b>Employment</b>				
Not employed	-0.12	0.89	0.41	1.51
Employed	ref	1.00	ref	1.00
<b>Residence</b>				
Central city of SMSA†	-0.38	0.69	0.07	1.07
Other area of SMSA	ref	1.00	ref	100.0
Not SMSA	-0.30	0.74	-0.62	1.00
<b>REPRODUCTIVE</b>				
<b>Parity</b>				
0	0.37	1.45	1.07	2.91
1	0.23	1.25	0.69	2.00
≥2	ref	1.00	ref	1.00
<b>Intends future birth</b>				
Yes/uncertain	-0.16	0.85	0.14	1.15
No	ref	1.00	ref	1.00
<b>Frequency of intercourse</b>				
<once a week	0.09	1.10	-0.49	0.61
≥once a week	ref	1.00	ref	1.00
<b>Unintended pregnancies</b>				
≥1	0.49**	1.63	0.38	1.46
0	ref	1.00	ref	1.00
<b>Duration of current pill use (mos.)</b>				
3-6	0.98**	2.66	1.50*	4.49
>6	ref	1.00	ref	1.00
Intercept	-1.87**		-2.70*	
χ <sup>2</sup>	679.46		118.65	
Degrees of freedom	18		18	

\*p<.05. \*\*p<.01. †Standard metropolitan statistical area. Notes: Table is based on weighted data. Inconsistent use is defined as having missed two or more pills in the previous three months. ref=reference category.

Overall, 16% of sexually active oral contraceptive users are inconsistent in their pill-taking (Table 2, page 21). Levels of inconsistency appear to vary according to only a few demographic characteristics. Hispanic women are significantly more inconsistent than non-Hispanic white and other women (26% vs. 15%). Women who have been using the pill for 3-6 months are

significantly more likely to take the pill inconsistently than are longer term users (35% vs. 15%).

The proportion of oral contraceptive users who are inconsistent in their pill-taking is 16% among those who use the pill only and 20% among those who also use another method; the difference is not statistically significant even in the large NSFG sample. For users of the pill alone, only Hispanic origin and duration of current use appear to be related to inconsistent pill-taking. Inconsistent use is more common among Hispanic women than among non-Hispanic white and other women (26% vs. 14%), and is more frequent among women who have used the pill for only 3-6 months than among those who have used it for longer (31% vs. 15%).

Among dual method users, inconsistency is related to poverty status and duration of current pill use. Women whose income is less than 250% of the poverty level are more likely than higher income women to be inconsistent in their pill use (30% vs. 12%), and those who have used the pill for 3-6 months have a higher level of inconsistency than do longer term users (48% vs. 17%).

**Multivariate Analysis**

We used logistic regression analysis to explore the underlying relationships suggested by the bivariate results. Again, we conducted separate analyses for users of the pill only and dual method users. Weighted data are used in the regressions, and the multistage sampling design of the NSFG is taken into account through the use of SUDAAN software, developed by the Research Triangle Institute.<sup>16</sup> Inconsistent pill use is examined according to the demographic and re-

productive characteristics described above. In preliminary analyses, the highest bivariate weighted correlation between any two variables (age and education among the dual method users) was 0.50.

Table 3 shows that the logistic regressions generally confirm the significant bivariate relationships; in addition, they reveal other relationships that were only suggested by the bivariate results. Among users of the pill alone, both Hispanic women and non-Hispanic black women are more than twice as likely as non-Hispanic white and other women to use the pill inconsistently, after the other characteristics in the analysis are controlled for (odds ratios, 2.5 and 2.1, respectively). Also, women who initiated pill use in the past 3-6 months are 2.7 times as likely as longer term users, and women who have ever had an unintended pregnancy are 1.6 times as likely as those who have not, to be inconsistent in their pill-taking.

Among dual method users, income is significantly related to consistency of pill use. Women whose household income is less than 250% of the poverty level are 4.3 times as likely as women with higher incomes to use the pill inconsistently, net of the effects of other characteristics. This result has at least three possible explanations, two of which raise a question about access. One possibility is that having to obtain both pills and condoms (the most common second method<sup>17</sup>) is expensive, and the economic strain shows up for poor women, who may fail to obtain new pill packages on schedule. Another possibility is that provider-client communication problems for poor women are compounded when use of both the pill and the condom need to be discussed. Or low income may be a marker for greater chaos in daily life, which has been associated with inconsistent contraceptive use.

Recent initiation of pill use is significantly associated with inconsistency among dual method users (odds ratio, 4.5), as it is among users of the pill only. This strong association may be attributable to selectivity for continuation of pill use; that is, women who are more successful and satisfied with the method may tend to become longer term users. Furthermore, women who have recently started taking the pill may not have routinized their pill-taking to the same degree as longer term users and may therefore skip pills more often.

It is notable that having had an unintended pregnancy does not influence consistency of use among dual method users, whereas for users of the pill alone, this is

a significant predictor. This finding suggests that dual method users are different from those who use only the pill. We have already described their distinct characteristics and noted that they may be mostly women who are using the condom for protection against STDs. Also, it may be that dual method users are relatively young and have not had as much exposure to the risk of unintended pregnancy. Varying sample sizes may also bear on these divergent results. The odds ratio for having a prior unintended pregnancy among dual method users is in the expected direction; perhaps in a larger subsample of dual method users, this relationship would attain statistical significance. In a larger subsample, a possible interaction between poverty status and unintended pregnancy could be examined as well.

We also conducted a logistic regression analysis of all pill users, to examine the importance of dual method use as a predictor of inconsistent pill-taking. Unfortunately, because of the hypothesized endogeneity of dual method use and consistency of pill use, such an analysis is difficult to interpret. In general, the significant predictors are the same as for users of the pill alone: Having had an unintended pregnancy and having initiated pill use within the last 3–6 months are highly significant ( $p < .01$ ); black race and Hispanic ethnicity are significant at  $p < .05$ . Although the results suggest that dual method users are more inconsistent than users of the pill only, the coefficient for dual use is not statistically significant.

## Discussion and Conclusion

Building an understanding of the determinants of inconsistent pill-taking is useful, especially among clinicians and pharmacists who prescribe and provide oral contraceptives. The results of our analysis suggest that the service delivery system may not be specifically designed to address many of the characteristics that affect women's use-related behaviors. For example, many Hispanic women may face a language barrier to understanding the importance of a rigid, daily pill-taking schedule for preventing pregnancy. Educational materials and counseling approaches need to be assessed for cultural sensitivity to individual clients.

The greater likelihood that oral contraceptive users who have had an unintended

pregnancy will be inconsistent in their method use has a number of implications. These women, who have already demonstrated that they are at relatively greater risk, may have difficulty incorporating consistent pill-taking into daily life, or may be less skilled at recognizing and solving problems with daily pill-taking. Their clinical care should be more individualized and perhaps more intensive. For these women, providers could put more time into telephone follow-up, the establishment of toll-free numbers and public education specifically about use-related problems.<sup>18</sup>

Finally, continued efforts are needed to improve measures of contraceptive consistency in survey instruments, as well as measures of factors that influence efficacy. Behavioral theories suggest that non-demographic characteristics play a role in contraceptive effectiveness. For instance, contraceptive effectiveness has been linked to whether methods are used for pregnancy prevention or for protection against STDs. Condom use may be more consistent if it is specifically for pregnancy prevention.<sup>19</sup>

Clinic-based studies, which tend to be based predominantly on those who are sexually active and motivated to prevent pregnancy, show that the strength of motivation to avoid pregnancy and partner support may be underlying influences for contraceptive consistency. Thus, what may appear to be demographic influences may actually be markers for psychosocial influences. Other factors, such as literacy, characteristics of the service system and the presence of side effects, may influence use effectiveness. For example, when providers can dispense only one pill pack at a time, women may have difficulty maintaining consistent pill use.

Further work is needed to develop better measures of consistency and to determine the predictors that should be tested in large-scale national databases. This research is a contribution to that effort.

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