

# Number of Oral Contraceptive Pill Packages Dispensed, Method Continuation, and Costs

Diana Greene Foster, PhD, Ram Parvataneni, MD, MPH, Heike Thiel de Bocanegra, PhD, MPH, Carrie Lewis, MPH, Mary Bradsberry, and Philip Darney, MD, MSc

**OBJECTIVE:** To estimate the effect of the number of cycles of oral contraceptive pills (OCPs) dispensed per visit on method continuation, pill wastage, use of services, and health care costs.

**METHODS:** We used paid claims data for 82,319 women dispensed OCPs through the California Family PACT (Planning, Access, Care, and Treatment) Program in January 2003 to examine contraceptive continuation and service use.

**RESULTS:** Women who received 13 cycles at their first visit in January 2003 received 14.5 cycles over the course of 2003 compared with 9.0 cycles among women receiving three cycles at first visit. When client characteristics are controlled, women who received 13 cycles were 28% more likely to have OCPs on hand and twice as likely to have sufficient OCP cycles for 15 months of continuous use compared with women who received three cycles. Oral contraceptive pill wastage was higher among women initially dispensed 13 cycles (6.5% of the cycles dispensed) than among women who received three cycles (2% of cycles). Despite having one fewer clinician visit, women dispensed 13 cycles were more likely to receive Pap and *Chlamydia* tests and less likely to have a pregnancy test than women initially dispensed fewer cycles. Over the course of the year, Family PACT paid \$99 more for women who received three cycles and \$44 more for women who received only one cycle than it did for women who received 13 cycles at their first visits of 2003.

**CONCLUSION:** Dispensing a year's supply of OCP cycles to women is associated with higher method continuation and lower costs than dispensing fewer cycles per visit.

(*Obstet Gynecol* 2006;108:1107-14)

**LEVEL OF EVIDENCE:** II-2

Discontinuation and imperfect use of oral contraceptive pills (OCPs) is a leading cause of unintended pregnancy nationally. Women who use oral contraceptives experience many more pregnancies than would be expected with perfect use; 5–8% of women are estimated to have a contraceptive failure in the first year of OCP use.<sup>1,2</sup> Among women presenting for abortion in 2000 and 2001 in the United States, one woman in seven was using OCPs in the month she conceived.<sup>3</sup> Given that an estimated 11.6 million American women use oral contraceptive pills as their primary contraceptive method,<sup>4</sup> improving pill use can significantly reduce the number of abortions and unintended births in the United States.

A small study by Smith and Oakley<sup>5</sup> found that the third leading cause of missed pills was “no new pill pack,” after “away from home” and “forgot.” Although women report “running out of pills” as a common reason for erratic pill taking, the role of the number of OCP cycles dispensed on method continuation has received little research attention. Phillips et al<sup>6</sup> demonstrated that, in 1996, 73% of American women obtained only a 30-day supply of OCPs per visit to the clinic or pharmacy, requiring a refill every month for continued use. Despite the potentially important role of dispensing policies on method compliance and continuation, the effect of the number of cycles dispensed on failure rates is unknown.

Most health plans limit prescriptions of all drugs filled at a community pharmacy to a 30-day supply.<sup>7</sup> State Medicaid policies vary across the country, but no more than a 100-day supply is dispensed at any one

---

From the Bixby Center for Reproductive Health Research & Policy, Department of Obstetrics, Gynecology and Reproductive Sciences, San Francisco General Hospital, University of California, San Francisco.

This work was performed as part of University of California, San Francisco, contract 05-45122 with the California Department of Health Services, Office of Family Planning.

The authors thank our colleague Dr. Michael Policar for raising the issue of dispensing limits.

Corresponding author: Diana G. Foster, 655 13th Street, Suite 201, Oakland, CA 94612; e-mail: greened@obgyn.ucsf.edu.

© 2006 by The American College of Obstetricians and Gynecologists. Published by Lippincott Williams & Wilkins.

ISSN: 0029-7844/06



time.<sup>8</sup> Family planning waiver programs, which allow states to expand eligibility for family planning services to women otherwise ineligible for Medicaid, vary widely in dispensing limits for OCPs from 1 to 17 cycles dispensed per visit.

Data from the state Medicaid waiver family planning program in California provide some insight on the effect of dispensing limits on oral contraceptive continuation. The Family PACT (Planning, Access, Care, and Treatment) Program in California provides clinical services for family planning and reproductive health at no cost to over one and a half million low-income California residents per year. Details of the program have been previously reported.<sup>9</sup> Family PACT policy allows eligible public and nonprofit clinics to dispense up to 13 cycles of OCPs per visit on site. Most clients going to private providers must receive supplies at pharmacies that abide by the Medi-Cal limit of a 100-day supply. As part of an effort to control costs and reduce wastage, this study was undertaken to determine the feasibility of the 13-cycle dispensing practice at public and nonprofit clinics. Our objective was to estimate the difference, if any, in method continuation, pill wastage, service use, and program costs when different quantities of OCPs are dispensed.

## MATERIALS AND METHODS

We used paid claims data on service use and OCP dispensing from the Family PACT Program. The study population consisted of the 82,319 women who were dispensed oral contraceptives through the Family PACT Program in the month of January 2003. This month was chosen to allow sufficient time for claims to be submitted and paid through the end of December 2004. Based on Family PACT data on time to submission and payment, we estimated that the claims data were 99.9% complete at the time we received them. The paid claims database is a nearly complete universe of services delivered through the Family PACT Program. There were 390 clients (0.5%) who may have received pills but whose claims were not paid.

We examined all Family PACT visits and services for the women who received OCPs in January 2003 and looked at use of services such as office visits, *Chlamydia* tests, Pap tests, and pregnancy tests for these women during 2003. We calculated direct Family PACT expenditures for these women for all visits during 2003, including all pharmacy, clinician, and laboratory claims. To estimate continuation of oral contraceptive use, we examined claims up to 24 months after January 2003. This study was approved

by the University of California San Francisco Committee on Human Research as part of the university's Family PACT Program Support and Evaluation project.

Information on client characteristics comes from the Family PACT enrollment form, reactivation of which must occur annually to maintain eligibility for services. Women were considered to be new Family PACT clients if they first enrolled in Family PACT at their January 2003 dispensing visit. Among women who are not new to Family PACT, we can distinguish between new and established OCP users based on their receipt of OCPs in 2002.

Paid claims data allowed us to construct several indicators of contraceptive continuation. We counted total months of protection dispensed to an individual in 2003 and determined whether there was pill dispensing to that same client in 2004. We were also able to determine whether a woman received a sufficient number of oral contraceptive cycles to be covered on the first of each month subsequent to January 2003. We used April 2004, 15 months after the initial dispensing, as an index date for continuation because women initially dispensed 13 cycles would need refills before that time. We distinguished sporadic use or use with gaps in protection from continuous use by examining the quantity of cycles dispensed and timing of visits to get more oral contraceptive supplies. Women were considered to be continuously protected if they received enough pill cycles to continue pill use without a break. There was a 28-day grace period in our calculations of contraceptive protection to allow for the use of a remaining cycle from a previous visit for women not new to the pill and for new users to wait one menstrual cycle before initiating pill use. We assumed that women were not using OCPs on an extended regimen where they skip the inactive pills.

To estimate wastage of oral contraceptives we looked at two distinct types of wastage. The first, *method-switching wastage*, occurs when another method of contraception was provided to the client before she could have consumed her OCPs. For example, if a woman received an injectable contraceptive 2 months after a visit in which she received three cycles of pills, one OCP cycle was considered to be wasted. Barrier methods were excluded from estimates of method-switching wastage because we could not distinguish between dual use and switching between barrier methods and oral contraceptives. The second type of wastage, *pill-oversupply wastage*, is what would occur if a woman received one brand of OCPs and switched to another brand before using the first or if she lost her



pills and returned for more. A cycle of oral contraceptives was considered to be wasted if the client received additional pills while having more than two cycles left from a previous visit.

For the purpose of analysis, we present results by the number of one-cycle packs of pills dispensed in January 2003. The three most frequent quantities in which OCPs cycles are dispensed are 1, 3, and 13. We combined all other quantities into the *other* category. We used  $\chi^2$  tests for differences by initial dispensing quantities for categorical and dichotomous variables. We evaluated the significance of continuous variables by initial dispensing quantity using analysis of variance tests where noted. To identify the effect of dispensing quantity on the continuation of pill use for 15 months, we used a multivariable logistic regression to control for factors associated with receiving 13 cycles, such as client demographics and dispensing location.

## RESULTS

In Family PACT, most women get 3 OCP cycles per visit. Nearly two thirds (63%) of women who received pills in January 2003 got three cycles, 16% got one cycle and 7% got 13 cycles. Even among public/non-profit clinics where providers can dispense more than 100 days supply, only 17% of OCP clients received the full allowable 13 cycles in January 2003.

Younger women are somewhat more likely to get 13 cycles than older women, with 8% of teenagers, 7% of women in their twenties, 4% of women in their

thirties, and 3% of women in their forties getting 13 cycles ( $P<.001$ ). African-American women and Hispanic women receive different OCP quantities than white, non-Hispanic women. African-American and Hispanic women are more likely to get three cycles (70% and 62% compared with 52% among white women) and less likely to get 13 cycles than white, non-Hispanic women (4%, 8%, and 12%, respectively) ( $P<.001$ ). New Family PACT clients and new OCP users obtain slightly more cycles than established clients and users ( $P<.001$ ; Table 1).

Women who received 13 cycles in their January 2003 visits received an average of 14.5 cycles over the course of the year compared with 9.0 cycles per year among women who received three cycles in the initial visit and 7.5 cycles per year among women who received one cycle at the initial visit ( $P<.05$ ). The average of 14.4 cycles includes women who received 13 cycles in January and another 13 in December for use in 2004, women who switched to another pill formulation, and women who received only 13 cycles. Women who initially received 13 cycles were more likely to still be receiving pills in 2004 than women who received one or three cycles in January 2003 (49% versus 46% and 42%, respectively, ( $P<.001$ ). Fifteen months after the initial pill dispensing encounter, 43% of women who received 13 cycles had received enough pill cycles in sufficient time to have continuously used OCPs for a year compared with 22% of women who received three cycles and 20% of women who received one cycle in January 2003

**Table 1. Characteristics of Women Who Receive 1, 3, and 13 Cycles at a Family PACT Visit**

	Quantity of Cycles Dispensed (%)				Total	n	p
	1	3	13	Other			
Total	16	63	7	14	100	82,319	
Pharmacy dispensed	16	80	0	4	100	49,867	<.001
Clinician dispensed	16	38	17	29	100	32,452	
Age (y)							
Less than 20	16	58	8	18	100	15,990	<.001
20–29	16	62	7	14	100	42,803	Reference
30–39	15	69	4	12	100	19,103	<.001
40 and older	16	68	3	13	100	4,423	<.001
Race/ethnicity							
Hispanic	15	70	4	11	100	49,657	<.001
White, non-Hispanic	16	52	12	20	100	22,075	Reference
Asian/Pacific Islander	16	55	10	19	100	5,319	.079
Black/African American	17	62	8	13	100	2,780	<.001
Other race/ethnicity	15	56	10	19	100	2,488	.301
New Family PACT client	14	62	12	12	100	9,488	<.001
Established Family PACT client	16	64	6	14	100	72,831	
Established OCP user	16	64	5	15	100	57,389	<.001
New OCP user	17	64	8	11	100	15,442	

PACT, Planning, Access, Care, and Treatment Program; OCP, oral contraceptive pill.



( $P < .001$ ). Women who received fewer than 13 cycles were significantly more likely to experience gaps in coverage (19% of women who received three cycles and 16% of women who received one cycle compared with 4% of women who received 13 cycles) and less likely to have any coverage at all in April 2005 (59%, 64% and 53%, respectively,  $P < .001$ ). Figure 1 shows the percentage of women who had OCPs on hand for a given month and the percentage of women who had sufficient supplies for continuous use by month since their initial January 2003 dispensing visits.

Some differences in continuation may result from women leaving the Family PACT Program, rather than their failure to continue OCPs. Among women with some Family PACT service use in 2004, similar patterns of OCP continuation are evident. Women who received 13 cycles in January 2003 had a greater number of months of contraceptive protection and were less likely to experience gaps in coverage than women who received fewer cycles (Table 2).

On average, women in Family PACT wasted 3% of the pill cycles that they received in 2003. Women wasted 0.18 of a cycle due to pill oversupply or switching and 0.11 by switching to another method of contraception, for a total of 0.28 of a cycle or just over a week's worth of pills (Table 3).

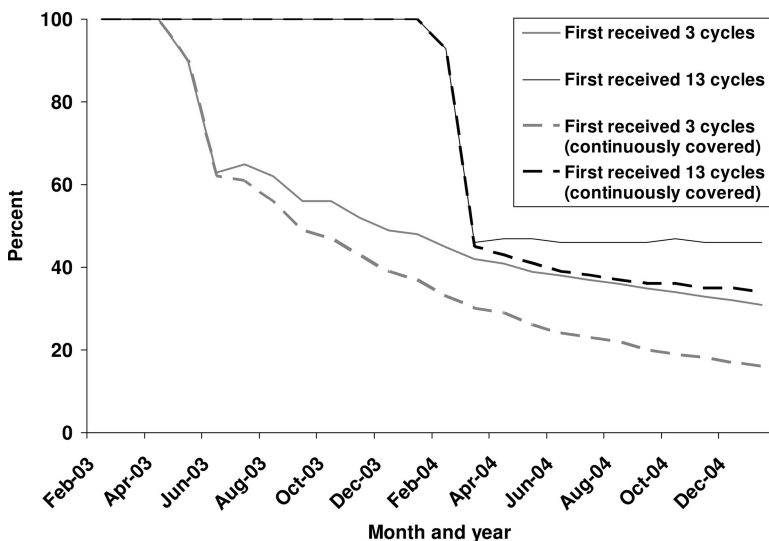
Women who received 13 cycles were somewhat more likely to waste pills than women who received fewer cycles. We find that women who were dispensed 13 cycles wasted almost one cycle (6.5%) of the 14.5 they were dispensed over the course of the year. Women who were dispensed three cycles at their January encounter wasted 2% of their cycles, and women who were dispensed one cycle wasted 2.4% over the course of the year.

Women who we predicted would be less consistent users, including teenagers, new Family PACT clients, and established clients who had not used pills in the previous year, had higher levels of wastage: 4.2% of all cycles dispensed to teenagers and 8.1% of cycles dispensed to teenagers who initially got 13 cycles were estimated to have been wasted; 3.3% of the cycles dispensed to new Family PACT clients and 6.6% among those who initially got 13 cycles were estimated to have been wasted. New pill users wasted an estimated 2.9% of their cycles, 7.9% among those who received 13 cycles in January 2003.

Women who received 13 cycles of pills in their first dispensing encounter of 2003 had fewer total visits over the course of the year than women who received fewer cycles of pills at their first 2003 visit. Women dispensed three cycles had one more clinician visit and nearly three more pharmacy visits over the course of the year than women dispensed 13 cycles in January 2003 ( $P < .05$ ). See Table 4 for data on Family PACT service use.

Women dispensed 13 cycles were more likely to have a Pap test and a *Chlamydia* test than women dispensed fewer cycles, despite having one fewer office visits. Three quarters (74%) of women who received 13 cycles had a Pap test during the year compared with 57% of women who received one or three cycles ( $P < .001$ ). Among women aged 25 years and younger, 69% who received 13 cycles and 56% who received one or three cycles had a *Chlamydia* test over the course of the year ( $P < .001$ ) as recommended by the guidelines of the Centers for Disease Control and Prevention.<sup>10</sup>

Women who received fewer than 13 cycles were more likely to have a pregnancy test and received



**Fig. 1.** The percentage of women who had any oral contraceptive pills (OCPs) on hand in a given month by the initial number of cycles dispensed in January 2003 and the percentage of women who had sufficient OCP supplies to be continuously covered through the given month by the initial number of cycles dispensed in January 2003.

Foster. Number of Oral Contraceptive Pill Packages. *Obstet Gynecol* 2006.





**Table 2. Indicators of Oral Contraceptive Continuation**

(n=82,319)	Quantity of Cycles Dispensed					P
	1	3	13	Other	Total	
All women receiving pills in January 2003						
Months of contraceptive protection dispensed in 2003	7.5	9.0	14.5	11.3	9.4	<.001*
Percentage with any pill dispensing 2004 (%)	42	46	49	44	45	<.001
OCP supplies on hand on April 1, 2004 (%)						
No	64	59	53	56	59	<.001
Yes, with gaps in coverage	16	19	4	10	16	
Yes, continuous supply to April 1, 2004	20	22	43	33	25	
Total	100	100	100	100	100	
Women receiving pills in January 2003 who had a visit in 2004						
Months of contraceptive protection dispensed in 2003	9.3	10.6	14.6	12.5	10.9	<.001*
Percentage with any pill dispensing 2004 (%)	76	77	83	75	77	<.001
OCP supplies on hand on April 1, 2004 (%)						
No	40	36	30	36	36	<.001
Yes, with gaps in coverage	27	30	5	16	25	
Yes, continuous supply to April 1, 2004	33	35	65	48	38	
Total	100	100	100	100	100	

OCP, oral contraceptive pill.

\* Differences tested using analysis of variance with reference group three cycles dispensed.

**Table 3. Estimates of the Number of Cycles Wasted by Initial Dispensing Quantity**

	1 Cycle		3 Cycles		13 Cycles		Other Quantity		Total
	P		P		P		P		
Total (n=82,319)									
Pill oversupply wastage	0.12	.019	0.1	Reference	0.65	<.001	0.38	<.001	0.18
Method switching wastage	0.06	.004	0.08	Reference	0.3	<.001	0.17	<.001	0.11
Total	0.18	.811	0.18	Reference	0.95	<.001	0.55	<.001	0.28
Total cycles wasted (%)	2.40	.007	2.00	Reference	6.50	<.001	4.80	<.001	3.00
Women under age 20 (n=15,990)									
Pill oversupply wastage	0.17	.328	0.14	Reference	0.75	<.001	0.43	<.001	0.25
Method switching wastage	0.08	.322	0.1	Reference	0.45	<.001	0.21	<.001	0.15
Total	0.25	.840	0.24	Reference	1.19	<.001	0.64	<.001	0.39
Total cycles wasted (%)	3.80	.011	2.90	Reference	8.10	<.001	5.40	<.001	4.20
New Family PACT clients (n=9,488)									
Pill oversupply wastage	0.04	.081	0.09	Reference	0.67	<.001	0.29	<.001	0.18
Method switching wastage	0.05	.330	0.08	Reference	0.3	<.001	0.13	.045	0.11
Total	0.09	.052	0.17	Reference	0.97	<.001	0.42	<.001	0.29
Total cycles wasted (%)	2.00	.579	2.10	Reference	6.60	<.001	4.00	.001	3.30
Established Family PACT clients with no pill use in previous year (n=15,442)									
Pill oversupply wastage	0.07	.254	0.05	Reference	0.57	<.001	0.23	<.001	0.11
Method switching wastage	0.07	.186	0.05	Reference	0.57	<.001	0.23	<.001	0.11
Total	0.14	.896	0.1	Reference	1.15	<.001	0.46	<.001	0.23
Total cycles wasted (%)	2.60	.281	1.30	Reference	7.90	<.001	4.70	<.001	2.90

PACT, Planning, Access, Care, and Treatment Program.

Differences tested using analysis of variance with reference group 3 cycles dispensed.

more pregnancy tests than women who received 13 cycles: 46% of women who were dispensed three cycles in January 2003 and 45% of women who were dispensed one cycle had at least one pregnancy test over the course of the year compared with 25% of

women who received 13 cycles ( $P<.001$ ). Among women who received at least one pregnancy test, women who received three cycles had 2.2 tests compared with 1.4 among women who received 13 cycles in January 2003 ( $P<.05$ ).



**Table 4. Use of Family PACT Services in 2003, by Initial Dispensing Quantity**

	1 Cycle	3 Cycles	13 Cycles	Other Quantity	Total
	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>	<i>P</i>
Percentage receiving a Pap test	57	57	74	60	58 <.001
Percentage under age 26 receiving a <i>Chlamydia</i> test (n=44,717)	56	56	69	57	57 <.001
Percentage receiving a pregnancy test	45	46	25	32	42 <.001
Average number of pregnancy tests*†	2.2 .196	2.2 Reference	1.4 <.001	1.7 <.001	2.1
Average number of total encounters†	6.4 .473	5.9 Reference	2.2 <.001	3.8 <.001	5.4
Average number of clinician encounters†	3 <.001	3.1 Reference	2.1 <.001	2.9 <.001	3
Average number of pharmacy encounters†	3.4 <.001	2.8 Reference	0.1 <.001	0.8 <.001	2.4
Average program reimbursement (\$)†	422 <.001	478 Reference	379 <.001	379 <.001	449

PACT, Family Planning, Access, Care, and Treatment Program.

N=82,319 women who received pills through Family PACT in January 2003.

\* Among those with at least one pregnancy test.

† Differences tested using analysis of variance with reference group three cycles dispensed.

Family PACT spent an average of \$449 in reimbursements to providers, pharmacies, and laboratories for each woman who received pills in January 2003. Over the course of the year, Family PACT paid \$99 more for women who received three cycles and \$44 more for women who received only one cycle than it did for women who received 13 cycles at their first visit of 2003 ( $P<.05$ ).

Reimbursement per month of OCP protection indicates that dispensing more cycles of OCPs is cost-effective. Reimbursement per cycle of OCPs dispensed over the course of the year averaged \$54 for women receiving three cycles but only \$26 for women receiving 13 cycles.

We used a multivariable logistic model to identify the effect of the number of cycles dispensed on continuation while controlling for demographic factors and whether the client was new to Family PACT or new to OCPs (Table 5). We ran two models: one predicting whether clients had OCP protection through Family PACT on April 1, 2004, 15 months after the January 2003 dispensing, and the other predicting whether they had continuous protection up to that date. Our analysis of age shows the expected pattern of lower continuation among younger women than for older (30 years or older) women. With women in their twenties as the reference group, teenagers were significantly less likely and older women more likely to have OCP protection in April 2004. Hispanic and African-American women were less likely to be protected in April 2004 than were white, non-Hispanic women. Women who received their pills through a pharmacy were slightly less likely to still be protected 15 months later (OR 0.93, 95% confidence interval [CI] 0.89–0.96). New Family

PACT clients and new OCP users among established clients were each half as likely to still be covered as established clients who were existing OCP users ( $P<.05$ ). Women who received 13 cycles were 28% more likely to be protected 15 months later than women who received three cycles in January 2003 (OR 1.28, 95% CI 1.20–1.37).

The effect of dispensing 13 cycles is greater in the second model, which predicts continuous protection to April 2004. We find similar age and racial/ethnic patterns as in the first model. Women receiving pills from a pharmacy in January 2003 were significantly less likely to have an adequate supply (OR 0.65, 95% CI 0.63–0.68). In this model we found that women receiving 13 cycles were just over twice as likely to have supplies on hand for continuous use for the next 15 months as women who received only three cycles in their January 2003 encounter (OR 2.03, 95% CI 1.9–2.16). The magnitude of this dispensing effect is greater than the effects for race/ethnicity, age, or pharmacy dispensing and is similar in magnitude but opposite in direction as the effect of being a new client or new OCP user (OR 0.50, 95% CI 0.48–0.53; OR 0.45, 95% CI 0.43–0.48, respectively).

## DISCUSSION

Clinicians who identify a patient as being committed to use of OCPs can dispense a full year's supply and expect higher contraceptive continuation, fewer visits, and lower overall costs. Our findings document a positive relationship between number of OCP cycles provided and OCP continuation. We also find that women who receive a greater number of OCP cycles are less likely to experience a gap in OCP coverage. The higher use of pregnancy tests among women who



**Table 5. Multivariable Logistic Regression Models of Oral Contraceptive Pill Continuation (n=82,319)**

	Odds of Having OCPs on Hand on April 1, 2004		Odds of Having Had OCPs on Hand Continuously up to April 1, 2004	
	OR	95% CI	OR	95% CI
Dispensing quantity of January 2003				
First got 1 cycle	0.78	0.75–0.81	0.78	0.74–0.82
First got 3 cycles	1	Reference	1	Reference
First got 13 cycles	1.28	1.2–1.37	2.03	1.90–2.16
Other quantity	0.99	0.95–1.04	1.27	1.20–1.33
Age (y)				
Less than 20	0.89	0.85–0.92	0.85	0.81–0.89
20–29	1	Reference	1	Reference
30–39	1.15	1.11–1.19	1.1	1.05–1.15
40 and older	1.24	1.16–1.32	1.15	1.07–1.24
Race/ethnicity				
White, non-Hispanic	1	Reference	1	Reference
Hispanic	0.82	0.79–0.85	0.72	0.69–0.74
Black	0.65	0.60–0.71	0.62	0.56–0.69
Asian	1.05	0.99–1.12	1.04	0.97–1.11
Other	0.82	0.76–0.90	0.8	0.73–0.89
Dispensed by				
Pharmacy	0.93	0.89–0.96	0.65	0.63–0.68
Clinic	1	Reference	1	Reference
Client status				
New client	0.46	0.44–0.49	0.5	0.48–0.53
Established client/new OCP user	0.44	0.42–0.46	0.45	0.43–0.48
Established client/established OCP user	1	Reference	1	Reference

OCP, oral contraceptive pill; OR, odds ratio; CI, confidence interval.

received fewer cycles is consistent with a greater perceived risk of pregnancy due to gaps in coverage.

One explanation for the higher continuation, lower use of pregnancy tests, and improved reproductive health screening among women who received 13 cycles compared with women receiving fewer cycles is greater convenience. When offered the option of only one visit per year, women accept the basic reproductive health screening rather than putting it off until the next visit. Return visits to pharmacies or clinics to refill prescriptions may be the burden on women's time and provider resources that results in discontinuation and gaps in OCP use. The additional visits may also serve as occasions to reconsider OCP use. Women with mild adverse effects characteristic of adoption of OCPs may continue through the first few months of use when they have a year's supply but may stop using OCPs if they must return to a clinic to refill a prescription.

Health care plans that set limits on drug dispensing and clinicians in managed care settings who limit OCP prescriptions to three cycles may find lower direct costs for visits and pregnancy tests and perhaps lower indirect costs for unintended pregnancy management if they raise their dispensing limits to allow a

1-year supply. The tendency to discontinue use when required to make multiple visits to refill prescriptions may be even greater in other health care settings. Because Family PACT clients receive services at no personal cost and do not pay drug co-pays, the disinclination to return to the pharmacy or clinic for refills within Family PACT is likely due to a lack of time or inconvenience. For women who must also pay per visit, return visits may represent a financial burden as well.

Our retrospective analysis did not randomize women to receive 13 or other numbers of OCP cycles. Women who knew that they only wanted to use OCPs for a short time may have requested fewer OCP packages. Likewise, clinicians may have been more likely to provide 13 cycles to women who they believed would be likely to continue OCP use. In the absence of random assignment to one, three, or 13 cycles, we can say that offering 13 cycles to women who may be compliant reduces program costs. Allowing 13 cycles to be dispensed at one visit gives the physician and client the ability to determine how many cycles are appropriate rather than setting a program policy that may cause expense, inconvenience, and gaps in contraceptive coverage.



Our study relies on program claims data, which probably underestimates pill wastage, rather than on contraceptive use data. We do not know whether OCP cycles dispensed were actually used and whether a woman who stops getting pills through Family PACT does so because she is discontinuing use of the pill, became pregnant, or ceased to be eligible for Family PACT. Our findings are, therefore, suggestive but not conclusive of the relationship between dispensing quantity and method continuation. Given the potentially large influence of dispensing quantities on method continuation, this study is a first step toward identifying changes in physician prescribing behavior and health care administration policy that can improve continuation of oral contraceptives and reduce the incidence of unintended pregnancy among OCPs users.

## REFERENCES

1. Hatcher R, Trussell J, Stewart F, Cates W, Stewart GK, Guest F, et al. Contraceptive technology. 18th ed. New York (NY): Ardent Media; 2004.
2. Trussell J, Vaughan B. Contraceptive failure, method-related discontinuation and resumption of use: results from the 1995 National Survey of Family Growth. *Fam Plann Perspect* 1999; 31:64–72, 93.
3. Jones RK, Darroch JE, Henshaw SK. Contraceptive use among U.S. women having abortions in 2000–2001. *Perspect Sex Reprod Health* 2002;34:294–303.
4. Mosher WD, Martinez GM, Chandra A, Abma JC, Willson SJ. Use of contraception and use of family planning services in the United States: 1982–2002. *Adv Data* 2004;350:1–36.
5. Smith JD, Oakley D. Why do women miss oral contraceptive pills? An analysis of women's self-described reasons for missed pills. *J Midwifery Womens Health* 2005;50:380–5.
6. Phillips KA, Stotland NE, Liang SY, Spetz J, Haas JS, Oren E. Out-of-pocket expenditures for oral contraceptives and number of packs per purchase. *J Am Med Womens Assoc* 2004; 59:36–42.
7. Phillips KA, Liang SY, Haas JS, Stebbins M, Alldredge BK. Prescription drug dispensing limits and patterns. *Manag Care Interface* 2005;18:41–6.
8. Crowley J, Ashner D. State medicaid outpatient prescription drug policies: findings from a national survey, 2005 update. The Henry J Kaiser Family Foundation; 2005. Available at: <http://www.kff.org/medicaid/7381.cfm>. Retrieved August 1, 2006.
9. Brindis CD, Llewelyn L, Marie K, Blum M, Biggs A, Maternowska C. Meeting the reproductive health care needs of adolescents: California's Family Planning Access, Care, and Treatment Program. *J Adolesc Health*. 2003;32 suppl: 79–90.
10. U.S. Preventive Services Task Force. Screening for chlamydial infection: recommendations and rationale. *Am J Prev Med* 2001;20 suppl:90–4.

