

# Characteristics of Women in the United States Who Use Long-Acting Reversible Contraceptive Methods

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**OBJECTIVE:** To examine characteristics of U.S. women that are associated with use of long-acting reversible contraception and changes in these characteristics between 2002 and 2006–2008.

**METHODS:** We analyzed data from two nationally representative samples of women aged 15–44 in the National Survey of Family Growth, including 7,643 women in 2002 and 7,356 women in 2006–2008. We conducted simple and multinomial logistic regression analyses to identify demographic and reproductive health characteristics associated with use of long-acting reversible contraception.

**RESULTS:** Long-acting reversible contraception (intrauterine devices and subdermal implants) use among U.S. women using contraception increased from 2.4% in 2002 to 5.6% in 2006–2008. The largest increases in long-acting reversible contraception use during this time occurred among the youngest and oldest age groups, non-Hispanic white and non-Hispanic African American women, foreign-born women, and those in the highest income group. High prevalence of long-acting reversible contraception use in 2006–2008 was seen among women who had given birth once or twice (10%), foreign-born women (8.8%), and Hispanic women (8.4%). After adjusting for key demographic and reproductive health characteristics, in comparison with users of other contraceptive methods and with those not using contraception

who were at risk for unintended pregnancy, foreign-born women and women who experienced coitarche before age 18 were approximately twice as likely to be using long-acting reversible contraception as women without those characteristics.

**CONCLUSION:** A more diverse population of women used long-acting reversible contraception in 2006–2008 compared with 2002. However, there is likely more potential for increased uptake, especially among populations historically not considered to be candidates for these methods.

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**LEVEL OF EVIDENCE: III**

Nearly half of all pregnancies occurring in the United States are unintended, totaling more than 3 million per year.<sup>1</sup> Although half of all unintended pregnancies (52%) are attributable to nonuse of contraception, 43% are the outcome of inconsistent or incorrect method use.<sup>2,3</sup> Although the United States has a range of reversible methods available, many women continue to rely on less effective options. Approximately 80% of U.S. women using reversible methods use only three strategies: the pill, condoms, and withdrawal.<sup>4</sup> With typical use, these methods can produce failure rates of up to 18% during the first year of use.<sup>5,6</sup> In contrast, long-acting reversible contraception, specifically intrauterine devices (IUDs) and implants, have typical failure rates of 1% or less, primarily because of their low dependence on individual compliance.<sup>5,6</sup> In 2002, only 1.3% of U.S. women aged 15–44 were using an IUD,<sup>7</sup> a rate among the lowest of any developed country.<sup>8,9</sup> This low utilization of available long-acting reversible contraceptive methods may contribute to high levels of unintended pregnancy in the United States.

The typical U.S. woman wants only two children; to achieve that goal, she must use contraception for

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The conclusions presented are those of the authors.

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approximately 30 years.<sup>2</sup> The historical shift toward postponing and limiting childbearing in developed countries has increased the amount of time in women's lives during which they are at risk for unintended pregnancy. Therefore, methods that are effective over longer periods of time, specifically long-acting reversible contraception, would appear well-suited to serve these needs. Between 1995 and 2002, IUD use increased only slightly, from 0.5% to 1.3%.<sup>4</sup> Using the most recent national data available, we examine current levels of use of long-acting reversible contraception and changes in prevalence and correlates of use between 2002 and 2006–2008. We also identify specific populations of women who may benefit from efforts to increase use of these methods.

## MATERIALS AND METHODS

The Guttmacher Institute's institutional review board (Department of Health and Human Services identifier institutional review board 00002197) determined that the project is exempt from Institutional Review Board approval. The data for this analysis are from the 2002 and 2006–2008 rounds of the National Survey of Family Growth. Nationally representative samples of 7,643 and 7,356 women aged 15–44 were interviewed in 2002 and in 2006–2008, respectively. Men were also surveyed for the National Survey of Family Growth, but the male sample was not included in this analysis. The face-to-face interviews used computer-assisted methods to collect information on a broad range of sexual and reproductive health topics, including partnership, pregnancy and contraceptive use history, childbearing intentions and desires, and use of family planning services. The National Survey of Family Growth used a multistage probability sample design and oversampled women, teenagers aged 15–19, African Americans, and Hispanics.<sup>10</sup> The response rate for all female respondents was 76%.<sup>4</sup> More detailed information on survey methodology, sampling design, estimation procedures, and variance estimation is published elsewhere.<sup>10</sup>

Our primary outcome of interest was current use of long-acting reversible contraception, defined as use of an IUD or subdermal implant as the principal method of birth control at the time of the interview. We excluded the injectable contraceptive Depo-Provera (Pfizer) from the long-acting reversible contraception category because of its shorter efficacy period (3 months compared with 3 years for the implant and 5 to 10 years for IUDs). Women who reported concurrent long-acting reversible contraception use and sterilization were omitted from all analyses. The National Survey of Family Growth questionnaire did

not distinguish between the two types of IUDs available in the U.S., the levonorgestrel intrauterine system and the copper-T IUD.

Independent variables examined in these analyses included sociodemographic characteristics (age, race or ethnicity, nativity, relationship status, educational achievement, current employment, poverty status, current insurance coverage, and religious affiliation) and sexual and reproductive health characteristics (age at first intercourse, number of sexual partners in the past year, having ever experienced an unwanted pregnancy, history of abortion, parity, birth intentions, having visited a family planning clinic in the past year, and having ever stopped using a non-long-acting reversible hormonal method, including pills, patches, rings, and injectables, because of dissatisfaction).

In our primary analysis, we selected only current contraceptive users (all methods) from the National Survey of Family Growth to assess long-acting reversible contraception use as a proportion of all use in 2002 and 2006–2008. We used simple logistic regression analyses to estimate unadjusted odds ratios for the relationship between individual-level characteristics and use of long-acting reversible contraception and to determine significant differences in long-acting reversible contraception use by respondent characteristics.

In a subsequent analysis using only the 2006–2008 National Survey of Family Growth, we created four distinct categories of women based on their primary method of use to compare current long-acting reversible contraception users, current non-long-acting reversible hormonal method users (including those using the pill, patch, or injectable), current barrier or behavioral method users (including those using male and female condoms, spermicidal and other barrier methods, periodic abstinence, or withdrawal), and women not using contraceptives at risk for unintended pregnancy (those not using contraception who had sex within the past 3 months but were not seeking pregnancy, were not postpartum, and had not undergone surgical sterilization). We used multinomial logistic regression to disentangle correlated effects and to identify demographic and reproductive health characteristics predictive of long-acting reversible contraception use. All independent variables examined at the bivariate level were initially entered into the multinomial model. Variables that were not significantly associated with any of the outcome categories at  $P < .1$  were excluded from the final model. All analyses were conducted using the "svy" command prefix within Stata 11.1 (StataCorp) to account for the National Survey of Family Growth's use of a multistage probability sample.



## RESULTS

Approximately 5.6% of current contraceptive users were using an IUD or implant in 2006–2008, an increase from 2.4% in 2002 (Table 1). Among current long-acting reversible contraception users in 2006–2008, 98% were using IUDs and 2% were using implants (not shown).

Use of long-acting reversible contraception increased in every demographic group, although most dramatically among the youngest and oldest age groups (those younger than 24 and those age 35 or older), non-Hispanic white and non-Hispanic African American women, those born in the United States, and those in the highest income group. The highest prevalence of long-acting reversible contraception use continued to be seen among Hispanic women (8.4%) and foreign-born women (8.8%).

In 2006–2008, there were no significant differences in long-acting reversible contraception use by age group, poverty level, or insurance coverage. In contrast, in 2002, use of long-acting reversible contraception was significantly more prevalent among women in particular subgroups of those aged 25–34, those with lower income, those without insurance, or those insured by Medicaid. In 2006–2008, long-acting reversible contraception use was more common among married and cohabiting women compared with others.

Between 2002 and 2006–2008, the proportion of women using long-acting reversible contraception increased among all subgroups of women defined by sexual and reproductive health characteristics (Table 2). In 2006–2008, women who had sex for the first time at age 17 or younger were twice as likely to use long-acting reversible contraception as women who had experienced coitarche at an older age; this characteristic was not significantly associated with use of long-acting reversible contraception in 2002. Similarly, in 2006–2008, the odds of long-acting reversible contraception use differed significantly by the number of additional births expected, whereas there was no difference in the odds of use for this characteristic in 2002. In both time periods, the odds of long-acting reversible contraception use were significantly associated with total number of live births, with a visit to a clinic for family planning services in the past year, and with having ever stopped using a non-long-acting reversible contraceptive hormonal method because of dissatisfaction.

Comparing long-acting reversible contraception users to users of three other specific contraceptive use groups (non-long-acting reversible hormonal method

users, barrier or behavioral method users, and women not using contraceptives at risk for unintended pregnancy) showed patterns similar to the bivariate associations observed in 2006–2008 (Table 3). After adjusting for key demographic and sexual and reproductive health characteristics, in comparison with non-long-acting reversible hormonal method users, women older than age 35, married women, women who had ever experienced an unwanted pregnancy, and women who had ever stopped using a non-long-acting reversible hormonal method because of dissatisfaction were all more likely to be long-acting reversible contraception users. In comparisons with barrier or behavioral method users, women with some college education, women who intended to have additional children, and women who had visited a clinic in the past year for family planning services were all more likely, and non-Hispanic other or multiple-race women were less likely, to be long-acting reversible contraception users.

Across all demographic and sexual and reproductive health characteristics, users of long-acting reversible contraception have the least in common with women not using contraceptives at risk for unintended pregnancy. Married or cohabiting women, women with at least some college education, women who had ever experienced an unwanted pregnancy, women who had visited a clinic in the past year for family planning services, and women who had ever stopped using a non-long-acting reversible hormonal method because of dissatisfaction were all more likely to be users of long-acting reversible contraception than to be women not using contraceptives at risk for unintended pregnancy.

## DISCUSSION

Use of long-acting reversible contraception has increased substantially between 2002 and 2006–2008, increasing to the highest level of use in the United States since the early 1980s.<sup>11</sup> This increase is primarily attributable to a surge in IUD use, because implant use barely registered in the National Survey of Family Growth in either year. A far more diverse population of women used long-acting reversible contraceptive methods in 2006–2008 as compared with 2002. The substantial increase in use of long-acting reversible contraception among women in the younger age groups, especially, may indicate providers' growing willingness to provide more effective long-acting reversible contraceptive methods to these women. This change is consistent with published recommendations on the topic.<sup>12,13</sup> With childbearing occurring at later ages, the fertile period before childbearing can be as



**Table 1.** Percentage of Current Contraceptive Users Who Currently are Using Long-Acting Reversible Contraception and Unadjusted Odds Ratios and 95% Confidence Intervals for Current Use of Long-Acting Reversible Methods by Selected Demographic Characteristics, 2002 and 2006–2008

Demographic Characteristic	Use of Long-Acting Reversible Contraception Among Current Contraceptive Users (%)		Unadjusted OR (95% CI)	
	2002	2006–2008	2002	2006–2008
All	2.4	5.6		
Age (y)				
15–19	0.3	3.6	—*	—
20–24	1.9	6.0	—*	1.7 (0.6–4.4)
25–29	4.8	6.6	3.8 <sup>†</sup> (2.2–6.5)	1.9 (0.6–6.4)
30–34	3.8	6.6	2.9 <sup>†</sup> (1.6–5.4)	1.9 (0.5–6.9)
35–39	1.7	5.9	1.3 (0.7–2.6)	1.7 (0.9–2.9)
40–44	1.4	4.2	1.0 (0.4–2.6)	1.1 (0.3–4.2)
Race or ethnicity				
Non-Hispanic white, single race	1.6	5.1	—	—
Non-Hispanic African American, single race	1.5	5.2	0.9 (0.4–2.0)	1.0 (0.5–2.2)
Non-Hispanic other or multiple race	2.9	4.5	1.8 (0.9–3.8)	0.9 (0.5–1.6)
Hispanic	7.1	8.4	4.6 <sup>†</sup> (2.8–7.4)	1.7 <sup>§</sup> (1.1–2.6)
Born outside the United States				
No	1.6	5.1	—	—
Yes	7.5	8.8	4.8 <sup>†</sup> (2.8–8.5)	1.8 <sup>§</sup> (1.1–3.1)
Relationship status				
Not married or cohabiting	1.4	3.2	—	—
Married	3.1	6.8	2.3 <sup>†</sup> (1.3–4.0)	2.2 <sup>†</sup> (1.2–4.0)
Cohabiting	2.5	6.6	1.8 (0.9–3.6)	2.2 <sup>§</sup> (1.1–4.4)
Education				
Not high school graduate	3.3	4.7	—	—
High school graduate or GED	2.5	5.1	0.8 (0.4–1.4)	1.1 (0.6–2.1)
Some college	2.2	6.4	0.7 (0.4–1.3)	1.4 (0.8–2.5)
College graduate	2.1	5.8	0.6 (0.3–1.2)	1.2 (0.6–2.4)
Employment				
Not working full-time	2.4	6.1	—	—
Working full-time	2.5	5.0	1.0 (0.7–1.5)	0.8 (0.6–1.2)
Poverty status				
<100% of federal poverty level	4.7	6.1	—	—
100–199%	3.0	6.3	0.6 (0.3–1.2)	1.0 (0.6–1.7)
200–299%	1.9	4.3	0.4 <sup>§</sup> (0.2–0.8)	0.7 (0.4–1.2)
300% or higher	1.5	5.6	0.3 <sup>†</sup> (0.2–0.5)	0.9 (0.5–1.7)
Current insurance coverage <sup>  </sup>				
Private	1.9	5.1	—	—
Medicaid	3.8	6.7	2.1 <sup>†</sup> (1.3–3.2)	1.3 (0.8–2.1)
None	4.5	6.0	2.4 <sup>†</sup> (1.3–4.7)	1.2 (0.8–1.8)
Religious affiliation				
No religion	2.8	6.9	—	—
Catholic	3.3	6.2	1.2 (0.6–2.4)	0.9 (0.5–1.8)
Protestant	1.9	4.7	0.7 (0.3–1.3)	0.7 (0.3–1.4)
Other	2.2	6.6	0.8 (0.2–2.7)	1.0 (0.4–2.3)

OR, odds ratio; CI, confidence interval; GED, general equivalency diploma.

— indicates reference category.

Population includes all female respondents who reported current contraceptive method use, weighted to reflect the female civilian population of the United States. Long-acting reversible contraception includes intrauterine devices and implants.

\* The two youngest age groups in 2002 were combined for the reference group owing to small numbers in these age categories.

<sup>†</sup> Significant difference at  $P < .001$ .

<sup>‡</sup> Significant difference at  $P < .01$ .

<sup>§</sup> Significant difference at  $P < .05$ .

<sup>||</sup> Women reporting "other" insurance were omitted owing to limited reliability of analyses based on the small numbers in this category.



**Table 2.** Percentages of Current Contraceptive Users Who Currently are Using Long-Acting Reversible Contraception and Unadjusted Odds Ratio and 95% Confidence Intervals for Current Use of Long-Acting Reversible Methods by Selected Sexual and Reproductive Health Characteristics, 2002 and 2006–2008

Sexual and Reproductive Health Characteristics	Use of Long-Acting Reversible Contraception Among Current Contraceptive Users (%)		Unadjusted OR (95% CI)	
	2002	2006–2008	2002	2006–2008
All	2.4	5.6		
Age at first intercourse (y)*				
Younger than 15 to 17	2.5	7.4	0.9 (0.6–1.4)	2.1 <sup>†</sup> (1.2–3.6)
18–44	2.9	3.6	—	—
Number of male sexual partners in past year				
Fewer than 2	2.6	5.9	—	—
2 or more	1.4	4.0	0.5 (0.2–1.3)	0.7 (0.3–1.4)
Ever experienced unwanted pregnancy				
No	2.5	5.2	—	—
Yes	2.4	6.9	1.0 (0.6–1.5)	1.3 (0.8–2.3)
History of abortion				
No	3.3	7.0	—	—
Yes	2.5	9.4	0.7 (0.4–1.3)	1.4 (0.8–2.5)
Total number live births				
0	0.6	0.5	—	—
1–2	3.4	10.0	5.8 <sup>†</sup> (2.6–12.9)	22.1 <sup>†</sup> (8.1–60.8)
3 or more	3.0	4.2	5.0 <sup>†</sup> (2.2–11.4)	8.7 <sup>†</sup> (3.3–22.8)
Intentions for additional births <sup>§</sup>				
Does not intend to have (more) children	2.8	6.0	—	—
Intends to have (more) children	2.3	5.0	0.8 (0.5–1.3)	0.8 (0.6–1.2)
Number of additional births expected				
0	2.3	5.1	—	—
1 or 2	3.2	7.8	1.4 (0.9–2.2)	1.6 <sup>  </sup> (1.2–2.2)
3 or more	1.0	1.5	0.5 (0.2–1.1)	0.3 <sup>  </sup> (0.1–0.8)
Visited clinic in past 12 mo for family planning services?				
No	1.6	3.4	—	—
Yes	4.4	10.8	2.9 <sup>†</sup> (2.0–4.3)	3.4 <sup>†</sup> (2.4–4.8)
Ever stopped using non-long-acting hormonal method due to dissatisfaction?				
No	1.6	3.7	—	—
Yes	4.5	9.1	3.0 <sup>†</sup> (2.0–4.5)	2.6 <sup>†</sup> (1.7–3.9)

OR, odds ratio; CI, confidence interval.

— indicates reference category.

Population includes all female respondents who reported current contraceptive method use, weighted to reflect the female civilian population of the United States. Long-acting reversible contraception includes intrauterine devices and implants.

\* Age at first sex is limited to respondents age 20 and older.

<sup>†</sup> Significant difference at  $P < .05$ .

<sup>‡</sup> Significant difference at  $P < .001$ .

<sup>§</sup> Women reporting “don’t know” in response to pregnancy intentions were omitted owing to limited reliability of analyses based on the small numbers in this category.

<sup>||</sup> Significant difference at  $P < .01$ .

long as that after childbearing. As such, the “ideal candidate” for long-acting reversible contraception may just as likely be a younger woman as an older woman.

In 2002, the copper-T IUD was the primary long-acting reversible contraceptive method available, and Hispanic women were far more likely to use

IUDs than women in other racial or ethnic groups. Higher rates of long-acting reversible contraception use among Hispanic women are likely driven by the higher rates of long-acting reversible contraception use among foreign-born women. For example, 12% of Mexican women using contraceptives used the IUD in 2006.<sup>14</sup> However, by 2006–2008, the addition of



**Table 3. Adjusted Odds Ratios and 95% Confidence Intervals for Selected Respondent Characteristics and Current Long-Acting Reversible Contraception Use as Compared With the Associations Between These Selected Characteristics and Other Contraceptive Method Use and Nonuse, 2006–2008**

Characteristic	Long-Acting Reversible Contraception Users vs Non-Long-Acting Hormonal Method Users	Long-Acting Reversible Contraception Users vs Barrier or Behavioral Method Users	Long-Acting Reversible Contraception Users vs Contraceptive Nonusers at Risk for Unintended Pregnancy
Demographic			
Age (y)			
15–24	—	—	—
25–34	1.1 (0.5–2.5)	1.0 (0.5–2.0)	0.9 (0.4–1.9)
35–44	2.1* (1.0–4.4)	1.5 (0.8–2.9)	0.8 (0.4–1.6)
Race or ethnicity			
Non-Hispanic white, single race			
Non-Hispanic African American, single race	1.3 (0.6–2.9)	1.1 (0.5–2.5)	0.7 (0.3–1.6)
Non-Hispanic other or multiple race	1.1 (0.6–2.0)	0.5* (0.2–0.9)	0.6 (0.3–1.3)
Hispanic	1.4 (0.8–2.5)	1.5 (0.8–2.6)	1.8 (1.0–3.4)
Born outside the United States			
No	—	—	—
Yes	2.6 <sup>†</sup> (1.6–4.4)	1.9* (1.1–3.4)	2.4* (1.2–4.7)
Relationship status			
Not married or cohabiting			
Married	3.7 <sup>†</sup> (1.8–7.4)	1.6 (0.8–3.4)	7.0 <sup>†</sup> (3.3–15.1)
Cohabiting	1.9 (0.8–4.7)	1.8 (0.7–4.4)	5.4* (1.9–15.0)
Education			
Not high school graduate			
High school graduate or GED	1.7 (0.7–4.3)	2.1 (0.8–5.4)	2.5 (0.9–7.0)
Some college	1.9 (0.9–4.1)	2.3* (1.1–5.0)	3.5* (1.6–7.8)
College graduate	1.8 (0.6–5.3)	2.3 (0.8–6.7)	4.8* (1.5–15.3)
Employment			
Not working full-time			
Working full-time	0.6 (0.4–1.0)	0.7 (0.4–1.1)	1.0 (0.6–1.6)
Sexual and reproductive health			
Age at first intercourse (y) <sup>§</sup>			
Younger than 15–17	3.1* (1.6–6.1)	3.1* (1.6–6.0)	2.1* (1.0–4.1)
18–44	—	—	—
Number of male sexual partners in past year			
Fewer than 2	—	—	—
2 or more	1.7 (0.7–3.8)	0.5 (0.2–1.1)	0.8 (0.3–1.9)
Ever experienced unwanted pregnancy			
No	—	—	—
Yes	2.4* (1.3–4.6)	1.2 (0.6–2.3)	2.2* (1.1–4.4)

(continued)



**Table 3. Adjusted Odds Ratios and 95% Confidence Intervals for Selected Respondent Characteristics and Current Long-Acting Reversible Contraception Use as Compared With the Associations Between These Selected Characteristics and Other Contraceptive Method Use and Nonuse, 2006–2008 (continued)**

Characteristic	Long-Acting Reversible Contraception Users vs Non-Long-Acting Hormonal Method Users	Long-Acting Reversible Contraception Users vs Barrier or Behavioral Method Users	Long-Acting Reversible Contraception Users vs Contraceptive Nonusers at Risk for Unintended Pregnancy
Intentions for additional births <sup>  </sup>			
Does not intend to have (more) children	—	—	—
Intends to have (more) children	1.3 (0.8–2.2)	1.9* (1.2–3.0)	1.3 (0.7–2.4)
Visited clinic in past 12 mo for family planning services?			
No	—	—	—
Yes	1.0 (0.6–1.7)	10.1 <sup>†</sup> (6.3–16.4)	11.9 <sup>†</sup> (6.8–20.9)
Ever stopped using non-long-acting hormonal method due to dissatisfaction?			
No	—	—	—
Yes	3.5 <sup>‡</sup> (2.1–5.7)	1.4 (0.9–2.3)	1.9* (1.1–3.1)

GED, general equivalency diploma.  
Data are odds ratio (95% confidence interval).  
— indicates reference category.

Population includes all female respondents who reported current long-acting reversible contraceptive method use, current non-long-acting hormonal contraceptive method use, current barrier or traditional method use, and nonuse of contraception while at risk of unintended pregnancy, weighted to reflect the female civilian population of the United States. Adjusted odds ratios were calculated using multinomial logistic regression. Women at risk of unintended pregnancy are those who have reported being sexually active in the 3 months before interview but who have not been seeking pregnancy, are not postpartum, and have not undergone surgical sterilization.

\* Significant difference at  $P < .05$ .

<sup>†</sup> Significant difference at  $P < .001$ .

<sup>‡</sup> Significant difference at  $P < .01$ .

<sup>§</sup> Age at first sex is limited to respondents age 20 and older.

<sup>||</sup> Women reporting "don't know" in response to pregnancy intentions were omitted owing to limited reliability of analyses based on the small numbers in this category.

the levonorgestrel intrauterine system to the market (the Food and Drug Administration approved the device in 2000, with marketing beginning in 2001) may have softened that ethnic divide. Women born in the United States have higher rates of long-acting reversible contraception use than in previous years, and long-acting reversible contraception use has become more homogeneous across income levels and insurance coverage groups; these patterns suggest that the new device may be playing a role in its wider appeal. Many factors explain the general increase in use of long-acting reversible contraception, but introduction of the levonorgestrel intrauterine system was perhaps the most important one.<sup>11</sup> Unfortunately, National Survey of Family Growth data do not distinguish between types of IUDs, so we are unable to confirm this hypothesis with these data.

Several sexual and reproductive characteristics emerged as predictive of long-acting reversible contraception use between 2002 and 2006–2008. The association between an early age at first intercourse and long-acting reversible contraception use is likely reflecting broader associations between this characteristic and contraceptive use. We conducted a supplementary analysis and found that women initiating sex at an earlier age were also more likely to use provider-controlled methods such as the pill, patch, and injectables than those who experience coitarche at a later age.

Not surprisingly, women who have given birth are more likely to be users of long-acting reversible contraception than those who have not. The increased rate of long-acting reversible contraception use seen among women who have given birth one or two times as compared with women with three or



more births is likely attributable to higher rates of sterilization among women in this latter group.<sup>15</sup> Women's desires for additional children have emerged as a predictive characteristic of long-acting reversible contraception use since 2002. The lower rates of long-acting reversible contraception use among women who expect to have three or more additional births as compared with women expecting fewer births are likely attributable to a recognized need for shorter-term contraceptive coverage (or none at all) among this group to achieve this goal.

Users of long-acting reversible contraception have more in common with users of more short-term contraceptive methods than they do with nonusers of contraception at risk for unintended pregnancy. Given the similarities in educational achievement between long-acting reversible contraception users and non-long-acting reversible hormonal method users, less educated women may be less likely to choose prescription methods, perhaps because of limited knowledge about them.<sup>16</sup> Women's increased likelihood of using a long-acting reversible contraceptive method compared with a non-long-acting reversible contraceptive hormonal method or no method at all if they had experienced an unwanted pregnancy indicates that these women may be more motivated to avoid an additional unwanted pregnancy in the future.<sup>17</sup>

Several limitations are inherent in the analysis of cross-sectional data. Associations observed between respondent characteristics and contraceptive method use do not necessarily imply a causal relationship. Because of well-documented underreporting of abortion in the National Survey of Family Growth,<sup>18</sup> any associations between this factor and long-acting reversible contraception use may not be robust. Because the 2006–2008 National Survey of Family Growth included only five implant users, our findings cannot describe trends associated with this particular long-acting reversible contraceptive method. In addition, the National Survey of Family Growth made no distinction between the type of IUD being used (eg, the copper IUD compared with the levonorgestrel intrauterine system), so we cannot determine whether these findings are more reflective of one product or the other. Future rounds of the National Survey of Family Growth will permit this distinction, however.

The potential for long-acting reversible contraceptive methods to decrease unintended pregnancy rates and subsequent abortions is gaining much needed attention.<sup>19,20</sup> Long-acting reversible contraceptive methods are in the top tier of contraceptive effectiveness, whereas short-acting methods are not. The dearth of long-acting reversible contraception

options and acceptability in a recent 15-year period (1986–2000) compelled American women who wanted to avoid unintended pregnancy to rely on short-acting reversible methods or sterilization. Today, long-acting reversible contraception, which fills the slot between these two other approaches, is more accessible, and the increased prevalence of use among women using contraception in the United States reflects this fact. However, there is likely more potential for increased use among women at risk for unintended pregnancy, especially among populations historically not considered to be candidates for long-acting reversible contraceptive methods, such as adolescent women, nulliparous women, and women who are not married or cohabiting. Previous research identifying characteristics of women at risk for unintended pregnancy<sup>1</sup> should be revisited to help initiate discussion of long-acting reversible contraception use in these subgroups. Our finding that previous unwanted pregnancy is associated with long-acting reversible contraception use suggests that women who have had an unintended pregnancy may be among the most motivated to seek out the most effective methods of contraception, probably to prevent recurrence. Increasing awareness of the benefits and effectiveness of long-acting reversible contraception may encourage uptake in the United States and could contribute to improving the nation's reproductive health.

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