

Contraception after Abortion and Risk of Repeated Unintended Pregnancy among Health Plan Members

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ABSTRACT

Context: Optimizing access to effective contraception at the time of abortion can reduce repeated unintended pregnancies.

Objective: To assess contraception initiation and repeated unintended pregnancies among women receiving abortions in Kaiser Permanente Northern California (KPNC) facilities and through outside contracted facilities.

Design: A retrospective cohort study was conducted using a randomized proportional sample of women aged 15 to 44 years having abortions in KPNC, to determine contraception initiation within 90 days. Demographic and clinical characteristics (age, race/ethnicity, gravidity, parity, contraceptive method initiated, and pregnancies within 12 months) were collected from electronic health records. Descriptive statistics, χ^2 tests, *t*-tests, and logistic regression models assessed predictors of long-acting reversible contraception (LARC) initiation and having another unintended pregnancy within 12 months of abortion.

Results: Women having abortions from contracted facilities were significantly less likely to initiate LARC within 90 days compared with those receiving abortions in KPNC facilities (11.99% vs 19.10%, $p = 0.012$). Significant factors associated with 90-day LARC initiation included abortions in KPNC facilities (adjusted odds ratio [aOR] = 1.87, $p = 0.007$) and gravidity of 3 or more. Women initiating short-acting or no contraception were significantly more likely to have an unintended pregnancy within 12 months of the abortion than those initiating LARC (aOR = 3.66, $p = 0.005$; no contraception vs LARC, aOR = 3.75, $p = 0.005$).

Conclusion: In response to this study, KPNC now provides reimbursement for LARC in all outside abortion contracts, internalized more abortions in KPNC facilities, and strengthened clinical recommendations for immediate, effective postabortion contraception, especially LARC.

For personal reasons, some women may prefer their abortion care to be provided at facilities outside of their Health Plan. For some women who have their abortions through contracted abortion facilities, coverage or reimbursement for postabortion contraception may or may not be included in the abortion services. Besides coverage or reimbursement, specialty abortion facilities also may have immediate onsite contraception available, especially long-acting reversible contraception (LARC). As a result, some women may not receive contraceptive services from the contracted abortion facilities and on the same day as their abortion. Although referral to contracted specialty abortion facilities provides private and efficient access for many women, it may undermine the continuity of care and timely access to postabortion contraception.

As a large integrated health care system, Kaiser Permanente Northern California (KPNC) delivers emergent and nonemergent health services in its facilities. Abortion services are provided in many KPNC facilities and through preauthorized referrals to outside contracted abortion facilities. Both short-acting contraception and LARC are provided to KPNC Health Plan members as a covered benefit with most insurance plans regardless of whether they receive abortion care in KPNC facilities or from outside contract facilities. However, during this study period (2011-2013), contraception was not covered or reimbursed by KPNC as a part of outside contracted abortion services.

Our main study objective was to assess contraceptive initiation within 90 days of the abortion and to determine the risk of having a repeated unintended pregnancy within 12 months by the women receiving abortion services in KPNC facilities vs those receiving abortion services through outside contracted facilities.

We hypothesized that women having abortions in the KPNC facilities would be more likely to initiate contraception within 90 days, particularly LARC, compared with women having abortions through outside contracted facilities. A secondary hypothesis was that women initiating LARC would be less likely to have a repeated unintended pregnancy within 12 months compared with women initiating a short-acting or no contraceptive method within 90 days of their abortion.

METHODS

A retrospective cohort study was conducted with a proportional random sample of women aged 15 to 44 years with a medical or

INTRODUCTION

Annually, 1.2 million women have abortions in the US; half of these women have already had at least 1 prior abortion.¹ One way to help prevent repeated unintended pregnancies is to provide access to highly effective contraception at the time of abortion.²⁻⁸ Because of limited numbers of trained abortion providers and staff, referral to specialty abortion facilities is the predominant model of abortion care in the US.^{9,10}

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surgical abortion performed in KPNC facilities or provided by reimbursed contracted abortion facilities between January 2011 and December 2012. Industry standard codes—Current Procedural Terminology, 4th Edition (CPT-4), International Classification of Diseases, Ninth Revision (ICD-9), and Healthcare Common Procedure Coding System (HCPCS)—plus records of administered mifepristone were used to electronically identify the abortions provided in KPNC facilities and through KPNC's authorized outside medical facilities system (AOMS). Women receiving authorized referrals through AOMS have a documented positive pregnancy test, may have had pregnancy-dating ultrasonograms and examinations performed in KPNC, and had confirmed Health Plan coverage for the abortion. The decision to refer women through AOMS or to provide the abortion services in KPNC facilities depends on the facility, access to provide the abortion services in a timely manner, clinician and support staffing mix, and sometimes the woman's preference.

The first abortion identified within the study timeframe was considered the index case. Eligible women were required to have Kaiser Foundation Health Plan membership in the 3 months before and the 12 months after the index abortion as well as a prescription drug benefit in the 3 months after the index abortion. All data obtained from KPNC electronic databases were validated by review of the electronic health records. The Kaiser Foundation Research Institute's institutional review board approved this retrospective cohort study with waiver of consent and authorization.

Data Collection

The patient's age at index abortion, race/ethnicity, and prescribed or administered method of contraception within 90 days of abortion were electronically extracted. The 90-day period to assess initiation of contraception after the abortion was chosen to allow adequate time for all subjects to initiate contraception in KPNC regardless of where the abortion services were provided.

Methods of LARC included both the levonorgestrel-releasing and the copper intrauterine contraceptive device (IUD) and the subdermal contraceptive implant. Short-acting reversible methods included depomedroxyprogesterone acetate, oral contraceptive pills, transdermal patch, vaginal ring, and prescribed barrier methods (diaphragm, cervical cap, and condoms). Emergency contraception was considered a short-acting method prescribed if no other methods were prescribed.

Evidence of the first repeated pregnancy within 12 months after the index abortion was electronically identified. For pregnancies for which prenatal care was initiated, self-reported pregnancy intention status was obtained from questions routinely asked at entry to prenatal care: *"At the time that you conceived, did you want to become pregnant?"* (intended vs unintended), *"Did you want to become pregnant but not at this time?"* (mistimed), or *"Did you not want to become pregnant at all?"* (unwanted). If the self-reported pregnancy intention status was reported as mistimed or unwanted, it was defined as unintended. Pregnancies resulting in abortion were considered unintended unless prenatal care was initiated and the pregnancy was self-reported as intended. If the repeated pregnancy resulted in a spontaneous or missed abortion or ectopic

pregnancy, pregnancy intention status was considered unknown unless the pregnancy was self-reported as intended at entry to prenatal care before termination.

During the study, 57% of the abortions were performed in KPNC facilities and 43% through outside contracted facilities. To calculate the sample size to test the first hypothesis, we estimated that 5% of women receiving abortions through outside contracted abortion facilities and 10% to 15% receiving abortions in KPNC facilities would initiate LARC within 90 days of abortion. With use of unequal group sample size and power calculations, a 2-group, continuity-corrected χ^2 test with a 0.05 two-sided significance level would have 80% power to detect the difference between 10% and 15% LARC initiation in the KPNC facilities, compared with 5% LARC initiation in the outside contracted facilities, with sample sizes of 400 and 300 cases, respectively.

To calculate the sample size to test the secondary hypothesis, we conservatively estimated that approximately 10% of women after abortion would initiate LARC methods. We hypothesized that 30% of women who initiated short-acting or no contraception within 90 days after abortion, and who became pregnant within 12 months, would have an unintended pregnancy, compared with 5% initiating LARC after abortion. Use of a 2-group, continuity-corrected χ^2 test with a 0.05 two-sided significance level would have 80% power to detect the 25% difference in unintended pregnancies between women initiating LARC within 90 days of abortion and those initiating short-acting contraception or no contraceptive method within 90 days after abortion, with sample sizes of 26 and 228, respectively. Therefore, a proportional random sample of 400 women receiving abortion services in KPNC facilities and 300 women receiving abortions through outside contracted facilities was selected, exceeding the required sample sizes to test both hypotheses.

Electronic medical record review, conducted by 2 gynecologic resident physicians, validated the type of contraception initiated within 90 days of the index abortion and obtained accurate gravidity and parity for the study cohort. These physicians also identified repeated pregnancies within 12 months that were not captured in the electronic-coded data and determined the self-reported pregnancy intention status if available. They also confirmed the repeated pregnancy outcome (prenatal care ongoing, spontaneous abortion, missed abortion, ectopic pregnancy, type of abortion [medical or surgical], fetal demise, or delivery). A total of 690 women with abortions performed in 2011 to 2012 made up the final analytic dataset. Ten women with abortions were excluded because of miscoding because they either did not have an abortion or had an abortion but not within the study period.

Data Analysis

We used descriptive statistics (frequencies, means, medians, and proportions) to describe the cohort by abortion service group (in KPNC facilities vs outside contracted facilities). Comparisons of the women's demographic and clinical characteristics in the 2 abortion service groups were made using χ^2 tests for all categorical variables and t -tests for continuous variables.

Logistic regression models were used to identify predictors of LARC initiation within 90 days of the index abortion and

for having a repeated unintended pregnancy within 12 months. The primary predictor in each model was the abortion service group (in KPNC facilities vs outside contracted facilities). In the model identifying predictors of LARC initiation within 90 days, we controlled for age categorically, race/ethnicity, and gravidity. For the model assessing predictors of having a repeated

unintended pregnancy within 12 months of the index abortion, we controlled for age categorically, race/ethnicity, gravidity, and contraception method initiated after abortion. Pairwise comparisons between LARC vs no method, short-acting vs no method, and LARC vs short-acting were included in this model using contrast statements.

RESULTS

There were significant differences in age, race/ethnicity, and gravidity between the 2 abortion service groups (Table 1). The mean age of women receiving abortions in KPNC facilities was significantly older than the women receiving abortions from outside contracted facilities (29.8 vs 26.6, $p < 0.001$; Table 1). A greater proportion of adolescents and black women received abortions by outside contracted facilities. Of 690 abortions, 75% were surgical (80% from contracted facilities, 71% in KPNC facilities) and 25% were medical (20% from contracted facilities, 29% in KPNC facilities). The proportion of women initiating short-acting contraception within 90 days was similar in the 2 abortion service groups (39% vs 43%, respectively, $p = 0.333$), with the pill being the most frequently initiated method in both groups (Table 1, Figure 1).

Characteristic	Contracted facilities (n = 292), no. (%)	KPNC facilities (n = 398), no. (%)	p value
Mean age, years (median)	26.6 (25.0)	29.8 (30.0)	< 0.001^a
Age group, years			
15-19	56 (19.18)	35 (8.79)	< 0.001
20-29	140 (47.95)	154 (38.69)	
30-39	76 (26.03)	176 (44.22)	
≥ 40	20 (6.85)	33 (8.29)	
Race/ethnicity			
Asian	34 (11.64)	87 (21.86)	< 0.001
Black	79 (27.05)	51 (12.81)	
Hispanic	61 (20.89)	83 (20.85)	
White	88 (30.14)	151 (37.94)	
Other/unknown	30 (10.27)	26 (6.53)	
Gravidity			
1	100 (34.84)	112 (28.21)	0.026
2	44 (15.33)	91 (22.92)	
≥ 3	143 (49.83)	194 (48.87)	
Parity			
0	139 (48.43)	169 (42.57)	0.47
1	68 (23.69)	109 (27.46)	
2	51 (17.77)	78 (19.65)	
≥ 3	29 (10.10)	41 (10.33)	
Type of contraception initiated within 90 days			
LARC (vs no LARC)	35 (11.99)	76 (19.10)	0.012
IUD	30 (10.27)	73 (18.34)	0.333
Implant	5 (1.71)	3 (0.75)	
Short-acting (vs no short-acting)	114 (39.04)	170 (42.71)	
DMPA	26 (8.90)	29 (7.29)	
Pill	68 (23.29)	100 (25.13)	
Patch	2 (0.68)	3 (0.75)	
Ring	7 (2.40)	11 (2.76)	
Emergency contraception only	7 (2.40)	12 (3.02)	
Condoms (prescribed)	4 (1.37)	15 (3.77)	
No contraception method documented (vs method documented)	143 (48.97)	152 (38.19)	
Repeated unintended pregnancy within 12 months	50 (17.12)	46 (11.62)	0.04

^a p values for mean age comparisons were calculated using the t-test. All other p values were calculated using χ^2 tests. Boldface indicates statistical significance. DMPA = depomedroxyprogesterone acetate; IUD = intrauterine contraceptive device; KPNC = Kaiser Permanente Northern California; LARC = long-acting reversible contraception.

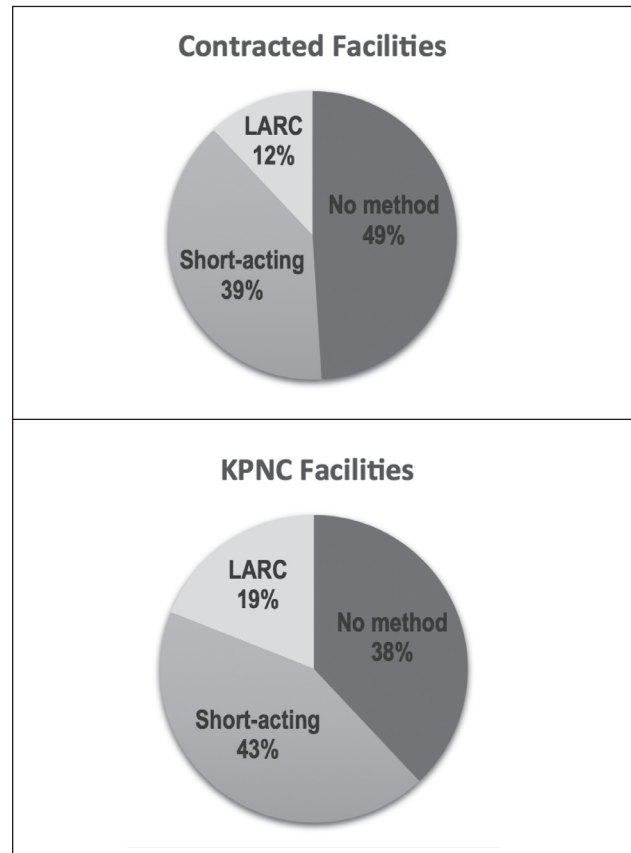


Figure 1. Contraception category initiated within 90 days, by abortion service. KPNC = Kaiser Permanente Northern California; LARC = long-acting reversible contraception.

Overall, LARC was initiated within 90 days of the abortion by 16% of the cohort, which was higher than expected. However, women were significantly less likely to initiate LARC when their abortions were provided through outside contracted facilities

Table 2. Factors associated with LARC initiation within 90 days of abortion

Characteristic	Adjusted OR (95% CI) ^a	p value ^b
Abortion service (reference: Provided by contracted facilities)		
Provided by KPNC facilities	1.87 (1.18-2.96)	0.007
Age group (reference: 20-29 years)		
15-19 years	0.77 (0.36-1.66)	0.506
30-39 years	0.58 (0.35-0.94)	0.027
≥ 40 years	0.52 (0.22-1.24)	0.141
Race/ethnicity (reference: White)		
Asian	1.19 (0.66-2.16)	0.563
Black	1.09 (0.59-2.02)	0.779
Hispanic	1.09 (0.61-1.94)	0.771
Unknown/other	0.85 (0.35-2.05)	0.714
Gravidity (reference: 1)		
2	1.71 (0.90-3.26)	0.102
≥ 3	2.23 (1.26-3.95)	0.006

^a Odds ratios were calculated using the logistic regression model.
^b Boldface indicates statistical significance.
 CI = confidence interval; KPNC = Kaiser Permanente Northern California; LARC = long-acting reversible contraception; OR = odds ratio.

Table 3. Factors associated with having a repeated unintended pregnancy within 12 months of abortion

Characteristic	Adjusted OR (95% CI) ^a	p value ^b
Abortion facilities (reference: Provided by KPNC facilities)		
Provided by contracted facilities	1.1 (0.67-1.78)	0.71
Age group (reference: 30-44 years)		
15-19 years	6.56 (2.80-15.34)	< 0.001
20-24 years	4.31 (2.19-8.48)	< 0.001
25-29 years	3.28 (1.74-6.18)	< 0.001
Race/ethnicity (reference: White, non-Hispanic)		
Asian	2.02 (1.01-4.07)	0.048
Black	1.78 (0.93-3.38)	0.08
Hispanic	1.26 (0.65-2.44)	0.49
Unknown/other	0.95 (0.35-2.53)	0.91
Gravidity (reference: 1)		
2	1.25 (0.59-2.66)	0.56
≥ 3	3.60 (1.91-6.78)	< 0.001
Method initiated within 90 days (reference: LARC)		
No method	3.75 (1.50-9.36)	0.005
Short-acting method	3.66 (1.48-9.03)	0.005
No method initiated within 90 days (reference: Short-acting method)	1.03 (0.63-1.66)	0.92

^a Odds ratios were calculated using the logistic regression model.
^b Boldface indicates statistical significance.
 CI = confidence interval; KPNC = Kaiser Permanente Northern California; LARC = long-acting reversible contraception; OR = odds ratio.

compared with those receiving abortions in the KPNC facilities (11.99% vs 19.10%, p = 0.012; Table 1, Figure 1). When the abortion was performed in KPNC facilities, 70% of the women initiating LARC did so within 14 days and 45% initiated LARC the same day as their abortion. In contrast, only 15% of the women receiving abortions through outside contract facilities who initiated LARC did so within 14 days, and none did so on the same day of their abortion. The most common LARC method initiated in both abortion service groups was the IUD (Table 1).

Controlling for demographic and clinical characteristics, women with abortions provided in KPNC facilities were 87% more likely to initiate LARC within 90 days of abortion compared with women with abortions provided by outside contracted facilities (adjusted odds ratio [aOR] = 1.87, p = 0.007). Women with gravidity of 3 or more were twice as likely to initiate LARC compared with women who were gravida 1 (aOR = 2.23, p = 0.01). Women aged 30 to 39 years were 40% less likely to initiate LARC compared with women aged 20 to 29 (aOR = 0.6, p = 0.03; Table 2).

Nearly 14% of the women (96 of 690) had a repeated unintended pregnancy within 12 months. Women with abortions from outside contracted facilities were significantly more likely to have a repeated unintended pregnancy within 12 months compared with those having abortions in KPNC facilities (17.1% vs 11.6%, p = 0.04; Table 1). After we controlled for all other demographic and clinical predictors, women initiating short-acting contraception (aOR = 3.66, p = 0.005) and women with no prescribed contraception initiated within 90 days of abortion (aOR = 3.75, p = 0.005) were almost 4 times as likely to have a repeated unintended pregnancy within 12 months compared with women initiating LARC (Table 3). There was no statistically significant difference in the odds of women having a repeated unintended pregnancy within 12 months when no method was initiated compared with short-acting contraception initiation (aOR = 1.03, p = 0.92; Table 3).

The younger a woman was, her odds significantly increased of having a repeated unintended pregnancy within 12 months of the abortion (15-19 vs 30-44 years, aOR = 6.56, p < 0.001; 20-24 vs 30-44 years, aOR = 4.31, p < 0.001; 25-29 vs 30-44 years, aOR = 3.28, p < 0.001). Other significant predictors of having a repeated unintended pregnancy included being Asian (reference: white, aOR = 2.02, p = 0.048) and having higher gravidity (≥ 3 vs 1, aOR = 3.59, p < 0.001; Table 3).

DISCUSSION

In this study, about 1 in 7 KPNC Health Plan members experienced a repeated unintended pregnancy within 12 months of having an abortion. Women having abortions in KPNC facilities were twice as likely to initiate LARC within 90 days as women having their abortions from contracted facilities. The largest factor associated with the women having a repeated unintended pregnancy within 12 months was no initiation of contraception or initiation of short-acting contraception after abortion, compared with LARC.

This study adds to the existing literature, providing insight on women's postabortion outcomes in the US. A New Zealand study

providing free medical care to all residents reported a repeated abortion rate at 24 months of 9.6%, with repeated abortions being 2 to 4 times higher in women initiating immediate short-acting contraception vs LARC.⁸ Two US studies showed significantly lower 12-month pregnancy rates after abortion between immediate and delayed LARC insertion in different Medicaid-reimbursed populations.^{11,12}

The difference in LARC initiation by women having abortions in KPNC vs through contracted facilities is likely owing to the lack of reimbursement for LARC as a covered benefit in the abortion service contract, thus requiring a second visit to KPNC to obtain LARC. One US study found that only 32% of women who reported they intended to have an IUD insertion after their abortion actually had the IUD insertion by 6 months after their abortion.¹³ The largest barrier identified was the time needed for the additional visit.¹³ Similarly, another study showed more than half of the women who intended to have subdermal contraceptive implant placement immediately after abortion missed their follow-up insertion appointments.⁷ Thus, lack of contraceptive reimbursement with outside contracted abortion facilities as well as the discontinuity of care may serve as barriers to initiation of timely and effective postabortion contraception. In KPNC's integrated health care system, most health care services are typically provided internally. Because of limitations in the number of trained abortion service clinicians and support staff in some KPNC facilities, other logistical system issues, and a woman's preference, there is a need for an outside abortion referral system to achieve timely access. Contraceptive services are routinely provided by all KPNC gynecology clinicians, most primary care clinicians, and most of the contracted abortion services. However, contracting abortion services outside KPNC led to the "unbundling" of abortion and contraceptive services, which ideally should be provided together. Because women are more likely to be highly motivated to improve contraceptive use right after an unintended pregnancy, initiation of contraception immediately after abortion is optimal.¹⁴ In addition, studies have shown that 86% of women ovulate within the first month after abortion and can ovulate as soon as 8 days after abortion.^{14,15}

In this study, almost half (49%) of the women having abortions from contracted facilities had no prescribed contraception within 90 days after abortion. However, a significant proportion (38%) of women having their abortion in KPNC facilities also had no prescribed contraception. It is likely that women undergoing an abortion may continue contraceptive use patterns after abortion that put them at risk of another unintended pregnancy.¹⁴ Less-than-optimal contraception initiation by women receiving abortions through contracted facilities or from KPNC facilities may reflect missed opportunities to reduce the risk of a repeated unintended pregnancy. In the Contraceptive CHOICE project, women offered a choice of methods immediately after abortion at no cost were more likely to choose LARC (85%) than short-acting contraception, suggesting that higher adoption rates are possible.¹⁶ In our study, women initiating short-acting contraception after abortion had similar risks for having a repeated unintended pregnancy within 12 months to those initiating no contraceptive method. This is consistent

with previous studies showing that women not initiating LARC after abortion were more likely to have a repeated unintended pregnancy.^{2,8,11-13,17,18}

This study's limitations included the retrospective observational design and lack of Health Plan information on deductibles, which may have affected affordability of LARC for some women. However, during the study period, more than 80% of women had no deductible applied for outpatient contraception facilities. Variation in deductible amounts under different Health Plans is unlikely to have had a differential effect because deductible amounts were the same regardless of whether the abortion was provided in KPNC or by outside referral. Women who chose not to disclose their pregnancy to KPNC or did not have abortion coverage in their Health Plan, such as federal employees, were not included in the study cohort.¹⁹ Approximately 5% of KPNC membership is made up of federal employees. History of a previous abortion before the index abortion was also not collected because of underreported documentation in the medical record. In this study, it was not feasible to include all abortions performed during the study period because of the need to perform electronic medical record review to identify gravidity and parity, and to validate type of contraception and repeated unintended pregnancies within 12 months. However, the demographic characteristics (ie, age and race/ethnicity) of the random sample of women that made up the analytic study cohort were similarly distributed by race and ethnicity, with the mean and median ages being the same as in the overall abortion service group.

The study's strengths include the setting in KPNC's demographically diverse population representative of the geographic region.²⁰ The KPNC system's electronic health records and electronic databases allowed for accurate capture of study variables validated with electronic medical record review.

CONCLUSION

These study findings resulted in KPNC strengthening clinical recommendations for providing immediate postabortion LARC insertion regardless of the abortion setting, internalizing more abortion services in KPNC facilities, and adding contraception reimbursement, including for LARC, in all outside abortion service contracts. Access to immediate, effective postabortion contraception, especially LARC, as an essential component of abortion care, should be integrated into all abortion care settings. We hope these findings lead to optimization of abortion care in Kaiser Permanente and across all US health plans, including providing immediate access to highly effective contraception. There are plans to study changes in LARC initiation after abortion in KPNC in the future to learn whether strengthened clinical recommendations and contract changes successfully reduce repeated unintended pregnancies. ❖

Disclosure Statement

Four of the authors (Debbie Postlethwaite, Maqdooda Merchant, Amy Alabaster, and Tina Raine-Bennett) are participating in a US Food and Drug Administration-mandated safety study funded by Bayer Global. The author(s) have no additional conflicts of interest to disclose.

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Every Occasion

Contraceptives should be used on every conceivable occasion.

— Terence Alan “Spike” Milligan, KBE, 1918-2002, British-Irish comedian, writer, poet, playwright, and actor