

Reasons For First Teen Pregnancies Predict the Rate of Subsequent Teen Conceptions

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ABSTRACT. *Objective.* To identify reasons for inconsistent contraceptive use that antedate conception and continue to predispose participants in adolescent-oriented maternity programs to unsafe sexual practices after delivery. We hypothesized that teens who attributed their failure to use contraceptives before their first conception exclusively to concerns about their side effects and/or their own lack of motivation to prevent conception would report less consistent contraceptive use and more repeat conceptions than would teens who attributed their previous failure to use contraceptives to their lack of capacity to do so.

Method. We conducted a 2-year, prospective, longitudinal study of contraceptive use and repeat conceptions in a racially/ethnically diverse population of poor 13- to 18-year-olds. The 198 study participants were enrolled consecutively during their first pregnancies from an adolescent-oriented maternity program.

Results. The majority (84%) of the teens attributed their failure to use contraceptives before their first pregnancy partially to a lack of capacity to do so. As hypothesized, these teen mothers were significantly more likely to use hormonal contraceptives (85% vs 62%), (particularly Norplant, 47% vs 19%) and less likely to conceive again (13% vs 41%). Most teens attributed their inconsistent contraceptive use during the postpartum study period to three factors: side effects, plans to abstain from sexual intercourse, and their lack of motivation to postpone additional childbearing.

Conclusions. The reasons teen mothers give for not using contraceptives consistently before their first pregnancies predict the occurrence of subsequent conceptions during adolescence. Those who attribute their previous failure to use contraceptives consistently to side-effect concerns and their own lack of motivation to postpone childbearing are least likely to use hormonal contraceptives after delivery and most likely to conceive again. Our findings suggest that future research should focus on the development of more effective interventions for preventing repeat conceptions among adolescent mothers who had the capacity to prevent their first pregnancies. *Pediatrics* 1998;101(1). URL: <http://www.pediatrics.org/cgi/content/full/101/1/e8>; *adolescent pregnancy, repeat adolescent pregnancy, contraception.*

ABBREVIATIONS. CAMP, Colorado Adolescent Maternity Program; CI, confidence interval.

The pregnancy rate among sexually experienced American teenagers decreased during the last 2 decades, a tribute to the success of sex education and family planning programs in this country.¹ However, the teen pregnancy rate in the United States remains one of the highest in the Western world, evidence that many sexually active American teenagers are still ineffective contraceptive users.¹⁻⁴ The increased availability of confidential, adolescent-oriented, reproductive health care services has helped many teenagers prevent the untoward consequences of unprotected sexual activity.³⁻⁹ However, these programs have not been effective with sexually active teenagers who do not exhibit an immediate interest in obtaining or using contraceptives.³⁻⁹ Even in health care settings that guarantee confidentiality and eliminate common knowledge, financial, and transportation barriers, young people who grow up in disadvantaged environments in which early parenthood entails little in the way of lost opportunities typically become inconsistent contraceptive users at best.^{3-6,8,9} This appears to be true because many educationally and socioeconomically disadvantaged teenagers harbor ambivalent feelings about postponing conception.³⁻⁹

Teenage mothers are at particularly high risk for conception during adolescence.^{3,4,10-13} This is perplexing because most have access to contraceptives and insist that they do not want to become pregnant again "any time soon."^{7,11} There is some evidence that extending comprehensive, multidisciplinary, adolescent-oriented maternity programs beyond the immediate postpartum period and providing simultaneous care for adolescent parents and their children promotes more consistent contraceptive use.^{3,4,12,14} These types of programs are predicated on the assumption that young people need motivation as much as they need contraceptives to avoid pregnancy.^{3,4,12,14} The premise is that modifying the aspects of an adolescent mother's life that put her at risk for inconsistent contraceptive use before her first conception will help her prevent additional conceptions during adolescence.^{3,4,12,14} To this end, young mothers are educated about contraceptives, counseled about educational and vocational options, and supported in their efforts to pursue careers in addition to motherhood.^{3,4,12,14}

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Unfortunately, the frequency and rapidity with which the participants in these special programs become pregnant again indicates that this approach fails to convince many adolescent mothers that the costs of repeat childbearing outweigh the benefits.^{3-5,10-15} Our review of the literature suggested that this might be true, in part, because the health care and social service providers who staff these programs have successfully modified some of the antecedent aspects of their patients' lives that put them at risk for inconsistent contraceptive and not others. The purpose of this research was to learn more about the latter (eg, those antecedent aspects of adolescent mothers' lives that health care and social service providers have most difficulty modifying).

Specifically, our goal was to determine which of the reasons teen mothers give for not using contraceptives consistently before their first pregnancy are addressed least effectively by the counseling offered in a typical clinic-based, comprehensive, multidisciplinary, adolescent-oriented maternity program. We hypothesized that during the first two postpartum years, teen mothers who attributed their failure to use contraceptives before their first conception exclusively to concerns about side effects and/or a lack of motivation to prevent conception would report less consistent contraceptive use and more repeat conceptions than would teen mothers who attributed their previous failure to use contraceptives to their lack of capacity to do so.

METHODS

Subjects

The study sample consisted of a racially and ethnically diverse group of 198, poor, nulliparous, predominantly unmarried, pregnant 13- through 18-year-olds. Most lived with at least one biological parent and were enrolled in school at conception. The study participants were enrolled consecutively from the Colorado Adolescent Maternity Program (CAMP) during the third trimester of their first pregnancy (mean \pm SD, 34.4 \pm 2.4 weeks) and followed prospectively through the 18th postpartum month. Teenagers who stated that their pregnancies were the result of rape or other types of coercive sexual activity were not asked to participate in the study. Our study design also excluded teenagers who delivered very preterm infants. Although we do not have any data bearing on the biases that might have been introduced by the exclusion of these young women, they are likely to quite minor because only 3% of CAMP patients deliver before the 34th week of gestation.¹⁷

CAMP is a comprehensive, multidisciplinary, adolescent-oriented prenatal, delivery, postpartum, and infant care program in Denver, CO.^{7,17} Prenatal, labor, and delivery care are provided by three certified nurse midwives and a pediatrician with subspecialty training in adolescent medicine. Postnatal care is provided simultaneously to teenage parents and their children by three physician assistants with subspecialty training in pediatrics and adolescent medicine and by the pediatrician with subspecialty training in adolescent medicine. Continuity between the prenatal and postnatal portions of the program is maintained by the pediatrician, a social worker, a dietician, and two community-based outreach workers. Specific measures implemented to eliminate common access-to-care barriers included 1) walk-in appointments and a waiting time of <1 week for appointments; 2) follow-up of missed health maintenance visits by telephone, mail, or home visit and rescheduling within 1 week of contact; 3) special efforts to schedule appointments at times that do not conflict with the teenagers' school and/or work schedules; 4) clinic fees and contraceptive supplies on a sliding scale; free care and supplies for uninsured and underinsured patients; and 6) free bus tokens and help with accessing other forms of free transportation.

During the prenatal and postnatal period, heavy emphasis is placed on the importance of consistent contraceptive use, regular school attendance, and future-oriented family and career planning. Providers make every effort to identify and counter environmental pressures and experiences that might make repeat pregnancy a more attractive option than contraception. To this end, they discuss concerns about contraceptive side effects and provide information about educational and vocational training opportunities in the community.

A total of 165 (83%) of the 198 young mothers completed the study. Characteristics of this portion of the study population are presented in Table 1. The remaining 33 young mothers were lost to follow-up (most because they moved out of the region, leaving no forwarding address or contact person). Attrition analyses revealed that those who were lost to follow-up did not differ significantly from those who completed the study with regard to socioeconomic status, gravidity, race, school status, reasons for not using contraceptives consistently before conception, or pregnancy outcome. They were, however, significantly older, more likely to have entered prenatal care late in gestation, to be depressed, and be living apart from both parents. Thus, it is possible that our study understates the repeat pregnancy rate.^{2,10,11}

The study was approved by the Institutional Review Board at the University of Colorado Health Sciences Center.

Data Collection

At enrollment, participants completed the principle assessment instrument. This was a self-administered questionnaire, developed for this investigation with the use of items used in earlier studies.²⁻¹⁶ The questionnaire was written at a fifth grade reading level. It collected information about 21 sociodemographic and psychosocial variables related to the social context of the index pregnancy and the young women's sexual and reproductive history and postpartum contraceptive and future childbearing plans. Factors of interest included maternal characteristics that have been associated consistently with inconsistent contraceptive use and conception during adolescence.^{2-11,16-25} These are 1) sociodemographic factors (eg, young maternal age, minority race/ethnicity,

TABLE 1. Characteristics of the Study Population at Enrollment (N = 165)

Variable	Number (%)
Age (mean \pm SD; years)	16.2 \pm 1.2
<16 years of age	61 (37)
Race/ethnicity	
White/non-Hispanic	81 (49)
Black	44 (27)
Hispanic	35 (21)
Other	5 (3)
Medicaid user	151 (93)
Primigravida	143 (87)
Live with parent(s)	105 (64)
Nonteen father of child*	51 (32)
Relation with father of child*	
None/not seeing	49 (31)
Friend/dating	67 (40)
Live in	34 (21)
Married	13 (7)
New boyfriend	18 (11)
School status	
High school graduate	6 (4)
Enrolled	100 (60)
Drop out	59 (36)
Psychosocial problems	
Past physical/sexual abuse	54 (34)
Substance abuse at conception†	70 (42)
Depressed	47 (31)
Inadequate family support‡	12 (8)
Preconception contraception	
None	56 (34)
Condom	62 (38)
Birth control pills	70 (42)
Norplant/Depo-Provera	0 (0)

* Missing data N = 163, † All denied substance use during gestation, ‡ missing data N = 151, § missing data N = 157.

poverty, living apart from parents, and being married); 2) psychosocial factors (eg, dropping out of school, having inadequate family/social support, depression, a long-standing romantic relationship with the father of the baby, a nonteenage boyfriend, and substance abuse); and 3) reproductive factors (eg, previous adverse pregnancy outcomes and inadequate future contraceptive plans). Race/ethnicity was based on respondents' self-identification. The Family Apgar Scale was used to quantify the adequacy of family support; inadequate support was defined as a score ≤ 4 .²⁶ The Center for Epidemiologic Studies Depression Scale was used to quantify depressive symptoms; depression was defined as a score ≥ 17 .²⁷ Information about drug and alcohol use was obtained from patient reports; urine screens were not performed.

The questionnaire also collected information about reasons contraceptives had not been used consistently before the index conception. Nineteen of the most common reasons that adolescents give for not using contraceptives were listed, followed by five blank spaces for additional reasons.⁷ Study participants were instructed to indicate all of the reasons that applied to them. We subsequently grouped the individual reason into three constructs that account collectively for most of the inconsistent contraceptive behavior in the United States.^{4,28} Finally, based on our review of the sex education and family planning literature, we classified prospectively the three constructs as easier or harder for health care and social service providers to modify within the context of an adolescent-oriented maternity program.

Definition of the Three Constructs That Account for Inconsistent Contraceptive Use Before Conception

Lack of Capacity to Use Contraception

This construct defines an individual's ability to use contraceptives. It typically encompasses only the knowledge and access required to use contraceptives.^{4,8,28} However, studies of adolescent contraceptive behavior suggest that unsafe sexual practices may persist among knowledgeable teens who have access to effective contraceptives, because some youngsters are emotionally unwilling and/or cognitively unable to use their knowledge to make conscious decisions about their reproductive behavior.^{2,4,6,8,9,21,28,29} Studies showing that the majority of teenagers still describe their first sexual encounter as something that "just happened" and explain their failure to use contraceptives by saying "I just didn't get around to it" suggest that some teenagers lack the capacity to use contraceptives because they are emotionally incapable of thinking about themselves as sexually active and/or do not want to appear too prepared for sex.²⁹ A second factor that undermines the capacity of many knowledgeable teens to use contraceptives is the sense of invulnerability that permeates their cognitive processes. Adolescents who do not use contraceptives for a period of time and do not become pregnant may become resistant to the use of contraceptives either because they feel they are immune to pregnancy or because they begin to worry that they are sterile.⁶ Examples of statements endorsed by study participants who were classified as lacking the capacity to use contraceptives included "I just didn't think it would happen to me"; "I didn't know where to get birth control"; "I wasn't planning to have sex"; and "I thought I couldn't get pregnant, that I was sterile."

The literature is replete with studies showing that school- and community-based sex education and family planning programs address effectively the knowledge deficits and access barriers that frequently impede effective contraceptive use among nulliparous adolescents.¹⁸⁻²⁰ Therefore, we surmised that these types of reasons for inconsistent contraceptive use would be relatively easy to modify within the context of a comprehensive adolescent-oriented maternity program. Similarly, we anticipated that the experience of being pregnant and attending a clinic in which contraception was discussed openly would help most teenagers overcome the emotional and cognitive barriers that often make it difficult for their nulliparous counterparts to use the knowledge and access they have to contraceptives.^{21,22}

Fear of Contraceptive Side Effects

Examples of statements endorsed by study participants who were classified as fearing the side effects of contraceptives included "I was afraid of the side effects of birth control" and "I didn't like the side effects of birth control." Preexisting concerns about contraceptive side effects are extremely difficult to over-

come and remain one of the most important deterrents to consistent contraceptive use among women of all ages.^{23,24,28} Therefore, we anticipated it would be relatively difficult to modify such concerns in a clinic-based, adolescent-oriented maternity program.

Lack of Motivation to Use Contraception

This construct defines an individual's desire to use contraceptive as opposed to their ability to do so. Empirical data suggest that the motivation to use contraceptives varies both in direction and strength and that negative feelings about childbearing have to reach a certain strength to motivate behaviors required to avoid conception. Examples of statements endorsed by study participants who were classified as lacking the motivation to use contraceptives included "I didn't mind if I got pregnant" and "My boyfriend wanted me to get pregnant." Because studies of the antecedents of ambivalence about childbearing during adolescence suggest that most of the factors that contribute to the lack of motivation to postpone childbearing at this age are deeply embedded in the fabric of these young people's lives, we predicted it would take massive social transformations to change them and therefore that it would be relatively difficult to modify the positive and ambivalent feelings about childbearing that undermine the motivation to use contraceptives in a clinic-based, adolescent-oriented maternity program.^{4-9,16,25}

Follow-up

A similar questionnaire was administered at 6-month intervals through the 18th postpartum month. The postpartum questionnaire elicited additional information about the consistency of contraceptive use during the preceding 6 months and the types of contraceptives used. Responses to the question concerning consistency of contraceptive use were dichotomized. A consistent contraceptive user was defined as a teenager who reported no unprotected intercourse during the preceding 6 months. Participants were also asked to rate how they would feel and how they thought their boyfriends would feel if they were to become pregnant again immediately. Responses to this question were quantified on a 4-point pictorial Likert scale (choices ranged from 0 = a face showing a sad/mad expression, to 3 = a face showing a happy expression; the scale is available on request). Study participation ceased with the diagnosis of pregnancy.

Data Analysis

Univariate analyses were used to describe the study population and to report on the frequency with which the study subjects cited various reasons for not using contraceptives before conception. Initial comparisons among adolescents who reported at least one easy to modify reason for inconsistent contraceptive use before the index conception and those who gave only potentially more difficult to modify explanations for their previous contraceptive indiscretions were carried out with bivariate analyses (Student's *t* tests and χ^2 analyses). Multivariate analyses using logistic regression were conducted to determine whether findings at the bivariate level would be supported after adjusting for relevant sociodemographic characteristics (eg, those that differed by $P < .05$ between the groups). Adjusted odds ratios for consistent contraceptive use and repeat conception and their 95% confidence intervals (CI) were calculated from the logistic coefficients and SE units for each variable in the models. To simplify the model and its application in clinical practice, the independent predictor variables were dichotomized (present or absent). Classifications were based on the results of previous studies concerning the antecedents of repeat adolescent pregnancies.^{4,9-12} Thus, for example, for the minority race/ethnicity variable, all race/ethnicity categories except white, non-Hispanic were as coded 1 and for the young maternal age at conception variable, age < 16 , was coded as 1. The statistical tests for the logistic regression model was the χ^2 likelihood ratio.

All statistical analyses were performed with SPSS/PC+.³⁰

RESULTS

A total of 138 (84%) of 165 pregnant teenagers who completed the study gave at least one "easier to modify" explanations for their failure to use contra-

ceptives before their first conception. The remaining 27 young women gave only potentially “harder to modify” explanations for their behavior.

Prenatal plans for postpartum contraception were similar in the two groups. Overall, 89% of the teen mothers who gave at least one “easier to modify” explanations for their failure to use contraceptives and 85% of those who gave only potentially “harder to modify” explanations for their behavior planned to use a highly effective hormonal method after delivery (54% and 44% Norplant, 11% and 18% Depo-Provera, and 32% and 30% oral contraceptives, respectively). In addition, 3% and 4%, respectively, planned to use condoms, and 7% and 4% planned to be abstinent. Less than 1% of each group had no definite postpartum contraceptive plans.

Table 2 compares the consistency of contraceptive use and the prevalence of repeat conception in the two study groups at 6-month intervals during the 18-month follow-up period. The data show that group differences began to emerge as soon as the teenagers had the opportunity to put their prenatal contraceptive plans into practice. By the end of the first postpartum year, teen mothers who had given at least one easier to modify reason for their previous failure to use contraceptives consistently were significantly more likely to report that they had used one of the highly effective hormonal contraceptive methods (particularly Norplant) 100% of the time since delivery. More importantly, they were half as likely to have conceived again.

Group differences in contraceptive behavior and repeat conceptions increased during the postpartum follow-up period. This was true even though there was no significant group difference in the proportion of teen mothers who indicated that an immediate conception would definitely make them and/or their boyfriend very happy or very unhappy. Indeed, the

majority of the respondents in both groups indicated that they and their boyfriends wanted to postpone further childbearing for at least 5 years.

After delivery, the two groups of teen mothers also gave very similar explanations for their inconsistent use of contraceptives. The two most common explanations were “I’m not planning to have sex” and “I don’t like the side effects of birth control.” Together, they accounted for >50% of the inconsistent contraceptive behavior during the postpartum study period.

Bivariate analyses uncovered few statistically significant group differences in the prevalence of common demographic and psychosocial risk factors for inconsistent contraceptive use and repeat adolescent pregnancy. Teenagers who gave at least one easier to modify reason for their failure to use contraception before conception were, however, a select sample of the study population. They were significantly younger (16.2 ± 1.3 vs 16.7 ± 1.0 years; $P = <.02$), more likely to be <16 years of age (40.6% vs 18.5%; $P = .03$), enrolled in school (73% vs 41%; $P = .001$), and not living with the boyfriend (25% vs 48%; $P = .02$). The two groups of teen mothers had similar contraceptive experiences and reproductive histories.

Multivariate analyses controlling for group differences in age, educational status, and partner cohabitation supported the study hypothesis. The data presented in Table 3 show that three factors (young maternal age at conception, being enrolled in school, and citing at least one easier to modify reason for not using contraceptives before the first pregnancy) were significant independent predictors of consistent contraceptive use 12 months after delivery. Citing at least one easier to modify reason for not using contraceptives before the first pregnancy was the only independent predictor of Norplant use at 12 months (relative risk: 20; 95% CI: 1.35, 13.20; $P = .01$) and 18 months (relative risk: 7.52; 95% CI: 1.65, 34.47; $P = .008$) after delivery. The logistic regression analysis that examined the relationship among maternal demographic and psychosocial characteristics, reasons for not using contraceptives before the first conception, and repeat pregnancy during the first 18 postpartum months also supported the study hypothesis. We found that two factors (not being enrolled in school and citing only harder to modify reasons for not using contraceptives before the index pregnancy) were significant independent predictors of repeat conception during the study period (see Table 4).

TABLE 2. Consistency of Contraceptive Use and Prevalence of Repeat Conception

	Easier to Modify	Harder to Modify	P
Number	138	27	
6-Months' postpartum, N (%)			
Pregnant	8 (6)	4 (15)	NS
Missing	3 (2)	0 (0)	NS
Not pregnant	127 (92)	23 (85)	NS
Consistent contraceptive*	112 (88)	17 (74)	NS
Hormonal method†	109 (86)	16 (70)	NS
Norplant	56 (44)	6 (26)	NS
12-Months' postpartum, N (%)			
Pregnant	14 (10)	6 (23)	NS
Missing	4 (3)	0 (0)	NS
Not pregnant	120 (87)	21 (77)	NS
Consistent contraceptive	106 (88)	14 (67)	.06
Hormonal method	102 (85)	13 (62)	.05
Norplant	56 (47)	4 (19)	.02
18-Months' postpartum, N (%)			
Pregnant	18 (13)	11 (41)	.01
Missing	7 (5)	2 (7)	NS
Not pregnant	113 (82)	14 (52)	.01
Consistent contraceptive	91 (81)	12 (86)	NS
Hormonal method	88 (77)	10 (71)	NS
Norplant	51 (45)	2 (14)	.01

* Reports 100% use of contraceptives.

† Norplant, Depo-Provera, or oral contraceptives.

TABLE 3. Predictors of Consistent Contraceptive Use 12 Months After Delivery

Risk Factor	Adjusted Odds Ratio (95% CI)	P
Young age at conception	2.40 (1.00–6.05)	.05
Enrolled in school	2.61 (1.20–5.70)	.01
Inconsistent contraceptive use “easier to modify” explanation	2.58 (1.03–6.49)	.04

Model $\chi^2 = 20.1$; $P = .0002$.

TABLE 4. Predictors of Repeat Conception During the Study Period

Risk Factor	Adjusted Odds Ratio (95% CI)	P
School drop out	2.69 (1.46–9.9)	.005
Inconsistent contraceptive use “harder-to-modify” explanation	3.82 (1.12–6.49)	.02

Model $\chi^2 = 15.2$; $P = .0005$.

DISCUSSION

This study was prompted by our concern about the frequency and rapidity with which repeat conceptions occur even among teen mothers who obtain postnatal care in special programs designed to ensure that they have both the capacity (eg, easy access to comprehensive family planning services) and the motivation needed to use contraceptives effectively. The purpose of this study was to gain insight into the reasons these programs often fail to prevent repeat adolescent pregnancies. To that end, we examined prospectively how the reasons adolescent mothers give for not using contraceptives consistently before their first conceptions predict the occurrence of subsequent conceptions.

The results of this study extend our understanding of the antecedents of repeat adolescent pregnancies by showing that even within the context of a comprehensive adolescent-oriented maternity program in which the health care and social service providers made every effort to foster the desire to delay future childbearing (eg, by promoting future-oriented career and family planning), efforts to modify concerns about contraceptive side effects and the lack of motivation to postpone childbearing were significantly less successful than were efforts to eliminate knowledge deficits and access barriers. As hypothesized, teen mothers who attributed their failure to use contraceptives before their first pregnancy exclusively to concerns about contraceptive side effects and/or their own lack of motivation to postpone childbearing were significantly less likely to report that they had used one of the highly effective hormonal contraceptive methods (particularly Norplant) 100% of the time since delivery. Because contraceptive use was a self-report measure, it is important that within 18 months of the birth of the first child, this subgroup of the teen mothers we studied was also significantly more likely to have become pregnant again (41% vs 13%; $P = .01$). These findings are consistent with the results of studies that show that preexisting concerns about contraceptive side effects are among the most common reasons women stop using highly effective, hormonal contraceptives and expose themselves to the risk of unintended pregnancy.^{23,24} Norplant insertion clearly has the potential to reduce the pace of subsequent adolescent childbearing.^{31,32} However, the results of this and other studies suggest that if Norplant insertions and Depo-Provera injections are not accompanied by substantive changes in the daily living environment, (eg, those changes that are likely to make childbearing a less attractive life course option), early discontinuation and repeat pregnancies are likely to occur.^{4,10–16,23–25}

Other investigators have also found that young mothers who report that they wanted their first baby are more likely to experience a closely spaced second birth.¹⁰ It appears that in the absence of competing life choices (eg, future-oriented career options), adolescents who do not mind the idea of becoming parents are particularly likely to begin to feel that the benefits of repeat conception outweigh the costs. Additional studies are needed to determine whether impoverished adolescents who actually have educational and vocational experiences that compete with childbearing during pregnancy and the puerperium are less likely to feel that the risks of contraceptive use outweigh the benefits.

The literature indicates that in the absence of postpartum intervention, the prevalence of second adolescent pregnancies ranges from 30% to 50% 2 years after the birth of the first child.^{11–13} It was therefore encouraging to find that only 20% of the participants in our comprehensive, adolescent-oriented maternity program became pregnant again during a comparable period. Unfortunately, our data provide no reason for complacency or diminished concern about the risk of rapid repeat conception among teen mothers. Rather, because this was not a randomized trial, the exceedingly high rate of conception (41%) among the minority (16%) of teen mothers who attributed their failure to use contraceptives consistently before their first pregnancy exclusively to concerns about contraceptive side effects and their own lack of motivation to postpone childbearing raises concern that willingness to participate in a program like ours might be simply a marker for a set of personal beliefs and activities that are associated with more effective postpartum contraceptive use. Every teenager in the study population had contraceptive and career counseling on numerous occasions throughout the prenatal and early postpartum period. Thus, it seems unlikely that lack of knowledge about contraception and educational and vocational opportunities were important impediments to these young women's avoidance of subsequent pregnancies. Rather, our data add to the growing body of evidence that suggests that knowledge-based sex education and vocational opportunity programs and neighborhood family planning clinics help motivated teenagers to postpone childbearing but are not effective with those who do not already feel that the benefits of contraceptive use outweigh the risks of conception.^{4–9,18,20} Taken together, these data are a strong indication that new intervention strategies are needed to eliminate the unsafe sexual practices that persist among teenage mothers who did not lack the capacity to prevent their first pregnancy.

Punitive mandates do not appear to be the answer. To date, welfare policies that make the receipt of benefits contingent on regular school attendance and participation in family planning workshops and vocational training programs have not reduced significantly the rate of early subsequent childbearing among impoverished teenage mothers.¹³ By contrast, the relative infrequency with which socioeconomically advantaged American teenagers become parents suggests that to be successful, adolescent preg-

nancy-prevention programs must help young people enter high school with long-term, future-oriented goals and objectives that are sufficiently realistic and achievable to make parenthood their least rather than most attractive career option.

More than 80% of teen mothers we studied attributed their failure to use contraceptives consistently after delivery to three factors: 1) dislike of contraceptive side effects, 2) not planning to have sex, and 3) lack of motivation to postpone further childbearing. Thus, the results of our study suggest that the rate of repeat pregnancies might be dramatically reduced in adolescent-oriented maternity programs if these three remaining barriers to effective contraceptive use could be eliminated.

We conclude that the frequency and rapidity with which the participants in comprehensive, adolescent-oriented maternity programs become pregnant again is in part a reflection of the fact that the health care and social service providers who staff these programs (as with their counterparts who teach sex education and work in family planning clinics) have had more success overcoming the knowledge deficits and access barriers that impede effective contraceptive use than concerns about contraceptive side effects and the lack of motivation to prevent conception. Comprehensive, multidisciplinary, adolescent-oriented maternity programs were designed to provide teen mothers with both the means and the motivation to prevent rapid repeat pregnancies. The latter goal does not appear to have been achieved, at least in our hands.

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