TABLE 2—Regression Results on Age at First Visits and Immunizations Up-to-Date at Age 12 Months

	Age at First Visit, mo			Up to Date, at Age 12 mo	
	Coefficient	SE		OR	95% CI
Preintervention	Reference Group			Reference Group	
Post1* individual service	−1.49	0.10	**	5.90**	1.62, 21.38
Post1* community only	−1.97	0.06	**	2.48	0.79, 7.74
Post2* individual service	−2.13	0.09	**	4.24*	1.24, 14.51
Post2* community only	−1.86	0.10	**	1.35	0.25, 7.21

Note. OR = odds ratio; CI = confidence interval.
*Difference from preintervention group significant at .05 level, 2-tailed test.
**Difference from preintervention group significant at .01 level, 2-tailed test.

individually targeted services saw positive effects from the program, likely from the broad-based, community-level interventions and increased agency cooperation.

In addition, the program improved access to care by bringing children into well-child care at an earlier age—by more than 2 months relative to the pre period. Based on discussions with county officials and providers, this was likely a result of coordinated networks of services and community-level activities, as well as individualized services. These gains were sustained through both post periods.

Because this study was not a randomized trial, our findings could reflect either that the preintervention comparison group was different in an unobservable manner or that other unobserved changes occurred in the county at this time and led to improved well-child care, leading to overestimates of the effects of Pre-to-Three.

Leaders in San Mateo County made a commitment to address the current deficiencies of the child health system. New funding opportunities from the sizable tobacco Master Settlement Agreement to Proposition 10 funds in California make such interventions possible in other areas. The Pre-to-Three program is a starting point for formulating systems that promote effective, integrated, and comprehensive child health development. ■

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Contributors

A. Evans Cuellar conceived and designed the study, analyzed and interpreted the data, drafted and revised the brief, and provided statistical expertise. T.H. Wagner interpreted the data, revised the brief, and provided statistical expertise. T-w. Hu provided statistical expertise, interpreted the data, revised the brief, and obtained funding. K. Peifer acquired the data; conceived and designed the study; revised the brief; obtained funding; and provided administrative, technical, and material support. H. Kitzman conceived and designed the study, supervised the study, and obtained funding. S.J. Tobin acquired and interpreted the data, provided technical support, and obtained funding. V. Shih acquired the data, provided administrative and technical support, and revised the brief. S. Morrow acquired the data, conceived and designed the study, and revised the brief.

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Human Participant Protection

This study received human subjects approval for analysis of administrative data.

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Decreasing Barriers for Teens: Evaluation of a New Teenage Pregnancy Prevention Strategy in School-Based Clinics

Abbey Sidebottom, MPH, Amanda S. Birnbaum, PhD, MPH, and Sarah Stoddard Nafstad, MS, RN, CNP

In 1997, the pregnancy rate among 15- to 17-year-old adolescents in Minneapolis was 79.4 per 1000 (unpublished data, Minneapolis Department of Health and Family Support, 1997), compared with state and national rates of 32.0 and 57.1, respectively.[1] In response to this major public health concern, the Minneapolis Department of Health and Family Support looked to its high school–based clinics to help improve pregnancy prevention.

The Minneapolis Department of Health and Family Support operates comprehensive school-based clinics (SBCs) in 5 traditional high schools. Parents have the choice of allowing their child to receive (1) any SBC service, (2) any service other than contraceptive counseling and birth control prescriptions, or (3) no services.

In the past, students requesting contraceptives from SBCs had been given vouchers to pick up the contraceptives at community clinics at no cost. Because many vouchers went unfilled, a new policy involving direct on-site distribution of contraceptives was instituted in May 1998. (Appointments were necessary for requesting contraceptives.) In the present study, we sought to evaluate the effects of the

change in distribution systems on students' receipt of requested contraceptives and demand for contraceptives from SBCs.

METHODS

We conducted a retrospective chart review of all students in the class of 1998 requesting contraceptives from an SBC under the voucher system and all students in the class of 2000 requesting contraceptives under the direct distribution system. We examined charts from the junior and senior years of each class. The study sample of 302 students was 79.1% female, 39.1% White, and 36.8% African American. The 2 classes had similar demographic characteristics.

To compare receipt of contraceptives under the 2 systems, we computed, for each method separately as well as all methods combined, the proportions of contraceptives requested that were, in fact, received. To assess demand, we compared the proportions of all students enrolled who requested contraceptives under each system.

RESULTS

Under the voucher system, 41% of students received all requested contraceptives, and 59% received at least one. In contrast, 99% of students received all requested contraceptives under the direct distribution system (Table 1). Under the voucher system, only 25% to 50% of students received requested condoms or oral contraceptives, compared with 100% under direct distribution.

The percentage of students requesting contraceptives from an SBC was 11% in both study periods. However, demand for hormonal methods increased slightly under direct distribution (from 6.1% to 7.3% of students; see Table 2). The average number of requests per student was higher under the voucher system, possibly as a consequence of expired vouchers resulting in repeated requests.

DISCUSSION

This study demonstrates the efficacy of a direct distribution system, relative to a voucher system, in ensuring that sexually active students receive contraceptives. Because clinical policy changes can be implemented and enforced inconsistently, it was encouraging to see that the switch to a direct delivery system did indeed increase receipt of contraceptives. Although we were unable to examine actual method use in our sample, there is cause for optimism in light of evidence that improving adolescents' access to contraception increases actual rates of use.[2]

Overall demand for contraceptives did not change with the implementation of the direct delivery system. However, there was an increase in the proportion of requests for hormonal contraception methods. This is a promising result in terms of pregnancy prevention, because "use" of medroxyprogesterone (Depo Provera) is ensured once the injection is given, and oral contraceptives are highly effective in preventing pregnancy when they are used properly. It should be noted, however, that neither hormonal method used alone protects against sexually transmitted infections.

It is possible that overall demand would have increased had there been greater publicity about the change in delivery system. The Minneapolis Department of Health and Family Support did not widely promote the policy change; rather, staff informed current SBC users, school administrators, and some classrooms via presentations describing the services offered. Thus, students who had not previously used an SBC may have been unaware of the policy change. It is plausible that the voucher system was the key barrier preventing some of these students from using SBCs, and greater publicity regarding the direct distribution system may have resulted in students being more likely to visit an SBC to obtain contraceptives. Unfortunately, we do not have data to explore this possibility.

Results of a recent national survey indicated that, of the SBCs housed in US secondary schools, only 18% actually dispense birth control pills and about 28% dispense condoms.[3] Our findings suggest that SBCs could go a step further in reducing adolescents' barriers to accessing contraceptives by adopting an on-site direct delivery system.

Because our investigation involved a retrospective chart review technique, our ability to draw conclusions regarding the impact of the

TABLE 1—Receipt of Contraceptives Under the Voucher System (Class of 1998) and the Direct Distribution System (Class of 2000)

	Voucher (n = 149), No. (%)	Direct Distribution (n = 153), No. (%)
Receipt of contraceptives requested (all methods combined)		
Received all requests	61 (40.9)	152 (99.3)
Received some requests	27 (18.1)	0
Received no requests	61 (40.9)	1 (0.7)
Receipt of contraceptives, by method requested		
Condoms		
Received all requests	21 (25.3)	77 (100)
Received some requests	7 (8.4)	0
Received no requests	55 (66.3)	0
Oral contraceptives		
Received all requests	11 (50.0)	48 (100)
Received some requests	1 (4.5)	0
Received no requests	10 (45.5)	0
Medroxyprogesterone (Depo Provera)		
Received all requests	5 (62.5)	29 (100)
Received some requests	2 (25.0)	0
Received no requests	1 (12.5)	0
Combined (hormonal and condoms)		
Received all requests	40 (59.7)	46 (97.9)
Received some requests	14 (20.9)	0
Received no requests	13 (19.4)	1 (2.1)

TABLE 2—Demand for Contraceptives Under the Voucher System (Class of 1998) and the Direct Distribution System (Class of 2000)

	Voucher (n = 1365)	Direct Distribution (n = 1419)
Students requesting contraceptives, No. (%)	149 (10.9)	153 (10.8)
Students requesting condoms at least once, No. (%)	83 (6.1)	77 (5.4)
Students requesting prescription method at least once, No. (%)	83 (6.1)	104 (7.3)
No. of requests per student, mean (SD)	1.69 (1.12)	1.40 (0.74)

direct delivery system is limited. Complete data were available on receipt but not on use of contraceptives. In situations in which factors other than access were responsible for students' failure to fill vouchers (e.g., students changing their minds), the direct delivery system would not have removed all barriers to actual contraceptive use. Future studies and access to data on pregnancies will help to further elucidate this issue. ■

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Abbey Sidebottom is with the Minneapolis Department of Health and Family Support, Minneapolis, Minn. At the time of the study, Amanda S. Birnbaum was with the Division of Epidemiology, University of Minnesota, Minneapolis, and Sarah Stoddard Nafstad was with the Minneapolis Department of Health and Family Support.

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Contributors

A. Sidebottom worked on initial research question conceptualization, created the abstraction tool, wrote the initial draft, and worked on the data analysis. A.S. Birnbaum worked on initial research question conceptualization, data analysis, and writing and editing of the article. S.S. Nafstad contributed to data abstraction and conceptualized the initial research question.

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Human Participant Protection

This research was approved by the University of Minnesota institutional review board. Because of the chart review technique used in this study, informed consent was not required.

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Substance Use Among Foreign-Born Youths in the United States: Does the Length of Residence Matter?

Joseph C. Gfroerer, BA, and Lucilla L. Tan, PhD

The prevention of substance use is a critical component of health promotion among youths. Of the 72.3 million youths under 18 years of age in the United States in 2000, 2.8 million were foreign-born.[1] Research has suggested that foreign-born youths experience increasing risk of substance use as they become assimilated into US society (i.e., become acculturated).[2,3] This study provides the first national estimates of the prevalence of substance use among foreign-born youths aged 12 to 17 years and explores the association between acculturation, defined as the length of residence in the United States, and substance use.

METHODS

Data from the 1999 and 2000 National Household Survey on Drug Abuse (NHSDA) were used.[4–6] The NHSDA is an ongoing nationally representative survey of the noninstitutional civilian population aged 12 years and older.[4] Data were collected by a combination of computer-assisted personal interview and audio computer-assisted self-interview techniques to enhance privacy. Respondents could answer in English or Spanish. Weighted response rates were 91 percent for household screening and 80 percent for youth interviews.[5,6] The interview response rate for youths was 86 percent among Hispanics and 82 percent among non-Hispanic blacks. Only 0.2 percent of selected youths did not respond because of language barrier.

Youths born outside the United States were classified as foreign-born and others were classified as US-born, based on the question, "Were you born in the United States?" Foreign-born respondents were also asked, "In what country or US territory were you born?" and "About how long have you lived in the United States?" The sample of 50 947 youths represented 23.2 million youths in the nation, of which 7.1 percent were foreign-born. Among the foreign-born youths, 28.4 percent were born in Mexico, 5.1 percent in Germany, 4.6 percent in the Philippines, and 3.0 percent in India, Vietnam, and Korea (North and South).

Prevalence estimates were computed for past-month use of cigarettes, alcohol (any, binge, and heavy), marijuana, and other illicit drugs (cocaine, heroin, hallucinogens, inhalants, and nonmedical use of prescription-type pain relievers, tranquilizers, stimulants, and sedatives). Past-month use is defined as use at least 1 time during the 30 days before the interview. Cigarette use includes smoking all or part of a cigarette. Binge alcohol use is having 5 or more drinks on the same occasion at least once in the past 30 days. Heavy alcohol use is having 5 or more binge days in the last 30 days. Comparisons of prevalence estimates between foreign-born and US-born youths were made using *t*-tests. Multiple logistic regressions were run with SUDAAN software (Research Triangle Institute, Research Triangle Park, NC) to assess the effect of