

# Availability of Services for Emergency Contraceptive Pills At High School–Based Health Centers

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**CONTEXT:** School-based health centers have the potential to increase adolescents' awareness of, access to and use of emergency contraceptive pills, which can prevent unintended pregnancy following unprotected sex.

**METHODS:** In 2001, 250 high school–based health centers responded to a nationwide mail survey that assessed the provision of education, referral and prescription services for emergency contraceptive pills, as well as the perceived benefits and barriers related to offering these services. Frequencies, cross-tabulations and logistic regression models were used to analyze the data.

**RESULTS:** Fifty-nine percent of the centers provided education and referrals for emergency contraceptive pills, while 30% provided prescriptions. Staff generally identified the same benefits of and barriers to services, although centers that provided services were more likely than nonproviders to report benefits and less likely to report barriers. Predictors of offering education were providing reproductive health services (odds ratio, 4.6) and citing the increased likelihood that students would use the method (3.5) and have the opportunity to discuss contraception (2.6). Reporting the benefit of pregnancy prevention was a predictor of offering referrals (2.9), while providing reproductive health services (30.4) and citing pregnancy prevention (6.3) were predictors of offering prescriptions. Predictors of the decreased likelihood of offering services were also identified.

**CONCLUSIONS:** School centers that provide all three services have the greatest potential to ensure the successful use of emergency contraceptive pills by adolescents. While the number of centers offering services appears to be increasing, greater efforts are needed to improve students' awareness of and access to the method so they can make informed decisions regarding their reproductive health.

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Emergency contraceptives are pregnancy prevention methods that can be used after unprotected vaginal intercourse has occurred. From a pregnancy prevention perspective, vaginal intercourse is considered unprotected when a contraceptive method is either not used at all or not used correctly. Adolescent females in the United States are ideal candidates for emergency contraception, considering that an estimated 800,000 American 15–19-year-olds become pregnant each year.<sup>1</sup> More than three-fourths of these pregnancies are unintended and result from failure to use contraceptives at all or failure to use them correctly.<sup>2</sup> Almost one-third of unintended adolescent pregnancies end in abortion and more than half end in childbirth, so the use of emergency contraception by adolescent females has the potential to reduce both of these rates substantially.<sup>3</sup>

Pill regimens are the most common method of emergency contraception currently used in the United States.<sup>4</sup> The term “emergency contraceptive pills” refers to these regimens and distinguishes them from the abortifacient mifepristone. For many years, brand-name oral contraceptives were used for emergency contraception, although they were not specifically approved for that use.<sup>5</sup> In June 1996, an advisory committee of the Food and Drug Administration (FDA) approved four formulations of oral contraceptives for use as

emergency contraceptive pills.<sup>6</sup> This approval was largely due to the extensive efforts of medical and reproductive health groups who have advocated for the widespread availability of emergency contraceptive pills in the United States for several decades.<sup>7</sup> In 1998 and 1999, the FDA approved the Preven Emergency Contraceptive Kit and Plan B, respectively, which are products dedicated for use as emergency contraception and marketed as such.<sup>8</sup> Preven contains combination estrogen-progestin pills, which are about 74% effective in reducing the risk of pregnancy when taken within 72 hours after unprotected intercourse; it was withdrawn from the U.S. market in 2004.<sup>9</sup> Plan B consists of progestin-only pills, which are about 89% effective in reducing the risk of pregnancy when taken within the same time period.<sup>10</sup>

Surveys of adolescents in the United States have revealed that they lack sufficient awareness and knowledge of emergency contraceptive pills to gain access to the method.<sup>11</sup> This is especially troubling since these surveys have also shown that once adolescent females are educated about emergency contraceptive pills, a majority say that they would likely use them if the need arose. Surveys of adolescent health care providers have revealed that they are aware and knowledgeable about emergency contraceptive pills, but

many do not educate their adolescent patients about them.<sup>12</sup> These same studies also have indicated that the knowledge, attitudes and beliefs of those surveyed are associated with their practices regarding emergency contraceptive pills and adolescents.

School-based health centers in this country could play a pivotal role in increasing adolescents' use of emergency contraceptive pills by providing education, referrals and prescriptions. Most centers offer basic primary health care, which may include immunization, laboratory and prescription services, and are located on school grounds.<sup>13</sup> Those serving middle and high school students often offer on-site reproductive health care services, such as STD testing and treatment, HIV/AIDS counseling, pregnancy testing, and counseling about or dispensing of contraceptives. Although most centers in middle and high schools provide a range of reproductive health services, not all of them offer contraceptive counseling, and many of those that do are not able to prescribe or dispense contraception.<sup>14</sup> In 1998–1999, 77% of school-based health centers were prohibited from dispensing contraceptives.<sup>15</sup> For that same period, of the centers offering reproductive health services, 72% provided birth control counseling on-site. The majority of these made off-site referrals for contraceptives, although 15% actually dispensed emergency contraceptive pills. Most of the policies that prohibited dispensing contraceptives were established by the school district, the school or the state.

Despite their restricted ability to prescribe or dispense contraceptives, many school-based centers offer education and referrals for contraceptives, and so have the potential to improve adolescents' awareness of and access to emergency contraceptive pills. Given this potential, this study assessed the provision of education, referral and prescription services for emergency contraceptive pills by high school-based health centers. We applied the stages of change model in our analyses.<sup>16</sup> Although Prochaska and colleagues initially developed this model to assess individual readiness to change behavior (i.e., through the stages of precontemplation, contemplation, preparation, action, maintenance and relapse), it has recently been applied to organizational change<sup>17</sup> and even specifically to institutional change regarding the provision of emergency contraceptive pills.<sup>18</sup> In addition, we identified the perceived benefits of and barriers to providing education, referrals and prescriptions for this method, as well as the predictors of doing so.

## METHODS

### Sample and Instrument

The health centers for this study were identified from a mailing list purchased from a professional marketing service about two months before the study began. The list contained 364 centers located in public high schools in the United States.\*<sup>19</sup> Centers in combination schools, such as K–12 or with a grade lower than ninth grade, were not included in the list or the study. This mailing list was chosen because it

was updated annually by mail and telephone, whereas a list compiled by the National Assembly on School-Based Health Care was updated biennially. Also, use of the latter list would have entailed stringent prepublication review requirements.

Participation in the study was voluntary, and confidentiality of institutional responses was assured since only aggregate data would be reported. Human subjects approval for this study was obtained from the University of Toledo Human Subjects Research Committee.

On the basis of a comprehensive review of the literature on emergency contraceptive pills, school-based health centers and the stages of change model, a 19-item, closed-format questionnaire was developed and designed as a four-page booklet. Each of the first three pages was dedicated to the provision of a specific service for emergency contraceptive pills—education, referral or prescription. The first item on each of these pages was about provision of the service and listed answer choices corresponding to the stages of change model. Respondents were asked to select the choice that best fit their health center. The second item addressed the perceived benefits associated with the service, listing a number of fixed responses and an open-ended “other” option. All choices that applied could be selected, regardless of whether the center offered the service. The third item addressed perceived barriers; it also listed fixed responses and an open-ended option. Likewise, all choices that applied could be selected, regardless of whether the service was offered. The fourth page of the survey contained 10 items pertaining to characteristics of the school (i.e., state; public or private; student population size; urban, suburban or rural setting) and the center (years of existence; staff size; primary sponsoring agency; primary funding source; in, on or off school grounds; reproductive health care services), and one item pertaining to the person completing the survey.

To establish the content validity of the survey instrument, two leading experts on emergency contraceptive pills and two experts on the stages of change model reviewed the questionnaire. We incorporated several of their recommendations into the survey.

To estimate the reliability of the instrument, a test-retest was conducted using a convenience sample of 24 high school-based health centers listed on the National Assembly on School-Based Health Care Web site.<sup>20</sup> Cross-checking of the study's mailing list and the Web site listing ensured that none of the health centers participating in the study was used for the test-retest. Nineteen centers completed both the test and the retest instruments. All salient items were constructed as dichotomous, nominal variables, so we calculated percentage agreement to establish the reliability of the instrument. The overall percentage agreement for the salient items of the test-retest was 92%.

\*According to the marketing service, the list was compiled from nationwide mail questionnaires and telephone surveys. The exact population of high school health centers in the United States is unknown, since there is no mandatory reporting or registration process for school-based centers. The 1998–1999 census data from the National Assembly on School-Based Health Care identified 465 high school centers.

**TABLE 1. Percentage distribution of high school–based health centers, by selected characteristics, 2001**

Characteristic	%
<b>SCHOOL</b>	
<b>Region</b>	(N=250)
South	34.0
West	29.2
Northeast	25.6
Midwest	11.2
<b>Setting</b>	(N=249)
Rural	25.3
Urban	57.8
Suburban	16.9
<b>Student population</b>	(N=245)
≤1,000	32.2
1,001–1,499	28.2
1,500–1,999	20.8
≥2,000	18.8
<b>HEALTH CENTER</b>	
<b>Years of existence</b>	(N=243)
≤6	39.1
7–11	37.4
≥12	23.5
<b>Reproductive health care services</b>	(N=250)
Yes	69.2
No	30.8
<b>Staff size</b>	(N=239)
1–3	41.8
4–5	33.5
≥6	24.7
<b>Primary sponsoring agency†</b>	(N=250)
Health department	30.8
Hospital/medical center	26.4
School system	16.0
Community health center	15.6
Nonprofit health organization	8.8
Medical/nursing school	3.2
Other	4.0
<b>Primary funding source†</b>	(N=247)
Local/state/federal government	55.9
Sponsoring agency	19.4
Private foundation	6.9
Maternal and child health block grant	4.9
Medicaid	4.9
Student fees	0.8
Other	15.4
<b>Total</b>	<b>100.0</b>

†Percentages total more than 100% owing to multiple responses.

**Procedure and Analyses**

A two-wave mailing procedure began in February 2001. The initial mailing consisted of the survey, a hand-signed cover letter describing the purpose of the study and an addressed, stamped and coded return envelope, as well as a new one-dollar bill. Three weeks later, a second mailing with a revised cover letter but no money was sent to centers that had not responded.

We calculated frequencies and cross-tabulations, and conducted logistic regression, using SPSS version 10.0. Means and standard deviations were computed for student population size, years of health center existence and number of staff members.

We performed multivariate logistic regression analyses

to determine significant relationships between health center emergency contraceptive pill services and perceived benefits and barriers, as well as characteristics of schools and centers. Models for each service were first developed for benefits while controlling for barriers, and then for barriers while controlling for benefits. A second model was then developed by adding school and center characteristics. The resulting model was pruned by eliminating variables that were not statistically significant or that had borderline significance ( $p > .10$ ), until those remaining were statistically significant at  $p \leq .05$ . A check for multicollinearity of the variables in each model ensured that none of the tolerance statistics was less than .10.

Because of collinearity problems, the final model for prescription services was developed differently than were those for education and referral services, and the results need to be interpreted with caution. When all variables were entered into the preliminary prescription model, they were not statistically significant ( $p > .10$ ). Thus, we developed the final model by entering the significant benefit and barrier variables from the initial model, as well as the characteristic variables that showed significance in a separate bivariate or multivariate analysis. We then eliminated variables until only those that were statistically significant at  $p \leq .05$  remained. We used Nagelkerke  $R^2$  to assess the fit of the final models.

**RESULTS**

Of the 364 health centers contacted for the study, 275 (76%) returned surveys. Of these, 21 recipients indicated that they did not have a center, and four returned incomplete surveys. Exclusion of these 25 respondents left 250 surveys for analysis, giving a final response rate of 73% (250 of 343). Seventy percent of the surveys were completed by nurse practitioners, 9% by physician assistants and the remainder by other staff, mostly nurses.

**Characteristics of Schools and Health Centers**

Respondents were from 36 states plus the District of Columbia. On the basis of Census Bureau categorization,<sup>21</sup> we classified 34% of schools as being in the South, 29% in the West, 26% in the Northeast and 11% in the Midwest (Table 1). Fifty-eight percent were in an urban setting, and 25% and 17% were in rural and suburban settings, respectively. Student population size ranged from 180 to 5,000, with a mean of 1,474 (standard deviation, 867—not shown). Population was divided into four categories: One-third of the schools had a population of 1,000 or less, slightly more than one-fourth had 1,001–1,499 students, one-fifth had 1,500–1,999 students and another fifth had 2,000 or more. All of the responding schools were public institutions.

The centers had a wide range in their length of operation, from one-half year to 30 years (not shown); 39% had been operating for six years or less. More than two-thirds of centers offered reproductive health care services, and four in 10 had no more than three staff members. The majority reported health departments or hospitals as their sponsoring agency, and the remainder were sponsored by community health

centers, nonprofit health organizations, school systems, and medical or nursing schools. More than half of all centers identified local, state or federal government as their primary funding source, and one-fifth identified the sponsoring agency as the primary funder. The remaining centers were supported primarily by Medicaid, maternal and child health block grant funds, student fees and private foundations.

### Provision of Services and Perceived Benefits and Barriers

Sixty percent of the centers provided education about emergency contraceptive pills, and 59% provided referrals (Table 2). Whereas 46% and 44% had provided the respective service for one or more years (and thus were in the maintenance stage of the model), 13% and 15%, respectively, had initiated the service in the last year (action stage). Only 30% of all centers provided prescriptions, 25% having done so for one year or longer and 6% having started in the last year.

The leading perceived benefit of each service was pregnancy prevention, which was cited by three-fourths of all centers (Table 3). Other identified benefits were the opportunity to assist students with traditional contraceptive methods (64–71%), increased access to emergency contraceptive pills (65–74%) and greater likelihood of using them when needed (59–71%). The leading perceived barriers to offering each service were concerns about parental objection and that the pills were considered to be an abortion method (both cited by about half of all centers), followed by concerns that their use would encourage risk-taking behavior (cited by one-third of centers) and undermine traditional contraceptive use (one-fourth of centers).

Pregnancy prevention was the most cited benefit, regardless of whether centers offered specific services: Some 85–95% of providers and 63–71% of nonproviders identified this benefit (Table 4, page 74). Assisting students with traditional contraceptives was cited by around 80% of providers and by nearly 60% of nonproviders. Other benefits in relation to referrals and prescriptions were increased access to the method (78–89% for providers and 52–69% for nonproviders) and, for all services, higher likelihood of use (74–88% and 41–66%, respectively). For education services, 66% of providing centers cited increasing awareness of the method, compared with only 37% of education nonproviders. For prescription services, 71% of providers and 41% of nonproviders identified the benefit of offering a safe and effective contraceptive.

Those centers offering education indicated that the leading perceived barriers to doing so were concerns that parents would object (46%) and that emergency contraceptive pills are considered an abortion method (47%). Centers not offering education likewise reported these as the leading barriers, but the proportions were even higher (65% and 57%, respectively). Concern about parental objection was also the most cited barrier to providing either referrals or prescriptions, regardless of whether centers offered those services (41–47% for providers and 57–64% for nonproviders). For both referrals and prescriptions, the next most cited barrier was the perception that the medication

**TABLE 2. Percentage distribution of high school–based health centers, by stage of change status with regard to provision of emergency contraceptive pill services, according to type of service**

Status (stage)	Education (N=249)	Referral (N=228)	Prescription (N=240)
Do not intend to provide within the next year (precontemplation)	31.3	30.3	65.4
Intend to provide within the next year (contemplation)	6.8	6.6	2.1
Taking steps to provide (preparation)	2.4	3.9	2.1
Started providing within the past year (action)	13.3	14.9	5.8
Have provided for ≥1 year (maintenance)	46.2	43.9	24.6
Provided in previous years but no longer do (relapse)	0.0	0.4	0.0
Total	100.0	100.0	100.0

was an abortion method; this was cited by about 40% of providers and 55% of nonproviders. Across all three services, the other frequently cited barrier was that provision would encourage sexual risk-taking (29–36% for providers and 42–44% for nonproviders).

### Predictors of Service Provision

Health centers that cited the increased likelihood that students would use the method had elevated odds of providing education (odds ratio, 3.5—Table 5, page 75), as did those citing the opportunity to discuss contraception (2.6) and those offering reproductive health care services (4.6). The odds of providing education were decreased for centers that had a school policy prohibiting it (0.03), were located in the South (0.2) and had a primary funding source that was also the sponsoring agency (0.3). The final model accounted for 64% of the variance in provision of education services.

Centers that identified pregnancy prevention had in-

**TABLE 3. Percentage of high school–based health centers, by perceived benefits of and barriers to provision of emergency contraceptive pill services, according to type of service**

Benefit/barrier	Education (N=250)	Referral (N=250)	Prescription (N=250)
<b>Benefits</b>			
Helps prevent unintended pregnancies	79.6	74.0	76.8
Creates opportunity to discuss/link/provide traditional contraceptives	71.2	69.6	63.6
Increases access to the method when needed	na	65.2	74.0
Increases likelihood of using the method when needed	65.2	59.2	71.2
Increases awareness of the method	54.0	na	na
Provides a safe and effective contraceptive	na	na	49.2
Provides access, as no community provider prescribes the method	na	na	4.0
Other	6.8	4.8	5.2
<b>Barriers</b>			
Parents of students would object	53.6	48.0	55.6
The method is considered to be an abortion method	51.2	46.4	50.4
Would encourage sexual risk-taking	36.4	35.6	37.2
Would undermine traditional contraceptive use	29.2	24.8	26.4
School policy does not allow	21.2	15.2	38.8
Liability regarding use of the method	na	na	20.0
Staff object	11.2	7.2	10.4
Sponsoring agency does not allow	10.0	7.2	14.8
Center does not provide reproductive health care services	8.4	9.2	18.4
Funding source does not allow	8.0	6.0	11.6
Staff have not been educated about the method	4.8	na	na
No community provider prescribes the method	na	4.4	na
No physician/staff available to prescribe the method	na	na	8.4
State law does not allow	4.0	2.8	8.4
Other	10.0	13.6	12.8

Note: na—not applicable.

**TABLE 4. Percentage of high school–based health centers, by perceived benefits of and barriers to provision of emergency contraceptive pill services, according to provision status**

Benefit/barrier	Education		Referral		Prescription	
	Providing (N=148)	Not providing (N=101)	Providing (N=134)	Not providing (N=94)	Providing (N=73)	Not providing (N=167)
<b>Benefits</b>						
Helps prevent unintended pregnancies	90.5	63.4	85.1	66.0	94.5	70.7
Creates opportunity to discuss/link/provide traditional contraceptives	81.1	56.4	80.6	60.6	83.6	56.3
Increases access to the method when needed	na	na	78.4	52.1	89.0	68.9
Increases likelihood of using the method when needed	81.8	40.6	73.9	43.6	87.7	65.9
Increases awareness of the method	65.5	36.6	na	na	na	na
Provides a safe and effective contraceptive	na	na	na	na	71.2	40.7
Provides access, as no community provider prescribes the method	na	na	na	na	4.1	3.0
Other	10.1	2.0	6.7	3.2	8.2	2.4
<b>Barriers</b>						
Parents of students would object	45.9	65.3	47.0	57.4	41.1	64.1
The method is considered to be an abortion method	46.6	57.4	44.0	56.4	39.7	56.9
Would encourage sexual risk-taking	32.4	41.6	35.8	43.6	28.8	41.9
Would undermine traditional contraceptive use	29.1	29.7	23.1	33.0	19.2	30.5
School policy does not allow	2.0	48.5	2.2	37.2	1.4	57.5
Liability regarding use of the method	na	na	na	na	4.1	28.1
Staff object	3.4	22.8	2.2	16.0	2.7	13.8
Sponsoring agency does not allow	0.0	24.8	0.7	18.1	0.0	22.2
Center does not provide reproductive health care services	0.0	19.8	1.5	21.3	0.0	27.5
Funding source does not allow	0.0	19.8	0.0	16.0	0.0	17.4
Staff have not been educated about the method	0.7	10.9	na	na	na	na
No community provider prescribes the method	na	na	0.0	11.7	na	na
No physician/staff available to prescribe the method	na	na	na	na	0.0	12.6
State law does not allow	0.7	8.9	0.0	6.4	0.0	12.6
Other	7.4	13.9	12.7	12.8	13.7	12.0

Note: na=not applicable.

creased odds of providing referrals for emergency contraceptive pills (odds ratio, 2.9). The odds of offering referrals were decreased for centers that had a school policy that prohibited it (0.03), had staff who objected to these referrals (0.1), were located in a region other than the West (0.2–0.4) and were situated in a rural setting (0.3). The final model accounted for 43% of the variance in provision of referrals.

The odds of providing prescriptions were elevated for centers that cited pregnancy prevention (odds ratio, 6.3) and offered reproductive health services (30.4). The likelihood of writing prescriptions was decreased for centers that cited concern that emergency contraceptive pills were considered an abortion method (0.5) and concern about liability (0.1), as well as for those located in the Northeast or South (0.3 and 0.2, respectively) and those whose primary sponsoring agency was the school system (0.2). Fifty-four percent of the variance in provision of prescriptions was attributable to the final model. A check for collinearity was conducted for the final model, and no problems were indicated. However, given the collinearity problems for the preliminary models, the results of the final model for prescription services need to be interpreted with caution.

**DISCUSSION**

**Centers Providing Services**

It was encouraging that about 60% of high school–based health centers offered education and referrals for emergency contraceptive pills, and that more than one-fifth of these

had initiated services within the last year. Although fewer than one-third of the centers offered prescriptions, one-fifth of these had begun doing so within the last year. These findings regarding recently begun services may reflect the cumulative efforts by various medical and reproductive health groups to promote awareness of, access to and use of emergency contraceptive pills,<sup>22</sup> as well as the availability in this country of two dedicated products. Preven (now withdrawn from the U.S. market) and Plan B have legitimized emergency contraceptive pills and may have eliminated concerns related to off-label use of standard oral contraceptives.<sup>23</sup> Publicity in 2001 of the “citizens’ petition” requesting over-the-counter status for emergency contraceptive pills and the current public debate over whether the FDA should approve such access have further strengthened the legitimacy of this method.<sup>24</sup>

Centers that believed students would be more likely to use the pills had elevated odds of offering education services. This suggests that center staff have a strong awareness of the important connection between education and use of the method.<sup>25</sup> School centers that educate adolescents about emergency contraceptive pills can help to increase their knowledge and use of this method.

Centers that cited the opportunity to discuss traditional contraceptive methods also had higher odds of offering education. This finding may reflect the commitment of these centers to prevent unintended adolescent pregnancy, not only in emergency situations but also on an ongoing basis.

This commitment is further supported by the finding that centers citing pregnancy prevention had elevated odds of offering referrals or prescriptions. In several other health provider surveys, prevention of unintended pregnancy was the major reason for prescribing emergency contraceptive pills.<sup>26</sup> Our study found that this also holds true for providers at school-based centers.

While centers that provide reproductive health services do not necessarily offer contraceptive services,<sup>27</sup> we found that they did have greater odds of offering education or prescriptions for emergency contraceptive pills. Centers that already offer reproductive health services are probably better prepared to incorporate education or prescription services, as well as to identify and overcome both perceived and actual barriers.

### Centers Not Providing Services

School-based centers that did not provide services for emergency contraceptive pills were either not intending to do so, intending to do so in the next year or preparing to do so in the next year. Some, if not all, of the centers that were planning to offer such services may eventually do so. Whether centers that were not intending to offer these services will ever do so is uncertain, and could be related to specific barriers to providing these services.

Centers reporting concerns that emergency contraceptive pills are considered an abortion method had decreased odds of providing prescriptions. Studies of providers have found that very few regard the method as abortion, but those who do typically refuse to prescribe the medication, citing moral objections.<sup>28</sup> Misperceptions persist regarding the mechanism of emergency contraceptive pills, along with confusion of the method with the abortifacient mifepristone.<sup>29</sup> However, most studies have found that when providers and potential users are given accurate information about emergency contraceptive pills, their likelihood of prescribing or using the method increases.<sup>30</sup>

Centers that identified liability concerns also had lowered odds of offering prescriptions. Other surveys have found that providers who did not prescribe emergency contraceptive pills had liability concerns about the service.<sup>31</sup> We did not assess the specific basis of these concerns. Health centers with staff who object to referrals for the medication had decreased odds of offering referrals. We did not attempt to identify the specific objections of staff to providing such referrals, and further investigation of both of these barriers is needed to determine the underlying reasons for these concerns.

School policy was identified as a significant barrier for the provision of education and referral services for emergency contraceptive pills. We did not determine if this barrier extended to these services for other contraceptive methods. Dailard has reported that school district policy and school policy were leading barriers to the dispensing of contraceptives by school-based centers.<sup>32</sup>

In view of this, it was not surprising to find that centers whose primary sponsoring agency was the school system

**TABLE 5. Odds ratios (and 95% confidence intervals) from logistic regression analysis assessing the association between selected health center characteristics and provision of emergency contraceptive pill services, by type of service**

Characteristic	Education	Referral	Prescription
<b>Benefits</b>			
Increases likelihood of using the method when needed	3.46** (1.45–8.25)	na	na
Creates opportunity to discuss traditional contraceptives	2.64* (1.08–6.46)	na	na
Helps prevent unintended pregnancies	na	2.88** (1.32–6.36)	6.28** (1.86–21.15)
<b>Barriers</b>			
School policy does not allow	0.03*** (0.01–0.12)	0.03*** (0.01–0.12)	na
Staff object	na	0.12** (0.03–0.50)	na
The method is considered to be an abortion method	na	na	0.47* (0.22–1.00)
Liability regarding use of the method	na	na	0.12** (0.03–0.46)
<b>Region</b>			
South	0.15*** (0.05–0.46)	0.30* (0.12–0.77)	0.21*** (0.08–0.55)
Northeast	0.68 (0.22–2.13)	0.36* (0.14–0.92)	0.26** (0.11–0.65)
Midwest	0.29 (0.07–1.13)	0.19** (0.06–0.59)	0.26 (0.05–1.33)
West (ref)	1.00	1.00	1.00
<b>Setting</b>			
Rural	na	0.27* (0.09–0.81)	na
Urban	na	0.46 (0.17–1.21)	na
Suburban (ref)	na	1.00	na
<b>Health center characteristics</b>			
Provides reproductive health care services	4.58*** (1.99–10.51)	na	30.36*** (6.73–137.08)
Primary sponsoring agency is school system	na	na	0.20* (0.06–0.70)
Primary funding source is sponsoring agency	0.25** (0.10–0.63)	na	na
<i>Constant</i>	0.78	6.35	0.03
<i>Nagelkerke R<sup>2</sup></i>	0.64	0.43	0.54

\*p≤.05. \*\*p≤.01. \*\*\*p≤.001. Notes: na=not applicable, ref=reference group. Characteristics for which no reference group is shown are dichotomous.

had lowered odds of offering prescriptions for emergency contraceptive pills. We did not attempt to determine if such centers were prohibited from providing prescriptions for other contraceptives.

Centers whose primary funding source was a sponsoring agency had decreased odds of providing education about emergency contraceptive pills. Sponsoring agencies that provide the primary funding for centers can determine which services will and will not be provided. Our study did not assess if such centers were prohibited from providing education about other methods as well.

Our analysis also found geographic differences among the provision of services by school health centers. The likelihood of offering education, referral and prescription services was decreased among centers in the South. Centers in the Northeast had lowered odds of providing referral and prescription services, and those in the Midwest had lowered odds of offering referrals. These comparisons were all in relation to school-based centers located in the West, and we can only speculate on what caused the differences. Centers in the Northeast, Midwest and South may tend to be more conservative regarding emergency contraceptive pills than their counterparts in the West.

School-based health centers in rural settings had lower odds of providing referrals than did those in suburban areas. Rural centers may operate in a more conservative environment and have a smaller staff. Because rural communities are small, provision of emergency contraceptive pills may be limited; hence, students may have heightened concern that word will get back to their parents and others.

### Limitations

Several limitations of this study need to be acknowledged. The sample was taken from a mailing list compiled by a professional marketing service and limited to high school-based health centers, but the list did not include all high school centers in the country. Nor did the list or our sample include centers in schools that had any grade lower than ninth grade. While care should therefore be taken in generalizing the study results to all high school centers, our sample included 250 of the estimated 465 high school-based centers,<sup>33</sup> and so our findings reflect analysis of more than half of the targeted centers. These findings should not be generalized to nonclinician staff members of high school centers.

The internal validity of our findings is dependent on the accuracy and honesty of the confidential, self-reported data. The monothematic nature of the survey may have resulted in a biased sample, and the predominantly closed-format design of the survey items may have restricted respondents' answers. Each of these factors may have affected the study's validity. Furthermore, one-fourth of all centers contacted for the study did not return surveys, which may also have affected the validity of our findings.

### Conclusion

The majority of high school-based health centers contribute to the awareness of, access to and use of emergency contraceptive pills by adolescents in this country. Yet many centers do not offer any service at all for this medically safe method. Thus, while the findings of the current study are generally encouraging, educational and outreach efforts to health providers at school health centers should be strengthened to ensure that comprehensive contraceptive services are available to students. Access to emergency contraceptive pills can be dramatically improved by increasing the number of centers that are able and willing to offer prescriptions for the method.

The Surgeon General's 2001 "Call to Action to Promote Sexual Health and Responsible Sexual Behavior" identified school-based health centers as valuable resources for providing adolescents with contraceptive counseling and methods.<sup>34</sup> For these centers to continue to fulfill this important role, barriers to services must be addressed and overcome to ensure that students are able to learn about contraceptive issues and receive appropriate reproductive health care.

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