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Use of Patient-Delivered Partner Therapy in US College Settings: Associations With Legality, Perceived Legality and Other Sexual and Reproductive Health Services

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Abstract

Background: Young adults, including college students, have higher rates of chlamydia than the general population. Patient-delivered partner therapy (PDPT) is a partner treatment option for sex partners of individuals diagnosed with chlamydia or gonorrhea. We examined college health center use of PDPT in a national sample of colleges.

Methods: During 2014 to 2015, we collected data from 482 colleges and universities (55% of 885 surveyed), weighting responses by institutional characteristics abstracted from a national database (eg, 2-year vs 4-year status). We asked whether the school had a student health center and which sexual and reproductive health (SRH) services were offered. We also assessed the legal and perceived legal status of PDPT in states where schools were located. We then estimated PDPT availability at student health centers and measured associations with legal status and SRH services.

Results: Most colleges (n = 367) reported having a student health center; PDPT was available at 36.6% of health centers and associated with perceived legality of PDPT in the state in which the college was located (odds ratio [OR], 4.63; 95% confidence interval [CI], 1.17–18.28). Patient-delivered partner therapy was significantly associated with availability of SRH services, including sexually transmitted disease diagnosis and treatment of STI (56.2% vs 1.1%), gynecological services (60.3% vs 12.2%), and contraceptive services (57.8% vs 7.7%) (all $P < .001$). Compared with schools taking no action, PDPTwas more likely to be available at schools that notified partners directly (OR, 8.29; 95% CI, 1.28–53.85), but not schools that asked patients to notify partners (OR, 3.47; 95% CI, 0.97–12.43).

Conclusions: PDPT was more likely to be available in colleges that offered SRH services and where staff believed PDPT was legal. Further research could explore more precise conditions under which PDPT is used.

US college and university students constitute a population of interest with respect to sexually transmitted disease (STD) prevention and sexual health because they are largely drawn from

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an age range that (a) has a significant fraction of the morbidity of common STD, (b) is sexually active, and (c) is transitioning from an environment with more support and oversight to one with less. Colleges and universities with student health centers can use such facilities to address STD prevention and sexual health through the services they offer. In this article, we use data from a national-level survey of US colleges and universities to characterize the scope of these services and the extent to which they are available. We included management of sex partners of infected persons, including patient-delivered partner therapy (PDPT), because this aspect of STD control is often overlooked for common STD.[1]

Of STD in the United States, case reports of both gonorrhea and chlamydial infection are most commonly reported among 15 to 24 year olds.[2] This age range comprises the majority of the population attending public or private nonprofit colleges and universities, with those under 25 years making up 86% to 88% of the undergraduate body of 4-year schools and 61% to 73% at 2-year schools.[3] With respect to college-specific estimates, the American College Health Association annual Pap test and STI survey report from 128 college campuses in 2007 reported 2.9% positivity for chlamydia tests and 0.4% for gonorrhea.[4] More recent data are included in subsequent annual reports, with 2015 data indicating an overall 6.5% positivity rate for chlamydial infection and 1.0% positivity for gonorrhea.[5] Although the positivity estimates in this survey are based on testing clinic volunteers, not from screening, the numbers indicate significant morbidity (the schools in the 2006 survey covered approximately 2 million students),[4] and the increases parallel national surveillance-based estimates from CDC between 2007 and 2015.[2] Finally, chlamydia testing data from colleges participating in a national infertility program reported 6.5% positivity for chlamydia.[6]

In the general population, prevalence data from 1999 to 2012 show that close to 80% of the population experienced sexual debut by age 19 years.[7] Among those aged 18 to 24 years, 2011 to 2013 estimates from the National Survey of Family Growth for opposite sex vaginal, anal or oral contact are 86% for women and 84% for men (estimates for vaginal contact are 82% and 80%).[8] Same-sex estimates are, respectively, 19% and 7%. In college-specific samples, 1 survey of 1075 community college students reported that just over 80% were sexually active within the past 12 months, with only 44% of those engaging in vaginal sex using condoms (a 10% rate of unintentional pregnancy over 12 months suggests that students were not all using other methods of contraception, either).[9] College students also have increased rates of other behaviors that confer risk for STD; for example, alcohol and drug use.[10]

Individually focused interventions, whether delivered in college clinics or in college courses, have shown benefit to recipients,[11,12] but have had limited impact due to coverage. College health centers, however, might provide an avenue for structural interventions to improve college student sexual health through the range of their STD and reproductive health management services. We focus in particular on the role of expedited partner therapy (EPT), the practice of assuring treatment of partners of persons infected with select STD (chlamydial infection or gonorrhea in most circumstances) without an intervening medical evaluation.[13] The lack of an intervening medical evaluation may complicate EPT's legality in certain jurisdictions,[14] and providers have commonly cited fear of liability as a reason to

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not use EPT.[15] One study of college and university health centers found that, although EPT's use was higher in supportive legal environments, its use was low overall.[16] Similar findings have been found in other settings.[17,18] Because the means through which partners are provided expedited treatment in college settings is usually the patient, we will use the more specific term, patient-delivered partner therapy (PDPT) hereafter. We examined (a) the extent to which PDPT is available in college health centers, as well as the associations between PDPT availability; (b) EPT laws and perceived legality; and (c) other sexual and reproductive health (SRH) services offered at college health centers.

METHODS

Sample

The analyses in this article are drawn from a survey intended to measure the status of sexual health care services at US colleges and universities.[19] The survey examined STD/human immunodeficiency virus (HIV) prevention, education, screening, testing, and treatment available on campus, health insurance requirements, health center fees, linkage to care availability, community referrals, and confidentiality/privacy assurances. During 2014 to 2015, we sent the survey to 885 schools listed in the Integrated Postsecondary Education Data System (IPEDS), and requesting that the person "who has the most knowledge of and access to information about health services" complete the survey.

To be eligible, schools had to be in the United States and active 2- or 4-year, degree granting, accredited public or private schools that enrolled at least 500 undergraduate or graduate students. We then stratified eligible schools by enrollment size and significant minority enrollment. Significant minority enrollment was based on 2 criteria. One, legislation that designates colleges and universities as historically black colleges and universities (HBCUs) or as tribal colleges; or two, enrollment-based criteria, meaning colleges and universities that are not HBCUs or tribal colleges but have at least 25% of the student body that is of an ethnic minority (American Indian or Alaska Native, Asian, Black, Hispanic, Native Hawaiian or other Pacific Islander, mixed race), or those that do not meet the 25% threshold for any 1-minority group, but minority students as a whole comprised at least 50% of the total student body. Strata containing the smallest and largest enrollment size were oversampled because these schools were more likely to represent schools in which a health center is or is not present. Schools within each stratum of enrollment size and significant minority enrollment were sampled randomly with equal probability. Of the 885 colleges we surveyed, we collected surveys from 482 (55%). The study protocol and survey were approved by an institutional review board of the Centers for Disease Control and Prevention.

Measures

We abstracted information about the schools from the IPEDS database, including enrollment, geographic location, setting (city, town, suburb, or rural), public versus private status, 2-year versus 4-year status, and whether the school was a minority-serving institution (eg, a Historically Black College or University). We asked whether the college had a student health or wellness center (hereafter health center), which SRH services were offered, and

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surveyed health insurance requirements and health service delivery policies. State laws (statutes and regulations) explicitly permitting PDPT were coded as of January 1, 2014, before the collection of responses to our survey.

Analyses

To prepare the sample for analyses, we calculated a comprehensive weight and applied it to the data set. The weight allowed us to correct for response rate differences and was based on institutional characteristics in the IPEDS data set including school type (2-year, 4-year), funding type (private, public), enrollment size, and region (South, West, Northeast, Midwest).

We conducted all analyses using the *Complex Samples* functions in SPSS v21 (Chicago, IL). Weighted frequencies for service availability are presented with 95% confidence intervals (CIs), with estimates for service provision based on combining “no” and “don’t know” responses. We used odds ratios (OR) based on logistic regressions to estimate effect sizes for PDPT availability in the presence versus absence of other SRH services and PDPT laws. We used minority-serving institute status (yes/no) and 2-year versus 4-year status of schools as covariates in logistic regressions.

RESULTS

Sample Description

Nearly all the 482 responding schools reported male and female enrollees, with only 2 schools reporting single-sex enrollment (one each of male-only and female-only). The estimated total mean enrollment was 6762 (95% CI, 6548–6975); comprising estimated means of 3767 women (95% CI, 3649–3884) and 2995 men (95% CI, 2876–3114). The smallest enrollment was 502, and the largest was 52,557, based on unweighted data. The sample was geographically diverse in that responding schools were drawn from 47 states, with the largest percentage, 11.3% (95% CI, 8.8–14.3%), coming from California. Approximately 3 schools in 5 (61.7%) (95% CI, 56.9–66.2%) were located in states where PDPT was legal. Further details are provided in Table 1.

PDPT Availability and Laws Permitting EPT

Analyses hereafter are based on the 367 schools that reported having a health center. Laws permitting PDPT in 2014 for at least 1 STI existed in states in which 64.8% (95% CI, 59.4–69.8%) of the schools with health centers were located. In contrast, respondents at only 30.0% (95% CI, 25.5–35.0%) of schools believed PDPT was legal in their states; 67.3% (95% CI, 62.2–71.9%) either did not know or reported that legality was uncertain. The existence of an actual law was associated with belief that PDPT was legal (OR, 10.05; 95% CI, 2.68–37.76). The large majority of discrepancies were from respondents reporting uncertain legality or not knowing if PDPT were legal (these respondents were in states where laws existed in 2014).

Patient-delivered partner therapy was more likely to be available at schools if the respondent *believed* it to be legal versus illegal in that state (OR, 4.63; 95% CI, 1.17–18.28) and if the

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respondent believed it to be legal versus not knowing (OR, 9.40; 95% CI, 5.47–16.14). Patient-delivered partner therapy availability did not differ among those who believed it to be illegal versus not knowing (OR, 2.03; 95% CI, 0.53–7.84). Patient-delivered partner therapy availability at health centers, however, was unrelated to the actual presence of a 2014 state law (OR, 1.00; 95% CI, 0.61–1.64). These findings hold when analyses are constrained to 244 schools with health centers that offer any STI or HIV testing (and that therefore should be more likely to offer PDPT).

SRH Services and STI Management at College Health Centers

Health centers were most often run by nurses, 33.8% (95% CI, 28.6–39.3%), or nurse practitioners, 22.8% (95% CI, 18.3–28.1%). Physicians ran 14.8% (95% CI, 11.4–18.9%) of health centers, and health care administrators ran another 11.0% (95% CI, 8.2–14.7%). More than half of all health centers employed nurses (fulltime, 72.2%; 95% CI, 66.6–77.2%; parttime, 13.1%; 95% CI, 9.5–17.8%), nurse practitioners (fulltime, 51.1%; 95% CI, 45.7–57.3%; part-time, 18.1%; 95% CI, 13.8–23.4%), and physicians (fulltime, 32.6%; 95% CI, 27.7–37.9%; part-time, 33.1%; 95% CI, 27.7–39.0%). The majority operated during weekday business hours only, with 13.9% (95% CI, 10.8–17.8%) offering weekend hours and 35.3% (95% CI, 30.2–40.8%) offering evening hours. Some health centers allowed online contact with a doctor or nurse, 39.1% (95% CI, 33.6–44.8%). Health centers were generally the primary source of STI services on campuses with health centers, 73.2% (95% CI, 68.0–77.8%). Health departments were the primary source at 12.0% (95% CI, 8.8–16.1%) of schools with health centers. Further details are reported elsewhere.[19]

As shown in Table 2 (see also Habel et al.),[19] the 367 schools with health centers varied in the extent to which they offered various SRH services and STI management practices. Health education materials were the most common service provided, along with referral protocols. Almost two thirds of health centers provided STI diagnostic services, but only two in five screened for common STI such as chlamydia. Approximately half of health centers offered services indicative of significant medical capacity (e.g., dispensing prescriptions and OB/GYN services), although medical capacity did not always translate to contraceptive services. For example, long-acting reversible contraception (LARC) was only available at approximately 1 in 6 health centers. Patient-delivered partner therapy was offered at 36.6% of schools with health centers (95% CI, 31.6–41.9%) and at 54.0% (95% CI, 47.2–60.7%) of 244 schools with health centers that offered STI or HIV screening. Only half the health centers made condoms available (Table 2); however, some schools also made condoms available outside health centers.[19] Just under one third of schools did not have condoms available on campus at all, 32.0% (95% CI, 27.7–36.7%).

Patient-delivered partner therapy availability was associated with availability of every other SRH service that we measured (Table 3). Estimates of PDPT availability were clearly different from one another in that 95% CIs did not overlap for any SRH variable and *P* values were all less than 0.001. Effect sizes were mostly large; the smallest adjusted OR was 2.5, and half the 14 estimates were greater than 10.0. When we constrained analyses to 244 schools with health centers that offered any HIV or STI screening or testing, we found smaller effect sizes (the last column in Table 3).

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Availability of PDPT was also associated with partner management practices (estimates were limited to data from 244 schools as described above). Patient-delivered partner therapy was available at 24.2% (95% CI, 8.6–52.1%) of schools that took no action or did not know what action was taken, at 52.5% of schools that asked patients to notify partners, at 61.1% (95% CI, 47.9–72.9%) of schools that referred cases to the health department, and at 72.6% (95% CI, 39.5–91.5%) of schools that handled partner notification directly. Compared with schools taking no action, schools that referred cases to the local health department (OR, 4.93; 95% CI, 1.30–18.67) and schools that handled partner notification directly (OR, 8.29; 95% CI, 1.28–53.85) were more likely to offer PDPT. Schools that asked infected students to notify partners (OR, 3.47; 95% CI, 0.97–12.43) did not differ statistically from schools that took no action.

DISCUSSION

In a survey of colleges and universities across the United States, approximately three quarters reported having a student health center. Patient-delivered partner therapy was available as a service at a little over a third of those schools, despite the fact that the practice was permitted in the states in which a majority of schools were located. In the remainder of this discussion, we address PDPT availability through the lens of actual and perceived legality, and as part of a larger package of SRH services at student health centers.

The actual presence of a law permitting PDPT did not matter with respect to availability; the 2 variables were completely uncorrelated. However, perceived legality was quite closely associated with PDPT availability. We found greater availability in student health centers at schools where the respondent believed the practice to be legal, compared to where the respondent believed PDPT to be illegal *and* where the respondent did not know, a situation seen in previous research.[16] Given that not knowing typically resulted in not providing PDPT and that most respondents (133 of 232, or 57%, among schools with a student health center) who did not know were in states where PDPT was in fact permitted, efforts to reduce uncertainty might yield increased availability.

A broad view of the associations between PDPT availability and other SRH service availability suggests that student health centers provide PDPT as part of a “package” of SRH services. That is, PDPT availability was associated with all other SRH services, whether those were educational, prophylactic (eg., condom provision), relatively simple services (eg, chlamydia screening), or relatively complex (eg, OB/GYN services).

Patient-delivered partner therapy, however, was more closely associated with some services than with others, even when analyses were constrained to schools offering STI or HIV testing in health centers. We emphasize caution in interpretation because the effect sizes for any comparison in Table 3 are bounded by how commonly the service was offered. For example, the wide availability (86.1%) of health education in student health centers means that that service has to be offered at places with and without PDPT, thus limiting the effect size. That noted, PDPT availability was most commonly available in conjunction with services targeted to women. Specifically, PDPT was most commonly available along with LARC (72.5%), emergency contraception (62.8%), and OB/GYN services (60.3%). To some

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extent, services targeted to women are conflated with more complex care, but we note that even relatively simple female-targeted services were associated with PDPT (and thus indirectly benefited men, assuming men are the principal recipients of PDPT from women diagnosed with STD). For example, PDPTwas almost exclusively concentrated among health centers that offered pregnancy testing, which was commonly available. The effect size was an order of magnitude greater than for nontargeted services, such as STD screening.

Patient-delivered partner therapy was also associated with more intensive forms of partner management, including taking a direct role in partner notification and referring information to the local health department. This finding suggests that PDPT is an added service rather than a replacement for other forms of partner management. The most common form of partner management, however, remains asking patients to notify their own partners, a limited intervention, especially if in the form of a brief instruction without counseling.[20]

Limitations

We only received responses from 55% of schools solicited. Although the weighting scheme provides some mitigation, the sample might not be fully representative of US colleges and universities. We could not be sure who filled out the survey, so there was a possibility of response error if an unintended person completed the survey. *Don't know* responses were infrequent, and nearly all respondents identified themselves as medical professionals or program directors connected to health services, so we suspect this is at most a minor limitation. Finally, the survey only measured services offered, so responses should not be construed as service uptake.

CONCLUSIONS

A final question is whether these findings yield another estimate of the penetration of PDPT as a STD prevention service, compared with its theoretical availability via laws or policy. Respondents listed PDPT as available in not much more than half of the places where it was permitted by law in 2014, so there remains a clear gap between legal policies and practice. Instead, PDPT appears most likely to be offered in student health centers that are attentive to student SRH needs in other areas. The open question is whether those interested in increasing availability would do best to promote PDPT, where legal, or to simply promote more extensive SRH services and anticipate PDPT as part of the package.

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TABLE 1.

Institutional Characteristics

	Weighted Estimates		Unweighted Frequencies	
	Percent	95% CI	N	Percent
Location				
• City	42.8	38.3–47.4	233	48.3
• Suburb	19.8	16.3–23.9	96	19.9
• Town	19.0	15.4–23.1	79	16.4
• Rural	18.4	14.8–22.6	74	15.4
Minority-serving Institute status				
• No	73.1	68.6–77.2	359	74.5
• Yes	26.9	22.8–31.4	123	25.5
▪HBCU or “Black”	▪11.7	▪8.8–15.6	▪45	▪9.3
▪Tribal	▪0.3	▪0.0–1.9	▪1	▪0.2
▪Hispanic	▪9.6	▪7.2–12.8	▪48	▪10.0
▪Other	▪5.3	▪3.5–7.7	▪29	▪6.0
Primary funding				
• Public	58.1	53.7–62.4	290	60.2
• Private	41.9	37.6–46.3	192	39.8
Institution type				
• 4-y	65.6	60.7–70.1	340	70.5
• 2-y	34.4	29.9–39.3	142	29.5
Campus health/wellness center				
• Yes	67.9	63.1–72.3	353	73.2
• No	32.1	27.7–36.9	129	26.8
Student health fee				
• For fulltime students	46.2	41.6–50.9	246	51.0
• For part-time students	37.3	31.4–40.0	192	39.8
School health insurance plan				
• Available	41.9	37.3–46.4	219	45.4
• Unavailable/DK	58.1	53.3–62.7	263	54.6

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	Weighted Estimates		Unweighted Frequencies	
	Percent	95% CI	N	Percent
Health insurance requirement				
• For fulltime students	37.3	32.7–42.1	172	35.7
• For part-time students	20.3	16.6–24.6	89	18.5

N = 482 institutions.

DK indicates don't know.

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TABLE 2.

SRH Services and STI Partner Management in Student Health Centers

	Weighted Estimate	
	Percent	**95% CI**
SRH services offered at health centers *		
Health education	86.1	81.6–89.6
Triage/referral to other clinics	83.6	78.9–87.5
Pregnancy testing	74.4	69.2–78.9
Diagnosis and treatment of STI	64.4	59.0–69.5
HIV testing	62.0	56.6–67.0
Contraceptive services	57.9	52.5–63.2
Prescription dispensing	51.8	46.5–57.1
OB/GYN services	50.8	45.4–56.2
Condoms	50.4	45.7–55.1
Emergency contraception	44.9	39.7–50.2
Chlamydia screening	40.9	36.6–45.4
Gonorrhea screening	40.5	36.2–45.0
Trichomoniasis screening	23.6	20.0–27.5
LARC	17.1	13.7–21.1
STI partner management practices †		
Ask students to notify partners	63.9	57.3–70.1
Health center staff notify partners	4.3	2.3–7.8
Refer cases to health department only	25.6	20.2–31.9
No action from health center staff	1.5	0.5–4.1

N = 367 colleges or universities with health or wellness centers.

* The proportions in this section of the table are based on “yes” responses over “yes” plus “other”. “Other” is a combination of *no* (SRH service is not available) and *don’t know*. *Don’t know* responses were <5% for any given response.

† Respondents chose one of these actions, and responses are limited to 244 schools that screened or tested students for STI or HIV.

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TABLE 3.

PDPT Availability as a Function of SRH Services in Student Health Centers

	PDPT Availability			
	If SRH Service Is Available	Other*	Adjusted OR (95% CI), †‡ N = 367	Adjusted OR (95% CI), †§ N = 244
	% (95% CI)	% (95% CI)		
Health education	41.4 (35.8–47.2)	7.2 (2.5–18.7)	8.6 (2.8–26.2)	9.5 (3.0–30.2)
Triage/referral to other clinics	43.8 (38.1–49.7)	0	n/a	n/a
Pregnancy testing	49.0 (42.8–55.3)	0.6 (0.1–4.0)	163.0 (22.1–1203.1)	77.2 (10.1–588.7)
Diagnosis and treatment of STI	56.2 (49.6–62.7)	1.1 (0.1–7.2)	120.2 (15.9–906.0)	30.4 (3.9–238.5)
HIV testing	53.9 (47.2–60.5)	8.4 (4.6–15.0)	12.6 (6.3–25.2)	n/a¶
Contraceptive services	57.8 (50.8–64.5)	7.4 (4.1–13.0)	17.1 (8.6–34.1)	5.1 (2.4–11.0)
Prescription dispensing	57.4 (50.0–64.4)	14.2 (9.6–20.5)	8.1 (4.8–13.8)	4.5 (2.4–8.3)
OB/GYN services	60.3 (52.9–67.2)	12.2 (7.9–18.2)	10.9 (6.1–19.5)	3.8 (1.9–7.6)
Condom availability	42.9 (36.7–49.2)	8.8 (5.7–13.4)	2.8 (1.6–4.9)	1.5 (0.7–3.0)
Emergency contraception	62.8 (55.1–70.0)	15.2 (10.7–21.3)	9.1 (5.5–15.3)	3.6 (2.0–6.4)
Chlamydia screening	56.2 (49.2–62.9)	10.0 (5.9–16.3)	11.8 (6.3–22.2)	4.0 (1.1–14.2)
Gonorrhea screening	56.1 (49.1–62.9)	10.6 (6.5–16.9)	10.9 (5.9–19.8)	3.2 (1.1–9.4)
Trichomoniasis screening	52.5 (43.1–61.7)	29.4 (23.7–35.8)	2.5 (1.6–4.1)	0.9 (0.5–1.5)
LARC	72.5 (60.9–81.6)	29.2 (24.0–35.0)	6.2 (3.4–11.1)	3.4 (1.8–6.7)

All estimates by PDPT availability in the first two columns are different at $P < .001$.

*Other is a combination of *no* (SRH service is not available) and *don't know. Don't know* responses were < 5% for any given response.

†Covariates for the adjusted OR were Minority-serving institute status and institution type (2-year versus 4-year).

‡N = 367 colleges or universities with health centers.

§N = 244 colleges or universities with health centers where STI testing is offered.

¶All schools in this subsample offered HIV testing.