Using Buprenorphine to Treat Opioid-Dependent University Students

Opportunities, Successes, and Challenges

Peter A. DeMaria, Jr, MD, FASAM, Robert C. Sterling, PhD, Robin Risler, PsyD, and Jeremy Frank, PhD, CAC

Objective: The objective of this study was to characterize a population of opioid-dependent university students who were treated with buprenorphine, describe their treatment outcome, and discuss challenges the authors faced in working with this population in the setting of a university counseling center.

Methods: We conducted a retrospective chart review of 27 opioid-dependent university students treated with buprenorphine at the university's counseling center.

Results: Students were predominantly white (85%, n = 23), male (63%, n = 17), average age of 22 years with an average of 33.4 ± 28.79 months (range = 4 to 132) opioid use before presentation. By self-report, 17 (63.0%) students reported heroin use, 9 (33.3%) students reported prescription opioid use, and 1 (3.7%) student reported use of both. Fifteen (56%) reported intravenous use. Treatment retention was high with students receiving an average of 12.00 + 11.49 months treatment (range = 1 to 36). During the course of treatment, 81% of all submitted urine drug screens were negative for opioids, 83.1% were negative for cocaine, 90.7% were negative for illicit (nonprescribed) benzodiazepines, and 59.1% were negative for marijuana. The average buprenorphine dose was 13.8 ± 5.69 mg (range = 4 to 24 mg). No serious adverse effects occurred. In working with this population, we found that continued marijuana use, engagement in treatment, financial concerns, and decision making around family involvement were ongoing challenges.

Conclusions: Opioid-dependent university students are a unique group of substance users. Our results indicate that they can be safely and effectively treated with buprenorphine in a university counseling center.

From the Tuttleman Counseling Services (PAD, RR, JF), Temple University; Department of Psychiatry and Behavioral Sciences (PAD), Temple University School of Medicine; and Division of Substance Abuse Services (RCS), Department of Psychiatry and Human Behavior, Jefferson Medical College, Philadelphia, PA.

Received for publication July 3, 2009; accepted November 9, 2009.

Send correspondence and reprint requests to Peter A. DeMaria, Jr, MD, FASAM, Tuttleman Counseling Services, Temple University, 1810 Liacouras Walk, 5th Floor (66-09), Philadelphia, PA 19122. e-mail: pdemaria@temple.edu

ISSN: 1921–0629/10/0404-0236
DOI: 10.1097/ADM.0b013e3181cf2050

Key Words: opioid, heroin, oxycodone, buprenorphine, prescription narcotic analgesic, pharmacotherapy, university students

(*J Addict Med* 2010;4: 236–242)

Opioid abuse and dependence are chronic and serious health problem that adversely affect many aspects of the user's life (NIH Consensus Statement, 1997). For example, a cohort of male narcotic addicts followed up for 33 years was found to have an average future life expectancy 14.64 years less than comparable males and as a result have a lost monetary productivity of $174 million (Smyth et al., 2006). In another study, the economic costs of medical care, lost productivity, crime, and social welfare of heroin addiction in the United States was estimated to be $21.9 billion in 1996 (Mark et al., 2001). In a cohort of 795 intravenous drug users (IDUs) younger than 30 years in San Francisco, 22% reported a heroin overdose in the past year (Ochoa et al., 2005). Studying the same cohort of young IDUs, investigators found a baseline hepatitis C virus seroprevalence rate of 39% with 48 of 195 seronegative users converting positive during the study period for a seroconversion incidence rate of 25.1/100 person-years (Hahn et al., 2002). The human immunodeficiency virus seroprevalence rate was 5.3% for the young IDUs compared with 10% for street IDUs in San Francisco at the same time period (Page-Shafer et al., 2002). In the case of university students, opioid addiction can interfere with the primary goal of attending and graduating from college, ultimately leading to chronic infirmity, dropping out or being dismissed from school, and a continued downward spiral in functioning. McCabe et al. (2005a) using the 2002 Monitoring the Future database of high school seniors found that students using illicit prescription opioid analgesics had lower grade point averages, higher usage rates for tobacco, alcohol, and other drugs, and problem behaviors (eg, skipped school or were suspended/expelled from school). Later in life, because of the limited and failed education attempts, the path to rehabilitation and to a productive life can be more arduous due to lack of a formal education and skills. Effective early intervention, then, should prevent significant morbidity and mortality.

University students are one group that has seen an increase in opioid use particularly of oxycodone and hydrocodone containing prescription analgesics. A number of stud-

ies have investigated the prevalence of opioid use in university students. The most recent Core Alcohol and Drug Survey (Core Institute, 2009), conducted in 2006 among a sample of 71,189 undergraduate students from about 134 colleges found a 1.3% annual prevalence and a 0.6% 30-day prevalence rate of opioid use. These rates have remained relatively constant during the preceding 5 years. In contrast, the Monitoring the Future study among college students (Johnston et al., 2007) highlighted the problems of use of narcotics other than heroin. The study noted that after a low annual prevalence of use of 2.4% in 1994, there has been a sharp rise in annual prevalence of use peaking at 8.7% in 2003 then leveling off at a rate of 8.8% in 2006. Specific data on OxyContin and Vicodin have only been collected since 2002. Annual prevalence of use of OxyContin was 1.5% in 2002 and gradually climbed to its peak of 3.0% in 2006. For Vicodin, its annual prevalence was 6.9% in 2002, reached a peak of 9.6% in 2005, and decreased to 7.6% in 2006. An investigation of the use of prescription pain medicine among 9161 undergraduate students at a large Midwestern university revealed an annual prevalence of illicit pain medication use of 10.1% for men and 8.7% for women (McCabe et al., 2005b). Although these studies document use/misuse of opioids, they do not indicate whether students met criteria for dependence versus abuse.

A number of treatment options exist for the opioid-dependent individual including medication-assisted withdrawal (ie, detoxification) and medication-assisted treatment (MAT). Studies on medication-assisted withdrawal, though, have shown limited usefulness (Polydorou and Kleber, 2008) in diverse samples of opioid addicted individuals. Both methadone and buprenorphine are available for MAT. Although methadone is available only through specific narcotic treatment programs, buprenorphine is available through outpatient physicians' offices. There is a significant body of research documenting the effectiveness of both methadone (Payte et al., 2005) and buprenorphine (Strain and Lofwall, 2008) in the treatment of opioid dependence. To our knowledge, no studies have investigated the use of buprenorphine in the treatment of opioid-dependent university students. Recently, 2 studies have examined treatment of opioid-dependent adolescents. One study in adolescents aged 13 to 18 years compared buprenorphine with behavioral intervention with clonidine with behavioral interventions (Marsch et al., 2005). Buprenorphine treated adolescents were retained in treatment at a higher rate (72%) compared with clonidine treated youth (39%) and had a significantly higher percentage of opioid-negative urine test results (64% vs 32%). The other study investigated length of buprenorphine-naloxone treatment in adolescents aged 15 to 21 years (Woody et al., 2008). They found that 70% of adolescents treated for 12 weeks were retained in treatment compared with 20.5% of adolescents treated for 14 days. Adolescents maintained on buprenorphine-naloxone for 14 days had a higher percentage of opioid-positive urine test results compared with the adolescents treated for 12 weeks at 4 weeks (61% vs 26%) and 8 weeks (54% vs 23%) but not at 12 weeks (51% vs 43%). Both of these studies examine short-term treatment with buprenorphine ranging from 28 days to 12 weeks. To our knowledge, no published studies have investigated maintenance treatment in this population. Furthermore, despite data supporting its efficacy, some physicians have been reluctant to incorporate buprenorphine into their clinical practice (Thomas et al., 2008). Additionally, investigators have continued to explore which clinical populations might benefit most from its use (Sullivan et al., 2005).

Previously, we reported on the use of buprenorphine to treat a university student (DeMaria and Patkar, 2008). We now expand that work and present our experience treating 27 opioid-dependent university students describing their characteristics and treatment outcome.

METHODS

This research protocol was reviewed and approved by the Temple University Institutional Review Board.

Population

The study was conducted at a large (enrollment = 34,695 students), diverse (55% women; 57% whites, 15% blacks, 10% Asians, 3% Hispanics, 4% International students, and 11% other), urban, northeastern university that includes undergraduate, graduate, and professional schools. The counseling service is available to any matriculated university student. The center is not a drug and alcohol treatment facility; however, we do treat students who present with drug and alcohol addiction, including opioid addiction. We see approximately 1600 students for triage/walk-in clinic annually with the majority of students presenting with anxiety, depression, and relationship issues. The number of opioid-dependent students who present to the center is rare in comparison. Although it is our belief that more opioid-dependent students attend the university than present for treatment, our data only address those students who presented and were inducted on/treated with buprenorphine.

Procedure

Students seeking services were directed to the walk-in clinic where they were triaged by a member of the clinical staff. Students who presented requesting help with opioid addiction or for whom an opioid addiction problem was uncovered during the triage appointment were referred to the lead author, a board certified addiction psychiatrist with a waiver to prescribe buprenorphine. Typically, the psychiatrist met such students briefly during the triage visit to determine whether they met Diagnostic and Statistical Manual of Mental Disorders-IV TR criteria for opioid dependence and were candidates for buprenorphine treatment. If deemed appropriate candidates, he would provide them with educational material, a treatment contract for their review, a prescription for two 8-mg buprenorphine/naloxone tablets to be filled at a local pharmacy and brought to the induction appointment, and instructions for the induction appointment. The appointment for induction and a more complete evaluation was typically scheduled within a week of the triage appointment. During the triage appointment, students may have also been referred to another psychotherapist for concomitant psychotherapy. All students were encouraged to see their primary care physician or the university's student health services for

a medical evaluation including laboratory testing for hepatitis and human immunodeficiency virus.

During the induction appointment, a careful history was conducted documenting drug use, past treatment of addiction, current psychiatric symptoms, and psychiatric history, family history, and personal history. Student questions regarding buprenorphine and the treatment program were answered. Students were required to review and sign a treatment contract discussing goals of treatment, treatment options, and expectations. Once completed, students were clinically assessed for opioid withdrawal using the Clinical Opioid Withdrawal Scale and if appropriate were administered 4 to 8 mg sublingual buprenorphine, as Suboxone. Their response was monitored during the ensuing 30 minutes, and depending on drug use history and symptoms present, an additional dose, up to 8 mg total, was administered. The following day's dosage was calculated according to these parameters. A follow-up appointment was scheduled for 1 week. Students were generally seen weekly for the first month then once monthly thereafter. Prescription quantity reflected the frequency of visits. Dosage was individualized for each student depending on opioid withdrawal symptoms, reported cravings opioid use, and side effects, with a target dose of 16 mg.

Urine Drug Screening

As part of the assessment process and before buprenorphine induction, students were asked to provide a urine specimen for drug of abuse testing. Urine drug testing was completed using the Redwood Biotechnology Redi-cup or dipstick test. A temperature strip on the collection container ensured validity of the specimen. Urines were tested for methamphetamines, cocaine, opioids, tetrahydrocannabinol, benzodiazepines, and oxycodone. A separate test for oxycodone was necessary because the test for opioids would not detect oxycodone. In this study, a urine drug screen (UDS) positive for opioids, oxycodone or both opioids, and oxycodone was reported positive for opioids. After the initial test, UDSs were performed approximately once monthly, during follow-up appointments. Frequency of UDS was dependent on office visit frequency, which was dependent on a student's vacation breaks. Receiving a prescription for buprenorphine was contingent on the student providing a urine specimen for UDS. Overall, the philosophy of the authors was to retain students in treatment despite their UDS results. Students with a positive UDS for opioids or other drugs were evaluated for optimized buprenorphine dosing and level of care. Students with continued positive UDS were encouraged to increase group, 12-step or individual sessions, or were referred to an intensive outpatient treatment program or inpatient treatment.

Counseling

After the initial psychiatric and addiction evaluation, students were seen weekly by the study psychiatrist for 30-minute sessions. Once stabilized, students were seen monthly. Sessions focused on drug use, opioid withdrawal symptoms, buprenorphine side effects, triggers for use, and relapse prevention. Students were encouraged to explore and attend self-help meetings. Some students were referred for individual counseling at the counseling center. All were invited to participate in drug and alcohol groups offered by the center. Over time, and as the number of students being prescribed buprenorphine increased, the lead author initiated and had a weekly Suboxone Support Group. However, groups did not run during the winter break or summer months. A few students sought treatment services (eg, outpatient counseling, intensive outpatient counseling, and inpatient treatment) outside of the center using their insurance benefits.

Data Collection and Plan of Analysis

We reviewed the charts of 27 students inducted onto buprenorphine and treated for at least 3 months during the period of January 2004 and April 2008. Two students were not included in the study because they were inducted on buprenorphine before their treatment at the counseling center. Three additional students were excluded because they were treated less than 3 months.

Demographic information was collected and information about the use of drugs and past treatment, medical, psychiatric, legal, and family histories. In addition to the initial UDS, results of all UDS during the data collection period were collected. The length of treatment was calculated to the nearest month from the date of initiation of buprenorphine to the last office visit. After describing the sample characteristics, we will report on treatment outcomes (operationalized as months in treatment and the percentage of negative urines provided).

Multiple regression procedures were used to identify whether pretreatment characteristics could be identified as predictive of treatment outcome. For these analyses, a series of parallel analyses were conducted using percent time in treatment (PTT) and the proportion of opioid-negative urines as the dependent variables. For both, a backward regression procedure, which consists of entry of all predictor measures into the model followed by selective deletion of those not contributing significant variance, was used. Variables initially used included demographic factors such as age, race, sex, and academic year and substance use measures such as self-reported years of opioid use, opioid used (ie, dichotomized heroin or nonheroin [prescription opioid analgesic]), route of opioid administration (ie, dichotomized IV or non-IV use), the presence/absence of alcohol and cigarette use, and information regarding psychiatric history and prior substance abuse treatment. Initial urine results that were dichotomized as negative or positive for the presence of any 1 of 3 substances beyond opioids (eg, tetrahydrocannabinol, cocaine, and benzodiazepines) alone or in combination were also considered.

RESULTS

Sample Characteristics

As can be seen in Table 1, 63% of subjects were men, 85% were whites, and 96% were academic juniors or higher (including doctoral level and professional students), and 11 (41%) indicated that they were not involved in a relationship. The average age of these subjects was 22.37 ± 2.89. One treatment-naive student initially presented for treatment of a prescription opioid addiction, was inducted onto buprenor-

TABLE 1. Student Demographics

Demographics	N (%), Unless Specified
Sex	
Male	17 (63)
Female	10 (37)
Average age at presentation (range)	22.37 ± 2.89 yr (19–31)
Race	23 (85) white
	2 (7) Indian
	1 (4) African American
	1 (4) Multiracial
Relationship status	
Not involved	11 (41)
Involved	7 (26)
Committed	4 (15)
Deeply committed	5 (18)
Year in school at time of presentation	
Freshman	0 (0)
Sophomore	1 (4)
Junior	13 (48)
Senior	10 (37)
Masters level	0 (0)
Doctoral level	1 (4)
Professional school	2 (7)

phine, and stopped using opioids. However, he left after 1 month of treatment, ultimately relapsing, and returned to treatment. In this study, his 2 treatment episodes are considered separately.

Substance Use and Clinical Characteristics

Table 2 describes the substance use and clinical characteristics of the sample. By self-report, 17 (63.0%) students reported heroin use, 9 (33.3%) reported prescription opioid use, and 1 (3.7%) reported use of both. On average, they reported a 33.4 month ± 28.79 (range = 4 to 132) history of opioid use. Fifteen (55.6%) reported a history of intravenous (IV) use. Eighteen (66.7%) reported using tobacco, and 15 (55.6%) reported drinking alcohol.

UDSs obtained before buprenorphine induction were used to characterize subject drug use. All students tested positive for opioids (opioid, oxycodone, or both). Fourteen (51.9%) had an initial UDS positive for marijuana, whereas 12 students (44.4%) and 6 students (22.2%) were positive for cocaine and illicit (nonprescribed) benzodiazepines, respectively.

Sixteen students (59.3%) reported a history of substance abuse treatment. Treatments included the full spectrum of addiction treatment. Three students (11.1%) reported having been treated in a methadone maintenance treatment program in the past and 1 additional student (3.7%) admitted to purchasing methadone off the street to self-treat himself. Six students (22.2%) reported a history of buprenorphine treatment with an additional 4 (14.8%) reporting that they purchased buprenorphine off the street to self-treat themselves.

Legal history, family history, and psychiatric history are shown in Table 2.

TABLE 2. Substance Use and Clinical Characteristics

Characteristics	N (%), Unless Specified
Opioid use (self-reported)	
Heroin	17 (63.9)
Prescription opioid	9 (33.3)
Both	1 (3.7)
Average length of opioid use	33.4 ± 28.79 mo (range = 4–132)
History of intravenous use	15 (55.6)
Other reported substance use	
Tobacco	18 (66.7)
Alcohol	15 (55.6)
Initial urine drug screen result	
Opioid	27 (100)
Marijuana	14 (51.9)
Cocaine	12 (44.4)
Illicit (nonprescribed) benzodiazepine	6 (22.2)
Methamphetamine	0 (0)
Past treatment history	
Any	16 (59.3)
Methadone maintenance treatment	3 (11.1)
Buprenorphine	6 (22.2)
Self-treatment with street-obtained medication	
Methadone	1 (3.7)
Buprenorphine	4 (14.8)
Legal history	8 (29.6)
Family history	
Psychiatric	14 (51.9)
Addiction	19 (70.4)
Psychiatric diagnosis	
Total	15 (55.6)
Attention deficit/hyperactivity disorder	8 (29.6)
Anxiety disorder	6 (21.2)
Depressive disorder	7 (25.9)
Bipolar disorder	1 (3.7)

Buprenorphine Treatment

The average maintenance dose for the group was 13.8 ± 5.69 mg (range = 4 to 24 mg). The average highest administered dose during the study period was 16.0 ± 5.55 mg (range = 4 to 28 mg). Overall, buprenorphine was well tolerated. The most common side effect was constipation. No serious adverse events occurred. One female student became pregnant while in treatment. She was maintained on buprenorphine, had an uneventful pregnancy, and delivered a healthy baby boy. The baby did not experience neonatal abstinence syndrome.

Treatment Retention and Services Rendered

Of the 27 students who were inducted on buprenorphine, 11 (41%) were still in treatment as of the date of data collection. Of the remaining 16, 8 (29.6%) dropped out of treatment and were lost to follow-up, 5 (18.5%) graduated from school and were referred to community providers, 2 (7.4%) left treatment to enter long-term treatment programs (inpatient rehabilitation, methadone maintenance treatment

program), and 1 student (3.7%) was incarcerated for breaking stipulations of her parole.

For these 27 subjects, time in treatment ranged from 1 to 36 months ($M = 12.00 \pm 11.49$). Given differences in potential time in treatment, a PTT was calculated. This value is operationalized as the total number of months a student was in treatment divided by the potential number of months they could have been in treatment. The potential number of months in treatment was calculated from the date of admission to either the date of graduation or for current students, the end of the data collection period. The average PTT was 0.67 ± 0.43; values ranged from 0.023 to 1.00. Sixteen (59%) of the students had a PTT of 1.00, indicating that they were retained in treatment as long as was logistically possible.

In addition to examining absolute time in treatment, we also looked at services received while in treatment. Before being induced on buprenorphine, all students were seen for an initial psychiatric evaluation conducted by the lead author. Subsequently, students were seen by the lead author for follow-up medication management sessions ($M = 10.48 \pm 9.75$; range = 1 to 30). Students were also offered the opportunity to participate in clinical activities provided at the university counseling center. Results indicated that 18 students (67%) attended an average of 7.56 ± 5.73 individual counseling sessions (range = 1 to 21), and 15 students (56%) attended an average of 8.60 ± 5.69 group meetings (range = 2 to 20). One third of the students (n = 9) reported attending self-help meetings. However, the frequency of attendance at self-help sessions was not recorded.

Drug Use With Time in Treatment

The 27 students gave a total of 237 UDS while in treatment ($M = 8.8$/student, range = 0 to 33). The goal was to collect specimens monthly, but the collections varied according to session frequency and school breaks. Overall, 81.0% of all submitted UDS were negative for opioids, 83.1% were negative for cocaine, 90.7% were negative for illicit (nonprescribed) benzodiazepines, and 59.1% were negative for marijuana. None of the UDS were positive for methamphetamines. A borderline significant correlation between PTT and percent opioid-negative urines was observed, $r = 0.37$, $P = 0.06$, suggesting that the more possible treatment that was obtained, the better the observed outcome.

Predicting Treatment Outcome

With respect to the percent of opioid-negative urines provided during the course of treatment, a significant model with heroin/nonheroin use and any other substance use at treatment initiation as predictors was observed, $F(2, 22) = 8.41$, $P = 0.002$. Overall, the 2 variables accounted for 38% of the variance in the criterion measure. Examination of the unstandardized regression weights indicated that the use of heroin relative to prescription opioids contributed to a 39% (standard error [SE] = 12.1) reduction in the proportion of negative urines provided; similarly, the presence of any substance other than opioids was associated with a 29% (SE = 12.9) reduction in the outcome measure. Similar analyses using PTT as the criterion did not yield any significant predictors of outcome. Thus, it seems that although certain aspects of a subject's addiction background (ie, type of opioid used and use of additional substances other than opioids) were predictive of in-treatment use of opioids, retention was not responsive to these factors. The finding that these 2 criteria were at best modestly correlated supports this differential finding.

DISCUSSION

We report a unique population of opioid-dependent university students. The group was heterogeneous with both prescription opioid and heroin users. About half of the group reported IV use. Roughly half of the students used marijuana by the initial UDS results and about two thirds reported tobacco use. Smaller percentages of students had initial UDS indicating use of cocaine and benzodiazepine. Length of opioid use varied considerably with several students clearly being new initiates to opioid use with low levels of dependence, whereas others had more extensive opioid use histories with concomitant psychosocial comorbidities. Most students were new to treatment, and some had tried self-medication with street obtained methadone or buprenorphine. Ninety-six percent of the students were academic juniors or above. Two reasons may explain this. First, it may take a year or 2 for students in college to be introduced to opioids by their peer group. Second, it may take time for students to become addicted to opioids and exhibit problems related to their opioid use for which they seek help. Not surprisingly, about half had a family psychiatric history, and 70% had a family substance use history. Legal consequences of opioid addiction were few in this population compared with other populations of opioid-dependent patients.

Our results indicate that opioid-dependent university students can be successfully treated with buprenorphine at a university counseling center. Our retention rate was high, allowing many students to stay in school, complete their education, and graduate. Treatment also had an impact on drug use with significant decreases in opioid, cocaine, and illicit benzodiazepine use. Despite decreases in other drug use, marijuana use continued. We believe that this is due to many students not perceiving MJ as a drug and not suffering consequences of continued MJ use (eg, physical withdrawal, legal problems, and family problems) compared with continued opioid use. Other researchers have addressed the issue of cannabis use by patients in methadone maintenance treatment and concluded that cannabis use does not negatively affect treatment outcome (Epstein and Preston, 2003; Weizman et al., 2004).

Heroin use and use of any other substance at treatment initiation predicted less reduction in negative UDS. It is possible that heroin or polysubstance users are more refractory to treat and may require more intensive treatment than we provided. Interestingly, Motamed et al. (2008) did not find a difference in percent opioid-negative UDS in adolescent heroin versus prescription opioid drug users. Future studies aimed at a better understanding of treatment matching and outcome may help elucidate these findings.

Psychiatric comorbidity was also high in our sample with about half of students having a psychiatric diagnosis.

Diagnoses included attention deficit/hyperactivity disorder (ADHD), anxiety, and depressive disorders. Such high psychiatric comorbidity is common in the opioid-dependent populations, though our prevalence of ADHD was higher than in some studies (King et al., 1999). Perhaps, this was due to the likelihood that college-bound students are assessed and treated for ADHD.

We encountered a number of challenges working with this population in our university counseling center setting. For many students, once opioid withdrawal symptoms were treated with buprenorphine, the need for ongoing counseling and engagement in treatment also seemed to decrease. Students were difficult to engage in individual and group therapies, and it was more challenging to get them to buy into a consistent self-help recovery program. Mandating that they attend a general drug and alcohol process group, 12-step meetings, or individual therapy presented challenges, and so it was agreed that recommendations be made on a case by case basis. Several students were encouraged to attend a buprenorphine support group, which provided the additional benefits of social support, psychoeducation about the disease of addiction, MAT, and relapse prevention. Although adding psychosocial treatment to medication is recommended (Center for Substance Abuse Treatment, 2004), Fiellin et al. (2006) were not able to demonstrate that additional counseling led to improved treatment outcome in an office-based buprenorphine treatment program.

Financial concerns and the decision to involve parents and family presented problems for some students. For students with no insurance coverage (our university offers but does not require coverage) and limited financial resources, perhaps exacerbated by their addiction, affording medication posed a major obstacle. A number of students were covered under their parent's insurance policies, but students were often reluctant to use their insurance knowing their parents would likely learn about their addiction. Many students expressed the sentiments that they got themselves into this dilemma, and therefore it was their responsibility to get themselves out of it. Several students did not want their parents to know because they feared disappointing them. Others knew their parents would react negatively or pull them out of school. By not disclosing their addiction it made affording the medication more difficult while also preventing potential support from family members, which in some instances might aid in their recovery. When appropriate, we would encourage students to disclose their drug use to parents. Family members or nonusing friends could improve social support (Kidorf et al., 2005) and increase compliance with medication dosing, especially because some students admitted struggling with compliance. For students living away from home, involving significant others or close friends might also be a source of support. For graduating students, the financial challenges were even more significant. Finding local referrals was difficult as most local practitioners do not accept insurance for buprenorphine treatment services, and students were not always able to secure employment immediately after graduation.

This study has a number of limitations. First, it is an uncontrolled, retrospective chart review with no comparison group. Second, the sample size is small and is limited to 1 university during a 4-year period. It is not clear how our sample compares to all opioid-dependent students at our school as this population was a self-selected group of students who chose to access treatment services at the university's counseling center. Additionally, the results may not be generalizable to other university counseling centers. Finally, there was no follow-up data available for those students who dropped out of treatment. It is our belief that they continued or returned to using drugs.

In summary, we present a newly described opioid-dependent population of university students who were effectively treated with buprenorphine at a university counseling center. Despite the success, challenges existed around continued MJ use, difficulty engaging students in treatment, financial concerns, and decision making around involving family. Future research could expand on this study with a larger sample size and using a controlled, prospective design investigating the role of counseling and other nonpharmacologic therapies.

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