

Public Health Briefs

Weekly Patterns of Drug Treatment Attendance

ABSTRACT

Objectives. This study examined weekly patterns of drug treatment attendance in relation to date of welfare payment receipt and reason for treatment absence.

Methods. Treatment attendance by Medicaid-eligible pregnant women who were drug dependent was examined by calendar week over a 29-month period.

Results. Time series analyses showed that attendance was lower during week 1 than week 4. Drug use was the most frequently reported reason for treatment absence during week 1 (25%) but was not reported as a reason during week 3.

Conclusions. Drug-dependent outpatients had increased absences associated with illicit drug use during the first week of the month when welfare payments were received. The generalizability of the findings is unknown. (*Am J Public Health*. 1999;89:752-755)

Dace S. Svikis, PhD, Roy W. Pickens, PhD, Wendy Schweitzer, MS, Eric Johnson, PhD, and Nancy Haug, MA

Because possession of money is recognized as a factor in illicit drug use,¹⁻⁴ concern has been expressed that individuals receiving public assistance funds may use the money to purchase illicit drugs. This concern has been the focus of several popular press articles,⁵⁻⁸ scientific reports,⁹⁻¹² and congressional hearings.¹³⁻¹⁵ At the Center for Addiction and Pregnancy (Baltimore, Md), all clients of which receive public assistance, staff have anecdotally noted a relationship between program absences and receipt of welfare checks and have coined the phrase "check-week phenomena" to refer to this relationship.

The present study was conducted to examine empirically the relationship between program attendance and receipt of welfare checks by drug treatment clients and to assess reasons for program absence. Program attendance was determined for each week of each calendar month over a 29-month period for all clients, and anonymous surveys were separately conducted to assess reasons for absences.

Methods

Subjects

Participants were patients enrolled in a hospital-based program providing full-day outpatient drug treatment and medical services to pregnant and postpartum drug-dependent women (see Jansson et al. for a description of the treatment program¹⁶). Program absences were determined for all enrollees ($n = 513$) over a 29-month period (December 1991–April 1994). Reason for each absence was assessed in patient subsamples enrolled in March 1996 ($n = 85$) and June 1996 ($n = 75$). In terms of demographic characteristics, subjects were predominantly African American (84%) and single (82%), their mean age was 27.3 years, and their mean education level was 11.2 years. Nearly all were unemployed (93%)

and receiving federal medical assistance as well as monthly social services and/or food stamp benefits. Substance use disorders included cocaine (76%), heroin (66%), and alcohol (14%) dependence.

Procedure

Mean daily attendance rates for all participants were computed separately for weeks 1, 2, 3, and 4 of each calendar month based on data from medical and billing records. Descriptive assessments were initially used to identify broad processes (e.g., growth or decline), cyclical or periodic patterns (e.g., changes every fourth week), and specific perturbations of the general patterns (e.g., unusual events) in attendance. Seasonal regression analysis¹⁷ was used to test the hypothesis that week of the month had a significant cyclical effect on treatment attendance while accounting for other factors that could influence attendance. Week of the month was coded as a dummy variable; daily attendance for weeks 1, 2, and 3 was compared with this variable as the reference category. As a

Dace S. Svikis and Nancy Haug are with the Johns Hopkins University School of Medicine, Baltimore, Md. Roy W. Pickens is with the National Institute on Drug Abuse/Intramural Research Program, Baltimore, Md. Wendy Schweitzer is with the Johns Hopkins Bayview Medical Center, Baltimore, Md. Eric Johnson is with the Henry Ford Health Sciences Center, Detroit, Mich.

Request for reprints should be sent to Dace S. Svikis, PhD, Center for Addiction and Pregnancy, D-4-East, Johns Hopkins Bayview Medical Center, 4940 Eastern Ave, Baltimore, MD 21224 (e-mail: dacecap@aol.com).

This paper was accepted November 25, 1998.
Note. The views expressed in this article are those of the authors and do not necessarily represent those of the National Institute on Drug Abuse, the National Institutes of Health, the Public Health Service, or the Department of Health and Human Services.

means of maintaining comparability across months, days in excess of 28 each month were not included in the analysis.

Participants absent during any day of week 1 and/or week 3 were personally surveyed on their return to determine the reason for the absence. Participation was anonymous and voluntary, and patients were unaware of the purpose of the study. If the woman agreed to participate (98% of eligible patients did so), she was asked to indicate the primary reason for each absence from a list of commonly reported reasons. We used z tests of proportions to compare reasons for program absences in weeks 1 and 3.

Results

Weekly Attendance

Over the 29-month study period, mean daily attendance was lowest in week 1 (15.6 patient visits), followed by week 2 (17.8), week 3 (19.7), and week 4 (20.2) (Figure 1). Seasonal regression was used to examine whether attendance differed by week of the month. Attendance rates during week 1 were significantly lower than rates during week 4, whereas the differences between weeks 2 and 3 and week 4 were not significant (Table 1). These effects were maintained when the regression model was adjusted for other factors affecting treatment attendance (program growth over time, phase of the program, number of deliveries, and program closings because of holidays and inclement weather). Inclement weather and number of births both had a significant negative effect on attendance. Overall trend or growth was not significant once the model included phase of the program (growth during the first year vs maintenance during the second year) and an interaction term that counted an upward trend in attendance only during the growth phase. The final model explained 80% of the variance ($R^2 = 0.81$).

Patient Survey

The most commonly cited reason for treatment absence during week 1 was illicit drug use (25%), followed by having social services and other appointments (12%) and child-care issues (10%). During week 3, the most commonly cited reasons for absence were physical illness (23%), having social services appointments (13%), and child-care issues (12%). None of the patients indicated that drug use was a reason for treatment absence during week 3 (Table 2). The difference between weeks 1 and 3 in proportion of absences attributed

TABLE 1—Seasonal Regression Model of Treatment Attendance

	Regression Coefficient	β	P
Week^a			
Week 1	-4.172	-0.225	<.001
Week 2	-1.742	-0.094	.061
Week 3	0.182	0.010	.843
Adjustment			
Trend	-0.042	-0.044	.662
Phase	21.193	1.314	.001
Trend \times Phase	1.036	0.535	.001
No. of births	-0.514	-0.100	.022
Inclement weather (snow closings)	-14.645	-0.238	.001

^aWeek 4 is the reference category.

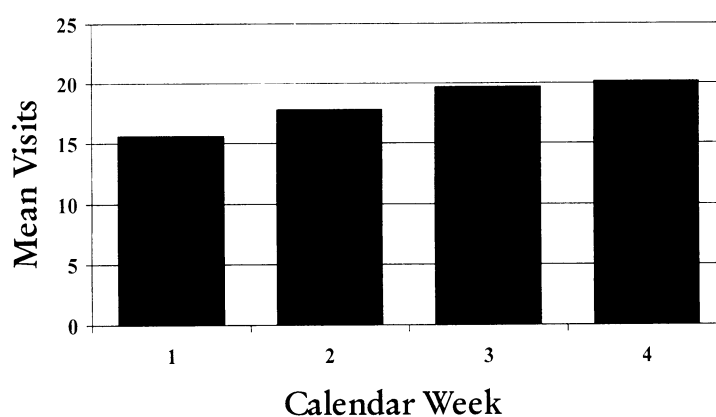


FIGURE 1—Mean full-day visits for each calendar week over the 29-month period.

to drug use was statistically significant ($z = 3.89$, $P < .0001$).

Discussion

After other possible confounding factors had been taken into account, the difference between weeks 1 and 4 in treatment attendance was statistically significant ($P < .001$), and the difference between weeks 2 and 4 approached significance ($P < .06$). The most frequently reported reason for week 1 absence was drug use, while that for week 3 was other appointments. One likely explanation for decreased attendance and increased drug use during week 1 was receipt of welfare payment. All participants received monthly welfare and food stamp payments on the first day of each calendar month, with payments ranging from \$18 to \$1018 per month (mean: \$413 per month).

That welfare payments are sometimes used by patients to purchase illicit drugs is well recognized in drug treatment programs.¹⁸ However, most epidemiological studies of factors related to drug use relapse

have focused on more global issues, such as psychosocial adjustment¹⁹⁻²¹ and psychiatric severity.^{22,23} The fact that receipt of money can serve as an immediate precipitant of drug use has been recognized in a number of behavioral studies attempting to identify and eliminate the stimulus cues previously associated with drug use.^{2,4,24,25}

Shaner and colleagues⁹ found that schizophrenic male veterans were more likely to use cocaine at the beginning of each month (when they received their disability payments), which was confirmed by patient self-report. Unfortunately, how these results generalize to the broader population of nonschizophrenic patients is unknown. Also, since the majority of the subjects were not enrolled in substance abuse treatment, the impact of disability check receipt on treatment participation and retention could not be assessed.

In many respects, the present findings should not be surprising. Given the limited financial resources of this patient population, receipt of a relatively large amount of money in a single lump-sum payment is likely to increase a number of behaviors requiring money. While some of these behaviors are

TABLE 2—Factors Related to Treatment Absence

Reason for Patient Absence	Week 1 (n = 67 Absences), %	Week 3 (n = 52 Absences), %
Other appointments (social services, child protective services, medical/dental)	12	13
Taking care of other things for self or child(ren) (e.g., shopping for food, clothing)	7	8
Using drugs	25	0
Not feeling well; physical illness or problems	6	23
Too tired	7	10
Child-care issues or taking care of sick child(ren)	10	12
Missed the van or bus transportation	7	6
Other (legal issues)	3	10

socially desirable (e.g., purchase of food and clothing, payment of bills), some are undesirable (e.g., illicit drug use). Both types of behaviors may reduce the likelihood of attending drug abuse treatment as well as other types of treatment programs.

As a group, welfare recipients have rates of alcohol and drug abuse that are comparable to those of individuals in the general population and individuals not receiving welfare benefits.²⁶ Nevertheless, the concern about welfare recipients using public funds to purchase illicit drugs is evident in the general public and popular press.^{5,6} To date, however, the possibility that welfare payments are being used disproportionately by drug-dependent individuals to purchase illicit drugs has not been empirically evaluated.^{11,27}

Our results suggest that delivering welfare payments at a fixed time each month may have an undesirable impact on treatment attendance rates and may affect census reports obtained on the first day of each month.²⁸ The data also suggest that other strategies for welfare payment delivery should be investigated. Recently, several behaviorally-based treatment studies have demonstrated the effectiveness of making voucher payments to drug treatment patients contingent on abstinence from illicit drug use.^{29,30} Similar results have been reported by other investigators in a limited sample of homeless, treatment-resistant male outpatients with a dual diagnosis of schizophrenia and cocaine dependence.³¹ Alternatively, behavioral incentives for outpatient treatment attendance may also enhance rates of drug abstinence and treatment participation during high-risk periods such as "check week."³²

When representative payees have been employed to manage funds of clients with severe mental illness and substance use disorders, results have been less conclusive. Two studies found that use of payees decreased illicit drug use rates⁹ and led to more regular treatment attendance,³³ while another study found no group differences for patients assigned and not assigned representative pay-

ees.³⁴ Other approaches (e.g., delivering welfare payments in smaller installments than a monthly lump sum or making welfare payments contingent on drug abstinence or program attendance) have not been evaluated.

There are several methodological limitations to the present study. First, the treatment population was a relatively homogeneous sample of pregnant opiate- and/or cocaine-dependent women receiving public assistance appropriate to their condition. The applicability of the findings to more heterogeneous populations or to individuals involved in other types of public assistance programs is unknown. Second, the women were enrolled in an outpatient treatment program requiring intensive treatment participation (typically 3–7 days per week). The generalizability of these data to less intensive drug treatment is unknown. Finally, the relationship between drug use and treatment absence was assessed only with self-report measures, and the validity of these measures is unknown. □

Contributors

D. S. Svikis and R. W. Pickens designed the study and wrote the manuscript. E. Johnson designed the statistical data analysis plan and assisted with manuscript preparation. W. Schweitzer created and maintained the computer database, performed all data coding and cleanup operations, conducted the statistical analyses, and provided editorial comments on the manuscript. N. Haug assisted with statistical analyses, oversight of data abstraction and coding procedures, and provided editorial comments. All 5 authors are guarantors for the integrity of the research.

Acknowledgments

This research was supported by Public Health Service grant P50 DA 09258 (Behavior Therapy Treatment Research Center).

We thank Bernie DeBelius, Cathy McCormick, and Karin Hastings-Miller for their assistance.

References

- Herbst MD, Batki SL, Manfredi LB, Jones T. Treatment outcomes for methadone clients receiv-

ing lump-sum payments at initiation of disability benefits. *Psychiatr Serv.* 1996;47:119–120.

- Marlatt GA. *Relapse Prevention: Maintenance Strategies in the Treatment of Addictive Behaviors.* New York, NY: Guilford Press; 1985.
- Wallace BC. Treating crack cocaine dependence: the critical role of relapse prevention. *J Psychoactive Drugs.* 1992;24:213–222.
- O'Brien CP, Childress AR, McLellan AT, et al. Integrating systemic cue exposure with standard treatment in recovering drug-dependent patients. *Addictive Behav.* 1990;15:355–365.
- Addicts often use benefits on drugs. *San Jose Mercury News.* January 10, 1994:A1.
- Tax-subsidized addicts. *Wall Street Journal.* February 8, 1994:A18.
- Haner J, O'Donnell JB. America's most wanted welfare program. *Baltimore Sun.* January 23, 1995:1.
- Satel S. Hooked: it's time to get addicts off welfare. *New Republic.* 1994;210:18–20.
- Shaner A, Eckman TA, Roberts LJ, et al. Disability income, cocaine use, and repeated hospitalization among schizophrenic cocaine abusers: a government-sponsored revolving door? *N Engl J Med.* 1995;333:777–783.
- Satel S, Reuter P, Hartley D, Rosenheck R, Mintz J. Influence of retroactive disability payments on recipients' compliance with substance abuse treatment. *Psychiatr Serv.* 1997;48:796–799.
- Rosenheck R. Disability payments and chemical dependence: conflicting values and uncertain effects. *Psychiatr Serv.* 1997;48:789–791.
- Frisman LK, Rosenheck R. The relationship of public support payments to substance abuse among homeless veterans with mental illness. *Psychiatr Serv.* 1997;48:792–795.
- Tax Dollars Aiding and Abetting Addiction: Social Security Disability and SSI Cash Benefits to Addicts and Alcoholics.* Investigative staff report of Senator William S. Cohen. Washington, DC, February 7, 1994.
- Rosenheck RA. *Public Support Payments and Substance Abuse.* West Haven, Conn: Veterans Affairs Northeast Program Evaluation Center; 1996.
- US General Accounting Office. *Disability Benefits for Drug Addicts and Alcoholics Are Out of Control* (testimony before the Subcommittees on Social Security and Human Resources of the Committee on Ways and Means, US House of Representatives, February 9, 1994).
- Jansson L, Svikis DS, Lee J, Paluzzi P, Rutigliano P, Hackerman F. Pregnancy and addiction: a comprehensive care model. *J Subst Abuse Treat.* 1996;13:321–329.
- SPSS 6.1 Syntax Reference Guide.* Chicago, Ill: SPSS Inc; 1994.
- Satel SL. When disability benefits make patients sicker. *N Engl J Med.* 1995;333:794–796.
- DeLeon G. *The Therapeutic Community: Study of Effectiveness.* Washington, DC: National Institute on Drug Abuse; 1984. NIDA Research Monograph ADM 84-1286.
- Simpson DD, Joe GW, Lehman WEK. *Addiction Careers: Summary of Studies Based on the DARP 12-Year Followup.* Washington, DC: US Dept of Health and Human Services; 1986. DHHS publication ADM 86-1420.
- Rounsaville BJ, Kosten TR, Kleber HD. The antecedents and benefits of achieving abstinence

- in opioid addicts: a 2.5-year followup study. *Am J Drug Alcohol Abuse*. 1987;13:213–229.
22. McLellan AT, Luborsky L, Woody GE, O'Brien CP, Druley KA. Predicting response to alcohol and drug abuse treatments. *Arch Gen Psychiatry*. 1983;40:620–625.
 23. Brown RA, Monti PM, Myers MG, et al. Depression among cocaine abusers during treatment: relation to cocaine and alcohol use and treatment outcome. *Am J Psychiatry*. 1998;155:220–225.
 24. Pickens RW, Bigelow G, Griffiths R. An experimental approach to treating chronic alcoholism: a case study and one-year followup. *Behav Res Ther*. 1972;11:321–325.
 25. Childress AR, Hole AV, Ehrman RN, Robbins SJ, McLellan AT, O'Brien CP. *Cue Reactivity and Cue Reactivity Interventions in Drug Dependence. Behavioral Treatment for Drug Abuse and Dependence*. Washington, DC: National Institute on Drug Abuse; 1993. NIDA Research Monograph 137:73–95.
 26. Grant BF, Dawson DA. Alcohol and drug use, abuse, and dependence among welfare recipients. *Am J Public Health*. 1996;86:1450–1454.
 27. Leong GB, Silva JA. Disability payments and drug abuse. *Psychiatr Serv*. 1996;47:1266.
 28. *Drug and Alcohol Services Information System (DASIS), Uniform Facility Data Set (UFDS)*. Washington, DC: Substance Abuse and Mental Health Services Administration; 1997.
 29. Silverman K, Higgins ST, Brooner RK, et al. Sustained cocaine abstinence in methadone maintenance patients through voucher-based reinforcement therapy. *Arch Gen Psychiatry*. 1996;53:409–415.
 30. Higgins ST, Budney AJ, Bickel WK, Foerg FE, Donham R, Badger GJ. Incentives improve outcome in outpatient behavioral treatment of cocaine dependence. *Arch Gen Psychiatry*. 1994;51:568–576.
 31. Shaner A, Roberts LJ, Eckman TA, et al. Monetary reinforcement of abstinence from cocaine among mentally ill patients with cocaine dependence. *Psychiatr Serv*. 1997;48:807–810.
 32. Svikis DS, Lee JH, Haug NA, Stitzer ML. Attendance incentives for outpatient treatment: effects in methadone- and non-methadone-maintained pregnant drug dependent women. *Drug Alcohol Depend*. 1997;48:33–41.
 33. Ries RK, Comtois KA. Managing disability benefits as part of treatment for persons with severe mental illness and comorbid drug/alcohol disorders: a comparative study of payee and non-payee participants. *Am J Addict*. 1997;6:330–338.
 34. Rosenheck R, Lam J, Randolph F. Impact of representative payees on substance use by homeless persons with serious mental illness. *Psychiatr Serv*. 1997;48:800–806.

Underage Drivers Are Separating Drinking From Driving

Peter J. Roeper, MA, MPH, and Robert B. Voas, PhD

ABSTRACT

Objectives. From 1985 to 1995, drivers younger than 21 years experienced a 50% drop in fatal crashes involving alcohol. This study addresses whether the decrease is explained by young drivers' drinking less or by their separating drinking from driving.

Methods. Nighttime roadside surveys were conducted in 3 communities to test drivers' breath and administer questionnaires on drinking practices. From 1992 to 1996, 34 898 drivers (21% of whom were younger than 21 years) were interviewed.

Results. Although drivers younger than 21 years were more likely to have consumed 6 or more drinks on at least 1 occasion during the previous month, a smaller percentage of younger drivers than of older drivers had blood alcohol concentrations of 0.01 or higher.

Conclusions. Younger drivers are more likely than drivers older than 21 years to separate drinking from driving. (*Am J Public Health*. 1999;89:755–757)

Cumulatively, US laws passed in the 1980s to restore the drinking age to 21 years have reduced underage drinking and driving.^{1–4} Drivers younger than 21 years have experienced a reduction of nearly 50% in fatal crashes involving a blood alcohol concentration (BAC) of 0.10 or higher (from 24% to 13% of all fatal crashes) from 1985 to 1995.⁵ The National Highway Traffic Safety Administration (NHTSA) estimates that from 1975 through 1995, age-21 laws have saved 15 667 lives.⁵ The proportion of drivers younger than 21 years on the nation's highways on Friday and Saturday nights who tested positive for alcohol decreased from 10.9% in 1973 to 4.6% in 1986 to 2.8% in 1996.⁶ New "zero tolerance" laws recently enacted by Congress may further improve these results. Nonetheless, youths who combine drinking and driving continue to have a higher relative risk of crash involvement than do older persons who drink and drive.^{7,8} In this study we focus on whether these findings are explained by young drivers' drinking less or by their separating drinking from driving.

Methods

The data were drawn from roadside surveys and breath tests conducted over 4 years as one element of a large study that evaluated

an alcohol community intervention in 3 communities, each with a population of around 120 000—a northern California city, a southern California city, and a county in South Carolina.^{9,10}

Data were collected on alternate Friday and Saturday nights (9 PM to 2 AM) between July 1, 1992, and June 30, 1996. In this study we examined BAC as measured by a breath-testing device—along with drinking history over the previous 28 days—as a function of sex, age, and community. Of the 42 878 drivers of private vehicles stopped, 91% provided breath samples; because some interviews were incomplete, the usable sample was 34 898 (81%).¹¹

The hand-held preliminary breath-test device used is listed on the NHTSA Confirming Products List for Evidential Breath-Test Devices.¹² Drinking history was determined by pencil-and-paper questionnaire, which for brevity's sake was limited to alcohol-related questions such as the following:

Peter J. Roeper is with the Prevention Research Center, Berkeley, Calif. Robert B. Voas is with the Pacific Institute for Research and Evaluation, Bethesda, Md.

Requests for reprints should be sent to Peter J. Roeper, MA, MPH, Prevention Research Center, 2150 Shattuck Ave, Suite 900, Berkeley, CA 94704 (e-mail: peter@prev.org).

This paper was accepted November 23, 1998.