2-28-2013

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Published in final edited form as:
J Psychoactive Drugs. 2013 ; 45(1): 48–56.

Diversion of Benzodiazepines through Healthcare Sources

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Abstract

Background—Benzodiazepines (BZ) are often diverted from legal sources to illicit markets at various points in the distribution process which begins with a pharmaceutical manufacturer, followed by distribution to healthcare providers, and finally, to the intended users. Little is known about the extent of BZ diversion involving distribution points directly related to healthcare sources (e.g., a script doctor) as opposed to points further down the distribution chain (e.g., street dealers). The present study examines the scope of BZ diversion via mechanisms directly related to a healthcare source. It examines the association between BZ dependence and the direct utilization of particular healthcare-related diversion sources among a diverse sample of prescription drug abusers in South Florida.

Method—Cross-sectional data were collected from five different groups of drug users: methadone-maintenance clients (n = 247), street drug users (n = 238), public-pay treatment clients (n = 246), private-pay treatment clients (n = 228), and stimulant using men who have sex with men (MSM; n = 248).

Results—Findings suggest that those ages 26 to 35 years old, non-Hispanic White participants, private-pay treatment clients, those who are insured, and those with higher incomes had higher odds of utilizing healthcare diversion sources. Participants utilized a pharmacy as a diversion source more than other healthcare sources of diversion, and the highest number of BZs were obtained from doctor shopping compared to other diversion sources. Those who reported BZ dependence also had 2.5 times greater odds of using a healthcare source to obtain BZs than those who did not meet criteria for dependence.

Discussion—Prevention of BZ diversion through healthcare sources should include strategies to reduce doctor shopping and diversion from pharmacies.

Keywords

prescription drug; diversion; benzodiazepines; dependence

Benzodiazepine Use

Benzodiazepines (BZs) are a type of central nervous system depressant often used by patients suffering from anxiety, acute stress attacks, and sleep disorders (National Institute

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on Drug Abuse 2005). Since benzodiazepines (BZs) have been shown to produce dependence, some official recommendations indicate that BZs should be limited to only brief terms (2–4 weeks) of use; however, despite these warnings, they continue to be prescribed for long term use (Mehdi 2011); National Service Framework for Mental Health 1999). BZs are frequently prescribed medications with demonstrated abuse potential (O'Brien 2005), as indicated by recent reports of emergency department visits documenting an 89% increase in BZ involvement between 2004 and 2008 (Cai, et al. 2010). Moreover, BZs are often abused when combined with other substances such as alcohol or opioids, and they can slow heart rate and respiration to the point of death (O'Brien 2005), leading to unintentional overdoses (Bohnert, Roeder, & Ilgen 2010).

The dangers of BZ abuse are particularly evident in Florida, where BZs were the second most common drug present in decedents (after ethyl alcohol), and were found to play a causal role (mostly in combination with other drugs) in the second highest number of deaths which includes both intentional and unintentional deaths (after Oxycodone) (Florida Department of Law Enforcement 2011). In 2009, the number of deaths involving BZs increased 4% from the previous year, and BZs were involved in approximately three deaths per day in Florida (Hall 2010). As the non-medical use of BZs continues to increase, it is important to understand how abusers are illicitly acquiring these medications, as well as the role that the healthcare system plays in their diversion. Increased knowledge in this area will directly inform the development of programs and policies aimed at preventing BZ diversion and abuse.

Prescription Drug Diversion

Prescription drug diversion involves obtaining prescription medications through illegal means or the channeling of these drugs to the illicit marketplace, most often for the purpose of using them in non-medical ways; that is, for enhancing pleasure or performance and/or for moderating the effects of other drugs (Inciardi et al. 2007). For example, BZs may be used to moderate the effects of drugs such as cocaine (Rigg & Ibañez 2010). Although all prescription medications are legitimately and pharmaceutically manufactured, there are different points in the distribution chain in which diversion may occur. Some of these diversion points are directly related to a healthcare professional, such as when individuals obtain BZs by going to multiple doctors or when they misuse legitimate prescriptions. Other individuals may obtain their BZs from diversion sources that are not directly related to a healthcare professional such as a street dealer or sharing with a friend or family member.

The diversion of all prescription medications from legal sources to illegal sources is estimated to cost public and private medical insurers approximately $72.5 billion a year (Coalition Against Insurance Fraud 2007). These losses include the cost of insurance schemes such as fraudulent insurance claims for bogus prescriptions and phantom injuries, as well as the estimated hidden cost of treatment for patients who develop actual medical problems due to prescription drug abuse (Coalition against Insurance Fraud 2007). Most experts now consider diversion to be one of the major drivers of the prescription drug abuse epidemic in the United States (Inciardi, Surratt, Lugo, et al. 2007).

Although the abuse and diversion of BZs has been noted previously (DuPont 1988); Wilford 1991), much of the diversion literature has focused on either opioid medications specifically (Cicero, et al. 2011), or has included numerous types of prescription medications grouped together. Common mechanisms of diversion include both healthcare-related sources and non healthcare-related sources. Health-care related sources of diversion refer to points in the distribution of prescription medication that are directly related to a healthcare source, such as: 1) 'script' doctors (i.e., the illegal sale of prescriptions by physicians); 2) 'doctor

shopping' by individuals who visit numerous doctors to obtain multiple prescriptions; and, 3) pharmacy (i.e., undercounting of pills by pharmacy staff or pharmacist, theft by pharmacy staff, fraud by staff or pharmacist). Non healthcare-related sources refer to points in the distribution of prescription medication that are not directly related to healthcare sources. These may include the following: 1) street buys/dealers; 2) theft (i.e., residential burglaries, theft of prescription pad, forgery, or alteration of prescriptions); 3) sharing and trading with friends; and 4) from a family member (Inciardi, et al. 2009a; Inciardi, et al. 2009b).

Healthcare diversion sources are often utilized by different types of drug abusing populations. For example, opioid dependent persons entering methadone treatment programs have reported using their main doctor to obtain a prescription, while the use of emergency room doctors was less likely to be reported (Rosenblum, et al. 2007). The primary healthcare-related diversion sources for opioid users include both legitimate (i.e., unknowing doctors) and illegitimate medical practices (i.e., pill mills) (Cicero, et al. 2011). One qualitative study exploring the different mechanisms of the diversion of prescription medication among substance users in South Florida suggested that the role of pharmacies as a diversion source is underestimated, and includes theft, employee pilferage, and fraud (Inciardi, Surratt, Kurtz, et al. 2007). To date, most studies on prescription drug diversion have either focused on the diversion of prescription drugs in general, or have centered on opioids (Cicero, et al. 2011; Rigg, March, & Inciardi, 2010; Martins, et al. 2009; Inciardi, et al. 2006). The diversion of benzodiazepines warrant specific attention, given that a substantial percentage of unintentional deaths involve benzodiazepines. For example, one study indicated that as many as 46% of unintentional deaths among benzodiazepine abusers in West Virginia did not have valid prescriptions for them (Toblin, et al. 2010).

The Present Study

The purpose of this paper is to examine the most common diversion sources for benzodiazepines (BZs), with a particular emphasis on healthcare sources. In addition, the relationship between BZ dependence and diversion source is also examined. Specifically, the present paper poses the following research questions: 1) To what extent are healthcare and non-healthcare related diversion sources being used to obtain BZ's? , 2) What individual characteristics are related to the use of healthcare diversion sources to obtain BZs? , and 3) are those who report BZ dependence more likely to utilize healthcare diversion sources than those who do not report BZ dependence?

Method

Participants

To be eligible for the study, individuals needed to be 18 years of age or older, and report abusing psychoactive prescription drugs at least 5 times within the last 90 days. For the purposes of this study, prescription drug abuse was defined as follows: a) taking prescription drugs without a legitimate prescription, or b) taking them in ways not prescribed by a physician (i.e., overusing). Of the 1,503 total sample of prescription drug abusers, only the BZ users were selected for further analyses (n = 1,207). Participants also had to meet one of the following criteria to determine which study sub-sample they represented: 1) methadone-maintenance treatment participants (n = 247) were currently enrolled in a methadone-maintenance treatment program ; 2) street drug users (n = 238) must have used powder cocaine, crack, or heroin 12 or more times in the past 30 days prior to interview date; 3) public pay treatment clients (n = 246) were currently enrolled in a publicly funded/ subsidized drug treatment facility for fewer than 45 days prior to interview date, 4) private-pay treatment clients (n = 228) were enrolled for fewer than 45 days in a substance abuse treatment program that was paid by private insurance or personal funds, and finally 5) men

who have sex with men (MSM; n = 248) who also reported using at least one stimulant (cocaine, crack, ecstasy, or methamphetamine) three times in the past 90 days. For the public and private pay treatment clients, their prescription drug use during the 90 days prior to treatment entry was assessed. These samples were selected due to their high rates of multiple substance use, and because previous studies demonstrated high rates of prescription drug abuse among these groups of substance users (Brands, et al. 2004; Simoni-Wastila, Ritter, & Strickler 2004).

Measures

For this study, the Global Appraisal of Individual Needs (GAIN; Dennis, et al. 2002) was used to assess background characteristics and substance use. All scales and subscales of the GAIN display good internal consistency (Cronbach alphas over .7). Cronbach alphas for all scales and subscales were over .7

Background and Substance Use—Participants were assessed on several demographic characteristics including age, gender, race/ethnicity (African-American, Hispanic/Latino, White, Other), type of user group (methadone maintenance, public treatment, private treatment, street users, MSM), income, and whether they had health insurance (yes/no).

Participants were asked to report the frequency and amount of specific benzodiazepines they used non-medically in the last 90 days. Benzodiazepines included alprazolam, diazepam, and clonazepam. All BZs were grouped for analysis. BZ dependence was assessed using the GAIN-I subscale for substance dependence, which is based on Diagnostic Statistical Manual (DSM-IV) criteria (7 items; Dennis, et al. 2002). Sample items for the dependence subscale included ‘did you experience withdrawal symptoms from [a BZ] use?’ and ‘have you used [a BZ] more or longer than you meant to?” Responses were dichotomous (yes/no). If the participant endorsed 3 or more items specific to BZs, the participant met criteria for BZ dependence.

Diversion Methods—Based on the existing literature, the authors developed a measure to assess different types of diversion sources for each specific prescription drug misused by the participant. Participants were asked which sources they used to divert and obtain prescription drugs, how many times each source was used, and how many pills were obtained within the last 90 days per diversion source. For the present analyses, we examined only diversion sources used to obtain BZs. Diversion methods included sources that were directly related to healthcare such as script doctors (i.e., a doctor that sells prescription), doctor shopping (i.e., the user goes to multiple doctors for multiple prescriptions), and pharmacy (i.e., undercounting pills by staff, employee pilferage, any staff theft), as well as prescriptions from a regular doctor (i.e., the user misuses their own legitimate prescription). These definitions were provided to the participant before asking them questions regarding diversion. Non-healthcare diversion sources to obtain BZs such as theft, street dealer, family members, and sharing/trading were also examined.

Procedures

A variety of purposive sampling strategies were used to locate and recruit study participants which are described below.

Street Drug Users—Print media advertisements, handing out study cards, and the posting of flyers were largely used to recruit active street drug users. A variation of respondent driven sampling (RDS; Heckathorn, et al. 2002) to recruit street drug users was also used. Each participant who completed an interview was also invited to refer anyone that they thought would be eligible for the study. They were given a recruitment coupon to hand out

to other interested participants with study contact information. Each participant was limited to five referrals in an effort to minimize sample bias. Specific eligibility criteria were not disclosed to the recruiters. Street drug users were provided a $10 monetary incentive for each eligible referral that completed an interview.

Methadone Maintenance Clients—Assisted by methadone clinic staff, the research staff identified and recruited methadone clients by posting flyers and handing out study cards to individuals in the methadone clinics. Counselors at the clinics also handed out study cards to clients, and each clinic provided space for interviews to be conducted. Methadone clinic clients were sampled from various locations across South Florida including Miami, Fort Lauderdale, and Fort Myers.

Public and Private Pay Treatment Clients—Treatment program staff identified new clients who reported prescription drug abuse histories at intake, and contacted the research team if the client was interested in participating. Flyers and study cards were also posted in the public treatment centers. Interviews were conducted by research staff in a private room at the treatment facility.

MSM—Participants were recruited via a combination of strategies including print media, presentations at community-based organizations that serve the gay community, participant referrals, and treatment centers. Interviews were conducted in private spaces in either our research field offices, or in the participating treatment centers.

Screening and Interviewing

All participants were screened for eligibility before they were scheduled for a confidential one-time interview. Street drug users, MSM, and methadone clients were screened over the phone by research staff. For public and private-pay treatment clients, treatment staff screened and identified eligible participants, and would coordinate with research staff to schedule the interview.

Before administering the computer- assisted personal interview (CAPI), each participant was re-screened to ensure eligibility. Once eligibility was confirmed, they were administered informed consent. Participants were assured that participation was strictly confidential and voluntary. After the consent form was signed, the CAPI interview was administered, which assessed demographic information, mental and physical health, and drug use history. Interviews lasted approximately 1- ½ to 2 hours; and after completing the interview, the participant was given a $30 monetary incentive for their participation. All study protocols and instruments were approved by the University of Delaware (predecessor institution for the project) and Nova Southeastern University Institutional Review Boards.

Data Analysis

First, descriptive statistics were calculated for the total sample, and for each of the different groups of substance users. Descriptive statistics were also calculated for the number of times and the number of BZ pills that were obtained through each diversion source (both healthcare and non-healthcare). Second, all the healthcare diversion sources (i.e., script doctor, doctor shopping, pharmacist, regular doctor) were combined into an “any healthcare diversion source” variable for further analysis. Cross-tabulations and univariate logistic regressions were conducted to compare participants who reported using any healthcare diversion source in the last 90 days to those who did not on various demographic characteristics. Third, a multivariate logistic regression analysis was conducted to examine the association between healthcare diversion sources and BZ dependence controlling for all variables significant on the bivariate level. All demographic variables significant at the

bivariate level were included as covariates in Step 1 of the model, followed by BZ dependence in Step 2. A Hosemer-Lemeshow test was conducted to examine the goodness of fit of the multivariate model.

Results

Descriptive statistics for the total sample as well as for each of the different user groups is presented in Table 1. The mean age for the total sample was 35.3 (range: 18–59), and participants were mostly male (63%). About half reported less than $1000 monthly income on average (51%), and did not have current health insurance (52%). The racial/ethnic breakdown of the sample included the following: 50% (n = 598) Non-Latino White, 23% (n = 276) African-American, 23% (n = 277) Latino, and 4% (n = 56) Other. Of the 1,207 BZ abusers, 759 (63%) reporting using one BZ, 378 (31%) used two BZs, and 70 (6%) used three BZs. The most commonly used BZ was alprazolam (n = 1102, 91%) followed by diazepam (n = 400, 33%), and clonazepam (n = 257, 21%).

As shown in Table 2, about 21% (n = 251) of the total sample had utilized at least one healthcare related source to divert BZs in the last 90 days, with 35 participants utilizing multiple healthcare related sources. The most commonly reported healthcare diversion source was regular doctor, with 11% of the sample misusing their legitimate prescriptions. The second most common healthcare diversion source was a script doctor, followed by doctor shopping and pharmacy. Participants also reported how many times they used each source specifically to obtain BZs and the total number of BZ pills obtained. The mean number of times that each healthcare diversion source was used was higher for pharmacy than any other healthcare source; and the median number of pills obtained was higher for doctor shopping than any other healthcare source (Table 2).

We also examined similar data for non-healthcare diversion sources. As shown in Table 2, at least one non-healthcare related source was utilized in the last 90 days by virtually the entire sample (n = 1136; 94%), with 454 participants utilizing multiple non-healthcare related sources. The most common non-healthcare diversion source was dealer/street buy. Sharing and trading to obtain BZs was also more common than other sources of diversion such as stealing from family members or non-family theft. Although non-healthcare sources were reportedly utilized more often than healthcare sources for the overall sample, the median number of pills obtained by these sources of diversion was generally lower than the number of BZ pills obtained via healthcare sources. Dealers were the source used most often and the source that produced the highest number of BZ pills among the non-healthcare sources.

Univariate logistic regressions were run to examine the associations between each of the demographic variables and the use of healthcare diversion sources. Results indicated that those between 26–35 years of age had 1.6 times greater odds of utilizing healthcare diversion sources to obtain BZs compared to younger adults (Table 3). There were also significant racial/ethnic differences, with African-American (OR = 0.39 [.26, .58], p < .001) and Hispanic (OR = 0.51 [.35, .74], p < .001) participants having lower odds of utilizing healthcare diversion sources compared to non-Hispanic Whites. In terms of user groups, public treatment clients (OR = .47 [.31, .72], p < .001), methadone treatment clients (OR = .52 [.34, .78], p < .002), MSM (OR = .59 [.39, .89]. p < .011), and street drug users (OR = .23 [.14, .38], p < .001) reported lower odds of utilizing healthcare sources than private pay treatment clients (reference group) to obtain BZs. Lastly, participants who reported higher than $1000 monthly income ($OR$ = 1.96 [1.47, 2.60], p < .008) or insurance coverage (OR = 1.89 [1.43, 2.51], p < .001) had greater odds of using healthcare diversion sources in the last 90 days than those with lower income or the uninsured.

BZ dependence was assessed using the GAIN-I substance dependence subscale, with forty-three percent (n = 521) of the sample meeting the criteria for dependence. Significant variables in the univariate logistic regressions, along with BZ dependence, were then run in a multivariate logistic regression model. Age, race, group, income, and insurance remained significant predictors of using a healthcare diversion source in the last 90 days in the model. After controlling for these covariates in step one, BZ dependence was entered in step two, and those categorized as BZ dependent had 2.5 times greater odds of utilizing a healthcare diversion source in the last 90 days compared to those who did not meet criteria for BZ dependence (Table 4). Furthermore, a Hosmer-Lemeshow goodness of fit test conducted on the multivariate model suggested that the model is a good fit, $X^2 = 11.42$, df = 8, $p < .179$, and the variables in the model accounted for approximately 14% of the variance in healthcare diversion source (*Nagelkerke* $R^2 = .138$).

Discussion

The present study examined the diversion mechanisms used to acquire BZs, the correlates of utilizing healthcare diversion sources, and the association between diversion sources and BZ dependence among a diverse sample of prescription drug abusers in South Florida. Results indicated that those with higher income or medical insurance had higher odds of BZ diversion through healthcare sources, which was expected given these participants's access to such sources for BZs. Furthermore, of the different groups sampled for this study, private pay treatment clients were also more likely to use healthcare diversion sources than all other user groups. Taken together, these findings emphasize how readily available BZs might be for those with access to the health care system. This finding supports previous recommendations for further research on the association between availability/supply with abuse of prescription medication and its diversion (National Center on Addiction and Substance Abuse at Columbia University [CASA] 2005), and highlights the need for more oversight at this level.

The main findings indicate that healthcare diversion sources may be a more efficient way of obtaining pills than non-healthcare sources. Interestingly, using a regular doctor as a diversion source for BZs was reported by twice as many participants as was using a script doctor (defined as a doctor that sells prescriptions), the second most common healthcare source. Regular doctors accounted for as many BZ pills on average as did dealers/street buys on the non-healthcare side. Although much attention has been focused on script doctors as a diversion source, our findings suggest that attention on individuals diverting their legitimate prescriptions is also warranted.

Although participants reported visiting healthcare sources far less often than non-healthcare sources, more pills were obtained through these sources per visit. Additionally, those who met the criteria for BZ dependence were also more likely than non-dependent individuals to utilize healthcare sources of diversion. Our findings indicate that healthcare sources of diversion have the potential to provide large quantities of pills sought by heavy or dependent users, or dealers. In contrast, less frequent users may be more likely to use opportunistic sources of diversion such as theft, dealers, or family members, which provide access to a lower number of pills, possibly due to inconsistent supplies or access. Future studies should examine the role that healthcare diversion sources may play in the progression from therapeutic, legitimate BZ use to abuse and dependence. For example, are those who begin using BZ's for legitimate purposes more likely to develop BZ dependence compared to those who begin BZ use illicitly, or vice versa? Are those who *initially* obtain BZ pills from healthcare sources more likely to develop problematic BZ use than those who began diverting BZ pills from non-healthcare sources?

The role of pharmacies in the diversion of BZs remains unclear. Participants reported obtaining BZs from pharmacies in similar quantities to those obtained through dealers. Although diversion from pharmacies may generally encompass a number of activities and mechanisms, concurrent qualitative data collected in the present study suggests that pharmacy diversion most often involved pharmacy technicians, who tended to divert relatively small amounts of BZ pills (Rigg, et al. 2012). Small thefts through undercounting or shorting prescriptions, as well as failure to verify questionable or forged prescriptions presented by their associates appear to be common mechanisms utilized by pharmacy techs to divert medications (Rigg, et al., 2012). Future studies are needed to systematically assess the role of pharmacy staff in the diversion of BZs and other controlled substances.

Limitations

This study has several strengths and limitations. The collection of cross-sectional data prevented us from being able to establish causality between the independent and dependent variables. However, these results do show a clear relationship between our variables of interest. As with all self-report data, the possibility of recall bias should be considered. Given that face-to-face interviewing was utilized as a means of data collection, social desirability may have affected responses. As this was not a random sample, the generalizability of the findings is limited. Strengths of the study include the following: to the authors' knowledge, this study is the first to investigate how prescription drug abusers, both in and out of treatment, illicitly acquire BZ's; this study examines diversion methods by BZ use; and the study utilized CAPI interviews, which allows for more accuracy and privacy in the data collection process (United Nations Statistics Division 2007).

Implications

Additional training of both physicians and pharmacists on prescription drug abuse and diversion is needed. According to a recent survey of doctors and pharmacists, only 19% of physicians received any training in identifying prescription drug diversion in medical school, and less than half of pharmacists reported having any type of training or education on prescription drug diversion since pharmacy school (CASA 2005). The same study found that 25% of pharmacists reported that they do not regularly validate the prescribing doctor's DEA number when dispensing medication and despite the lack of training reported by both physicians and pharmacists, over 80% stated they were confident that they could identify prescription drug diversion (CASA 2005). Better education, training and supervision standards for pharmacy techs with access to controlled medications are also urgently needed (Rigg, Kurtz, & Surratt 2012; Traynor 2003).

In addition, physicians may need to implement procedures to track misuse of legitimate prescriptions such as getting early refills by their clients. For example, if physicians suspect diversion or abuse, they could ask patients to return to their office after a certain number of days with their medication bottle to determine if the correct number of pills is in the bottle. According to the CASA study (2005), only 23% of physicians actually conducted a pill count when they suspected prescription drug abuse or diversion. Another suggestion might be for physicians to set up a "one doctor, one treatment plan" for clients (Longo, et al. 2000). By having patients see the same doctor, early refills are more likely to be detected. Furthermore, future studies should examine whether certain specific types of prescription drugs (i.e., BZs vs. opioids) are diverted more often through healthcare sources than others. Clearly, the schedule IV status of BZs would likely increase healthcare provider comfort with prescribing these medications, however, the health consequences of BZ abuse and dependence appear to warrant additional monitoring by physicians and other providers. For example, treating BZs similar to schedule II drugs would restrict prescriptions to a 30 day supply with no refills (Toblin, et al. 2010). However, this could make it difficult for patients

with legitimate health issues to obtain needed prescriptions and subsequent refills. Another recommendation in preventing BZ diversion and its subsequent miuse would be for physicians to seek alternative treatments to BZ use such as cognitive behavioral therapy for their patients (Toblin, et al. 2010).

In sum, and not surprisingly, those who have more access to healthcare systems (e.g., higher income, insurance coverage) are more likely to utilize healthcare sources of diversion. However, our findings also shed light on specific healthcare diversion sources that need more research attention such as the use of a regular doctor's legitimate prescription to divert BZ, and diversion mechanisms within pharmacies. Our study contributes to the literature by suggesting that how individuals obtain their BZs is related to dependence; specifically, those who obtained BZs from healthcare sources were more likely to report BZ dependence. Better monitoring systems within clinics and pharmacies in order for doctors, pharmacists, and their staff to track the frequency of refills and frequent visits by individuals are needed especially given the health consequences of BZ misuse, as well as training programs and consultation for physicians, physician assistants, and nurse practitioners. Clearly, more clinical work and research is needed to increase awareness of BZ abuse and diversion.

Acknowledgments

This research study was supported by a grant from the National Institute on Drug Abuse (NIDA; Grant # R01 DA021330). NIDA had no further role in study design; in the collection, analysis and interpretation of data; in the writing of the report; or in the decision to submit the paper for publication. Furthermore, the views expressed in this article are those of the authors and do not necessarily reflect the position of the Department of Veterans Affairs or the United States government. We wish to acknowledge the original Principal Investigator, Dr. James A. Inciardi.

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Table 1

Descriptive Statistics for the Total Sample of BZ users by Groups (n = 1,207)

Demographics	Total (*n*=1207)		Public (*n* = 245)		Private (*n* = 228)		Methadone (*n* = 247)		MSM (*n* = 249)		Street Users (*n* = 238)	
	n	%	n	%	n	%	n	%	n	%	n	%
Gender[+]												
Male	759	63	146	60	147	65	107	44	246	100	113	48
Female	443	37	98	40	81	35	139	56	---------		125	52
Race												
African-American	276	23	46	19	8	4	2	1	71	29	149	63
Hispanic	277	23	101	41	21	9	37	15	83	33	35	15
Non-Hispanic White	598	50	87	36	187	82	200	81	85	34	39	16
Other	56	4	11	4	12	5	8	3	10	4	15	6
Income												
< $1000	610	51	121	49	61	27	135	55	134	54	159	67
$1001 or more	597	49	124	51	167	73	112	45	115	46	79	33
Insurance Coverage[+]												
No	629	52	169	70	65	29	129	52	107	43	159	67
Yes	573	48	73	30	162	71	118	48	142	57	78	33
Age												
18–25	282	23	60	25	119	52	55	22	30	12	18	8
26–35	351	29	82	33	66	29	106	43	56	23	41	17
36–46	335	28	57	23	34	15	49	20	97	39	98	41
47[+]	239	20	46	19	9	4	37	15	66	26	81	34

[+]Missing data for 5 participants

Table 2

All Sources of Diversion Utilized in the last 90 days for Obtaining BZ (n = 1,207)

Sources of Diversion[+]	**Number of Times obtained BZs**		**Number of BZ pills Obtained in Last 90 Days**	
Healthcare-related (*n* = 251; 21%)	Mean	Median	Mean	Median
Regular Doctor (*n* =132; 11%)	4.2	3.0	169	144
Script Doctor (*n* = 90; 7.5%) [*]	5.3	3.0	275	180
Doctor Shopping (*n* = 41; 3.4%) [*]	7.0	4.0	672	360
Pharmacy (*n* = 31; 2.6%) [*]	24.4	6.0	184	100
Non-Healthcare (*n* = 1136; 94%)				
Theft (*n* = 77; 6.4%) [*]	9.0	3.0	106	60
Dealer (*n* = 785; 65%) [*]	22.4	10.0	150	60
Family (*n* = 217; 18%)	13.6	4.0	***	***
Sharing (*n* = 627; 52%) [**]	14.8	6.0	51	25

[*] One outlier was excluded from analyses because it was above or below 3 standard deviations from the mean.

[**] Outliers (n=12) were excluded from analyses if above or below 3 standard deviations from the mean.

[+] Note: Sources of diversion are not exclusive. Participants can report more than one diversion source used.

Table 3

Characteristics of Benzodiazepines (BZ) Users Who Obtained Any BZs through a Healthcare Diversion Source (n = 1,207)

Demographics	Used Healthcare Sources				OR[95%]	p
	Yes(*n* = 251)		No (*n* = 956)			
	%	n	%	n		
Gender+					1.06 [.80, 1.42]	ns
Male(ref)	20	155	80	604		
Female	21	95	79	348		
Age						
18–25 (ref)	18	52	82	230		
26–35	27	95	73	256	1.64 [1.12,2.41]	.011
36–46	20	66	80	269	1.09 [0.73, 1.63]	ns
47+	16	38	84	201	0.84 [0.53, 1.32]	ns
Race/Ethnicity						
White (ref)	27	162	73	436		
African-American	13	35	87	241	0.39 [.26, .58]	.001
Hispanic	16	44	84	233	0.51 [.35, .74]	.001
Other	18	10	82	46	0.59 [.29, 1.19]	ns
Group						
In-treatment, Private (ref)						
In-treatment, Public	33	75	67	153		
Methadone	19	46	81	199	0.47 [.31, .72]	.001
MSM	20	50	80	197	0.52 [.34, .78]	.002
Street Users	23	56	77	193	0.59 [.39, .89]	.011
	10	24	90	214	0.23 [.14, .38]	.001
Income					1.96 [1.47, 2.60]	.008
< $1,000 (ref)	15	94	85	516		
$1000 or more	26	157	74	440		
Health Insurance+					1.89[1.43, 2.51]	.001
Yes	26	151	74	422		
No (ref)	16	100	84	529		

Ref = reference group;

+ missing data from 5 participants

Table 4

Healthcare Diversion Sources Regressed on Background and BZ Dependence

Final Model	B	OR	95%CI	p level
Step 1				
Age	.02	1.02	1.00, 1.03	.050
Race/Ethnicity				.010
Non-Hispanic White (ref)				
African-American	−.64	0.53	.32, .86	.010
Hispanic/Latino	−.67	0.51	.34, .78	.002
Other	.26	.77	.37, 1.61	Ns
Group				.090
Private, in treatment (ref)				
Public, in treatment	−.37	.69	.42, 1.13	ns
Methadone	−.59	.56	.35, 0.87	.011
MSM	−.14	.87	.53, 1.42	ns
Street Users	−.79	.45	.24, 0.85	.013
Income	.49	1.63	1.20, 2.22	.002
Insurance	.51	1.66	1.22, 2.26	.001
Step 2				
BZ Dependence	.93	2.54	1.88, 3.43	.001

Ref = reference group