



## Correlates of three-year outpatient medical care use among rural stimulant users



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### ABSTRACT

Outpatient medical care (OMC) settings are a care context in which effective management of unhealthy substance use can occur. However, no studies have documented rates of OMC use and characteristics of OMC use among rural substance users. This study sought to examine the rates and frequency of OMC use in a sample of rural drug users over a three-year period. We also explored characteristics of participants associated with use of OMCs over time. Data were collected from June 2005 to September 2007 from a natural history study of 710 stimulant users living in rural communities. Participants were adults, not in drug treatment, and reporting recent methamphetamine, crack cocaine or powder cocaine use. Between 34 and 39% of participants reported any use of an OMC over the three-year follow-up period, with a mean average number of visits ranging from one to two at each follow-up. Having medical insurance, reporting any use of substance use disorder-related care (including formal substance use treatment or mutual-help groups), and higher Addiction Severity Index (ASI) medical and psychiatric composite scores were associated with greater odds of any OMC use and higher frequency of OMC use over time. Being male and having higher ASI alcohol and drug composite scores were associated with lower odds of any OMC use and lower frequency of OMC use. Our findings support the importance of public health efforts to increase OMC use among male rural drug users and those with more severe drug and alcohol use, the important role(s) of Federally Qualified Health Centers and other OMCs in rural communities that serve those with low rates of health insurance, and the need for public health efforts to increase the use of OMCs among rural drug users not experiencing more severe medical or psychiatric health problems.

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### 1. Introduction

Unhealthy substance use, ranging from hazardous substance use to meeting diagnostic criteria for a substance use disorder (SUD), is a significant public health issue for rural communities in the United States (US) (Booth et al., 2010; Gfroerer, Larson, & Colliver, 2007; Lambert, Gale, & Hartley, 2008). Rural communities are vulnerable to the health and legal consequences of drug and alcohol use given the potential negative perceptions of substance users toward available treatment resources (Carlson et al., 2010). Available SUD treatment services in

rural communities may be perceived as unaffordable, inaccessible, or unacceptable by substance users (Borders, Booth, Stewart, Cheney, & Curran, 2015). A recent study comparing rural and urban cocaine user perspectives found rural users to have less favorable views toward the availability, accessibility, and effectiveness of available drug treatment options when compared to urban drug users (Borders et al., 2015). Indeed, among rural drug users, 24% reported using SUD treatment services in the past three years (Curran, Ounpraseuth, Allee, Small, & Booth, 2011), while 36.8% of a national sample of drug users reported using such services in past 12-months (Compton, Thomas, Stinson, & Grant, 2007). Stigma, difficulties with transportation, and lower perceived need for treatment can also serve as barriers to SUD treatment use in rural communities (Borders et al., 2015; Pullen & Oser, 2014; SAMHSA, 2007), resulting in underutilization of SUD treatment services among rural substance users (Oser et al., 2011; Price, Risk, & Spitznagel,

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2001). In contrast, use of outpatient medical care, such as primary care clinics, can be a more appealing context for effectively addressing substance-related issues among rural substance users (Epstein, Barry, Fiellin, & Bush, 2015; Barry, Epstein, Fiellin, Fraenkel, & Busch, 2016; Gryczynski et al., 2011; Madras et al., 2009). However, little is known about the rates and correlates of outpatient medical care use in rural substance users.

Substance users who regularly use outpatient medical care, such as primary, community health or specialty medical care clinics, experience better health outcomes including reductions in addiction severity (Friedmann, Zhang, Hendrickson, Stein, & Gerstein, 2003; Madras et al., 2009), higher abstinence rates (Weisner, Mertens, Parthasarathy, Moore, & Lu, 2001; Griswold, Greene, Smith, Behrens, & Blondell, 2007; Saitz, Horton, Larson, Winter, & Samet, 2005) and fewer hospitalizations than non-users of these services (Laine et al., 2001). Research shows that among patients with a SUD without any primary care contact in the prior two years, 61% reported having medical problems in the prior 30 days with 47% reporting at least one chronic health condition (De Alba, Samet, & Saitz, 2004). Further, unhealthy substance users not using outpatient medical care also report higher utilization of hospital and emergency department services (De Alba et al., 2004) with half of these individuals reporting at least one emergency department visit in the prior six-months. Together, these data highlight the potential health, economic and health care system benefits of using outpatient medical care among substance using populations.

An additional potential benefit of outpatient medical care is that providers can help detect and treat unhealthy substance use, and have the opportunity to address comorbid medical and mental health conditions through screening and monitoring (Samet, Friedmann, & Saitz, 2001). Several screeners exist that can accurately detect drug and alcohol misuse in primary care, community health, and sexual health clinics (Timko, Kong, Vittorio, & Cucciare, 2016). Brief intervention models such as screening, brief intervention, and referral to treatment (SBIRT) can also reduce alcohol consumption and improve health outcomes (Jonas et al., 2012; Rogers, Johnson, Yu, Cuoco, & Blank, 2015; Yu et al., 2016); however, the effectiveness of brief interventions for reducing illicit drug use remains highly debated (Gryczynski et al., 2015; Schwartz et al., 2014; Saitz et al., 2014; Roy-Byrne et al., 2014). One large multi-site observational study found that the SBIRT model was associated with 6-month reductions in heavy alcohol use and illicit drug use in an ethnically diverse rural population of unhealthy substance users presenting to primary care clinics, public health offices, and school-based outpatient clinics (Madras et al., 2009). This study also showed that participants receiving SBIRT experienced improvements in overall physical and mental health, employment, housing status, and criminal behavior (Madras et al., 2009), demonstrating the potential of outpatient medical clinics (OMCs) in reducing substance use and improving the health of rural substance users. However, it is also important to note that OMC providers may face barriers, including limited training, to addressing substance use and/or comorbid mental health conditions, pointing to the potential need for training in effective and efficient approaches to addressing these clinical concerns in this setting (Ahmad et al., 2016).

Given the potential for OMCs to be an acceptable care context for rural substance users and a context in which effective management of unhealthy substance use can occur, it is important to document use of OMCs among rural substance users. Understanding the characteristics of rural substance users who might be less likely to use OMCs may also help inform the development and targeting of public health efforts to increase the use of these services in this population. Therefore, the present study sought to examine the rates and frequency of outpatient medical care use in a sample of rural stimulant users over a three-year period. In addition, using the Anderson Behavioral Model of Health Services (Anderson, 1995), we explored participant characteristics associated with any use and frequency of use of OMCs over time. This conceptual model of health care utilization has been used in prior studies to explore associations between predisposing, enabling, and need/

health status factors in relation to health care utilization in substance using populations (Borders et al., 2015; Parthasarathy & Weisner, 2005; Carlson et al., 2010). The model posits that healthcare service use is largely determined by demographic characteristics including age, gender, and marital status (predisposing factors), socioeconomic factors including medical insurance status and employment (enabling factors), and indicators of health status, including use of SUD-related care or mental health treatment (need factors) (Jahangir, Irazola, & Rubinstein, 2012). The findings of this study may have important implications for targeting efforts to increase the use of OMCs among rural substance users.

## 2. Methods

### 2.1. Sample, eligibility, and recruitment

Data were collected through a series of interviews between June 2005 and September 2007 from a natural history study of 710 stimulant users living in rural counties of Arkansas, Kentucky, and Ohio (Booth, Leukefeld, Falck, Wang, & Carlson, 2006). Rural counties were defined in the 2000 Census as non-metropolitan. All of the study counties had a population <20,000 people. Eligible participants were: (1) not in drug treatment or mutual-help groups (e.g., narcotics anonymous) within the past 30 days; (2) 18 years of age or older; (3) had used methamphetamine, crack cocaine or powder cocaine by any route of administration in the past 30 days; and (4) had a verifiable address within one of the study counties.

Each of the study sites recruited participants using Respondent-Driven Sampling (RDS), a type of snowball sampling (Heckathorn, 1997; Wang et al., 2004). Study staff identified potential “seeds” by meeting with drug treatment providers in the local area, distributing research study business cards to individuals who might know drug users, and visiting places frequented by drug users, such as bars (Draus, Siegal, Carlson, Falck, & Wang, 2005). Participants were asked to complete a baseline interview and then asked to hand out referral coupons describing the study to up to three people they knew used drugs. Each participant received \$10 each for up to three referrals who contacted the study coordinator, were eligible, and enrolled in the study.

### 2.2. Study procedure

The study was approved by the institutional review boards at each of the investigators' universities, and study researchers received a Certificate of Confidentiality from the National Institute on Drug Abuse (NIDA). Study participants completed the informed consent process prior to the baseline interview. Trained research assistants conducted the face-to-face baseline and follow-up interviews using computer-assisted personal interview software on a laptop computer. Follow-up interviews were conducted at 6-month intervals for a total of 36 months. They consisted of generally the same questions as asked in the baseline interview. Demographic information was collected and participants contact information was updated at each follow-up interview to optimize the ability of study staff to locate participants for the subsequent follow-up. This resulted in a 73% to 85% follow-up rate over the course of the six follow-up interviews (Table 1). Participants who were male, younger in age, from Ohio, and those with higher ASI medical composite scored were more likely to drop out compared to their corresponding counterparts.

### 2.3. Measures

#### 2.3.1. Dependent variables

Dependent variables included any (yes/no) and frequency of OMC use. At baseline, participants were asked, “Not including hospitalizations, emergency room visits, or outpatient surgeries, in the past 12 months have you received care from a medical doctor, nurse, medical

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