



Referrals and Treatment Completion for Prescription Opioid Admissions: Five Years of National Data



Barbara St. Marie, Ph.D.^a, Ethan Sahker, M.A.^{b,c}, Stephan Arndt, Ph.D.^{c,d,e,*}

^a College of Nursing, The University of Iowa, 101 College of Nursing Building, 50 Newton Road, Iowa City, IA 52242

^b Department of Psychological and Quantitative Foundations, Counseling Psychology Program College of Education, University of Iowa, 361 Lindquist Center Iowa City, IA 52242

^c Iowa Consortium for Substance Abuse Research and Evaluation, 100 MTP4, University of Iowa, Iowa City, IA 52245-5000, USA

^d Department of Psychiatry, Carver College of Medicine, University of Iowa, 451 Newton Road 200 Medicine Administration Building, Iowa City, IA 52242

^e Department of Biostatistics, College of Public Health, University of Iowa, 145 N. Riverside Drive 100 CPHB, Iowa City, IA 52242

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ABSTRACT

This study examines sources of referral for prescription opioid admission to substance use disorder treatment facilities and their relative completion success rates using secondary analysis of an existing data set (treatment episode datasets—discharge). Five years of data from public and private treatment facilities were extracted for client discharges with no prior treatment ($N = 2,909,884$). Healthcare professionals account for very few referrals to treatment ($<10\%$). Prescription opioid clients referred into treatment had lower treatment success compared to other substance clients and when referred by healthcare providers had lower success rates ($OR = 0.72$, $95\% CI 0.70–0.75$) than clients from other referral sources. Fewer treatment referrals for prescription opioid misuse by healthcare providers and lower success rates are significant and timely findings due to the prevalence of prescription opioid misuse. Healthcare providers are well positioned to refer early for prescription opioid misuse and continue support of their patients during treatment.

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1. Introduction

Opioid use disorder is a complex public health problem that has created major human and societal costs. In 2013 in the United States, opioid use disorder associated with prescription opioids affected 1.8 million Americans, and opioid use disorder associated with heroin affected 517,000 (Substance Abuse and Mental Health Services Administration, 2014). Prescription opioid (PO) misuse results in significant morbidity and mortality often due to unintentional overdose (Dunn et al., 2010). Since 2004, emergency room visits related to POs increased 153%, or over 220,000 visits (Substance Abuse and Mental Health Services Administration, 2013), and the deaths from PO overdose out-numbered death from motor vehicle accidents (Centers for Disease Control and Prevention, 2011). The growth of this problem suggests a need to investigate PO admissions to treatment and successful treatment completions. Given the importance and increasing health care contacts with PO users, it is important to understand who is currently referring those presenting with PO as a problem substance. Furthermore, it is important to understand how referral sources are associated successful treatment completion.

Successful treatment completion is a clinically meaningful outcome measure predictive of long-term outcomes such as decreased criminal

involvement, fewer treatment readmissions (Evans, Li, & Hser, 2009; Garnick, Lee, Horgan, & Acevedo, 2009; Zarkin, Dunlap, Bray, & Wechsberg, 2002), employment, and income 1 year following treatment (Arria et al., 2003). Furthermore, successful treatment completion data are useful in public health analyses (Alterman, Langenbucher, & Morrison, 2001; Garnick et al., 2009). Referral source is associated with treatment success (Arndt, Acion, & White, 2013; Atkinson, Misra, Ryan, & Turner, 2003). For example, for all substances, employer and criminal justice referrals predict the highest percentage of successful completion rates, while self-referrals and healthcare referrals (HCR) predict the lowest percentage of success (Arndt et al., 2013; Evans et al., 2009; Friedmann, Lemon, Stein, & D'Aunno, 2003; Kelly, Finney, & Moos, 2005; Perron & Bright, 2008; Wild, Cunningham, & Ryan, 2006). Coercion may be a factor for completion success rate for treatment (Wild et al., 2006). For instance, criminal justice system referrals mandate treatment and keep clients in the treatment programs longer (Perron & Bright, 2008). Longer retention in a treatment program is generally associated with better post-treatment outcomes (National Institute on Drug Abuse, 2010; Perron & Bright, 2008). However, self-referral and HCR clients are associated with lower success in treatment completion (Arndt et al., 2013). The recent Federal initiative for screening, brief intervention, and referral to treatment (SBIRT) in primary healthcare for patients misusing alcohol and illicit drugs highlighted the relevance of this investigation as SBIRT aims to increase HCRs (Urada, Teruya, Gelberg, & Rawson, 2014). While there is an urgent need for screening and intervention of PO problems, referral and treatment outcomes for clients with PO admissions is relatively unexplored.

* Corresponding author at: 100 MTP4, University of Iowa, Iowa City, IA 52245-5000, USA. Tel.: +1 319 335 4488; fax: +1 319 335 4484.

E-mail address: stephan-arndt@uiowa.edu (S. Arndt).

The purpose of this study was to explore PO admissions to treatment facilities and their associated successful treatment completions. We speculated that referral rates for treatment admissions for PO use disorder by healthcare professionals (HCP) would be lower compared with other referrals sources. In addition, successful treatment completion rates for PO admissions would be lower compared with other substances. In addition, we presented descriptive data on treatment admissions identifying with PO as the primary problem substance.

2. Material and methods

2.1. Participants and selection

This study was a secondary analysis of an existing data set from the Substance Abuse and Mental Health Services Administration. Admission and discharge information is requested from all public and private, urban and rural county addictions treatment facilities receiving public funding in the United States. These data were drawn from the Treatment Episode Datasets—Discharge (TEDS-D). TEDS consists of approximately 1.5 million annual admissions to licensed substance abuse treatment facilities making up a major proportion of all treatment admissions in the 50 states. Thus, results from TEDS are generalizable to those in licensed substance abuse treatment facilities. We used a concatenated 2006–2009 dataset (United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, & Office of Applied Studies, 2010) and the 2010 dataset (United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, & Office of Applied Studies, 2011) providing 5 years of discharge data ($N = 8,096,795$). TEDS-D data are collected on all admissions/discharges rather than each individual. We selected only those records where the client indicated no prior treatment ($N = 3,014,422$) to capture only first-time admission for analysis of individuals rather than multiple records for one person. Clients receiving medication-assisted opioid therapy (e.g., methadone) were excluded resulting in our final analytic sample ($N = 2,909,884$). Medication-assisted opioid therapy is viewed by some researchers (Bluthenthal, Jacobson, & Robinson, 2007; Guerrero et al., 2013) as an ongoing, indeterminate treatment that can misrepresent retention outcomes. Because these were secondary analyses of de-identified data, the University of Iowa Human Subjects Office, IRB exempted this study from review.

2.2. Measures

The main outcomes were successful substance abuse treatment completion status at discharge, and length of stay. TEDS data include demographic information and treatment characteristics collected on admission by agency staff. Continuous variables such as age were categorized due to confidentiality concerns. Participants were mostly male. Race/Ethnic groups were determined by self-report and combined into White (non-Hispanic/Latino ethnicity), Black (Black/African American regardless of ethnicity), Hispanic (Puerto Rican, Mexican, Cuban, Central or South American or any other Spanish cultural origin), and other (Native American, Asian, or other racial groups). Participants were categorized to either a POs group or other substance group (including heroin and alcohol). The PO group, our primary independent variable, consisted of admissions coded with “other opiates and synthetics” as their primary problem substance by TEDS. The “other opiates and synthetics” category include buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, morphine, opium, oxycodone, pentazocine, propoxyphene, tramadol, and any other drug with morphine-like effects. The PO group may consist of those misusing prescriptions or illegally obtained POs. Referral source was a major factor in our analyses. For one set of analyses, referral source was divided into HCR group (physician, psychiatrist, other licensed HCP, general hospital, psychiatric hospital, mental health program, or nursing home) or other

(individual/self, alcohol/drug abuse care providers, school/educational settings, employers/EAPs, courts/criminal justice agencies, and other community referrals).

The primary outcome variable of successful treatment completion was originally coded into several categories by treatment agency staff, and reduced to fewer subcategories by TEDS. We dichotomized successful treatment completion as “Treatment Completed” versus all other reasons (e.g., left against professional advice, terminated by facility, incarcerated, transferred, other). The secondary outcome of length of stay was defined by month-long intervals. Due to varied ranges provided by TEDS, frequencies in this analysis are in 1-month intervals and include discharges throughout the interval. Discharges were categorized in between 1 and 30 days and were categorized as 1 month. Discharges between 31 and 60 days were categorized as 2 months, and so on.

2.3. Statistical analysis

Basic chi-square was used to analyze differences between categorical variables. Logistic regression and estimated marginal probabilities (expressed as percentages) for multivariate analyses, predicted PO admission or referral from HCPs and successful treatment completion. Effect sizes were calculated using the probabilistic index (PI) and odds ratios (OR). A PI of 0.5 is the base and indicates no effect whatsoever, a $PI < 0.56$ is small, < 0.64 medium, and 0.7 is large (Acion, Peterson, Temple, & Arndt, 2006). Small differences would be considered statistically significant using $p < 0.05$. Because of the very large sample size and number of tests, the threshold for significance was set to 0.0001 to avoid a type I error. Risk differences greater than 5 percentage points were considered clinically meaningful measures of effect as were odds ratios greater than 2.0. Previous research has followed this effect size threshold in analysis of TEDS data (Sahker, Toussaint, Ramirez, Ali, & Arndt, 2015).

3. Results

3.1. Demographic data

Clients with primary substance as PO were more likely female and White when compared to the “other substance” group. Among the other substances group, Blacks and Hispanic/Latinos were almost 5 and 4 times more likely, respectively. Nearly 44% of those admitted for POs were between the ages of 21 and 29 in contrast to those among the other substances group where only 27.65% were in this age interval. There were fewer younger and older clients in the PO group than in other substances group. While there was an overall significant difference in age (Mann–Whitney $z = 7.73$, $p < 0.0001$) the effect size was trivial ($PI < 0.51$). The people with PO admissions were more often unemployed, retired or disabled, living independently, currently married and less often supporting themselves from wages and salary in comparison to the other substance group.

3.2. Referral sources

Substance use treatment information appears in Table 1 comparing the PO and other substance groups. The PO group had considerably more self-referrals and fewer criminal justice referrals compared to the other substances. While there were more HCR among the PO admissions (chi-square = 3,664.55, $df = 1$, $p < 0.0001$) the difference of 3.78 percentage points missed our criterion of 5.0 to be considered clinically meaningful. HCR were generally low in both groups (PO and other substances) and were only slightly less than 10% for the PO clients. Fig. 1 shows the number of HCPs and other referral source admissions by age group where POs were the primary problem substance.

The HCR versus other referrals, for PO admissions was analyzed by age, race, gender, and employment status. Demographic differences between HCRs and other referral sources among the PO admissions (Table 2) showed marginally more females among the referrals coming

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