



Full length article

Perceptions and practices addressing diversion among US buprenorphine prescribers



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ABSTRACT

Background: While there has been a dramatic increase in prescribing of buprenorphine for the treatment of opioid use disorder in the US, little is known about prescribers' attitudes and practices regarding buprenorphine diversion and how they relate to prescriber characteristics.

Methods: A national random sample of buprenorphine prescribers (N = 1174) completed surveys from July 2014 to January 2017. Analyses examined relationships between prescriber and practice characteristics and prescriber perceptions and approaches regarding diversion.

Results: Among this sample of buprenorphine prescribers, 79.0% (N = 898) reported assessing all patients for risk of buprenorphine diversion and misuse. A third of prescribers described diversion as a significant or very significant concern in their community. The majority of prescribers reported seeing patients on average at least every other week during the first 60 days of treatment, and the majority reported testing urine for buprenorphine to assess for diversion. Perceptions of diversion being a greater problem in their community (AOR 1.212, 95% CI 1.073–1.369) and use of medication counts (AOR 1.006, 95% CI 1.003–1.009) were associated with increased likelihood of terminating patients when diversion was suspected, while having expertise in addiction (AOR 0.526, 95% CI 0.406–0.682) or psychiatry (AOR 0.714, 95% CI 0.558–0.914) were associated with decreased odds of terminating treatment for suspected diversion.

Conclusions: Buprenorphine prescribers report diversion is an important issue, and most prescribers report that they assess patients for diversion, though specific practices differ based on prescriber and practice characteristics.

1. Introduction

Given the dramatic rise in the prevalence of opioid use disorders (OUD) in the U.S. (Han et al., 2015; Martins et al., 2017), there is a clear and urgent need to expand access to evidence-based treatment. The most effective treatment for OUD is pharmacotherapy with formulations of buprenorphine and buprenorphine/naloxone (hereafter collectively termed buprenorphine) and methadone (Mattick et al., 2014; Nielsen et al., 2016; Nielsen et al., 2017). Recent data also strengthen support for long-acting naltrexone (Lee et al., 2017; Tanum et al., 2017). In the US, methadone and buprenorphine can be dispensed in federally approved opioid treatment programs (OTPs), and

since 2003, buprenorphine can also be prescribed by waived prescribers in health care settings outside OTPs. Buprenorphine prescriptions in the US have substantially increased, and Medicaid spending for buprenorphine increased from \$380.9 million in 2011 to \$753.9 million in 2016 (Clemans-Cope et al., 2017). This increase suggests more individuals are receiving treatment, but concerns have also emerged about increased diversion of buprenorphine, defined as unauthorized rerouting or misappropriation of prescribed buprenorphine to someone other than the person for whom it was intended (Lofwall and Walsh, 2014). Diversion concerns are often cited by providers as a barrier to incorporating buprenorphine treatment into their practice (Andrilla et al., 2017). Thus, there is a crucial need to understand prescriber

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attitudes and identify practices addressing diversion.

Diversion of prescribed buprenorphine is an important and complicated clinical issue for prescribers. On the one hand, it is an illegal behavior involving a controlled substance they are prescribing; on the other hand, it is a marker of non-adherence to treatment, a common problem in all areas of medicine (Kardas et al., 2013; Nieuwlaet et al., 2014). Reasons for diversion vary. Patients may sell buprenorphine to supplement their income or to obtain their opioid of choice (Allen and Harocopos, 2016). Use of diverted buprenorphine among out-of-treatment individuals is clinically concerning but may be related to lack of access to formal treatment (Bazazi et al., 2011). For instance, among those who have used diverted buprenorphine in Appalachia Kentucky, the most robust risk factor was failing to access buprenorphine treatment in healthcare settings (Lofwall and Havens, 2012). Use of diverted buprenorphine does not guarantee that the person is taking the medication appropriately and may be associated with less positive clinical outcomes than when buprenorphine is provided as part of a treatment plan with ongoing monitoring. In rarer cases, individuals may misuse buprenorphine for euphoric effects, especially when more preferred substances are not available (Cicero et al., 2014; Kenney et al., 2017). International reports indicate that buprenorphine can be misused, though higher rates typically occur when the buprenorphine-mono-product is more widely available (Lofwall and Walsh, 2014).

Although there are numerous strategies providers can use to assess and mitigate diversion, including using the lowest effective dose of medication and informing patients about diversion, specific practices have been emphasized in buprenorphine prescribing guidelines (Substance Abuse and Mental Health Services Administration, 2004). The American Society of Addiction Medicine's National Practice Guideline on OUD treatment specifies that "recommended strategies include frequent office visits (weekly in early treatment), urine drug testing, including testing for buprenorphine and metabolites, and recall visits for pill counts (page 7)." Urine testing encompasses testing for buprenorphine and the metabolite norbuprenorphine because detection of only the parent compound may suggest an adulterated sample (Donroe et al., 2017; Suzuki et al., 2017). Although it is possible for patients to circumvent urine testing and other measures, these represent some of the key recommended practices to assess for diversion.

However, little is known about actual prescriber practices to address diversion. A 2008–2009 survey reported buprenorphine prescribers take a mean of 4.4 steps, including prescribing lowest effective dose and urine screens, to try to mitigate diversion (Yang et al., 2013). More detailed data and analyses on this issue, and examining impact of prescriber and practice characteristics, are critical to assessing current practices and attitudes as buprenorphine prescribing increases. In the present analyses, we assessed attitudes and practices regarding diversion, focusing on the specific practices recommended by the ASAM guideline. Analyses were conducted in a random sample of US buprenorphine prescribers and examined the relationships between prescriber characteristics with diversion practices and attitudes.

2. Methods

2.1. Sample

As the first wave of a longitudinal study, a national random sample of buprenorphine prescribers was drawn from the May 2014 issue of the Drug Enforcement Agency's Controlled Substances Act (CSA) Active Registrants database, which lists all civilian physicians holding a DEA X-license to prescribe buprenorphine in the 50 US states and the District of Columbia. Prescribers were sampled within each state, proportional to their state's representation within the DEA database, with 8031 prescribers randomly selected for screening by telephone (see Fig. 1 for participant recruitment). To be eligible, physicians were required to be currently treating at least one OUD patient with buprenorphine and to be practicing within the sampled state. Screening identified 3553

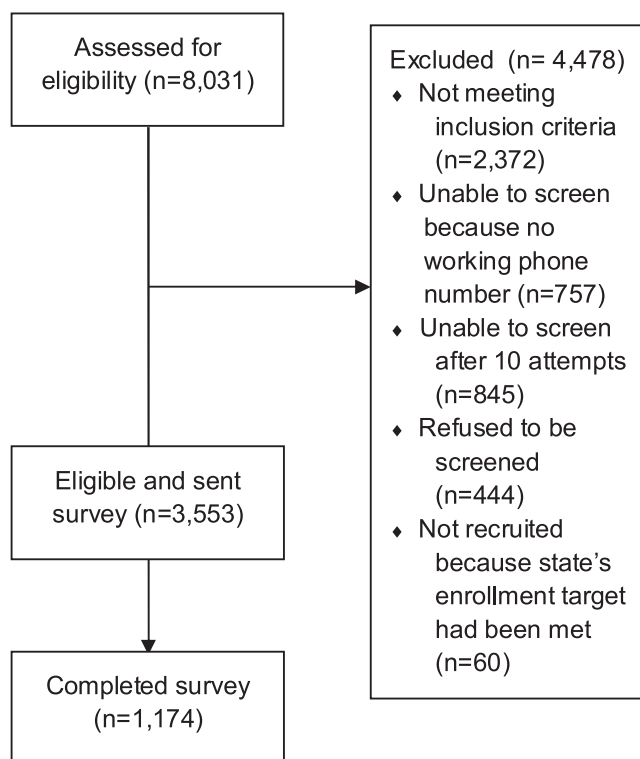


Fig. 1. Study flow diagram.

eligible prescribers. Eligible prescribers were mailed a letter describing the study and, about one week later, they were express-mailed a study packet (i.e., survey, consent forms, postage-paid return envelope). Participants received \$100. Participation was encouraged with a postcard reminder, a follow-up telephone call, and the mailing of a second packet to non-respondents. From July 2014 to January 2017, 33.0% (n = 1174) of eligible prescribers participated in the study. All procedures were approved by the University of Kentucky's Institutional Review Board.

2.2. Dependent variables

Five diversion-related dependent variables and four encompassing practices for detecting and deterring diversion and one focused on responding to diversion were measured. The first mention of diversion in the survey defined it as "patients selling, giving away, or trading their medication", and the related issue of buprenorphine misuse was defined in the survey as "not taking medication as prescribed." First, *assessment of diversion risk* was measured by an item asking "In the past year, for what percentage of your buprenorphine patients did you assess patients for medication misuse and diversion?" Responses were dichotomized into two groups—those reporting assessing all patients (= 1) and those not assessing all patients (= 0). Second, frequency of office visits during the early phase of treatment was measured by an item that asked, "For patients in treatment for 1–2 months following induction, how frequently do you typically see those patients?" Analyses used the categories of weekly or more, every other week, or monthly or fewer. Third, *urine drug screening for buprenorphine* was measured by an item that asked "Do you usually require that urine specimens be tested for buprenorphine? Response options were 'Yes, always,' 'Yes, but only if misuse/diversion is suspected,' and 'No.'" Responses were dichotomized to always testing for buprenorphine (= 1) versus not always testing/not ever testing (= 0). Third, prescribers were asked "In the past year, for what percentage of your buprenorphine patients did you initiate random film/pill counts based on your concerns about possible medication diversion (e.g., selling, giving away, or trading medication)?"

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