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The impact of buprenorphine on treatment of opioid dependence in a Medicaid population: Recent service utilization trends in the use of buprenorphine and methadone

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ABSTRACT

Background: Buprenorphine provides an important option for individuals with opioid dependence who are unwilling or unable to attend a licensed methadone opioid agonist treatment program to receive opioid agonist therapy (OAT). Little empirical information is available, however, about the extent to which buprenorphine has increased the percentage of opioid dependent individuals receiving OAT, nor to what extent buprenorphine is being used in office based settings.
Methods: Using administrative data from the largest Medicaid managed behavioral health organization in a large mid-Atlantic state, we used multivariate regression to examine rates and predictors of opioid agonist use and treatment setting for 14,386 new opioid dependence treatment episodes during 2007–2009.
Results: Despite an increase in the use of buprenorphine, the percentage of new treatment episodes involving OAT is unchanged due to a decrease in the percentage of episodes involving methadone. Use of buprenorphine was significantly more common in rural communities, and 64% of buprenorphine use was in office-based settings.
Conclusion: Buprenorphine use has increased in recent years, with the greatest use in rural communities and in office based settings. However, the percentage of new opioid dependence treatment episodes involving an opioid agonist is unchanged, suggesting the need for further efforts to increase buprenorphine use among urban populations.

1. Introduction

Opioid use disorders (opioid abuse and opioid dependence) are a significant public health problem, affecting hundreds of thousands of Americans (U.S. Department of Health and Human Services and Substance Abuse and Mental Health Services Administration Office of Applied Studies, 2010) with an estimated societal cost of $20 billion annually (National Consensus Development Panel, 1998). Historically, less than 25% of opioid dependent individuals receive opioid agonist therapy (OAT; American Methadone Treatment Association, 1998), the most effective intervention for opioid dependence with a broad evidence base (Marsch, 1998; Mattick et al., 2003, 2008; National Institute of Drug Abuse, 2006; National Institute of Drug Abuse National Quality Forum, 2005; Volkow, 2004), and one that has been shown to have a range of individual and societal benefits (Krantz and Mehler, 2004; Marsch, 1998; Mattick et al., 2008; National Consensus Development Panel, 1998).

The FDA's 2002 approval of buprenorphine and buprenorphine/naloxone (collectively buprenorphine) for opioid dependence treatment served as an opportunity to increase the number of patients with opioid dependence receiving OAT (Ducharme and Abraham, 2008). Under the physician waiver program established by the Drug Addiction Treatment Act of 2000, physicians could prescribe buprenorphine in regular office-based settings. This more flexible approach to opioid dependence treatment represented a paradigm shift from prior OAT treatment, which regulations had required to be taken in a licensed methadone program operating under strict state and federal regulations for treatment that commonly included daily attendance for dosing on-site (Ling et al., 2010). Compared to methadone, buprenorphine has been found to be effective and cost-effective (Barnett, 2009; Harris et al., 2005; Jones et al., 2009; Mattick et al., 2009, 2008), and buprenorphine's approval was therefore expected to increase

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access to OAT for individuals unable or unwilling to attend licensed methadone programs (O'Connor et al., 1998; Sullivan et al., 2005). Furthermore, the availability of buprenorphine OAT expanded pharmacologic options in licensed methadone opioid agonist treatment programs as well as in specialty addiction treatment programs that are not licensed to prescribe methadone.

While studies have documented buprenorphine use in office-based settings (Arfken et al., 2010) and the diffusion of buprenorphine use among opioid agonist treatment program and specialty addiction treatment program facilities (Ducharme and Abraham, 2008; Knudsen et al., 2006, 2007; Koch et al., 2006), there is a paucity of empirical data examining buprenorphine use and its relationship with methadone use and non-pharmacologic interventions in the treatment of opioid dependence. We are unaware of studies examining to what extent the introduction of buprenorphine has increased the overall number of individuals receiving OAT. Furthermore, if the number of individuals receiving OAT is increasing, it is not known whether this is related primarily to the availability of buprenorphine in office-based settings, or if an increase in OAT use is also occurring among individuals being treated in opioid agonist treatment programs and specialty addiction treatment programs. To better understand the role buprenorphine is playing in expanding access to OAT, we examined the use of buprenorphine and methadone from 2007 to 2009 among publicly insured individuals in a large Mid-Atlantic state. We hypothesized that the use of both buprenorphine and OAT increased over time, with a substantial amount of buprenorphine use observed in office based and rural settings.

2. Methods

2.1. Sample and data source

Using administrative data from the largest Medicaid managed behavioral health organization in a large mid-Atlantic state and state provided pharmacy data, we identified adults age 18–64 years old starting a new treatment episode for opioid dependence between January 1, 2007 and December 31, 2009. The study was conducted in compliance with the University of Pittsburgh Institutional Review Board.

The managed behavioral health organization manages behavioral health care for over half of the counties in the state. All Medicaid enrolled individuals in each of these counties have essentially all of their behavioral health care services managed by the managed behavioral health organization, and there are limited block grant funded substance abuse treatment services available in the communities in which these individuals reside. Buprenorphine is available on the Medicaid formulary and commonly requires prior authorization, but in contrast to a number of other states where efforts are being made to limit use of buprenorphine (Clark et al., 2011), there is no "fail first" requirement nor in our conversations with providers do they report finding the prior authorization requirement particularly onerous.

2.2. Outcome and predictor variables

We identified adults with a new opioid dependence treatment episode, which we defined as (1) a single inpatient claim or 2 or more outpatient behavioral health claims in a 90-day period with a diagnosis of opioid dependence (ICD code 304.0, 304.00, 304.01, 304.02, 304.03, 304.7, 304.70, 304.71, 304.72, 304.73), (2) a claim for a methadone related treatment service, or (3) a filled buprenorphine prescription (buprenorphine or buprenorphine/naloxone sublingual tablets) following a 90-day period with no claim with a diagnosis of opioid abuse or dependence, no methadone related services, and no prescription for buprenorphine. New treatment episodes were categorized as buprenorphine treatment, methadone treatment, or drug-free treatment. Individuals who received both buprenorphine and methadone within the first 90 days of starting the treatment episode were categorized as having buprenorphine treatment. We examined each year independently, so an individual could have a new treatment episode in each calendar year following a sufficiently long period with no treatment medications or services with a diagnosis of opioid abuse or dependence. Duration of treatment episodes was calculated from the beginning of the episode until the last observed claim, completed prescription, or end of the calendar year. For individuals who had more than one new treatment episode in a year, we included only the first treatment episode.

Sociodemographic variables, including age, sex, Medicaid eligibility category, and race/ethnicity were obtained from the state's membership and eligibility files. Race/ethnicity was categorized as white, African-American, or other. Consistent with other analyses of Medicaid-enrolled populations (Zito et al., 2005), individuals were categorized into Medicaid eligibility categories according to whether their Medicaid eligibility resulted from a disability or was income related. Consistent with other studies, we identified individuals with a comorbid serious mental illness if they had one inpatient or 2 outpatient claims with a diagnosis of schizophrenia, bipolar disorder, and major depression (Lurie et al., 1992). Dually eligible individuals (Medicaid/Medicare) were excluded from the analysis as their pharmacy claims were unavailable in the state provided Medicaid data files. Using provider identifiers in the Medicaid claims, we linked individuals to treatment facilities, and categorized location of opioid dependence treatment as (1) opioid agonist treatment programs (methadone programs providing methadone and buprenorphine), (2) specialty addiction treatment programs (programs not licensed to dispense methadone but able to provide buprenorphine), and (3) office based opioid agonist treatment for individuals who did not receive any services at either of the preceding treatment settings. Office-based treatment includes individuals on buprenorphine who are receiving care in both primary care and outpatient psychiatric settings. Individuals were categorized as living in an urban area if their county of residence had a population density greater than 1000 individuals/square-mile.

2.3. Analysis

We estimated three multivariate logistic regression models. We estimated the first model as a logistic regression of any opioid agonist treatment use among those with a new opioid dependence treatment episode, controlling for sex, race, urban/rural status, age, comorbid serious mental illness, Medicaid eligibility category, and year of episode. We estimated the second model as a logistic regression of buprenorphine use among those receiving any opioid agonist treatment, conditional on the same covariates. We estimated the third model as a logistic regression of office based treatment among those receiving buprenorphine, conditional on the same covariates. In each case, we calculated Huber-White standard errors to account for the intra-person correlation for those who contributed more than one treatment episode to the sample.

3. Results

3.1. Characteristics of population

We identified 14,386 new opioid dependence treatment episodes by Medicaid-enrolled individuals from 2007 through 2009. The individuals starting treatment episodes were predominantly under the age of 35, white, and Medicaid eligible due to income (Table 1). Approximately half were male, and approximately one third resided in urban communities. The number of individuals starting treatment for opioid dependence increased 35% from 2007 ($n=4115$) to 2009 ($n=5569$). Twelve percent ($n=1793$) of new episodes involved buprenorphine, 25% ($n=3581$) involved methadone, and 63% ($n=9012$) did not involve an opioid agonist. Of the 9012 individuals receiving drug-free treatment, the majority (71%; $n=6386$) were receiving services from specialty addiction treatment programs, 19% were receiving services other than methadone from opioid agonist treatment programs, and 10% ($n=882$) were receiving services from mental health providers.

3.2. Trends in the use of medications to treat opioid dependence from 2007 to 2009

We found that the number of new treatment episodes per adult Medicaid enrollees increased slightly from 1.6% in 2007 to 1.7% in 2008 and 2.0% in 2009. The number of new episodes involving buprenorphine more than doubled from 2007 ($n=367$) to 2009 ($n=793$), while there was a modest 6% increase in the number of new methadone episodes over the same time frame (Table 2). However, as the number of drug-free new treatment episodes increased by 37% over the same period, the overall percentage of new treatment episodes involving opioid agonists was essentially unchanged between 2007 (38%) and 2009 (37%). As highlighted in Table 2, the shifts in type of new treatment episodes were most pronounced in rural communities.