



## Regular articles

## Buprenorphine prescribing practice trends and attitudes among New York providers☆☆☆★



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## ABSTRACT

Buprenorphine office-based opioid maintenance is an increasingly common form of treatment for opioid use disorders. However, total prescribing has not kept pace with the current opioid and overdose epidemic and access remains scarce among the underserved. This study sought to assess current provider attitudes and clinical practices among a targeted sample of primarily New York City public sector buprenorphine prescribers. A cross-sectional online survey purposefully sampled buprenorphine prescribers in NYC with a focus on those serving Medicaid and uninsured patient populations. Expert review of local provider networks, snowball referrals, and in-person networking generated an email list, which received a survey link. A brief 25-question instrument queried provider and practice demographics, prescribing practices including induction approaches and attitudes regarding common hot topics (e.g., buprenorphine diversion, prescriber patient limits, insurance issues, ancillary treatments). Of 132 email invitations, N = 72 respondents completed (n = 64) or partially completed (n = 8) the survey between January and April 2016. Most (79%) were Medicaid providers in non-psychiatric specialties (72%), working in a hospital-based or community general practice (51%), and board-certified in addiction medicine or psychiatry (58%). Practice sizes were generally 100 patients or fewer (71%); many providers (64%) individually prescribed buprenorphine <25% of total practice time to a median 23 patients (mean 31, range 0–102). Unobserved (home) induction for new patients was a common practice: 49% predominantly prescribed unobserved induction; 16% mixed unobserved and observed inductions. Adjunctive psychosocial counseling was routinely recommended (46%) or considered on a case-by-case basis (17%) versus mandated (37%). Medication prior authorization requirements were the highest rated barriers to practice, followed by inadequate clinic space, limited clinic time and/or support staff, and inadequate psychiatric services for dual diagnoses. Buprenorphine diversion was not rated as an important practice barrier. In conclusion, this targeted survey of buprenorphine prescribers in NYC treating primarily underserved populations showed a consistent pattern of part-time prescribing to modest volumes of patients, routine use of unobserved buprenorphine induction, and primarily elective referrals to psychosocial counseling. Barriers to prescribing included prior authorization requirements, lack of clinical resources (space, staff) and psychiatric services. Federal and local efforts to reduce such barriers may improve buprenorphine access among the underserved.

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### 1. Introduction

The burden of opioid use disorders in the US and in New York City is substantial and worsening, with recent steady annual increases in the number of persons affected and overdose death rates (Han, Compton, Jones, & Cai, 2015; Paone & Kunnins, 2016). In NYC, overdose rates are

increasing in the poorest zip codes and among younger adults (Paone & Kunnins, 2016). Buprenorphine maintenance is a now well established, evidence-based approach to the treatment of opioid use disorders. Nationally, rates of buprenorphine waived prescribers and overall prescribing have grown substantially since FDA approval in 2002 (Dick et al., 2015). However, buprenorphine's availability has not kept pace with the opioid epidemic, particularly in poor communities and among the underserved, where overdose rates are highest (Hansen, Siegel, Wanderling, & DiRocco, 2016). A comparison of New York City neighborhoods and treatment resources found that buprenorphine treatment rates were lowest in the most impoverished neighborhoods despite adequate New York State Medicaid's coverage of buprenorphine prescriptions (Hansen et al., 2013). Expanded access to evidence-based opioid pharmacotherapies, including buprenorphine

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maintenance, is a focus of current Federal responses to the overdose epidemic, which include a recent increase in the buprenorphine individual prescriber 'patient cap' to 275 patients (US Department of Health and Human Services, 2016) and congressional passage of legislation allowing qualified nurse practitioners and physician assistants to prescribe buprenorphine (US Congress, 2016).

Previously reported barriers to increased buprenorphine prescribing in both primary care and specialty care settings include practice and induction logistics (time, space, support staff), prescriber training and support, variable or poor insurance coverage (Cunningham, Kunins, Roose, Elam, & Sohler, 2007; Hutchinson, Catlin, Andrilla, Baldwin, & Rosenblatt, 2014; Kissin, McLeod, Sonnefeld, & Stanton, 2006; Kunins, Sohler, Roose, & Cunningham, 2009; Netherland et al., 2009), buprenorphine diversion (Albright, Ciaverelli, Essex, Tkacz, & Ruetsch, 2010; Suzuki, Connery, Ellison, & Renner, 2014), and organizational/institutional support (Suzuki et al., 2014). National practice guidelines (Kampman & Jarvis, 2015) have continued to endorse and emphasize observed buprenorphine induction protocols and the importance of psychosocial treatments distinct from the buprenorphine prescriber office visits, despite a lack of evidence supporting the clinical superiority of either of these potentially resource-intensive practices over leaner approaches (Fiellin et al., 2006; Lee, Vocci, & Fiellin, 2014; Weiss et al., 2011).

This study sought to characterize current NYC high-volume and public sector buprenorphine prescribers, rates of important clinical practices, and attitudes regarding potential barriers to buprenorphine treatment using a cross-sectional 25-item Web-based survey. Study aims were to evaluate: 1) characteristics of practice settings and patient populations; 2) characteristics and rates of buprenorphine induction and maintenance practices; 3) attitudes on, and provision of, adjunctive psychosocial counseling; 4) perceived buprenorphine practice barriers; and, 5) attitudes regarding buprenorphine diversion.

## 2. Methods

### 2.1. Study design

This was a cross-sectional Web-based survey assessing buprenorphine prescriber characteristics, prescribing practices, and attitudes on potential barriers to prescribing among NYC-area buprenorphine prescribers.

### 2.2. Population and recruitment

Between February and April 2016, the survey was administered anonymously by email invitation to a purposeful sample of NYC buprenorphine physician prescribers known to the authors or referred by other providers. Snowball sampling among survey respondents generated additional referrals. We used the publicly available Substance Abuse and Mental Health Services Administration (SAMHSA) Buprenorphine Treatment Physician Locator, search engine results, and collegial referrals in order to compile email addresses. We also solicited participation and email addresses in-person at the annual New York Society of Addiction Medicine conference in NY, NY, on February 6, 2016. Providers were emailed an introduction and link to the Web-based survey; non-respondents received up to two subsequent email reminders. Survey activation was considered a form of verbal informed consent; the Institutional Review Board of the New York University School of Medicine reviewed and approved this protocol.

### 2.3. Survey instrument

A 25-item survey instrument was developed following a literature review, comparisons with previously administered buprenorphine prescriber surveys (Albright et al., 2010; Kissin et al., 2006; Walley et al., 2008), piloting among a small group of providers, and expert consensus. The survey consisted of three domains: prescriber and practice characteristics, prescribing and clinical practices, and attitudes regarding

potential barriers to buprenorphine prescribing and buprenorphine diversion. Attitudinal items used a 5-point Likert scale, 'strongly agree-strongly disagree'; 'not applicable' was an additional choice for potential barrier items, which may not have been relevant to all providers.

### 2.4. Data collection and analysis

Anonymous survey response data were collected using a third-party Web-based survey tool, SurveyMonkey. Data analysis consisted of descriptive statistics.

## 3. Results

A total of 132 individual provider email invitations generated N = 72 responses, n = 8 partial responses and n = 64 completed (64) surveys, yielding a response rate of 55% (72/132).

### 3.1. Prescriber demographics (Table 1)

The sample was largely made up of public sector prescribers, following the purposeful sampling methods. Participants were primarily from non-psychiatric specialties (72%), certified by an addiction specialty organization (58%), in practice for 5 or more years (64%), and serving a

**Table 1**  
Provider demographics and practice characteristics.

Characteristics, N = 72	n (%)
Years in practice	
Fellow	5 (7)
<5 years	21 (30)
5–10 years	10 (13)
11–20 years	13 (18)
>20 years	23 (32)
Primary medical specialty	
Family medicine	8 (11)
Internal medicine	30 (42)
Addiction medicine	12 (17)
Infectious disease	1 (1)
Public health	1 (1)
Psychiatry	20 (28)
Addiction medicine or psychiatry certification	42 (58)
Practice type	
Private practice	12 (17)
Hospital-based or affiliated mental or medical health clinic	26 (36)
Community mental health or medical clinic	11 (15)
Opioid treatment program (methadone program)	13 (18)
Specialty substance abuse treatment (intensive outpatient program)	4 (6)
Other (mix of clinical duties)	6 (8)
Patient insurance status	
Commercial	8 (11)
Medicaid	57 (79)
Medicare	1 (2)
Self-pay/no insurance	6 (8)
Patient socioeconomic status	
Underserved/Low income	54 (75)
Economically stable	7 (10)
Even mix	11 (15)
Patient opioid-use profile	
Mostly prescription opioids	3 (4)
Mostly heroin	37 (51)
Even mix	32 (45)
Clinical time spent prescribing buprenorphine (%)	
<25	46 (64)
25–49	24 (34)
50–100	10 (14)
Buprenorphine patients per prescriber (#)	
Mean	31
Median	23
Range, SD	0–102, 30
Buprenorphine patients per clinic (#)	
Mean	85
Median	65
Range	0–350, 81

**Table 2**  
Provider prescribing practices.

Prescribing practices, N = 65 with complete data	n (%)
Buprenorphine induction <sup>1</sup>	
Mostly in-office (observed)	22 (32)
Mostly at-home (unobserved)	34 (49)
Mix of both	11 (16)
Do not carry out inductions	2 (3)
Buprenorphine formulation prescribed	
Buprenorphine–Naloxone sublingual tablet	23 (35)
Buprenorphine sublingual tablet (Subutex)	1 (2)
Buprenorphine–Naloxone sublingual film	41 (63)
Buprenorphine dose, mg	
Maintenance dose, median (range)	16 (2, 24)
Highest maintenance dose, median (range)	24 (2, 36)
Dosage modification criteria (all that apply)	
Opioid withdrawal symptoms	56 (86)
Opioid cravings	58 (89)
Persistent opioid use (self-report or urine)	47 (72)
Side effects	6 (9)
Screening for illicit drug use (all that apply)	
Urine toxicology, every visit	33 (51)
Urine toxicology, random visits	38 (58)
Urine toxicology, third party	2 (3)
Do not perform urine testing	0 (0)
Screening for diversion (all that apply)	
Urine buprenorphine, regular basis	43 (66)
Urine buprenorphine, if diversion suspected	18 (28)
Urine norbuprenorphine, regular basis	19 (29)
Urine norbuprenorphine, if diversion suspected	13 (20)
Pill or film counts	22 (34)
None of the above	3 (5)
Other	11 (17)
Adjunctive psychosocial counseling	
Mandatory	24 (37)
Recommended, routinely	30 (46)
Recommended, case-by-case	11 (17)
Therapeutic goal of buprenorphine treatment <sup>1</sup>	
Brief taper and outpatient detox	0 (0)
Limited maintenance, then taper	1 (1)
Indefinite maintenance	28 (41)
Duration of therapy on a case-by-case basis	40 (58)

<sup>1</sup> These items included data from 69 respondents.

predominantly Medicaid-insured and/or underserved patient population. A variety of practice settings were represented in the sample; the largest group working in hospital based or affiliated clinics (36%). The opioid-use profile of these practices was predominantly heroin users (51%) or an even mix of heroin and prescription opioid users (45%). Most reported essentially a part-time buprenorphine practice and a median 23 individual patients only, meaning few respondents were at or near the then maximum 100-patient limit.

### 3.2. Prescribing practices (Table 2)

A majority of respondents (65%) endorsed conducting unobserved 'home' buprenorphine inductions most of the time (49%) or sometimes (16%). The most common formulation prescribed was the buprenorphine–naloxone film with a median maintenance buprenorphine dose of 16 mg. A majority affirmed using withdrawal symptoms (86%), cravings (89%) and persistent opioid use (72%) as parameters for gauging the need for dose adjustments. Almost all (90%) reported screening for illicit drug use with some degree of regularity, most commonly using urine toxicology. Similarly, 95% used one or more methods to screen for diversion of prescribed buprenorphine including testing urine samples for its metabolites and conducting pill/film counts. The goal of therapy was almost universally buprenorphine maintenance, either indefinitely (41%) or for a duration determined on a case-by-case basis (58%). Regarding adjunctive psychosocial therapy (i.e. individual or group counseling in addition to the medical prescriber visits), 62% of respondents rated this to be of essential or high importance; more respondents recommended (46%) or considered counseling on a case-by-case basis (17%) than mandated additional counseling (37%).

### 3.3. Attitudes on potential barriers to buprenorphine prescribing (Fig. 1)

Among the 11 barriers to buprenorphine prescribing examined, three were recognized as barriers ('agree or 'strongly agree') by 50% or more of respondents: medication prior authorization requirements (78%), inadequate clinical space, time, and support staff (52%), and inadequate availability of psychiatric services for patients with co-occurring psychiatric problems (50%). Concerns about adequate reimbursement for care (42%), the then 100-patient prescriber limit (41%), access to psychosocial counseling (38%) and buprenorphine diversion (38%) were identified as barriers by substantial minorities. A recent state requirement to check a New York state prescription monitoring database and inadequate access to addiction specialist consultation were the least likely to be labeled as practice barriers.

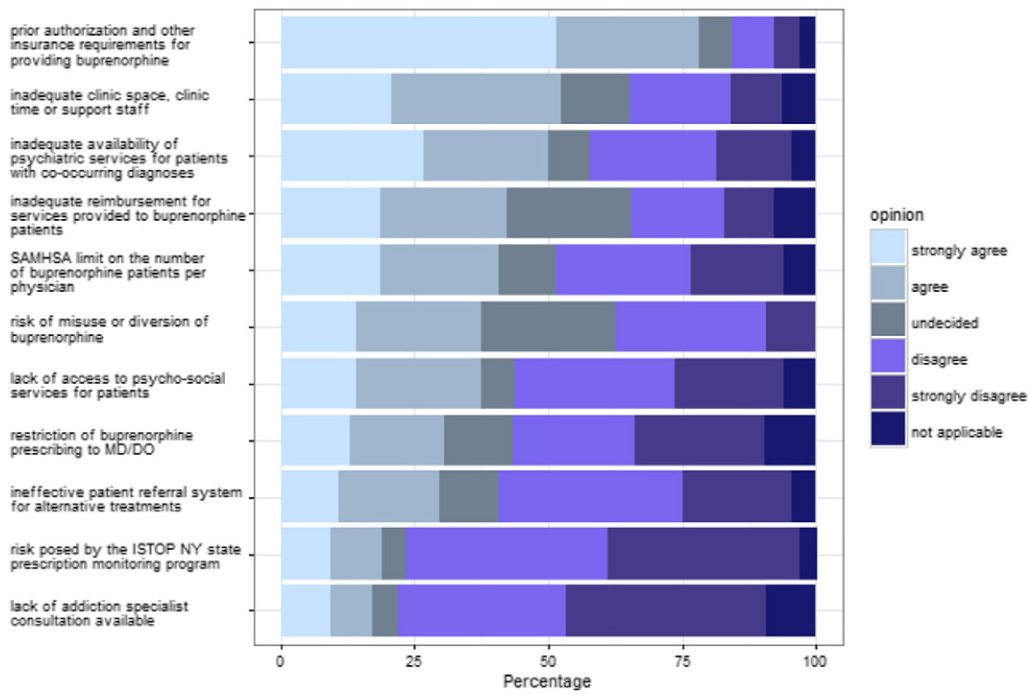
### 3.4. Attitudes on buprenorphine diversion (Fig. 2)

Respondents viewed buprenorphine diversion ('agree' or 'strongly agree') as primarily resulting from opioid dependent users seeking to relieve opioid withdrawal symptoms (91%), rather than using buprenorphine primarily to get high (5%). With reference to treatment access, a majority of respondents reported a belief that the diversion of buprenorphine reflects a lack of treatment availability (77%) and a minority of participants reported a belief that diversion prevented individuals from seeking treatment. Few agreed with a statement that diverted buprenorphine worsens the opioid epidemic (22%) or makes available an attractive abuse-prone opioid for use by opioid naïve individuals to get high (21%).

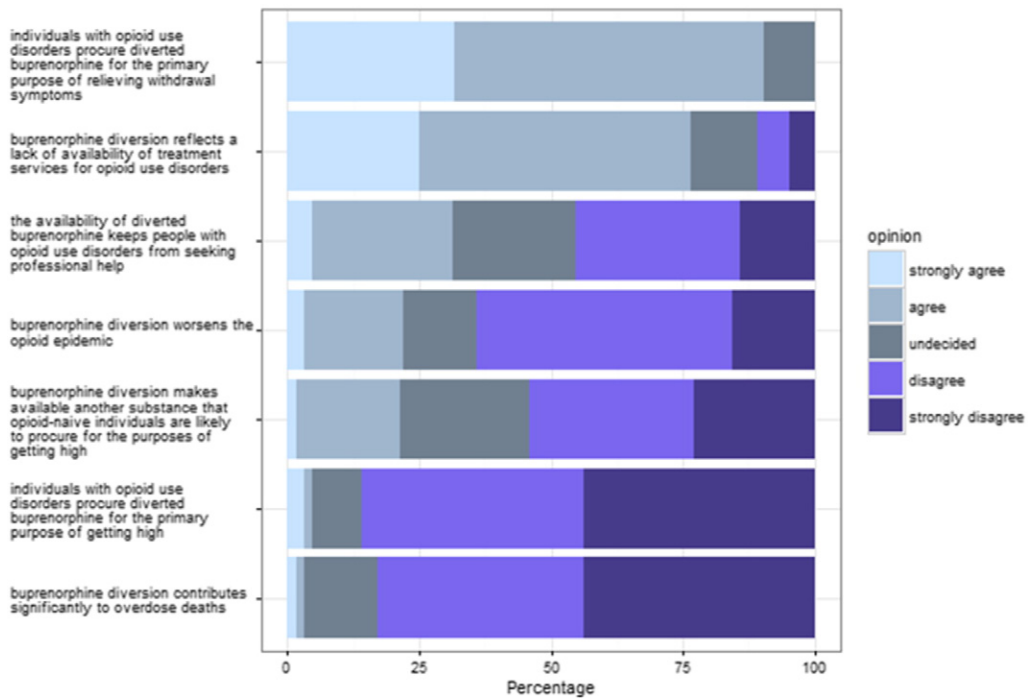
## 4. Discussion

This targeted survey assessed public sector buprenorphine physician providers on their practice characteristics, clinical approaches, and attitudes regarding structural practice barriers and buprenorphine diversion. No recent studies have focused on this provider population, to our knowledge. Results were consistent with modest volumes of individual prescribing to primarily Medicaid or uninsured heroin dependent patients by non-psychiatrists (Hutchinson et al., 2014; Schuman-Olivier et al., 2013; Walley et al., 2008). In the context of a national opioid epidemic/buprenorphine mismatch, recent policies to expand prescribing, and a historically limited availability of buprenorphine in poorer NYC zip codes, there appeared to be extra capacity in this sample of prescribers, the majority of whom were Addiction Medicine or Addiction Psychiatry certified. Most were prescribing less than 25% of their total clinical time, the mean and median number of patients was 31 and 23, respectively, and the highest rated barriers to practice were inadequate clinical resources (time, space, support staff) and prior authorization requirements. Most providers were clearly not near the patient caps of 100 or 275; increasing their rates of prescribing would likely involve supporting or 'buying' more of their time to devote to the buprenorphine practice. Federal and local efforts to support administrative, logistic, and collaborative team-based approaches to buprenorphine treatment appear well-justified (LaBelle, Han, Bergeron, & Samet, 2016; Public Health Solutions, 2016).

Common practice approaches in this sample included unobserved buprenorphine induction, dosing based on treatment effects, regular urine testing (including for buprenorphine metabolites) recommendations but not mandates in support of additional psychosocial counseling, and chronic maintenance therapy. These results on unobserved induction update the literature by documenting, within this targeted provider sample, the routine use of unobserved buprenorphine induction (Lee, Grossman, DiRocco, & Gourevitch, 2009). Unobserved induction is typical of most ambulatory care controlled substance prescribing, and avoids multiple in-office visits and the potentially increased time and attention of observed induction models recommended by national guidelines (Fiellin, Kleber, Trumble-Hejduk, McLellan, & Kosten, 2004; Kampman & Jarvis, 2015). One previous 2008 survey of Massachusetts



**Fig. 1.** Attitudes on potential barriers to buprenorphine prescribing. Mean and standard deviations for the individual items using a 5-point Likert scale (1 = strongly agree, 2 = agree, 3 = undecided, 4 = disagree, 5 = strongly disagree): prior authorization and other insurance requirements for providing buprenorphine (1.8, 1.2), inadequate clinic space, clinic time, or support staff (2.6, 1.3), inadequate availability of psychiatric services for patients with co-occurring diagnoses (2.7, 1.5), inadequate reimbursement for services provided to buprenorphine patients (3.1, 2.8), SAMHSA limit on the number of buprenorphine patients per physician (3.0, 1.4), risk of misuse or diversion of buprenorphine (3.0, 1.2), lack of access to psycho-social services for patients (3.2, 1.4), restriction of buprenorphine prescribing to MD/DO (3.3, 1.4), ineffective patient referral system for alternative treatments (3.4, 1.3), risk posed by the New York state prescription monitoring program (3.9, 1.3), lack of addiction specialist consultation available (3.9, 1.3).



**Fig. 2.** Attitudes on buprenorphine diversion. Mean and standard deviations for the individual items using a 5-point Likert scale (1 = strongly agree, 2 = agree, 3 = undecided, 4 = disagree, 5 = strongly disagree): individuals with opioid use disorders procure diverted buprenorphine for the primary purpose of relieving withdrawal symptoms (1.8, 0.6), buprenorphine diversion reflects a lack of availability of treatment services for opioid use disorders (2.1, 1.0), the availability of diverted buprenorphine keeps people with opioid use disorders from seeking professional help (3.2, 1.1), buprenorphine diversions worsens the opioid epidemic (3.6, 1.1), buprenorphine diversion makes available another substance that opioid-naïve individuals are likely to procure for the purposes of getting high (3.6, 1.1), individuals with opioid use disorders procure diverted buprenorphine for the primary purpose of getting high (4.2, 0.9), buprenorphine diversion contributes significantly to overdose deaths (4.2, 0.9).

buprenorphine-waivered physicians reported a 43% rate of unobserved induction adoption (Walley et al., 2008), compared to 65% of providers in this sample prescribing unobserved induction some or most of the time. Perhaps due to the lack of a definitive randomized trial comparing induction approaches, national guidelines have consistently followed the original 2002 FDA labeling and early clinical trial methods, which specify only observed induction. More recent ASAM 2015 guidelines allow unobserved induction among experienced providers and patients, but do not endorse unobserved induction as a routine, safe, and evidence-based practice for all providers and patients. Providers in this sample appear to have widely adopted unobserved induction as routine practice.

Psychosocial counseling for buprenorphine maintenance patients, in addition to office-based medical management visits, is also heavily encouraged by national guidelines and sometimes mandated by insurer prior authorization criteria for buprenorphine maintenance (Fiellin et al., 2004; Kampman & Jarvis, 2015; United Healthcare Community Plan, 2016). Counseling is usually specified as some form of additional specialty addiction behavioral treatment above and beyond office-based medical management. Examples include; 'drug counseling' (Fiellin et al., 2004), 'substance abuse rehabilitation services' (United Healthcare Community Plan, 2016), and, from the ASAM 2015 guidelines, cognitive behavioral therapies, contingency management, relapse prevention, or motivational interviewing (Kampman & Jarvis, 2015). A substantial proportion of respondents (37%) reported mandating additional counseling; the majority recommended it routinely or on a case-by-case basis. This likely reflects common prescriber experiences, whereas individual patients are often reluctant to pursue additional counseling, making mandates impractical. It also reflects the bulk of the clinical trial evidence to date, which has quite clearly demonstrated that additional counseling interventions do not improve usual office-based buprenorphine outcomes, including retention and opioid abstinence (Fiellin et al., 2006, 2013; Weiss et al., 2011). In these studies, "additional counseling" refers to counseling provided by trained substance abuse or mental health professionals distinct from the standard medical management visit. Not surprisingly, a lack of access to psychosocial services was not seen as a barrier to practice by a majority of respondents.

Common clinical practices often diverge from the recommendations of published guidelines, as in these two examples of unobserved induction and optional adjunctive counseling. While initial guidelines are often a useful starting point for approaching new areas of practice, they typically represent a cautious, safety-focused consensus, which may not keep pace with real-world practicalities or what is later shown to be effective practice, or real-world practice may routinely struggle to adopt guideline based care, e.g. failure to implement smoking cessation in an opioid treatment program can result in failure to deliver population health benefits. In the case of unobserved induction and ancillary counseling, it appears that the emerging evidence favors the practice trends, and not the original 2004 CSAT guidelines. The 2015 ASAM guidelines appropriately acknowledge the current evidence for unobserved induction and as needed vs. mandated adjunctive counseling. We would argue that more intensive the buprenorphine induction process and maintenance regimens, the fewer the patients a given practice will be able to manage with limited resources.

Practice barriers of greater concern to respondents centered around clinical support, resources, and hassles; 1) medication prior authorization requirements, 2) lack of availability of clinic space, clinic time and/or support staff, and 3) limited access to psychiatric services for dual-diagnosis patients. Of note, prior authorization requirements were perceived as the most important barrier, irrespective of insurance or economic profile of the provider's patient base. In New York State both Medicaid managed care and commercial insurance plans have routinely instituted prior authorization requirements for buprenorphine products. These three potential barriers had higher level of agreement, as such, than the 100-patient limit, buprenorphine diversion, state prescription monitoring requirements or addiction specialty consultation resources, among others. Our results do not allow us to untangle the

potential impact of recent Health and Human Service regulations increasing the cap to 275-patients on our respondents. We hypothesize, as above, that this new increase will have only modest direct impact on our respondents' practices and the number of patients they treat, unless accompanied by increased practice sessions or improved clinical support. Only 10% of the sample reported 85 or more current individual patients; 2 of the 72 respondents reported having 100 or more. Our results were consistent with a recent 7-state survey of all waived buprenorphine prescribers from 2010–2013, when the median patient census per provider was 13 (in New York, 11) (Stein et al., 2016). Capacity among these safety net prescribers in the NYC region appeared largely a function of limited physician time and effort, rather than prescribing regulations. Again, non-physician prescribers and collaborative care models could clearly address these historically physician-focused and logistical barriers to buprenorphine expansion. It may also be the case that lifting the cap to 275 will justify additional practice and provider resources which were previously not feasible.

Given the high rate of co-morbid mental illness that exists among patients who suffer from opioid use disorders, and the inherent interdependence of these conditions, achieving adequate psychiatric care for their patients is a priority for buprenorphine providers. As buprenorphine prescribing has expanded over time, the balance has shifted from psychiatrists to primary care physicians as the predominant prescribers (Turner, Kruszewski, & Alexander, 2015). While this trend toward a generalist model for the medical treatment of opioid use disorders has been a beneficial means of expanding access to buprenorphine, addressing psychiatric comorbidities that many of these patients have remains a significant challenge. Efforts to develop better mental health support networks including access to evidence based therapeutic modalities (e.g., cognitive behavioral therapy for post-traumatic stress disorder), ideally within the same practice, institution or community as the buprenorphine provider, would likely serve to address this barrier to buprenorphine provision and improve retention.

As total buprenorphine prescribing has grown, so has buprenorphine diversion (Lavonas et al., 2014). The literature to date indicates that buprenorphine diversion is primarily the use of buprenorphine by opioid dependent individuals for the purposes of self-treatment, versus use of buprenorphine for euphoria or after getting 'hooked' on buprenorphine as the primary illicit opioid (Johanson, Arfken, di Menza, & Schuster, 2012). Policy makers have seized on buprenorphine diversion as a threat to public health and justification for reducing access (Clark, Samnaliev, Baxter, & Leung, 2011). Attitudes in this survey indicate that buprenorphine diversion reflects inadequate access to care, that diversion is not a barrier to prescribing, and that persons use buprenorphine illicitly to relieve withdrawal (rather than to get high). It has been suggested that expanding buprenorphine access overall will lead to decreased diversion: if opioid-dependent persons are acquiring diverted buprenorphine in the absence of access to treatment, expanding access to treatment would reduce diversion rates and any associated harms (Lofwall & Havens, 2012).

This modestly sized, non-random, cross-sectional survey focused on a particular physician demographic, NYC-area public sector buprenorphine providers, and had clear limitations. Our survey was distributed among a purposeful sample of office-based providers who were known to the authors or referred by other local experts; such a non-random sample is not representative of NYC public sector buprenorphine providers, much less US buprenorphine providers in general, rural providers, private practice physicians, or those staffing specialty opioid treatment clinics (18% of this sample). A number of potential participants likely did not receive the emailed survey invitation due to firewalls, email filters, or incorrect email addresses, reducing our overall response rate. A small percentage initiated but did not complete the entire survey. Our practice and attitudinal survey items were based on literature review, limited piloting, and author consensus; there are no validated instruments for this survey's specific and contemporary topics. It is possible that some items were unclear or not understood by respondents as intended.

In summary, this targeted survey of current NYC-area public sector providers showed few practitioners near or at the (then current) 100-patient cap, wide adoption of unobserved buprenorphine induction and predominantly voluntary referrals to adjunctive psychosocial counseling. Barriers to prescribing included prior authorization requirements, lack of clinical resources (time, space, support staff) and limited access to psychiatric services for co-morbid patients. Federal and local efforts to reduce such barriers may improve buprenorphine access among the underserved.

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## References

- Albright, J., Ciaverelli, R., Essex, A., Tkacz, J., & Ruetsch, C. (2010). Psychiatrist characteristics that influence use of buprenorphine medication-assisted treatment. *Journal of Addiction Medicine*, 4, 197–203.
- Clark, R. E., Sammaliev, M., Baxter, J. D., & Leung, G. Y. (2011). The evidence doesn't justify steps by state Medicaid programs to restrict opioid addiction treatment with buprenorphine. *Health Affairs (Project Hope)*, 30, 1425–1433.
- Cunningham, C. O., Kunins, H. V., Roose, R. J., Elam, R. T., & Sohler, N. L. (2007). Barriers to obtaining waivers to prescribe buprenorphine for opioid addiction treatment among HIV physicians. *Journal of General Internal Medicine*, 22, 1325–1329.
- Dick, A. W., Pacula, R. L., Gordon, A. J., Sorbero, M., Burns, R. M., Leslie, D., & Stein, B. D. (2015). Growth in buprenorphine waivers for physicians increased potential access to opioid agonist treatment, 2002–2011. *Health Affairs (Project Hope)*, 34, 1028–1034.
- Fiellin, D. A., Barry, D. T., Sullivan, L. E., Cutter, C. J., Moore, B. A., O'Connor, P. G., & Schottenfeld, R. S. (2013). A randomized trial of cognitive behavioral therapy in primary care-based buprenorphine. *The American Journal of Medicine*, 126, 74 e11–77.
- Fiellin, D. A., Kleber, H., Trumble-Hejduk, J. G., McLellan, A. T., & Kosten, T. R. (2004). Consensus statement on office-based treatment of opioid dependence using buprenorphine. *Journal of Substance Abuse Treatment*, 27, 153–159.
- Fiellin, D. A., Pantalon, M. V., Chawarski, M. C., Moore, B. A., Sullivan, L. E., O'Connor, P. G., & Schottenfeld, R. S. (2006). Counseling plus buprenorphine-naloxone maintenance therapy for opioid dependence. *The New England Journal of Medicine*, 355, 365–374.
- Han, B., Compton, W. M., Jones, C. M., & Cai, R. (2015). Nonmedical prescription opioid use and use disorders among adults aged 18 through 64 Years in the United States, 2003–2013. *JAMA*, 314, 1468–1478.
- Hansen, H., Siegel, C. E., Case, B. G., Bertollo, D. N., DiRocco, D., & Galanter, M. (2013). Variation in use of buprenorphine and methadone treatment by racial, ethnic, and income characteristics of residential social areas in New York City. *The Journal of Behavioral Health Services & Research*, 40, 367–377.
- Hansen, H., Siegel, C., Wanderling, J., & DiRocco, D. (2016). Buprenorphine and methadone treatment for opioid dependence by income, ethnicity and race of neighborhoods in New York City. *Drug and Alcohol Dependence*, 164, 14–21.
- Hutchinson, E., Catlin, M., Andrilla, C. H., Baldwin, L. M., & Rosenblatt, R. A. (2014). Barriers to primary care physicians prescribing buprenorphine. *Annals of Family Medicine*, 12, 128–133.
- Johanson, C. E., Arfken, C. L., di Menza, S., & Schuster, C. R. (2012). Diversion and abuse of buprenorphine: Findings from national surveys of treatment patients and physicians. *Drug and Alcohol Dependence*, 120, 190–195.
- Kampman, K., & Jarvis, M. (2015). American Society of Addiction Medicine (ASAM) National Practice Guideline for the use of medications in the treatment of addiction involving opioid use. *Journal of Addiction Medicine*, 9, 358–367.
- Kissin, W., McLeod, C., Sonnefeld, J., & Stanton, A. (2006). Experiences of a national sample of qualified addiction specialists who have and have not prescribed buprenorphine for opioid dependence. *Journal of Addictive Diseases*, 25, 91–103.
- Kunins, H. V., Sohler, N. L., Roose, R. J., & Cunningham, C. O. (2009). HIV provider endorsement of primary care buprenorphine treatment: a vignette study. *Family Medicine*, 41, 722–728.
- LaBelle, C. T., Han, S. C., Bergeron, A., & Samet, J. H. (2016). Office-based opioid treatment with buprenorphine (OBOT-B): Statewide implementation of the Massachusetts collaborative care model in community health centers. *Journal of Substance Abuse Treatment*, 60, 6–13.
- Lavonas, E. J., Severtson, S. G., Martinez, E. M., Bucher-Bartelson, B., Le Lait, M. C., Green, J. L., ... Dart, R. C., et al. (2014). Abuse and diversion of buprenorphine sublingual tablets and film. *Journal of Substance Abuse Treatment*, 47, 27–34.
- Lee, J. D., Grossman, E., DiRocco, D., & Gourevitch, M. N. (2009). Home buprenorphine/naloxone induction in primary care. *Journal of General Internal Medicine*, 24, 226–232.
- Lee, J. D., Vocci, F., & Fiellin, D. A. (2014). Unobserved "home" induction onto buprenorphine. *Journal of Addiction Medicine*, 8, 299–308.
- Lofwall, M. R., & Havens, J. R. (2012). Inability to access buprenorphine treatment as a risk factor for using diverted buprenorphine. *Drug and Alcohol Dependence*, 126, 379–383.
- Netherland, J., Botsko, M., Egan, J. E., Saxon, A. J., Cunningham, C. O., Finkelstein, R., & Finkelstein, R. ... the BHIVES Collaborative. (2009). Factors affecting willingness to provide buprenorphine treatment. *Journal of Substance Abuse Treatment*, 36, 244–251.
- Paone, D., & Kunnins, H. (2016). 2016 advisory # 8: Increase in drug overdoses deaths and increased presence of fentanyl in New York City [press release]. Retrieved from <https://a816-health30ssl.nyc.gov/sites/nychan/Lists/AlertUpdateAdvisoryDocuments/Fentanyl-HAN-advisory.pdf>
- Public Health Solutions (2016). Expanding access to buprenorphine in primary care request for proposals (RFP) [press release]. Retrieved from: [https://www.healthsolutions.org/sites/default/files/Buprenorphine%20Awardees\\_dx%20for%20website\\_7-11-16.v3.pdf](https://www.healthsolutions.org/sites/default/files/Buprenorphine%20Awardees_dx%20for%20website_7-11-16.v3.pdf)
- Schuman-Olivier, Z., Connery, H., Griffin, M. L., Wyatt, S. A., Wartenberg, A. A., Borodovsky, J., ... Weiss, R. D. (2013). Clinician beliefs and attitudes about buprenorphine/naloxone diversion. *Am J Addict*, 22, 574–580.
- Stein, B. D., Sorbero, M., Dick, A. W., Pacula, R. L., Burns, R. M., & Gordon, A. J. (2016). Physician capacity to treat opioid use disorder with buprenorphine-assisted treatment. *JAMA*, 316, 1211–1212.
- Suzuki, J., Connery, H. S., Ellison, T. V., & Renner, J. A. (2014). Preliminary survey of office-based opioid treatment practices and attitudes among psychiatrists never receiving buprenorphine training to those who received training during residency. *The American Journal on Addictions*, 23, 618–622.
- Turner, L., Kruszewski, S. P., & Alexander, G. C. (2015). Trends in the use of buprenorphine by office-based physicians in the United States, 2003–2013. *The American Journal on Addictions*, 24, 24–29.
- UnitedHealth Community Plan (2016). Suboxone/Subutex/Subsolv PRIOR AUTHORIZATION REQUEST. Retrieved from: <https://www.uhccommunityplan.com/content/dam/communityplan/healthcareprofessionals/pharmacyprogram/all-Suboxone.pdf>
- US Congress (2016). S.524 - comprehensive addiction and recovery act of 2016.
- US Department of Health and Human Services (2016). HHS announces new actions to combat opioid epidemic [press release]. Retrieved from: <http://www.hhs.gov/about/news/2016/07/06/hhs-announces-new-actions-combat-opioid-epidemic.html>
- Walley, A. Y., Alperen, J. K., Cheng, D. M., Botticelli, M., Castro-Donlan, C., Samet, J. H., & Alford, D. P. (2008). Office-based management of opioid dependence with buprenorphine: Clinical practices and barriers. *Journal of General Internal Medicine*, 23, 1393–1398.
- Weiss, R. D., Potter, J. S., Fiellin, D. A., Byrne, M., Connery, H. S., Dickinson, W., ... Ling, W., et al. (2011). Adjunctive counseling during brief and extended buprenorphine-naloxone treatment for prescription opioid dependence: A 2-phase randomized controlled trial. *Archives of General Psychiatry*, 68, 1238–1246.