



## Short Communication

## Perceived need and availability of psychosocial interventions across buprenorphine prescriber specialties

Lewei (Allison) Lin<sup>a,b,\*</sup>, Michelle R. Lofwall<sup>c</sup>, Sharon L. Walsh<sup>c</sup>, Hannah K. Knudsen<sup>c</sup><sup>a</sup> Addiction Center, Department of Psychiatry, University of Michigan, 2800 Plymouth Road, Ann Arbor, MI 48109, United States<sup>b</sup> Center for Clinical Management Research (CCMR), Veterans Affairs Ann Arbor Healthcare System, 2800 Plymouth Rd, Ann Arbor, MI 48109, United States<sup>c</sup> University of Kentucky, Department of Behavioral Science and Center on Drug and Alcohol Research, 845 Angliana Avenue, Lexington, KY 40508, United States

## HIGHLIGHTS

- 93% of prescribers think most buprenorphine patients would benefit from counseling.
- 36% of prescribers report there are adequate number of counselors in their areas.
- Prescribers vary in delivering counseling vs. having patients see other counselors.
- Specialists report more resources for patients with complex psychiatric problems.

## ARTICLE INFO

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## ABSTRACT

**Introduction:** Psychosocial interventions are often recommended as part of buprenorphine treatment for patients with opioid use disorder, but little is known about prescriber perspectives on their use and how this varies across buprenorphine prescriber specialties.

**Methods:** A large US sample of physicians actively prescribing buprenorphine ( $n = 1174$ ) was surveyed from July 2014 to January 2017. Analyses examined prescriber characteristics and their perceptions and use of psychosocial interventions across three groups of physicians: primary care providers (PCPs), addiction physicians/psychiatrists, and other physicians.

**Results:** Across all prescribers, 93.3% ( $n = 1061$ ) report most patients would benefit from formal counseling during buprenorphine treatment while only 36.4% ( $n = 414$ ) believe there are adequate number of counselors in their communities. Among addiction physicians/psychiatrists, 75.9% ( $n = 416$ ) report their treatment settings have the resources to provide psychiatric services to patients with complex psychiatric problems compared to 29.1% ( $n = 130$ ) of PCPs and 29.6% ( $n = 39$ ,  $p < .001$ ) of other physicians. Addiction physicians/psychiatrists report a higher percentage of patients receive counseling from clinicians in their practice while PCPs report a higher percentage of patients receive counseling from external providers.

**Conclusions:** The majority of prescribers believe patients receiving buprenorphine would benefit from psychosocial interventions and there is variation in how these services are delivered. However, many prescribers, especially those without addiction or psychiatry backgrounds, report their settings do not have adequate psychosocial treatment resources for patients with complex psychosocial needs. Future work developing novel models of psychosocial interventions may be helpful to support prescribers to effectively treat complex patients with opioid use disorders.

## 1. Introduction

The US continues to face a rising epidemic of opioid use disorder (OUD), with over 47,000 people dying of opioid overdose in 2017. (Scholl, Seth, Kariisa, Wilson, & Baldwin, 2018). Major efforts are underway to expand treatment access, in particular to buprenorphine,

which improves outcomes and can be prescribed in office-based settings (Mattick, Breen, Kimber, & Davoli, 2014; Nielsen, Larance, & Lintzeris, 2017). In order to prescribe buprenorphine for OUD, clinicians are required to be able to refer patients to psychosocial counseling, but referrals are not mandatory (Substance Abuse and Mental Health Services Administration, 2018). Psychosocial interventions (PIs) encompass

\* Corresponding author at: University of Michigan, Dept. of Psychiatry, Bld. 16, 2nd Fl. 2800 Plymouth Road, Ann Arbor, MI 48109, United States.  
E-mail address: [leweil@med.umich.edu](mailto:leweil@med.umich.edu) (L.A. Lin).

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numerous modalities, including brief supportive counseling, specialized addiction counseling, community recovery supports (e.g., 12 step meetings), psychotherapy for comorbid mental health disorders, and importantly should be individualized based on each patient's needs (Substance Abuse and Mental Health Services Administration, 2018). However, not all forms of PIs may be available in different areas and an often-cited barrier to offering buprenorphine treatment is the lack of available psychosocial services in communities (Andrilla, Coultard, & Larson, 2017; Hutchinson, Catlin, Andrilla, Baldwin, & Rosenblatt, 2014).

Given that PIs can be a recommended part of OUD treatment, it is critical to further understand their use by active buprenorphine prescribers and perceived barriers or challenges. Prior studies of buprenorphine prescribers have found the majority of prescribers offered counseling within their practice settings and others refer patients to counseling in the community (Barry, Fazzino, Necrason, et al., 2016; Walley, Alperen, Cheng, et al., 2008). Furthermore, in a small sample of buprenorphine prescribers in New York City, 62% of respondents considered PIs to be of at least high importance for patients (Kermack, Flannery, Tofighi, McNeely, & Lee, 2017). In addition, patients value psychosocial interventions, including brief counseling delivered by the prescriber, though some also believe PIs should not be a mandatory requirement of treatment (Fox, Masyukova, & Cunningham, 2016). Further data on perceived importance by prescribers and barriers to use in a large national sample of prescribers would better elucidate current practices and needs in delivering buprenorphine treatment. In addition, because buprenorphine can be prescribed in general outpatient settings, a spectrum of prescribers, including physicians with specific training in addiction treatment and psychiatry, primary care physicians (PCPs), and other physicians are delivering buprenorphine treatment (Rosenblatt, Andrilla, Catlin, & Larson, 2015). Use of psychotherapy for mental health disorders has been shown to be lower for patients treated by PCPs than by psychiatrists (Lawrence et al., 2012; Weisberg, Dyck, Culpepper, & Keller, 2007) which may be related to both differences in access and other barriers to use and differences in perspectives on psychotherapy treatment. Understanding how PCPs differ in use or perceived importance of PIs when compared to addiction or mental health specialists, who may have more training and more resources in their settings, is also important in OUD treatment. The current study addresses these gaps in a national survey of active buprenorphine-prescribing physicians across specialties by assessing perceptions and use of PIs.

## 2. Methods

All US physicians with a waiver to prescribe buprenorphine were identified using the May 2014 issue of the DEA Active Registrants database. Methods have been described in detail previously (Knudsen, Lofwall, Walsh, Havens, & Studts, 2018; Lin, Lofwall, Walsh, Gordon, & Knudsen, 2018). In brief, physicians were randomly sampled within states. To be eligible, physicians were required to be actively treating at least one patient with OUD with buprenorphine. Telephone screening yielded 3553 eligible physicians, who were mailed a study packet (i.e., survey, consent forms, postage-paid return envelope). Participants received \$100. Participation was encouraged with a postcard reminder, follow-up telephone call, and a second packet mailed to non-respondents. From July 2014 to January 2017, 33.0% ( $n = 1174$ ) of eligible prescribers participated. Because of our focus on current prescribers, physicians with the 100-patient waiver were far more likely to be eligible, and these physicians were more likely to respond (36.5% response rate) than physicians with the 30-patient waiver (29.3% response rate). Our sampling strategy resulted in respondents being well-distributed across the nation. All procedures were approved by the University of Kentucky's Institutional Review Board.

Physicians were classified into three mutually exclusive categories: primary care (including family medicine and internal medicine), addiction/psychiatry (addiction medicine, addiction psychiatry, or psychiatry alone), and all others (reference group). The following

physician characteristics were also assessed across prescriber specialties: age, gender, race, US Census region, years of prescribing buprenorphine, metropolitan versus non-metropolitan location, waiver type (i.e., 30-patient limit or 100-patient limit) and payment type for office visits. Non-metropolitan versus metropolitan location was determined using the zip code of the practice location and the 2013 Rural-Urban Continuum Codes (RUCC) published by the US Department of Agriculture's Economic Research Service (US Department of Agriculture, E.R.S., 2016). Physicians with missing data on specialty were excluded ( $n = 25$ ).

The survey included questions assessing prescriber perceptions of PIs encompassing broadly "counseling" and psychosocial support resources (e.g. 12-step groups), and responses were dichotomized as "agree" or "strongly agree" (=1) versus all others (=0, including neither agree or disagree, disagree, or strongly disagree). Please see item wording of survey questions in Table 2. Physicians were asked to indicate the percentage of patients who received counseling from different sources. Chi-square tests and one-way analysis of variance (ANOVA) were used to compare these measures of PIs by medical specialty. For dichotomous measures that were significant, bivariate logistic regressions were conducted to isolate pairwise differences. Finally, adjusted analyses using logistic regression for dichotomous measures and negative binomial regressions for the percentages of patients receiving counseling were estimated while controlling for physician characteristics that varied significantly across the three specialty groups.

## 3. Results

Among this US sample of active buprenorphine-prescribing physicians, 39.6% ( $n = 455$ ) were primary care, 48.7% ( $n = 560$ ) were addiction/psychiatry, and 11.7% ( $n = 134$ ) were categorized as other. Table 1 summarizes their characteristics. There were no differences in waiver type (30-patient limit or 100-patient limit) across physicians. PCPs on average had slightly fewer years of prescribing compared to addiction physicians/psychiatrists and a higher proportion accepted Medicaid compared to both other physician groups.

On average 93.3% of all buprenorphine prescribers believed patients would benefit from counseling with no significant difference across prescriber specialties (Table 2). However, only 36.4% ( $n = 414$ ) believed there are adequate numbers of counselors in their community who can provide counseling to buprenorphine patients. The majority of prescribers reported most of their patients would benefit from 12-step groups, but 30.6% ( $n = 346$ ) perceived 12-step groups in their communities may be unwelcoming toward patients on buprenorphine, with no significant differences across prescriber specialties. More addiction/psychiatry physicians (42.2%,  $n = 233$ ; odds ratio, OR = 1.51,  $p = .002$ ) perceived there were adequate numbers of counselors in their area compared to PCPs (32.7%;  $n = 147$ ). A much larger proportion of addiction physicians/psychiatry physicians (75.9%,  $n = 416$ , OR = 7.68,  $p < .001$ ) compared to PCPs (29.1%,  $n = 130$ ) reported they had adequate resources to care for patients with complex psychiatric needs but only a minority in both groups reported adequate resources to address complex social needs. PCPs reported fewer patients received counseling from the prescriber or other clinicians in the practice and more patients receiving outside counseling than addiction/psychiatry physicians. Prescribers across specialties report only a small minority of patients did not receive any counseling. Results were largely the same after adjusting for differences in prescriber characteristics across the three specialty groups, except PCPs no longer reported a significantly smaller percent of patients receiving counseling from them compared to addiction/psychiatry physicians (see Appendix Table 1).

## 4. Discussion

In this study of US buprenorphine prescribers, we find PIs are highly

**Table 1**  
Characteristics of US buprenorphine prescribers by medical specialty.

	All prescribers (N = 1149)	Primary care (N = 455; 39.6%)	Addiction/ Psychiatry (N = 560; 48.7%)	All Others <sup>d</sup> (N = 134; 11.7%)
Age	55.5 (11.4)	55.5 (10.7)	55.4 (11.9)	56.0 (11.0)
Gender*				
Female	22.9% (262)	20.4% (93) <sup>a</sup>	26.2% (145) <sup>c</sup>	17.9% (24)
Male	77.1% (881)	79.6% (362)	73.8% (409)	82.1% (110)
Race				
White	76.5% (861)	78.1% (350)	74.9% (409)	77.3% (102)
Asian	12.6% (142)	10.3% (46)	14.5% (79)	12.9% (17)
All others	10.9% (123)	11.6% (52)	10.6% (58)	9.9% (13)
US census region				
Northeast	27.1% (311)	27.9% (127)	27.9% (156)	20.9% (28)
Midwest	16.6% (191)	16.9% (77)	15.4% (86)	20.9% (28)
South	32.4% (372)	29.7% (135)	33.2% (186)	38.1% (51)
West	23.9% (275)	25.5% (116)	23.6% (132)	20.2% (27)
Metropolitan location***				
Non-metropolitan	11.1% (128)	17.1% (78) <sup>a</sup>	6.4% (36)	10.4% (14)
Metropolitan	88.9% (1021)	82.9% (377)	93.6% (524)	89.6% (120)
Years prescribing buprenorphine***	6.7 (3.9)	6.0 (3.7) <sup>a</sup>	7.4 (4.0) <sup>c</sup>	6.2 (3.6)
Waiver type				
30 patient limit	42.3% (486)	41.8% (190)	43.0% (241)	41.0% (55)
100 patient limit	57.7% (663)	58.2% (265)	57.0% (319)	59.0% (79)
Payment type for office visits***				
Only cash	19.5% (218)	16.9% (75)	19.8% (108)	26.7% (35)
Private insurance but not Medicaid	23.8% (267)	19.8% (88)	26.4% (144)	26.7% (35)
Medicaid (with or without private insurance)	52.0% (582)	62.2% (276) <sup>a,b</sup>	45.1% (246)	45.8% (60)
All others	4.7% (53)	1.1% (5) <sup>b</sup>	8.6% (47) <sup>c</sup>	0.8% (1)

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ , significant F-statistic or chi-square test across the three groups of buprenorphine prescribers.

<sup>a</sup> Significant pairwise difference between primary care and addiction/psychiatry.

<sup>b</sup> Significant pairwise difference between primary care and all others.

<sup>c</sup> Significant pairwise difference between addiction/psychiatry and all others.

<sup>d</sup> The most common physician specialty types in the 'All Others' category included the following (based on open-ended responses of respondents): Pain (with no mention of other specialties) = 29, Physical Medicine & Rehabilitation and Pain = 23, Anesthesiology (14 of whom also mentioned Pain) = 16, Pediatrics = 10, Surgery = 9, OB/GYN or Maternal Fetal Medicine = 7, Emergency Medicine = 7.

recommended by prescribers of all specialties, but many prescribers felt there were an inadequate number of counselors in their area. Prior work indicate lack of availability of PIs is a barrier to physicians initiating buprenorphine treatment (Andrilla et al., 2017; Hutchinson et al., 2014). In our study of active buprenorphine prescribers, we confirm most buprenorphine prescribers highly value PIs, but use a variety of approaches to deliver PIs including delivering counseling themselves, working in conjunction with other clinicians who deliver therapy or referring patients to outside resources.

These findings are notable in part because the evidence for PIs as a whole is unclear. A number of RCT's have not shown effectiveness of adjunctive psychotherapy interventions for patients receiving buprenorphine (Carroll & Weiss, 2017; Fiellin, Barry, Sullivan, et al., 2013; Ling, Hillhouse, Ang, Jenkins, & Fahey, 2013; Tetrault, Moore, Barry, et al., 2012; Weiss, Potter, Fiellin, et al., 2011). These trials were rigorously designed and generally compared a formal psychotherapy intervention delivered by a therapist plus medical management versus medical management alone. Medical management is a basic treatment approach including brief supportive counseling and monitoring of substance use and medication adherence, typically delivered by the prescriber (Carroll & Weiss, 2017). In addition to formal psychotherapy, there is some evidence indicating attending 12-step groups is associated with improved buprenorphine treatment outcomes in non-randomized studies, though mandatory attendance was not beneficial (Monico et al., 2015; Parran, Adelman, Merkin, et al., 2010). In the current results, some prescribers had concerns about whether 12-step meetings in their community were accepting of patients receiving buprenorphine treatment, a concern that has also been raised by patients (Suzuki & Dodds, 2016). In addition, it is important to note that buprenorphine prescribers are required to be able to refer patients to PIs, but referrals are not mandatory (Substance Abuse and Mental Health

Services Administration, 2018). The contrast we see between limited evidence on PIs to date and the importance prescribers place on PIs and their utilization may reflect the need by prescribers to address comorbid psychiatric and other substance use disorders, which are highly prevalent in this patient population (Grant, Saha, Ruan, et al., 2016). Future studies should continue to develop and test PIs as adjunctive treatments to buprenorphine, but may want to focus on interventions for those with higher treatment needs, such as those with comorbid mental health and other substance use disorders.

In addition, we found a number of differences in perceptions of PI availability and use across prescriber specialties. Fewer PCPs reported adequate number of counselors in their area and adequate resources in their setting for patients with complex psychosocial conditions. A number of factors may contribute. PCPs report a higher proportion of patients receiving Medicaid, which may magnify access challenges to PIs, but findings persisted after adjusting for differences in prescriber characteristics. Specialists in addiction/psychiatry, on the other hand, may have more streamlined referral processes or be more likely to work in settings with on-site availability of psychotherapy, which is consistent with the results showing addiction/psychiatry physicians report almost double the percent of patients receiving counseling from clinicians in their practices. These data indicate there is variability of resources to deliver PIs across practice settings and across prescriber specialties. Specialists may have more resources within their practice settings to treat more complex patients, which is consistent with the success of hub-and-spoke models of buprenorphine treatment in some communities (Brooklyn & Sigmon, 2017; Rawson, Cousins, McCann, Pearce, & Van Donsel, 2019). Future work developing novel treatment models, such as integrated behavioral health in primary care or telemedicine, may increase access to PIs for more complex patients receiving buprenorphine in primary care (King, Brooner, Peirce, Kolodner, & Kidorf, 2014; Watkins, Ober, Lamp, et al., 2017).

**Table 2**  
Buprenorphine prescribers' perceptions and use of psychosocial interventions.

	All prescribers (N = 1149)	Primary care (N = 455; 39.6%)	Addiction/ psychiatry (N = 560; 48.7%)	All others (N = 134; 11.7%)
	% "agree" or "strongly agree" (N or mean (SD))	% "agree" or "strongly agree" (N or mean (SD))	% "agree" or "strongly agree" (N or mean (SD))	% "agree" or "strongly agree" (N or mean (SD))
Perceptions about psychosocial interventions				
"Most patients would benefit from formal counseling during buprenorphine treatment"	93.3% (1061)	92.7% (418)	93.8% (518)	93.3% (125)
"Most patients would benefit from being involved in 12-step groups during buprenorphine treatment" <sup>a</sup>	76.8% (873)	73.3% (330) <sup>a</sup>	80.1% (443)	74.6% (100)
"Twelve-step groups in my community are unwelcoming toward patients who disclose that they are on buprenorphine"	30.6% (346)	30.4% (136)	31.6% (174)	27.2% (36)
"There are sufficient numbers of professional counselors in my area who are well suited to provide counseling to buprenorphine patients" <sup>a</sup>	36.4% (414)	32.7% (147) <sup>a</sup>	42.2% (233) <sup>b</sup>	25.4% (34)
The treatment setting "has the resources to provide psychiatric services to patients with complex psychiatric problems" <sup>a</sup>	51.9% (585)	29.1% (130) <sup>a</sup>	75.9% (416) <sup>b</sup>	29.6% (39)
The treatment setting "has the resources to provide social services to patients with complex social problems" <sup>a</sup>	33.7% (378)	27.3% (121) <sup>a</sup>	40.3% (220) <sup>b</sup>	28.0% (37)
Use of psychosocial interventions				
% of patients who "received psychosocial counseling" from the prescriber <sup>a</sup>	53.7 (43.9)	49.0 (44.6) <sup>a</sup>	60.9 (41.8) <sup>b</sup>	39.4 (44.7)
% of patients who "received psychosocial counseling from providers working within (the respondents) practice/facility/organization" <sup>a</sup>	38.0 (41.1)	26.8 (36.9) <sup>a</sup>	49.0 (41.8) <sup>b</sup>	29.5 (39.9)
% of patients who "received psychosocial counseling from providers in other practices/facilities/organizations" <sup>a</sup>	38.9 (32.7)	45.2 (32.2) <sup>a</sup>	30.5 (30.8) <sup>b</sup>	51.7 (32.6)
% of patients who "did not receive any psychosocial counseling" <sup>a</sup>	12.4 (20.1)	17.3 (22.9) <sup>a</sup>	7.5 (15.3) <sup>b</sup>	16.7 (22.4)

\*\*\*p < .001, \*\*p < .01, \*p < .05, significant F-statistic or chi-square test across the three groups of buprenorphine prescribers.

<sup>a</sup> Significant pairwise difference between primary care and addiction/psychiatry.

<sup>b</sup> Significant pairwise difference between addiction/psychiatry and all others.

Importantly, PCPs also report delivering counseling themselves to about half of their patients. Medical management, which incorporates brief counseling, can be delivered effectively by non-specialty trained physicians and other clinicians and may be a key part of buprenorphine treatment (Carroll & Weiss, 2017). The survey results indicate that a substantial proportion of prescribers report delivering medical management or other PIs to many of their patients, though further data is needed to understand intensity and type of services provided.

This study has several limitations. All data rely on physician self-report of practices and not on actual treatment provided. However, there is limited data on buprenorphine prescriber perceptions and comparison of prescriber self-reported perceptions and use of PIs across physician specialties provides important insights. Survey questions did not specify or differentiate types of PIs (e.g., different psychotherapy modalities, group versus individual PIs, other social support groups besides 12-step, etc.) and there may be differences in how prescribers interpret what constitutes counseling. Finally, the limited response rate in this study may limit generalizability, though this is a common challenge in national physician surveys (Keto, Jokelainen, Timonen, Linden, & Ylisaukko-oja, 2015; Macalino, Sachdev, Rich, et al., 2009).

There is a clear and pressing need to increase the number of prescribers delivering buprenorphine treatment to patients with OUD. As we encourage more prescribers, both generalists and specialists, to adopt treatment, it is critical to consider additional treatments that may be needed for some patients in this population. Novel models incorporating psychosocial services that can be delivered in primary care and other settings and a better understanding of models prescribers currently use in their practices to overcome access challenges may help support prescribers deliver optimal care to their patients with OUD.

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### Contributors

Study concept and design: Lin, Knudsen.  
 Acquisition, analysis, or interpretation of data: All authors.  
 Drafting of the manuscript: Lin.  
 Critical revision of the manuscript for important intellectual content: All authors.  
 Statistical analysis: Knudsen.  
 Administrative, technical, or material support: All authors.  
 Study supervision: Lin, Knudsen.

All authors have approved the final manuscript.

### Conflicts of interest

Lewei Lin and Hannah Knudsen have no conflicts of interest. Michelle Lofwall has received contract research funding from Braeburn Pharmaceuticals, has consulted for Indivior and CVS Caremark, and has received honoraria from PCM Scientific (which received unrestricted educational grant funds from Reckitt Benckiser) for developing and presenting educational materials on opioid use disorder. Related to buprenorphine for opioid use disorder, Dr. Walsh has received research funding, consulting fees, and travel support from Braeburn and Camurus as well as travel support and honoraria from Indivior. She has

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### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.addbeh.2019.01.023>.

### References

- Andrilla, C. H. A., Coultard, C., & Larson, E. H. (2017). Barriers rural physicians face prescribing buprenorphine for opioid use disorder. *Annals of Family Medicine*, 15(4), 359–362. <https://doi.org/10.1370/afm.2099>.
- Barry, D. T., Fazzino, T., Necrason, E., Ginn, J., Fiellin, L. E., Fiellin, D. A., & Moore, B. A. (2016). The availability of ancillary counseling in the practices of physicians prescribing buprenorphine. *Journal of Addiction Medicine*, 10(5), 352–356. <https://doi.org/10.1097/ADM.0000000000000247>.
- Brooklyn, J. R., & Sigmon, S. C. (2017). Vermont hub-and-spoke model of care for opioid use disorder: Development, implementation, and impact. *Journal of Addiction Medicine*, 11(4), 286–292. <https://doi.org/10.1097/ADM.0000000000000310>.
- Carroll, K. M., & Weiss, R. D. (2017). The role of behavioral interventions in buprenorphine maintenance treatment: A review. *The American Journal of Psychiatry*, 174(8), 738–747. <https://doi.org/10.1176/appi.ajp.2016.16070792>.
- 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(1), 74. (e11–17) <https://doi.org/10.1016/j.amjmed.2012.07.005>.
- Fox, A. D., Masyukova, M., & Cunningham, C. O. (2016). Optimizing psychosocial support during office-based buprenorphine treatment in primary care: patients' experiences and preferences. *Substance Abuse*, 37(1), 70–75. <https://doi.org/10.1080/08897077.2015.1088496>.
- Grant, B. F., Saha, T. D., Ruan, W. J., Goldstein, R. B., Chou, S. P., Jung, J., ... Hasin, D. S. (2016). Epidemiology of DSM-5 drug use disorder: Results from the national epidemiologic survey on alcohol and related conditions—III. *JAMA Psychiatry*, 73(1), 39–47. <https://doi.org/10.1001/jamapsychiatry.2015.2132>.
- Hutchinson, E., Catlin, M., Andrilla, C. H. A., Baldwin, L.-M., & Rosenblatt, R. A. (2014). Barriers to primary care physicians prescribing buprenorphine. *Annals of Family Medicine*, 12(2), 128–133. <https://doi.org/10.1370/afm.1595>.
- Kermack, A., Flannery, M., Tofighi, B., McNeely, J., & Lee, J. D. (2017). Buprenorphine prescribing practice trends and attitudes among New York providers. *Journal of Substance Abuse Treatment*, 74, 1–6. <https://doi.org/10.1016/j.jsat.2016.10.005>.
- Keto, J., Jokelainen, J., Timonen, M., Linden, K., & Ylisaukko-oja, T. (2015). Physicians discuss the risks of smoking with their patients, but seldom offer practical cessation support. *Substance Abuse Treatment, Prevention, and Policy*, 10, 43. <https://doi.org/10.1186/s13011-015-0039-9>.
- King, V. L., Brooner, R. K., Peirce, J. M., Kolodner, K., & Kidorf, M. S. (2014). A randomized trial of web-based videoconferencing for substance abuse counseling. *Journal of Substance Abuse Treatment*, 46(1), <https://doi.org/10.1016/j.jsat.2013.08.009>.
- Knudsen, H. K., Lofwall, M. R., Walsh, S. L., Havens, J. R., & Studts, J. L. (2018). Physicians' decision-making when implementing buprenorphine with new patients: Conjoint analyses of data from a cohort of current prescribers. *Journal of Addiction Medicine*, 12(1), 31–39. <https://doi.org/10.1097/ADM.0000000000000360>.
- Lawrence, R. E., Rasinski, K. A., Yoon, J. D., Meador, K. G., Koenig, H. G., & Curlin, F. A. (2012). Primary care physicians' and psychiatrists' approaches to treating mild depression. *Acta Psychiatrica Scandinavica*, 126(5), 385–392. <https://doi.org/10.1111/j.1600-0447.2012.01887.x>.
- Lin, L. A., Lofwall, M. R., Walsh, S. L., Gordon, A. J., & Knudsen, H. K. (2018). Perceptions and practices addressing diversion among US buprenorphine prescribers. *Drug and Alcohol Dependence*, 186, 147–153. <https://doi.org/10.1016/j.drugalcdep.2018.01.015>.
- Ling, W., Hillhouse, M., Ang, A., Jenkins, J., & Fahey, J. (2013). Comparison of behavioral treatment conditions in buprenorphine maintenance. *Addiction (Abingdon, England)*, 108(10), 1788–1798. <https://doi.org/10.1111/add.12266>.
- Macalino, G. E., Sachdev, D. D., Rich, J. D., Becker, C., Tan, L. J., Beletsky, L., & Burris, S. (2009). A national physician survey on prescribing syringes as an HIV prevention measure. *Substance Abuse Treatment, Prevention, and Policy*, 4, 13. <https://doi.org/10.1186/1747-597X-4-13>.
- Mattick, R. P., Breen, C., Kimber, J., & Davoli, M. (2014). Buprenorphine maintenance versus placebo or methadone maintenance for opioid dependence. *Cochrane Database of Systematic Reviews*, 2, CD002207. <https://doi.org/10.1002/14651858.CD002207.pub4>.
- Monico, L. B., Gryczynski, J., Mitchell, S. G., Schwartz, R. P., O'Grady, K. E., & Jaffe, J. H. (2015). Buprenorphine treatment and 12-step meeting attendance: Conflicts, compatibilities, and patient outcomes. *Journal of Substance Abuse Treatment*, 57, 89–95. <https://doi.org/10.1016/j.jsat.2015.05.005>.
- Nielsen, S., Larance, B., & Lintzeris, N. (2017). Opioid agonist treatment for patients with dependence on prescription opioids. *Journal of the American Medical Association*, 317(9), 967–968. <https://doi.org/10.1001/jama.2017.0001>.
- Parran, T. V., Adelman, C. A., Merkin, B., Pagano, M. E., Defranco, R., Ionescu, R. A., & Mace, A. G. (2010). Long-term outcomes of office-based buprenorphine/naloxone maintenance therapy. *Drug and Alcohol Dependence*, 106(1), 56–60. <https://doi.org/>

- 10.1016/j.drugalcdep.2009.07.013.
- Rawson, R., Cousins, S. J., McCann, M., Pearce, R., & Van Donsel, A. (2019). Assessment of medication for opioid use disorder as delivered within the Vermont hub and spoke system. *Journal of Substance Abuse Treatment*, *97*, 84–90. <https://doi.org/10.1016/j.jsat.2018.11.003>.
- Rosenblatt, R. A., Andrilla, C. H. A., Catlin, M., & Larson, E. H. (2015). Geographic and specialty distribution of US physicians trained to treat opioid use disorder. *Annals of Family Medicine*, *13*(1), 23–26. <https://doi.org/10.1370/afm.1735>.
- Scholl, L., Seth, P., Kariisa, M., Wilson, N., & Baldwin, G. (2018). Drug and opioid-involved overdose deaths — United States, 2013–2017. *MMWR. Morbidity and Mortality Weekly Report*, *67*. <https://doi.org/10.15585/mmwr.mm6751521e1>.
- Substance Abuse and Mental Health Services Administration (2018). *Medications to treat opioid use disorder. Treatment improvement protocol (TIP) series 63, full document*. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Suzuki, J., & Dodds, T. (2016). Clinician recommendation of 12-step meeting attendance and discussion regarding disclosure of buprenorphine use among patients in office-based opioid treatment. *Substance Abuse*, *37*(1), 31–34. <https://doi.org/10.1080/08897077.2015.1132292>.
- Tetrault, J. M., Moore, B. A., Barry, D. T., O'Connor, P. G., Schottenfeld, R., Fiellin, D. A., & Fiellin, L. E. (2012). Brief versus extended counseling along with buprenorphine/naloxone for HIV-infected opioid dependent patients. *Journal of Substance Abuse Treatment*, *43*(4), 433–439. <https://doi.org/10.1016/j.jsat.2012.07.011>.
- US Department of Agriculture, E.R.S. *Rural urban continuum codes*. (2016). <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/> (Accessed April 23, 2018).
- 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*(9), 1393–1398. <https://doi.org/10.1007/s11606-008-0686-x>.
- Watkins, K. E., Ober, A. J., Lamp, K., Lind, M., Setodji, C., Osilla, K. C., ... Pincus, H. A. (2017). Collaborative care for opioid and alcohol use disorders in primary care: The SUMMIT randomized clinical trial. *JAMA Internal Medicine*, *177*(10), 1480–1488. <https://doi.org/10.1001/jamainternmed.2017.3947>.
- Weisberg, R. B., Dyck, I., Culpepper, L., & Keller, M. B. (2007). Psychiatric treatment in primary care patients with anxiety disorders: A comparison of care received from primary care providers and psychiatrists. *The American Journal of Psychiatry*, *164*(2), 276–282. <https://doi.org/10.1176/ajp.2007.164.2.276>.
- Weiss, R. D., Potter, J. S., Fiellin, D. A., Byrne, M., Connery, H. S., Dickinson, W., ... Ling, W. (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*(12), 1238–1246. <https://doi.org/10.1001/archgenpsychiatry.2011.121>.