


ORIGINAL ARTICLE

Prescribing Practices of Nurse Practitioners and Physician Assistants Waivered to Prescribe Buprenorphine and the Barriers They Experience Prescribing Buprenorphine

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Abstract

Background: In 2016, the Comprehensive Addiction Recovery Act permitted nurse practitioners (NPs) and physician assistants (PAs) to obtain a waiver to prescribe buprenorphine to treat opioid use disorder (OUD), with the goal of increasing access to this treatment. This study's purpose was to describe the buprenorphine prescribing practices of NPs and PAs and compare the barriers rural and urban providers face delivering treatment.

Methods: From the October 2018 Drug Enforcement Administration list of providers with the waiver to prescribe buprenorphine, all rural NPs and PAs (1,057) and a random sample of 500 urban NPs and PAs were surveyed. The questionnaire queried respondents about demographics, prescribing practices, practice characteristics, reimbursement policies, and barriers to prescribing buprenorphine to treat OUD.

Results: Of the waived NPs and PAs, 80.3% reported having prescribed buprenorphine and 71.1% said they were currently accepting new patients with OUD. Providers with the 30-patient waiver were treating, on average, 13.2 patients; 37.0% were not treating any patients. The most common barrier, cited by half of providers, was concerns about diversion/medication misuse. More rural providers indicated lack of specialty backup and mental health providers as a barrier than urban providers. Never-prescribers and former-prescribers reported 6 barriers at significantly higher rates than did current prescribers. More rural providers accepted Medicaid and cash reimbursement than urban providers.

Conclusions: NPs and PAs face many of the same barriers to providing buprenorphine as physicians have reported. Interventions to address these barriers have the potential to benefit all providers with the waiver to prescribe buprenorphine.

Key words buprenorphine, medication-based treatment, opiate dependent, opiate substitution treatment, rural health.

Ensuring an adequate workforce to provide medication-based treatment (MBT) for opioid use disorder (OUD) has been a strategy promoted for fighting the current opioid epidemic. Significant federal legislation and resources have been targeted toward expanding the workforce qualified to obtain a Drug Enforcement Administration

(DEA) waiver to provide buprenorphine to patients with OUD.¹⁻⁴ Nurse practitioners (NPs) and physician assistants (PAs) were the first providers other than physicians to be authorized to obtain a DEA waiver. Because NPs and PAs provide a significant proportion of primary care services to rural populations,⁵ who experience challenges

in accessing MBT services,^{6,7} these providers are thought to be an important part of the solution to ensure access for underserved populations.⁸⁻¹¹

Physicians have long reported barriers to providing buprenorphine services in their practices,¹²⁻¹⁶ but little is known about the barriers NPs and PAs experience and whether they differ from those that physicians report. NPs and PAs practice under different scope-of-practice regulations in different states and with different levels of required practice supervision. The barriers these providers experience may be different for providers who are able to practice independently compared to those requiring physician supervision. This study's purpose was to describe the practice patterns of NPs and PAs, understand the barriers that these providers face in providing buprenorphine treatment, and compare them with their physician counterparts and across varying levels of practice autonomy.

Methods

Using the October 2018 DEA list of providers with a waiver to prescribe buprenorphine to treat OUD, we surveyed all rurally located NPs and PAs and a sample of 500 randomly selected urban-located NPs and PAs for comparison. We categorized provider locations using the Rural-Urban Commuting Area (RUCA) code¹⁷ corresponding to the ZIP Code of providers' DEA registration addresses.¹⁸ The RUCA codes were aggregated into 4 categories using the primary digit as follows: urban (1,2,3), large rural (4,5,6), small rural (7,8,9), and isolated rural (10).

We mailed paper questionnaires and invitations to respond online to all providers at the addresses in the DEA file. We used information gathered from the National Provider Identifier registry, the Substance Abuse and Mental Health Services Administration Buprenorphine Practitioner Locator, and Google Search results to correct addresses for nonresponding providers and returned questionnaires. Research staff telephoned all nonrespondents using DEA, National Provider Identifier, or Google Search result addresses until the provider's practice was found. Participants received the questionnaire at that address twice more, 2 weeks apart, followed by a final invitation to participate 1 month later. Two weeks later, we mailed an abbreviated version of the questionnaire as a tear-off return postcard. The tear-off postcard only asked providers whether they currently prescribe buprenorphine and about barriers to using buprenorphine to treat OUD. We telephoned nonrespondents up to 3 times, at 2-week intervals. Data collection occurred from January to July 2019.

Measures

The questionnaire was based on one used in a 2016 study of rural physicians,¹⁹ with 4 additional potential barriers listed for NPs and PAs to choose from: insurance issues, clinic policies, lack of physician support or collaboration, and the patient cap which limits the number of patients a provider is authorized to treat concurrently. The questionnaire asked providers about their history and current practice of treating patients with OUD with buprenorphine products; the number of patients currently treated; the number and prescribing status of physician, NP, and PA coworkers with a DEA waiver; and whether certain groups of patients (eg, from another provider or clinic) and reimbursements (eg, Medicaid, private insurance) were accepted for buprenorphine treatment. Providers were asked to indicate from a list of barriers which ones they had experienced when incorporating buprenorphine products into their practice for the treatment of OUD, provide details about practice characteristics and location, and answer basic demographic questions. Based on survey responses, providers were classified as never, former, or current buprenorphine prescribers. States were classified as less-restrictive or restricted-practice for NP buprenorphine prescribing authority based on state legislation. Less-restrictive states allow NPs fully autonomous prescribing authority either immediately upon licensure or at some point in their career after transitional oversight requirements are met (27 out of the 50 states and DC are less-restrictive-practice for NPs). Regulations in states defined to be less restrictive for PAs include at least 5 of 6 "essential elements" of practice recommended by the American Association of Physician Assistants. These elements principally advocate that scope of practice be determined at the practice level rather than at the state level (23 out of the 50 states and DC are less-restrictive-practice for PAs).²⁰⁻²² Restricted-practice states do not allow NPs to prescribe medications without eligible physician supervision or collaboration. We performed chi-square, *t* tests, and ANOVA using SAS version 9.4 (SAS Institute, Inc., Cary, NC), using a *P* = .05 threshold for statistical significance. The University of Washington IRB approved this research.

Results

Of the 1,572 providers surveyed, 247 (15.7%) were determined to be out of scope because they were retired (6), had moved abroad (3), were on leave (15), left practices or moved (33), and/or were unable to be located (190). Of those in scope, 614 providers (498 NPs and 116 PAs) responded to yield a 46.3% response rate overall (NPs, 46.6%; PAs, 45.1%).

Table 1 Characteristics of NPs and PAs With a DEA Waiver to Prescribe Buprenorphine for Opioid Use Disorder

| Characteristic | Nurse practitioners | Physician assistants | Overall | P value ^a |
|---|---------------------|----------------------|------------|----------------------|
| n (%) | 498 (81.1%) | 116 (18.9%) | 614 (100%) | |
| Age, years, % | | | | |
| Mean | 49.2 | 47.3 | 48.8 | .1122 |
| <35 | 20.9% | 25.9% | 21.8% | .5808 |
| 35-44 | 22.5% | 23.3% | 22.6% | |
| 45-54 | 25.9% | 23.3% | 25.4% | |
| 55-64 | 22.3% | 17.2% | 21.3% | |
| 65+ | 8.4% | 10.3% | 8.8% | |
| Sex, % | | | | <.0001 |
| Female | 81.2% | 54.0% | 75.8% | |
| Specialty, % | | | | <.0001 |
| Primary care | 52.2% | 61.0% | 53.9% | |
| Psychiatry | 28.3% | 5.7% | 23.9% | |
| Addiction medicine | 7.3% | 21.0% | 9.9% | |
| Other | 12.3% | 12.4% | 12.3% | |
| Practice type, % | | | | .6182 |
| Private practice | 21.0% | 26.2% | 22.0% | |
| Hospital-sponsored clinic | 10.3% | 10.3% | 10.3% | |
| Rural health clinic | 24.6% | 25.2% | 24.7% | |
| Community health clinic | 19.9% | 14.0% | 18.7% | |
| Other | 24.3% | 24.3% | 24.3% | |
| Waiver type, % | | | | .8581 |
| 30 patients | 85.1% | 84.5% | 85.0% | |
| 100 patients | 14.9% | 15.5% | 15.0% | |
| Rurality, % | | | | .8521 |
| Urban | 32.1% | 30.2% | 31.8% | |
| Large rural | 38.4% | 41.4% | 38.9% | |
| Small rural | 17.9% | 19.0% | 18.1% | |
| Isolated small rural | 11.7% | 9.5% | 11.2% | |
| Region, % | | | | .0397 |
| Northeast | 24.3% | 16.4% | 22.8% | |
| Midwest | 18.1% | 20.7% | 18.6% | |
| South | 22.9% | 16.4% | 21.7% | |
| West | 34.7% | 46.6% | 37.0% | |
| State practice restrictions, % | | | | .0229 |
| Practicing in a less-restrictive state ^b | 45.2% | 56.9% | 47.4% | |
| Practicing in a more-restrictive state | 54.8% | 43.1% | 52.6% | |

DEA = Drug Enforcement Administration. Missing data: sex, 34; specialty, 70; practice type, 59.

^aOverall χ^2 or *t* test.

^bFor NPs: Full practice authority and buprenorphine prescribing authority available upon licensure or at some point in their career after transitional oversight requirements are met. For PAs: Regulations in states defined to be less restrictive for PAs include at least 5 of 6 "essential elements" of practice recommended by the American Association of Physician Assistants as categorized by Spetz and associates (2019).

Table 1 displays characteristics of NPs and PAs with a DEA waiver to prescribe buprenorphine. The average age of responding NPs was 49.2 years and for PAs 47.3 years. More than three-quarters of NPs (81.2%) and about half of PAs (53.9%) were women. Overall, more than half (54.0%) self-reported practicing in primary care (including family practice), nearly one quarter (23.9%) in psychiatric or behavioral health services, 9.9% in addiction medicine, and the remaining 12.3% in a variety

of other specialties. Significantly more NPs practiced in psychiatry and behavioral health specialties (28.3%) compared with 5.7% of PAs. The reverse was seen in addiction medicine: 21.0% of PAs practiced in addiction medicine compared with 7.3% of NPs. About a quarter (24.7%) of respondents reported practicing at a rural health clinic, a fifth in private practice (22.0%) or a community health clinic (18.7%), and 10.3% in a hospital-sponsored clinic. Most providers (85.0%)

Table 2 Prescribing Practices of NPs and PAs With a DEA Waiver to Prescribe Buprenorphine for Opioid Use Disorder

| Prescribing practice | Nurse practitioners | Physician assistants | Overall | P value ^a |
|---|---------------------|----------------------|------------|----------------------|
| n (%) | 469 (80.5%) | 114 (19.6%) | 583 (100%) | |
| Percentage who have ever prescribed buprenorphine for OUD | 79.7% | 82.5% | 80.3% | .5140 |
| Percentage accepting new patients with OUD for buprenorphine treatment | 70.5% | 73.9% | 71.1% | .4743 |
| Mean number of patients currently being treated with buprenorphine for OUD (median) | | | | |
| Providers with a 30-patient waiver | 12.4 (5) | 16.6 (5) | 13.2 (5) | .0971 |
| Providers with a 100-patient waiver | 40.8 (35) | 44.7 (30) | 41.5 (35) | .6360 |
| Percentage who accept patients for buprenorphine treatment from: | | | | |
| Patients from their own panel | 79.2% | 85.2% | 80.3% | .1733 |
| Patients of other providers in the practice | 73.8% | 82.5% | 75.5% | .0638 |
| Patients from the community | 66.7% | 68.3% | 67.0% | .7551 |
| Patients from outside the community | 58.8% | 60.8% | 59.2% | .7117 |
| Reimbursement accepted | | | | |
| Private insurance | 68.7% | 72.8% | 69.5% | .3937 |
| Medicare | 65.1% | 66.7% | 65.4% | .7547 |
| Medicaid | 69.6% | 72.8% | 70.2% | .4958 |
| Workman's compensation | 19.0% | 21.1% | 19.4% | .6237 |
| Self-pay | 61.3% | 70.2% | 63.0% | .0784 |
| Cash | 46.5% | 55.3% | 48.2% | .0932 |
| Mean number of other providers in practice (SD) | 4.8 (8.6) | 6.1 (7.8) | 5.0 (8.5) | .1722 |
| Mean number of other waived providers in practice (SD) | 2.6 (5.7) | 3.4 (3.5) | 2.7 (5.4) | .1886 |
| Mean number of other providers providing buprenorphine treatment in practice (SD) | 2.4 (8.1) | 2.6 (2.6) | 2.4 (7.4) | .8235 |

DEA = Drug Enforcement Administration. Missing data: ever prescribed, 31; accepting new patients, 36; number of patients, 30-patient waiver, 19; 100-patient waiver 6; patients accepted, 86; reimbursement accepted, 27; other providers, 69; other waived providers, 106; other prescribing providers, 110.

^aOverall 2-category χ^2 test.

had a waiver allowing treatment of up to 30 patients concurrently; the remaining 15.0% held the 100-patient-cap waiver. There were some significant differences in the geographic distribution of the respondents. More PAs than NPs reported practicing in the West (46.6% vs 34.7%, respectively; $P = .0176$). Overall, 31.8% of respondents worked in urban areas, 38.9% in large rural areas, 18.1% in small rural areas, and 11.2% in isolated small rural areas, and NP and PA respondents were similarly distributed across these categories. The percentage practicing in less-restrictive-practice states was 45.2% for NPs compared with 56.9% for PAs. Table 2 shows prescribing practices of NPs and PAs with a DEA waiver. About 80% of both groups indicated that they had prescribed buprenorphine to treat OUD and 71.1% indicated they were accepting new patients with OUD. The average number of patients that these providers reported currently treating was 17.3 (not shown). Overall, 17.5% of NPs and PAs with the initial 30-patient waiver were approaching the patient limit, treating 27 or more patients ($\geq 90\%$ of the maximum). Of providers with the 100-patient-limit waiver, only 11.6% reported approaching their patient limit (treating

≥ 90 patients, 90% of the maximum). One-third (33.1% of all providers said they were not currently treating any patients.

Waivered NPs and PAs practiced with similar numbers of other providers (5.0 physicians, NPs and PAs). Of these other providers, on average slightly over half (2.7) had the DEA waiver and 2.4 were currently providing buprenorphine treatment.

Four out of 5 NPs and PAs said they would accept patients for buprenorphine treatment from their own panel (80.3%) and 75.5% reported accepting patients of other clinicians at their clinic. Two-thirds of providers (67.0%) said they accepted patients from the community for treatment with buprenorphine and slightly fewer, though still a majority (59.2%) reported accepting patients from outside their community for treatment.

Most NPs and PAs (69.5%) reported accepting private insurance for buprenorphine treatment and 65.4% accepted Medicare. More rural NPs and PAs reported accepting Medicaid than urban NPs and PAs (73.3% vs 63.6%, respectively, $P = .0177$). More rural providers also accepted cash (52.5%) than their urban counterparts (39.0%) ($P = .0024$).

Table 3 Barriers NPs and PAs Perceive to Incorporating Buprenorphine Treatment Into Clinical Practice, by Rural Status

| Barrier | Urban | Large rural | Small rural | Isolated rural | Overall | P value ^a |
|--|-------------|-------------|-------------|----------------|------------|----------------------|
| n (%) | 173 (31.7%) | 214 (39.2%) | 97 (17.8%) | 62 (11.4%) | 546 (100%) | |
| Time constraints, % | 31.2% | 38.3% | 29.9% | 32.3% | 33.9% | .3633 |
| Financial/reimbursement concerns, % | 29.9% | 31.3% | 29.9% | 30.7% | 30.5% | .9901 |
| Resistance from practice partners, % | 15.6% | 21.7% | 27.6% | 29.0% | 21.7% | .0520 |
| Lack of specialty backup for complex problems, % | 27.4% | 42.1% | 41.8% | 41.9% | 37.3% | .0129 |
| Lack of confidence in your ability to manage opioid use disorder, % | 10.4% | 22.3% | 19.0% | 16.1% | 17.3% | .0203 |
| Lack of available mental health or psychosocial support services, % | 33.0% | 49.8% | 49.5% | 46.8% | 44.1% | .0050 |
| Attraction of drug users to your practice, % | 23.3% | 25.5% | 33.3% | 32.3% | 26.9% | .2297 |
| DEA intrusion on your practice, % | 8.7% | 7.4% | 8.4% | 8.1% | 8.1% | .9730 |
| Concerns about diversion or misuse of medication, % | 39.3% | 52.8% | 65.0% | 54.8% | 50.9% | .0005 |
| Insurance issues (eg, prior authorization, limits on prescription duration), % | 42.0% | 40.3% | 46.9% | 38.7% | 41.8% | .6790 |
| Clinic policies | 21.8% | 22.0% | 15.5% | 22.6% | 20.9% | .5520 |
| Lack of physician support or collaboration, % | 15.0% | 20.1% | 23.5% | 16.1% | 18.7% | .3144 |
| The patient cap limits the potential benefit of incorporating buprenorphine product treatment, % | 25.7% | 18.7% | 21.1% | 25.8% | 22.1% | .3471 |

DEA = Drug Enforcement Administration. Missing data: time, 68; financial, 67; resistance, 69; specialty backup, 65; confidence, 69; available mental health services, 67; attraction of drug users, 68; DEA intrusion, 70; diversion, 64; insurance, 64; clinic policies, 63; physician support, 67; patient cap, 72.

^aOverall 4-category χ^2 test.

From a list of potential barriers, the questionnaire asked providers to indicate which barriers they experienced in incorporating buprenorphine into their practice. The most commonly reported barrier, reported by 50.9% of respondents, was concern about diversion or misuse of the medication. Lack of available mental health or psychosocial support services and insurance issues (such as prior authorizations and limits on prescription duration) were reported by 44.1% and 41.8% of respondents, respectively. The barriers reported varied by the rurality of the provider's practice location. A higher percentage of rural providers reported that the following were barriers to incorporating buprenorphine into their practice: lack of specialty backup for complex patients, lack of available mental health or psychosocial support services, concerns about diversion or misuse of medication, and lack of confidence in their ability to manage opioid use disorder (Table 3). Comparing all rural respondents to urban respondents, more rural NPs and PAs reported resistance from their practice partners than their urban counterparts (24.5% vs 15.6%, $P = .0195$).

Waivered NPs and PAs who were not currently prescribing buprenorphine (never and former prescribers) reported clinic barriers such as clinic policies, lack of physician support, resistance from practice partners, and concern about the lack of specialty backup at significantly higher rates than did those currently prescribing (Table 4). Providers who had never prescribed buprenorphine reported concern about DEA intrusion on their practice (18.2% vs 6.0%, $P < .0002$) and lack of confi-

dence in their ability to manage OUD (38.2% vs 13.8%, $P < .0001$) at about 3 times the rate that current prescribers did.

Significantly more NPs practicing in less-restrictive-practice states than NPs practicing in restricted-practice states identified lack of specialty backup (44.4% vs 32.0%, $P = .0074$) as a barrier. There were no other significant differences by state scope of practice classification.

Female providers, about three-quarters of respondents (75.8%), reported a lack of confidence in their ability to manage opioid use disorder (19.5%) almost twice as often as male providers (20.0% vs 10.9%, $P = .0207$).

Discussion

Significant numbers of NPs and PAs have responded to the legislative change allowing them to obtain a DEA waiver to prescribe buprenorphine to treat OUD. Our study findings indicate that these relatively newly waived providers are using their waiver. The nearly three-quarters of rural NPs and PAs (71.1%) who reported accepting new patients is a significantly higher proportion than among rural physicians with a waiver (56.2%) reported in 2016.¹⁹ Furthermore, NPs and PAs with the initial 30-patient waiver treated more patients on average (13.2) than did the rural physicians (8.8), and fewer reported not treating any patients (37.0% vs 53.0%, respectively).¹⁹ Because NPs and PAs have only been authorized to prescribe buprenorphine for a short

Table 4 Barriers NPs and PAs Perceive to Incorporating Buprenorphine Treatment Into Clinical Practice, by Prescribing Status

| Barrier | Never prescribed | Former prescriber | Current prescriber | Overall | P value ^a |
|--|------------------|-------------------|--------------------|------------|----------------------|
| n (%) | 90 (17.1%) | 37 (7.1%) | 398 (75.8%) | 525 (100%) | |
| Time constraints, % | 43.3% | 32.4% | 32.7% | 34.5% | .1516 |
| Financial/reimbursement concerns, % | 24.7% | 32.4% | 32.1% | 30.9% | .3878 |
| Resistance from practice partners, % | 37.9% | 38.5% | 17.0% | 22.1% | <.0001 |
| Lack of specialty backup for complex problems, % | 53.3% | 46.2% | 33.6% | 37.9% | .0012 |
| Lack of confidence in your ability to manage opioid use disorder, % | 38.2% | 10.8% | 13.8% | 17.8% | <.0001 |
| Lack of available mental health or psychosocial support services, % | 44.9% | 51.4% | 43.3% | 44.1% | .6275 |
| Attraction of drug users to your practice, % | 34.8% | 29.0% | 25.1% | 27.1% | .1697 |
| DEA intrusion on your practice, % | 18.2% | 8.1% | 6.0% | 8.2% | .0009 |
| Concerns about diversion or misuse of medication, % | 48.3% | 42.1% | 52.4% | 51.0% | .4148 |
| Insurance issues (eg, prior authorization, limits on prescription duration), % | 31.8% | 37.8% | 43.9% | 41.5% | .1015 |
| Clinic policies | 46.2% | 51.3% | 11.6% | 20.5% | <.0001 |
| Lack of physician support or collaboration, % | 38.6% | 50.0% | 11.3% | 18.7% | <.0001 |
| The patient cap limits the potential benefit of incorporating buprenorphine product treatment, % | 12.6% | 27.0% | 23.6% | 22.0% | .0613 |

DEA = Drug Enforcement Administration. Missing data: time, 68; financial, 67; resistance, 69; specialty backup, 65; confidence, 69; available mental health services, 67; attraction of drug users, 68; DEA intrusion, 70; diversion, 64; insurance, 64; clinic policies, 63; physician support, 67; patient cap, 72.

^aOverall 3-category χ^2 test.

time, it is unknown whether their prescribing patterns will remain consistent over time. Nevertheless, these apparent improvements in the workforce participation rate in MBT prescribing as indicated by this early evidence on NPs and PAs, if they remain stable, lend hope to addressing the MBT access problems across the country.^{6,23}

At the same time, 1 in 5 (19.7%) NPs and PAs with a waiver indicated they had never prescribed buprenorphine, greater than the 11% of rural physicians in 2016 who had never used their waiver.²⁴ The barriers that nonprescribing NPs and PAs (never and former prescribers) cited at a higher rate than prescribing NPs and PAs (Table 4) were also reported more often by nonprescribing physicians than by prescribing physicians.²⁴ These patterns suggest that successful interventions to address these barriers may cut across profession types and maximally increase the participation rate of the entire waived provider workforce. Nonprescribing NPs and PAs also reported additional infrastructure barriers including clinic policy and lack of physician support or collaboration. PAs must always practice with physician supervision, and so must NPs in many states. Thus, it is not surprising that lack of physician support and collaboration is a barrier for NP and PA prescribing of buprenorphine. Removing or decreasing supervision requirements for NP and PA prescribing of buprenorphine, with appropriate support and referral resources, could increase access to this treatment.

The barriers most frequently reported by NPs and PAs were the same as those for rural physicians. The rate of the most oft-cited barrier, concern about diversion or misuse of medication, reported by about half of physicians, NPs and PAs, has not changed in the past several years.²⁴ Rural practitioners are significantly more concerned about diversion than urban practitioners, and this could be due to more diversion actually occurring in rural areas.²⁵ Poor access to treatment could result in greater buprenorphine diversion,²⁶ as could strong social and family networks, which are implicated in diversion of other opiate medications.²⁷ Alternatively, stigma and misunderstanding of MBT could result in greater concern about diversion.^{28,29}

Numerous strategies to overcome diversion concerns have been reported, such as expanding the health care team by developing relationships with dispensing pharmacists.³⁰⁻³² Educating waived providers about these strategies may help mitigate the impact of concerns about diversion on providers' decisions to prescribe buprenorphine.

Furthermore, some researchers argue that diversion concerns are not a reason to limit buprenorphine treatment.³³⁻³⁵ These researchers found that when buprenorphine was diverted, it was primarily used by people with OUD to manage their own withdrawal symptoms rather than to get high. Thus, insufficient access to MBT contributes to buprenorphine diversion,

and making buprenorphine treatment more readily available with lower thresholds for access to treatment could reduce diversion.^{26,36}

In the past few years, insurance policies, including Medicaid, have changed to cover more medication-based treatments and reduce restrictions on treatments.³⁷⁻³⁹ Still, 42% of our respondents identified insurance issues as a barrier, and 31% of providers identified financial or reimbursement concerns as a barrier. The administrative task of filing for prior authorization could discourage providers from prescribing buprenorphine or taking on more patients.^{37,40,41} Limits on prescription duration or dosage can prevent patients from receiving adequate treatment.^{40,42,43} Insurance policies must continue to evolve to facilitate patient access to MBT and limit provider barriers to accepting insurance coverage for MBT.

Lack of available mental health or psychosocial support services and lack of specialty backup for complex problems were significant barriers, especially for rural providers. The hub-and-spoke treatment model, developed effectively in Vermont, can address these barriers.^{44,45} The model draws on central treatment hubs where patients can be inducted into treatment or be referred if they have more complex problems. The spokes extend into rural and underserved areas to maintain access to treatment in a primary care setting.

Limitations

This study has some limitations. The response rate of 46.3% may introduce nonrespondent bias in our estimates. If a lower percentage of nonrespondents use their waiver than respondents, our estimates of these providers' prescribing participation rate may be too high. Additionally, a greater percentage of providers with a 100-patient waiver responded than those with a 30-patient waiver (53.8% vs 45.1%, $P = .0332$). Responding providers with the 30-patient waiver reported lack of confidence, lack of specialty backup, and financial barriers at a higher rate than responding providers with the 100-patient waiver, so our overall estimates for these barriers could be too low. A larger percentage of the urban sample (22.4%) was excluded because they could not be found compared with the rural providers (12.4%). Providers located in the West responded at a higher rate (57.9%) ($P < .0001$) than those from other Census regions (Northeast, 45.2%; Midwest, 38.8%; South, 40.3%). There was no difference by Census region in the percentages of the sample excluded because they could not be located, but more providers with the initial

30-patient waiver (16.6%) could not be found than those with the 100-patient waiver (8.6%) ($P = .0044$).

Conclusions

The growing awareness of and response to the opioid epidemic has resulted in changes in the delivery of MBT, including a significant expansion in both the numbers and types of providers authorized to obtain a DEA waiver. The newly waived NPs and PAs are prescribing at higher rates than physicians have in past studies, but they still report many of the same barriers to providing care. Understanding how NPs and PAs overcome barriers is an area for further research. To ensure an adequate workforce and improve patient access to MBT, strategies to address common barriers will need to be developed, supported by sufficient resources to work with providers to promote and implement these solutions.

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