

Nurse Practitioner and Physician Assistant Provision of Medication-Assisted Treatment for Opioid Use Disorder: A Survey of Knowledge, Engagement, and Perceptions

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Key Findings

The Behavioral Health Workforce Research Center (BHWRC) sent an online survey to 3,711 nurse practitioners and physician assistants about their experiences in, perspectives on, and barriers to providing medication-assisted treatment (MAT), and supplemented that survey with four, 1-hour long key informant interviews. The majority of the 240 survey respondents reported that oral buprenorphine, methadone, and naltrexone decreased cravings, reduced rates of relapse, and reduced rates of overdose. The respondents were largely unfamiliar with newer MAT drug formulations, like implanted and injected buprenorphine. Policy recommendations for increasing the availability and quality of MAT include, but are not limited to: adding MAT training to the core curricula for graduate nurse practitioner and physician assistant programs, increasing providers' access to peers providing MAT, and integrating behavioral health and medical settings.

Background

More than 115 people in the U.S. die each day from opioid overdose, on average.¹ The economic burden of prescription opioid misuse alone is \$115 billion a year, when including healthcare costs, lost productivity, addiction treatment, and criminal justice involvement.² Exacerbating this crisis are a shortage of psychiatrists³ and maldistribution of behavioral health providers⁴ available to treat people with opioid use disorders (OUDs).

Before opioid misuse and overdose escalated to epidemic proportions, the Drug Addiction Treatment Act (DATA) of 2000 authorized "qualified practitioners" to treat OUD with narcotic controlled substances of schedules III, IV, and V.⁵ The treatment of OUD with Food and Drug Administration–approved medications, and psychosocial and recovery support services is more commonly referred to as medication-assisted treatment (MAT).⁶ MAT has been shown to be more effective for OUD than placebo or abstinence-based, non-MAT treatment with regard to treatment retention, recovery outcomes, and reducing mortality.^{7–10}

Medications often used for MAT include two controlled substances:

1. methadone, which is only permitted to be dispensed at Opioid Treatment Programs approved by a Substance Abuse and Mental Health Services Administration (SAMHSA); and
2. buprenorphine, which requires a Drug Enforcement Administration (DEA) waiver to prescribe.^{5,6}

A physician is required to undergo 8 hours of training and register with the DEA in order to obtain a waiver.⁵ A third drug, naltrexone, previously used to treat alcohol use disorder, is also increasingly used in MAT to decrease the euphoric effect of opioids,¹¹ but is not an opioid or a controlled substance and thus does not require any waiver or special training to prescribe.¹²

In 2016, Congress also passed the Comprehensive Addiction and Recovery Act (CARA),¹³ which expanded addiction treatment for OUD in several ways. For example, CARA authorized the Department of Health and Human Services to provide monetary support to states, non-profits, and treatment facilities to increase access to MAT. Section 303 of CARA amended the Controlled Substances Act and authorizes nurse practitioners and physician assistants to prescribe MAT until 2021 by including them under the definition of "qualified practitioners."¹⁴ According to CARA's final rules, effective August 8, 2018, nurse practitioners and physician assistants need to complete "not fewer than 24 hours of initial training" to obtain a buprenorphine waiver, which includes the 8 hours required of physicians under DATA.¹⁵

A year after CARA's final rules became effective, 3,534 nurse practitioners (1.7% of those eligible, given state laws) and 912 physician assistants (0.8% of those eligible, given state laws) from 883 different counties obtained a DEA waiver for prescribing buprenorphine.¹⁶ As nurse practitioners are more likely to serve in rural areas and Medicaid-eligible populations than physicians,^{16,17} and physician assistants specialize in expanding physicians' practice, authorizing both occupations to prescribe MAT should increase Americans' access to OUD treatment. In fact, in 56 counties, nurse practitioners and physician assistants are the only waived providers available to residents.¹⁶

However, state laws may limit nurse practitioners and physician assistants from taking full advantage of DATA and CARA provisions. For instance, state laws that prohibit nurse practitioners from prescribing a certain schedule of controlled substances may inhibit nurse practitioners from engaging in MAT using that

drug schedule.¹⁸ Furthermore, state laws commonly require nurse practitioners and physician assistants to have collaborative practice agreements with physicians, or to have their prescriptions cosigned by physicians.¹⁹ Such provisions could hinder CARA's goal of expanding MAT access.

Other non-regulatory barriers toward nurse practitioners and physician assistants providing MAT include: insufficient education during their graduate program²⁰ or insufficient training with MAT during residencies²¹; provider stigma about patients with OUD,^{20,22} believing them to be more difficult, noncompliant, or likely to divert their medications than other patients; and, obstacles to reimbursement for MAT services (e.g., prior authorization), even though payer coverage for MAT has expanded significantly in recent years.²³

The Behavioral Health Workforce Research Center (BHWRC) conducted a survey of these professions to better understand how CARA has affected nurse practitioners and physician assistants, their barriers to providing MAT, and their perspectives on providing MAT. The research team supplemented this survey with key informant interviews with nurse practitioner and physician assistant providers. The findings from the survey highlight barriers that hinder and facilitate MAT expansion, and suggest avenues for addressing persistent obstacles faced by providers.

Methods

Online Survey

The BHWRC created an online survey using Qualtrics™, which was disseminated from July to August 2018 to a random sample of 3,711 nurse practitioners and physician assistants. RediData and ExactData, companies that retain nurse practitioner and physician assistant contact information, were used. The survey took between 10 and 15 minutes to complete.

The sample included two subgroups: high-frequency providers, such as those who practice addiction medicine or addiction psychiatry, and low-frequency providers who were less likely to engage in MAT. Both RediData and ExactData matched contacts with those nurse practitioners and physician assistants who received the SAMHSA buprenorphine waiver (n=653). The vendors also matched contacts (n=426) with a comprehensive list researchers received from Alkermes, Inc., the manufacturer of Vivitrol®. This list consisted of the 5,222 healthcare professionals actively prescribing the medication as of November 2017, consistent with their treatment locator searchable tool available to the public.

Weekly reminder emails were sent to the survey sample throughout the data collection period. To incentivize participation, researchers offered the first 400 participants to complete the survey a \$25 MasterCard Gift Card. Questions covered treatment for substance use disorders (SUDs) generally, and OUD specifically. Survey themes were:

1. demographics;
2. professional characteristics and practice settings;
3. screening for SUD;
4. SUD maintenance;
5. MAT drug knowledge and usage; and
6. treatment barriers.

Key Informant Interviews

Four, 1-hour long key informant interviews with nurse practitioners and physician assistants supplemented the survey. The National Council for Behavioral Health (National Council) invited nurse practitioners and physician assistants to participate in an hour-long semi-structured interview to elicit information about barriers and opportunities for these providers under CARA. Key informant interview participants were selected from the "high-frequency" provider contact lists obtained from RediData and ExactData. The National Council recruited key informant interviewees with an e-mail invitation sent to 52 nurse practitioners and 48 physician

assistants asking participation. Participants received a \$50 incentive to compensate for 1-hour interviews. Principal investigators at the University of Michigan created a semi-structured interview guide through partnership with the National Council. An MAT subject matter expert at the National Council conducted the interviews and recorded them for analysis.

Results

Online Survey

Demographics

The survey received a total of 264 responses (125 nurse practitioners, 129 physician assistants, and ten other). One response was excluded because it was completed by a physician, ten respondents who identified as “other” were included in the analysis. Of the 263 remaining responses, 33 were partial or incomplete responses. Researchers retained for analysis incomplete surveys only if the respondent finished at least half the survey, which disqualified 23 of the incomplete responses. After removing those incomplete responses,

researchers had 240 responses remaining in the sample.

Of this 240 total respondents, 118 were nurse practitioners (49.2%) and 122 were physician assistants (50.8%). The majority of nurse practitioners surveyed were female, white, and had a master’s degree (Table 1). The majority of physician assistants surveyed were male, white, and had a master’s degree. Nurse practitioners were more likely to have a graduate degree than physician assistants (92.4% vs 74.6%), largely attributable to the larger percentage (16.1% vs 2.5%) with a doctoral degree.

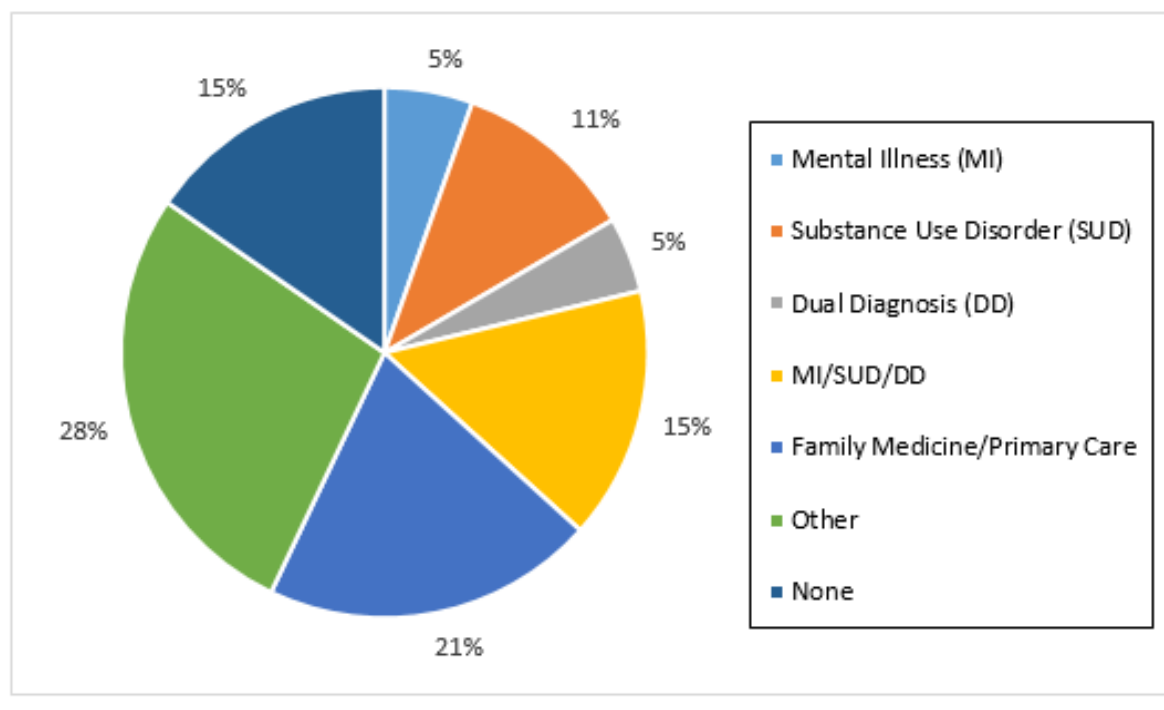
Professional Characteristics and Practice Settings

Regarding respondent practice specialties, the largest response category was “other” (n=66, 28%), followed by family medicine/primary care (n=49, 21%), and some combination of mental illness, SUD, and dual diagnosis (n=37, 15%) (Figure 1). Responses included under “other” were urgent/emergency care (n=13, 19.7%), obstetrics/gynecology (n=7, 10.6%), and pain management (n=5, 7.6%).

Table 1: Respondent Demographics

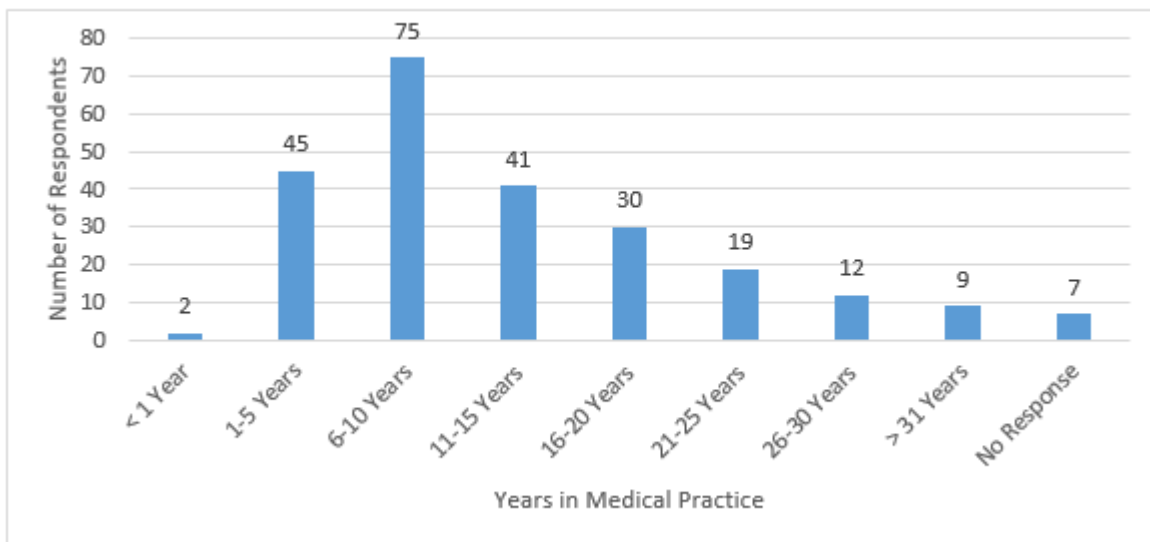
	Nurse Practitioners (n=118)	Physician Assistants (n=122)
Gender (n; %)		
Female	94 (79.7%)	34 (24.9%)
Male	20 (16.9%)	83 (68.0%)
Other	1 (0.8%)	0 (0%)
No Response	3 (2.5%)	5 (4.1%)
Race/Ethnicity (n; %)		
White	99 (83.9%)	96 (78.7%)
Black/African American	6 (5.1%)	6 (4.9%)
Hispanic	1 (0.8%)	6 (4.9%)
Asian	7 (5.9%)	5 (4.1%)
Native American or Alaskan Native	1 (0.8%)	1 (0.8%)
Native Hawaiian/Pacific Islander	0 (0%)	1 (0.8%)
Not Reported	4 (3.4%)	7 (5.7%)
Education (n; %)		
High School Diploma	1 (0.8%)	0 (0%)
Some College	0 (0%)	5 (4.1%)
Bachelor Degree	2 (1.7%)	21 (17.2%)
Master’s Degree	90 (76.3%)	88 (72.1%)
Doctoral Degree	19 (16.1%)	3 (2.5%)
Other	3 (2.5%)	0 (0%)
Not Reported	3 (2.5%)	5 (4.1%)

Figure 1. Respondents' Practice Specialties



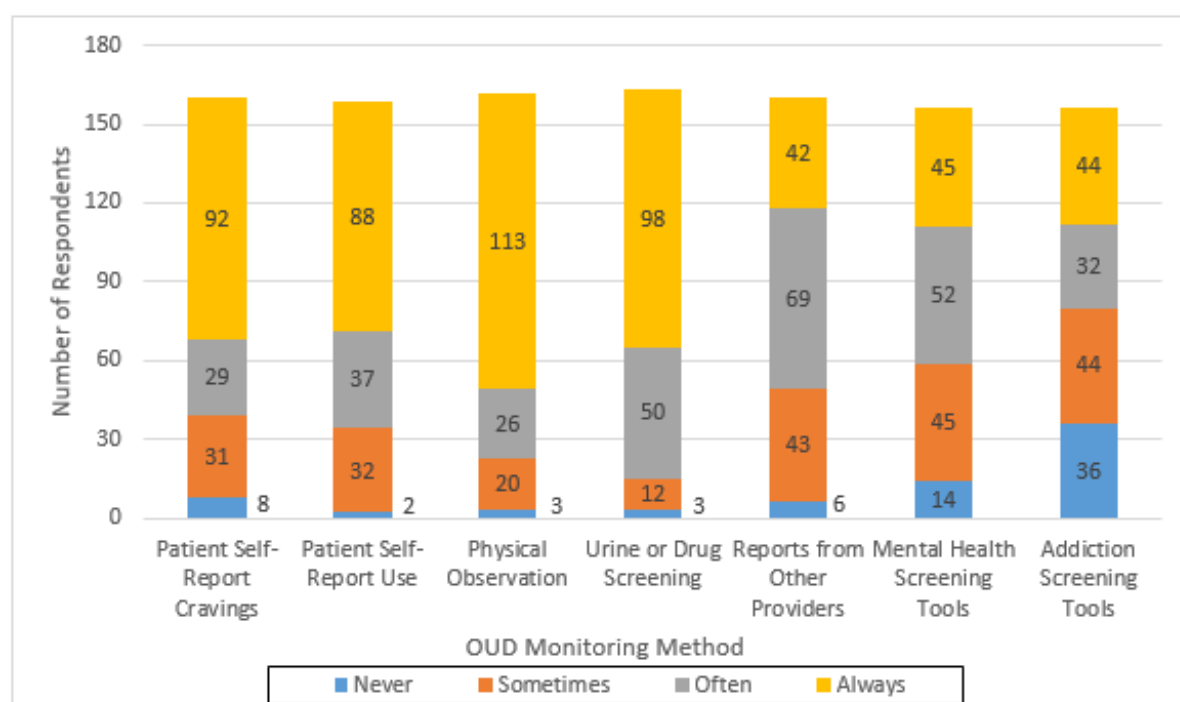
In the last 3 years, 103 (42.92%) of the respondents had training in some combination of dual diagnosis, mental disorder, and SUD, while an additional 73 (30.42%) had training in at least one of those subjects, and the remaining 64 (26.67%) either had no training in those subjects, or did not answer the question. The median respondent had between 6 and 10 years of experience practicing medicine (Figure 2).

Figure 2. Respondents' Experience Practicing Medicine



The most popular setting types were family medicine–outpatient facilities (76, 31.7%) and SUD treatment programs (61, 25.4%). Of all respondents, 21 did not work with a physician (8.8%), 218 did (90.8%), and one did not answer. Of the 21 respondents who did not work with a physician, 16 were nurse practitioners and five were physician assistants. Generally, physician assistants in every state must work with physicians in some capacity, whereas nurse practitioners in many states are able to practice autonomously. On average, respondents saw a median of 200 patients (interquartile range: 100, 300) a month (Figure 3). Outliers for this questions included the values: 7,500, 4,500, 4,000, 3,000, 1,800, 1,700, 1,500, 1,000, 900, and 800.

Figure 3. Respondents’ Monitoring Methods for Opioid Use Disorder, and Their Frequency of Utilization

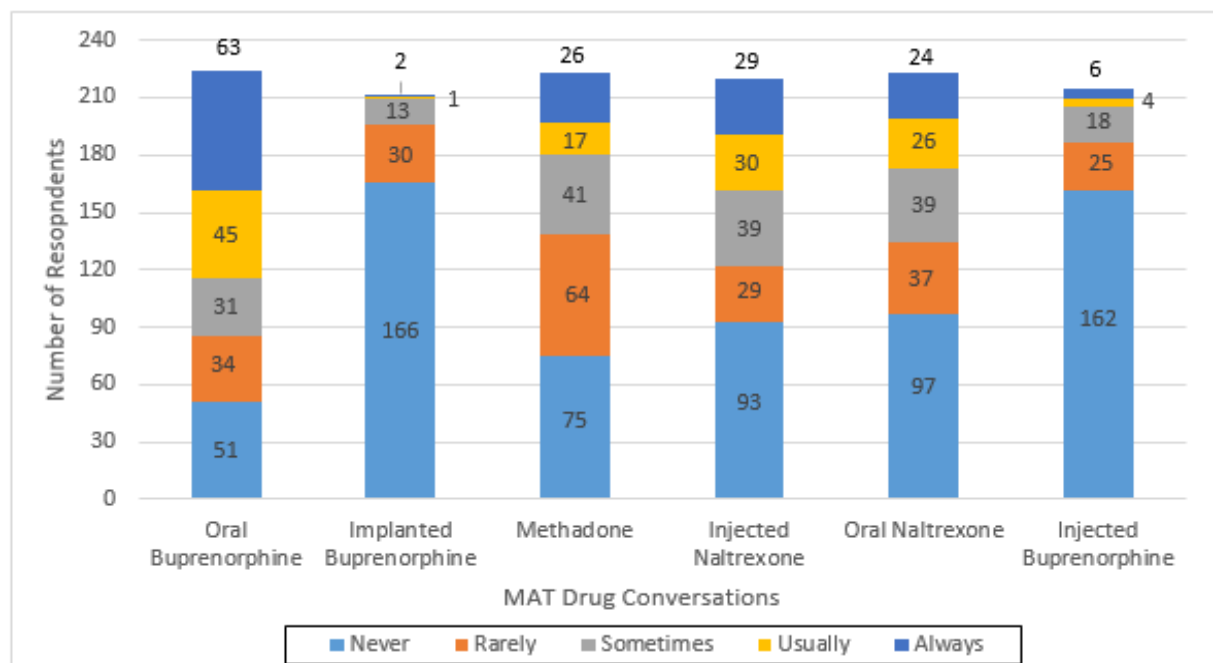


The average payment mix across all respondents was 32.8% Medicaid, 27.5% commercial coverage, 23.1% Medicare, 7.5% cash, and 4.6% other. Fifty-eight percent of providers have some patients involved in the criminal justice system, of the 211 respondents who answered this question.

Screening for Substance Use Disorders

The majority (n=134, 55.8%) of nurse practitioners and physician assistants surveyed screened between 76% and 100% of their new patients for SUDs, and the majority (n=168, 70.0%) also treated between 0% and 25% of their patients for SUDs. When specifically asked about the percentage of their patients that were treated for OUD, the 91 respondents who answered the question claimed a median of 20% of their patients were being treated for OUD. And according to a majority of respondents (n=113, 68.9%), more than 50% of their patients with OUD were also diagnosed with a co-occurring disorder. Respondents were most likely to monitor patients for OUD via physical observation, urine or other drug screening, and patients’ self-reporting of cravings/use (Figure 3). Respondents were more likely to discuss oral buprenorphine with patients with OUD (45 “usually,” 63 “always”) than any other MAT drug (Figure 4).

Figure 4. Respondents' Frequency of Discussions with Patients about Select Medication-Assisted Treatment Pharmacotherapy Options



Substance Use Disorder Maintenance

Respondents were most familiar with oral buprenorphine/buprenorphine–naloxone (148 “very familiar,” 87 “somewhat familiar”), followed by methadone (124 “very familiar,” 111 “somewhat familiar”), and oral naltrexone (108 “very familiar,” 87 “somewhat familiar”). These were the three medications most commonly used to treat patients with OUD, according to survey participants. Respondents were least familiar with injected extended-release buprenorphine (99 “never heard of it”) and implanted buprenorphine (86 “never heard of it”), and these were also the least commonly used medications to treat patients with OUD. These formulations were released more recently, suggesting the current NP and PA workforces are less informed about current drug formulations. Although respondents were familiar with methadone and it was used to treat many patients, respondents were less likely to have access to it in their practice (51 had access, 30.4%) compared with oral buprenorphine (130, 77.4%), oral naltrexone (92, 54.8%), and injected naltrexone (90, 53.6%).

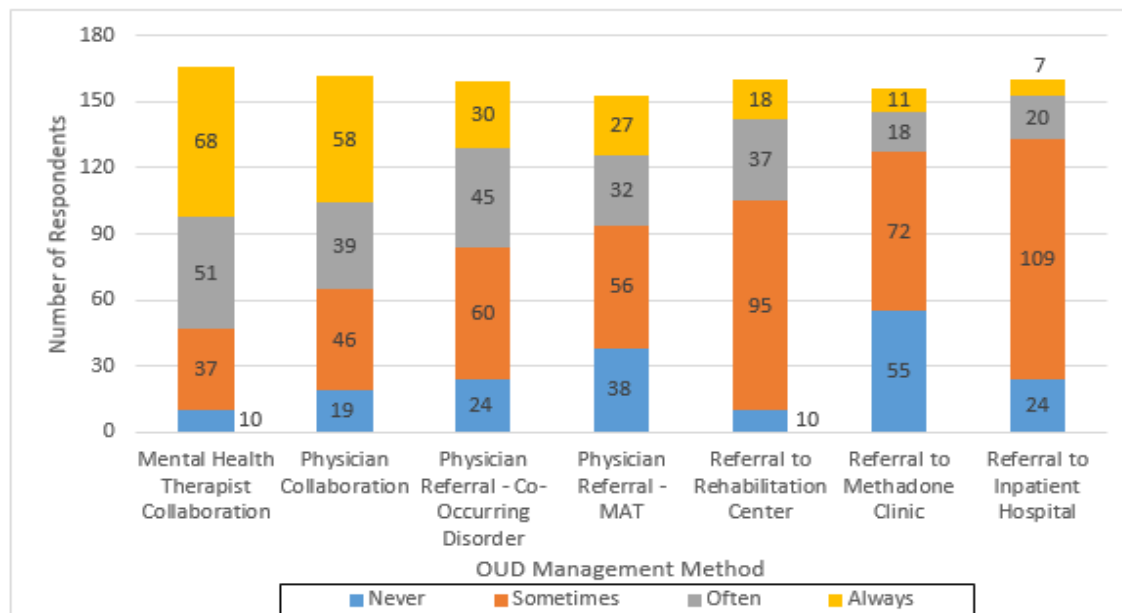
Respondents were most likely to manage patients with OUD in collaboration with mental health therapists/counselors (Figure 5). The other two most popular management methods were physician collaboration and physician referral for treating co-occurring disorder(s).

Medication-Assisted Treatment Knowledge

Respondents were more confident in their ability to identify, rather than treat, patients with OUD. When asked to rank their confidence in their abilities on a scale from 1 to 5, with 1 meaning “not confident at all” and 5 meaning “very confident,” the majority of respondents (n=138, 57.5%) answered either 4 or 5 for their ability to identify patients with OUD. However, 126 (52.5%) answered between 1 and 3 for their ability to treat or manage the disorder, suggesting that these providers may be better trained/experienced in OUD diagnosis than treatment.

Respondents were far more likely to have some formal education in oral buprenorphine (n=199, 83.3%) and methadone (n=120, 75.9%) than in any of the other medications included in the survey. In comparison, the respondents had the fewest formal education with implanted and injected buprenorphine, with only 75

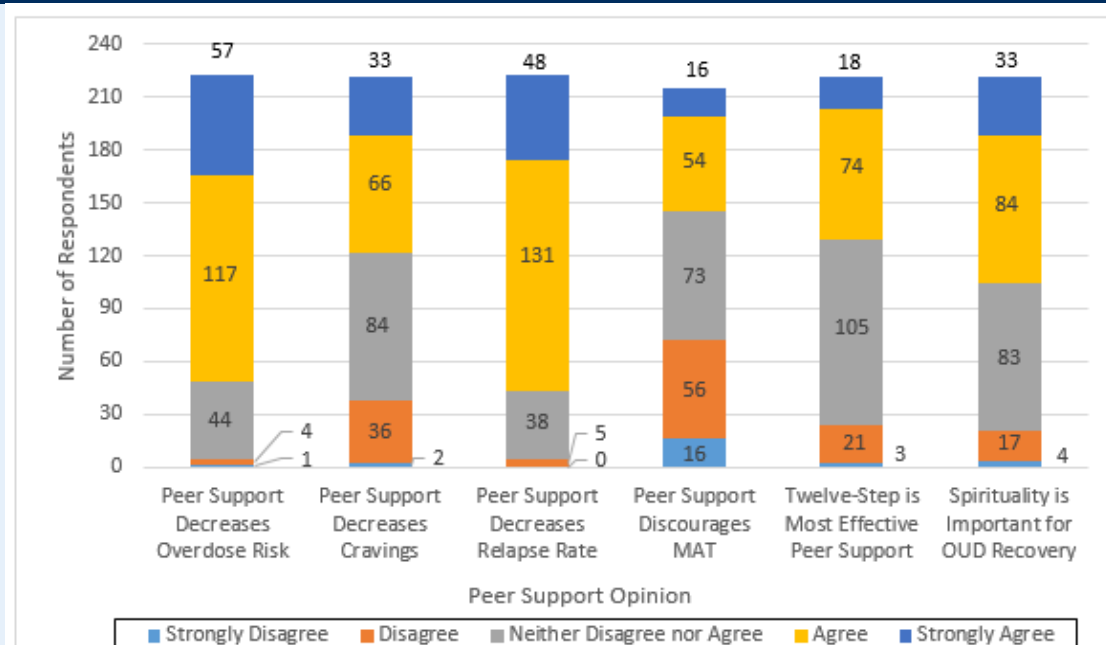
Figure 5. Respondents' Management Methods for Patients with Opioid Use Disorder



respondents (32.3%) having learned about the former and 70 (30.0%) having learned about the latter.

When asked about peer support in MAT, respondents generally agreed that participation in peer support groups decreased risk of death in patients from opioid overdose (n=174, 78.0%) and decreased rates of relapse (n=179, 80.5%) (Figure 6). There were mixed opinions, however, on whether peer support groups decreased cravings for opioids or discouraged the use of MAT for OUD.

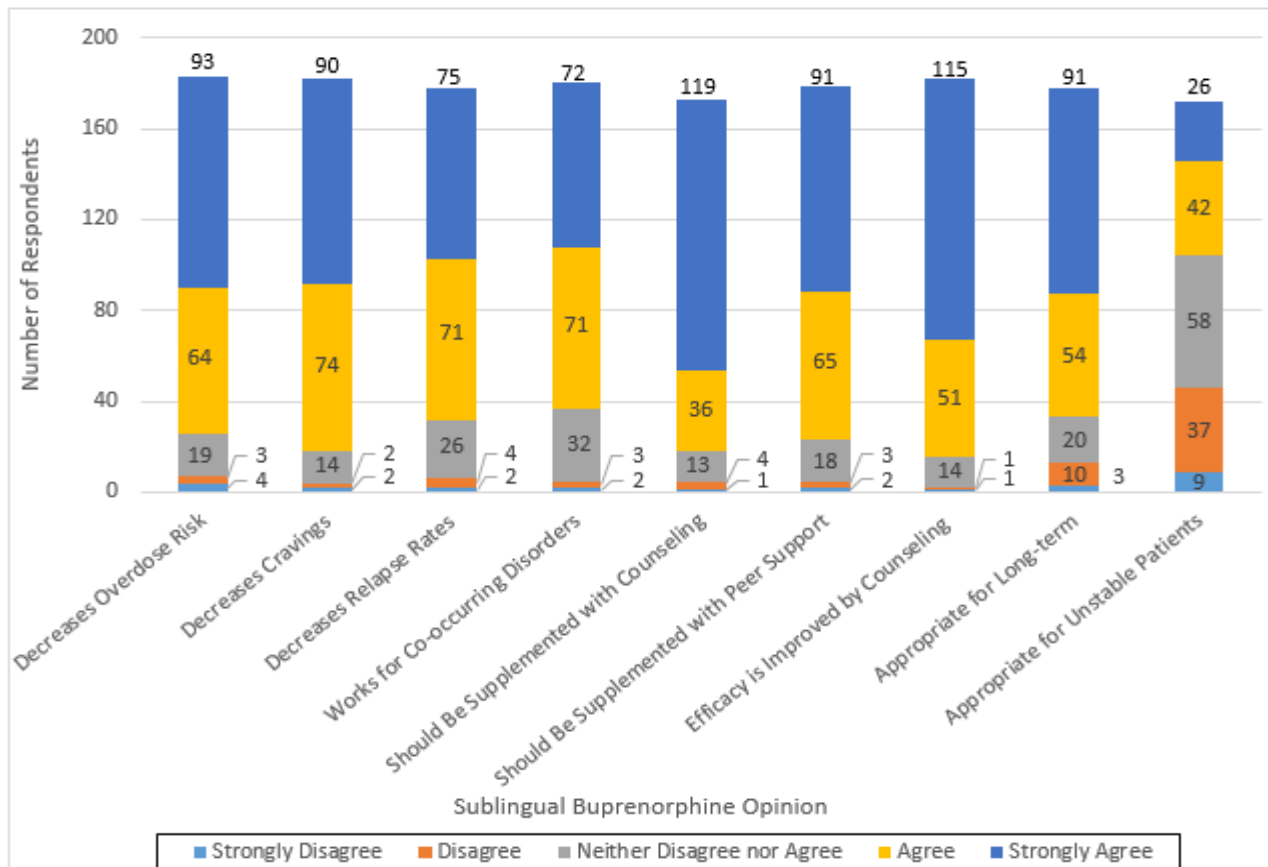
Figure 6. Respondents' Opinions on Peer Support



Medication-Assisted Treatment Drug Prescribing

Only about half of respondents (n=108, 45.6%) had a buprenorphine waiver, and a mean of 9.99 patients were being prescribed buprenorphine under that waiver (n=153, median=2, SD=14.56). Respondents tended to agree that buprenorphine decreases overdose risk (n=157, 85.8%), cravings (n=164, 90.1%), and relapse rates (n=146, 82.0%) (Figure 7). There was no consensus about whether buprenorphine was appropriate for unstable patients,* with 68 respondents agreeing it was (39.5%), 46 disagreeing (26.7%), and 58 neither agreeing nor disagreeing (33.7%). As for buprenorphine diversion or misuse, most respondents did not feel that patients who legally obtain the drug would divert it (n=113, 57.4%); however, they could not agree on how often buprenorphine was diverted (34.5% “often” vs 30.4% “not often”) or if it was appropriate for unstable patients (31.3% “agree” vs 29.7% “disagree”).

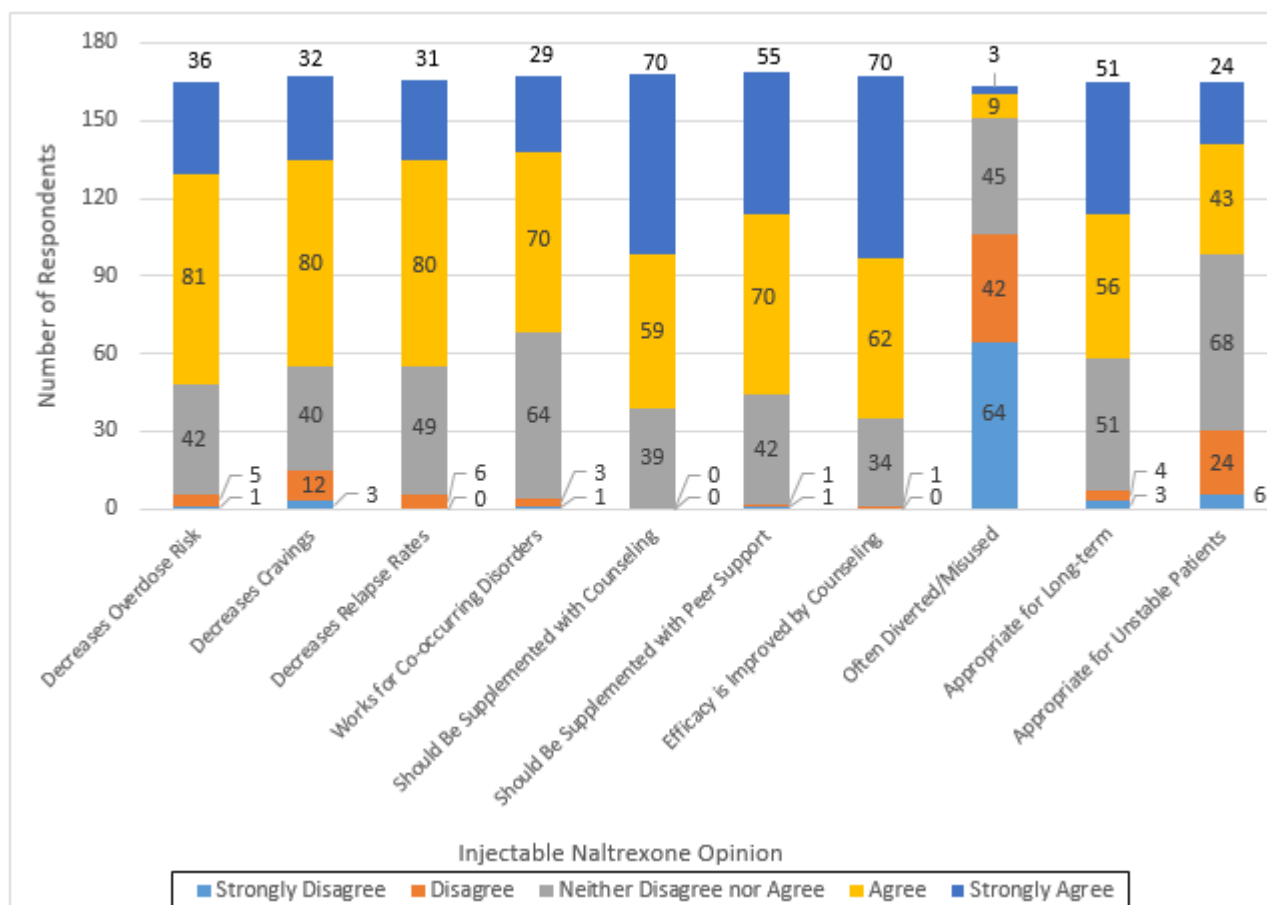
Figure 7. Respondents’ Opinions on Sublingual Buprenorphine to Treat Opioid Use Disorder



As for extended-release injectable naltrexone (Vivitrol™), respondents agreed that it decreased risk of opioid overdose (n=117, 70.9%), decreased cravings for opioids (n=112, 67.1%), and decreased relapse rates in patient (n=111, 66.9%) (Figure 8.) Respondents also felt that extended-release injectable naltrexone worked well in patients with co-occurring health disorders (n=99, 59.3%) and was rarely misused/diverted (n=106, 65.0%). However, there was no agreement on whether the drug was appropriate for unstable patients (40.6% “agree” vs 18.2% “disagree”), which revealed respondents were not knowledgeable about best practices for naltrexone. According to the American Society of Addiction Medicine (ASAM), induction into naltrexone treatment should not be initiated unless the patient has been free of short-acting opioids for about 6 days, and long-acting opioids for between 7 and 10 days.²⁴

*“Unstable patients” was not explicitly defined in the survey. We assumed that the nurse practitioner or physician assistant completing the survey would interpret it as patients who were not actively misusing opioids or experiencing acute withdrawal symptoms, but it is possible that it was interpreted differently among respondents.

Figure 8. Respondents' Opinions on Extended-Release Injectable Naltrexone to Treat Opioid Use Disorder



Like buprenorphine and naltrexone, respondents generally agreed that methadone decreased risk of opioid overdose ($n=119$, 58.3%), cravings for opioids ($n=149$, 73.0%), and rates of relapse for patients with OUD ($n=118$, 58.1%) (Figure 9). However, unlike the other two medications, methadone was not regarded as being appropriate for unstable patients (41.2% “inappropriate”).

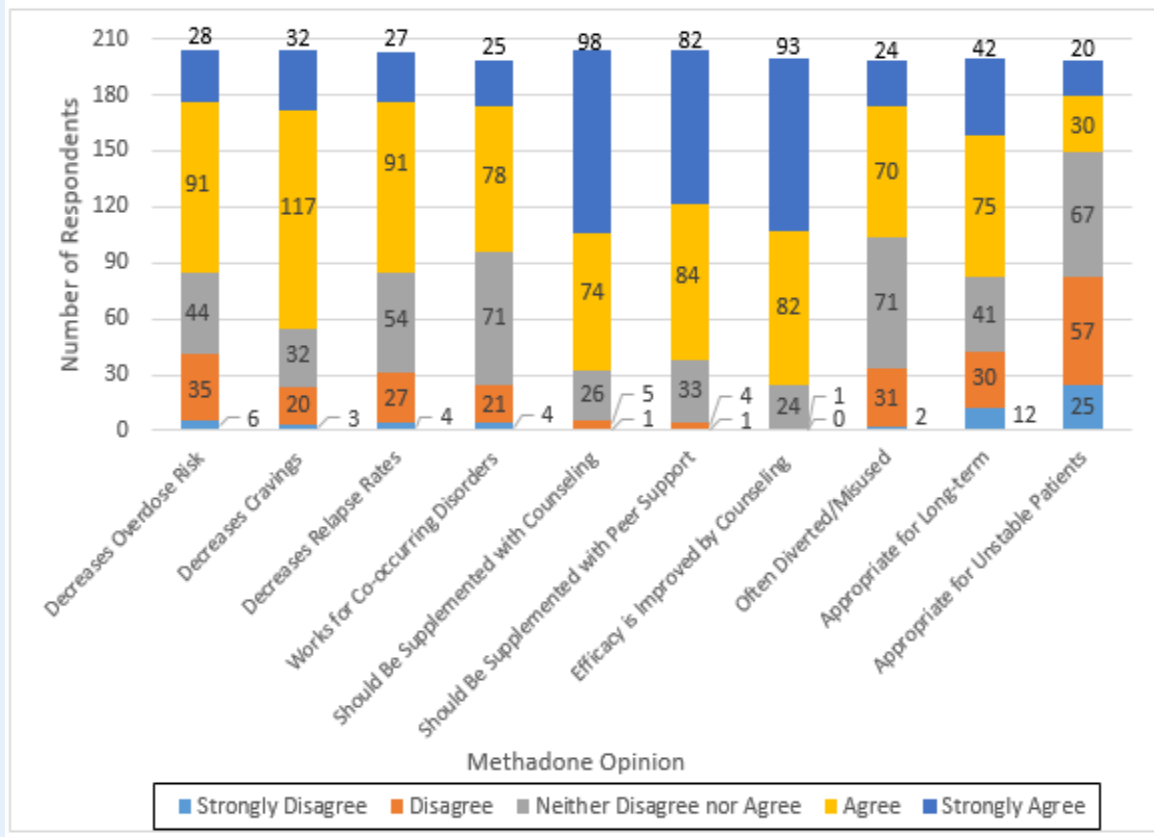
For buprenorphine, naltrexone, and methadone, respondents overwhelmingly agreed that the drug therapy should be supplemented with counseling (89.6%, 76.8%, and 84.3%, respectively) or peer support (87.2%, 74.0%, and 81.4%). Respondents also agreed that the efficacy of all three medications were improved with counseling (91.2%, 79.0%, and 87.5%).

Lastly, regarding naloxone, respondents were undecided about whether it was appropriate to always discuss the opioid antagonist with all patients with OUD (53.6% “usually/always” vs 29.0% “rarely/never”) or their families (48.3% “usually/always” vs 32.0% “rarely/never”).

Treatment Barriers

One hundred sixty-four respondents generally favored expanding MAT (79.9%), 9 generally disfavored expanding MAT (5.5%), and 24 were ambivalent or indifferent (14.6%). Respondents cited the following primary reasons for favoring MAT expansion: that MAT was an evidence-based practice, that it prevents overdose and relapse, and that the respondent had personal experience with successful treatments. Primary reasons for opposing expansion were that MAT was frequently misused, the medications are often diverted, and providers were trading one chemical dependency for another. Ambivalent or indifferent responses came from providers with no practical experience with MAT, or who thought that treatment should be tailored to the individual’s needs.

Figure 9. Respondents' Opinions on Methadone to Treat Opioid Use Disorder



Of the 20 potential barriers for prescribing buprenorphine raised in the survey, the majority of responses identified 18 as either “not a barrier at all” or “somewhat of a barrier.” The strongest barriers identified were the insufficient resources for patient detoxification and psychosocial support within the provider’s community. When asked to suggest other barriers, responses included:

1. having no collaborating physicians in the area;
2. having no collaborating physicians with a buprenorphine waiver in the area; and
3. having moral dilemmas about engaging in MAT with addicted patients.

As for implanted buprenorphine (Probuphine™), nearly two thirds of respondents (n=167) were not treating patients with the drug, and therefore did not have an opinion on its barriers. Of the third who were, the strongest barriers they identified were insufficient experience (55.4%) and training (54.5%) with the drug, and requirements for prior insurance authorization (63.3%). When asked to suggest other barriers not included in the survey, respondents claimed that oral buprenorphine was easier to administer than the implanted variant.

Lastly, when asked about injectable naltrexone, slightly more than half of respondents (n=130) had experience prescribing the medication to their patients, but did not identify any of the 15 included options as moderate or strong barriers. The weakest barriers identified were concerns about diversion of the drug (80.7% “not a barrier”), law enforcement oversight (79.3% “not a barrier”), and licensing board oversight (77.8% “not a barrier”). When asked to identify other barriers not included in the survey, the majority of feedback was centered on the high cost of naltrexone and a lack of insurance coverage for the drug.

Key Informant Interviews

The National Council conducted four key informant interviews, two interviews with nurse practitioners and two interviews with physician assistants, which revealed information about barriers and opportunities related to MAT waivers.

Barriers

The key informant interviews conducted by The National Council revealed three central barriers to MAT prescribing for nurse practitioners and physician assistants.

1. Time: Nurse practitioners and physician assistants must take both the 8-hour DATA waiver course for treatment of OUD that physicians currently take, and an additional 16 hours of training. All interviewees described this as a burdensome time commitment, and only one participant received time away from normal job responsibilities to complete the training.
2. Financing: Along with the time commitment to obtaining a waiver, there is a financial commitment from nurse practitioners and physician assistants to pursuing the training as well. Some trainings require an out-of-pocket financial investment from the. For example, there are several options to obtain the initial 8-hour certification for a waiver through DATA; however, some of these options require registration fees. Interview participants noted that these fees are not covered by their employing organization.
3. Prescribing rights of nurse practitioner and physician assistants: All interviewees expressed dissatisfaction with the 24-hour training requirement. One participant noted that they can prescribe other controlled substances without extensive training and felt there should not be a difference when prescribing buprenorphine.

Opportunities

The key informant interviews also revealed three opportunities surrounding nurse practitioners and physician assistants prescribing MAT.

1. Free training: Although interviewees noted they were not compensated for time off to complete the required training, all were able to access free materials for the additional 16 hours of education through several certified organizations. They were able to complete these trainings on their own time at their own pace.
2. Increased patient capacity: One interviewee noted that after obtaining a waiver he was able to provide care for a more diverse client population and expand his scope of services. Another interviewee was encouraged by their peers to pursue a waiver.
3. Financially viable for organizations: All interviewees agreed that nurse practitioners and physician assistants are financially viable alternatives to physicians for organizations that are interested in providing MAT services. Typically, nurse practitioners and physician assistants cost an organization less than a physician to employ, and yet can provide many similar services. Nurse practitioners and physician assistants also command a lower reimbursement rate than physicians for these services, but organizations may still save money through hiring a nurse practitioner or physician assistant over a physician, depending on the number of patients they serve, their payer mix, and the amount of MAT services they provide. One participant was encouraged by her organization to pursue a waiver because of increased interest around MAT services.

Conclusions

Of the 240 responses to the online survey, 118 were from nurse practitioners and 122 were from physician assistants. Although both occupations tended to be white and educated at a master's level, nurse practitioners tended to be female (79.7%) and physician assistants tended to be male (68.0%). In terms of practice

specialties, 36% were either specialized in mental illness, dual diagnosis, SUD, or some combination of the three; 21% were specialized in family medicine or primary care; 28% had an unlisted specialty; and 15% had no specialty. The median respondent had between six and 10 years of experience practicing medicine.

The majority of nurse practitioners and physician assistants surveyed screened between 76% and 100% of their new patients for SUDs, and treated between 0% and 25% of their patients for the same. Nurse practitioners and physician assistants were more likely to rely on physical observation, patient self-reporting of drug use/cravings, and urinalysis for screening OUD in patients than on standardized mental health and addiction screening tools/questionnaires.

Respondents were typically very confident in their ability to detect OUD in a patient, but less confident in their ability to treat it, suggesting possible lack of training or familiarity with MAT best practices. The surveyed nurse practitioners and physician assistants were most familiar with oral buprenorphine, followed by methadone and oral naltrexone. These were the three medications most commonly discussed with patients and used to treat OUD in the respondents' practice. For all three medications, respondents agreed that they decreased cravings, reduced rates of relapse, and reduced rates of overdose. They also agreed that MAT should be combined with counseling and peer support, and that this type of support increases the efficacy of MAT. Those surveyed were generally unfamiliar with implanted or injected buprenorphine – two more recent formulations of these medications.

The key informant interviews highlighted the opportunities that nurse practitioners and physician assistants provide for increasing access to MAT. Not only are the services they offer comparable to those of physicians, but provider organizations can hire a nurse practitioner or physician assistant for less than the cost of a doctor. However, the training that DATA and CARA require of these occupations to undertake before being able to prescribe methadone and buprenorphine can be costly both in time and money, especially if that training is redundant. Many nurse practitioners and physician assistants are authorized to prescribe Schedule II or III substances, and might already be familiar with the dangers these medications pose. CARA training, therefore, might be more acceptable to nurse practitioners and physician assistants if it focused more heavily on best practices and quality improvement, instead of on the specifics of the medications.

Limitations

This study is subject to limitations. The final response rate was roughly 6.4%, despite the \$25 incentive. The timeframe of survey dissemination (i.e. during July) may have contributed to this low response rate, along with the length and comprehensiveness of the survey. Shorter, concise surveys targeting one of the survey themes may attract more respondents. Caution should be taken when generalizing responses to the broader population of nurse practitioners and physician assistants.

Policy Considerations

Based on results and conclusions drawn from this fielded survey, the first to glean detailed information about nurse practitioner/physician assistant experiences and knowledge post-CARA policy changes, we recommend that policymakers consider the following to optimize nurse practitioner and physician assistant MAT prescribing for OUD:

1. Adjusting CARA training content: One key informant remarked the training required for a buprenorphine waiver under CARA was redundant, as the interviewee was already authorized to prescribe other Schedule III controlled substances. All 50 states and DC authorize nurse practitioners to prescribe Schedule III–V controlled substances,²⁵ and 44 states allow physician assistants to prescribe Schedules II–V.²⁶ At the same time, more than two thirds of survey respondents were unfamiliar with implanted buprenorphine, even though it has been available since 2016.²⁷ These findings suggest the most recent MAT developments are not being disseminated quickly through the nurse practitioner and physician assistant workforces. Instead of covering material that nurse practitioners and physician assistants might already be familiar with, such as the dangers of certain classes of drugs, CARA trainings should focus instead on current MAT best practices and the newest formulations of MAT medications.

2. Incentivizing CARA training uptake: Increasing patient access to MAT is largely dependent on increasing the number of buprenorphine waivers among providers and how many patients they treat under those waivers. Two behavioral economic methods for increasing the proportion of providers undertaking CARA's required training to obtain a buprenorphine waiver are: lowering the perceived costs of obtaining a waiver, and increasing the perceived benefits of having a waiver. Perceived costs, in this case, are the time and financial requirements to fulfilling CARA's requirements, and the perceived benefits are the size of the patient panels providers would be able to treat with buprenorphine.
 - a. Addressing barriers to obtaining a waiver: The key informant interviews suggested free training options were available to meet CARA's 24-hour training requirement, such as the Providers Clinical Support System (PCSS) training. PCSS is a program funded by SAMHSA intended to provide free education to primary care providers in evidence-based practices to treat OUD.²⁸ Free trainings reduce the financial burden to nurse practitioners and physician assistants seeking a buprenorphine waiver, and should be further developed, promoted, and utilized.
 - b. Expanding patient panels: Besides lowering the time or cost associated with obtaining a buprenorphine waiver, policymakers could encourage more nurse practitioners and physician assistants to fulfill CARA's requirements by expanding the number of patients the waiver would allow the provider to treat with buprenorphine. The 45.6% of surveyed nurse practitioners and physician assistants who had such a waiver were treating an average of 9.99 patients with buprenorphine. This could be due to the limited patient panels that nurse practitioners and physician assistants are given under CARA and also because the waiver opportunity is so new. If federal policymakers amended CARA, the limit of 30 patients could be expanded, allowing more OUD patients to be treated with buprenorphine under a single waiver. Being able to treat more patients would allow nurse practitioners and physician assistants to bill for more MAT services, making the choice of undertaking CARA's requirements more fiscally viable. To maintain high-quality treatment, the 30 patient limit could remain intact until a CARA-approved provider achieves certain quality metrics within a defined time period. This way, only providers who have proven themselves to be safe prescribers would be given authority to offer more MAT services.
3. Standardizing graduate program addiction training: The online survey suggested some nurse practitioners and physician assistants were misinformed about some basic MAT information. Twelve respondents agreed Naltrexone was often diverted, even though concerns about diversion of this drug are unsubstantiated because it is not an addictive, controlled substance and because VivitrolTM is injected onsite by a medical provider. Furthermore, respondents did not agree about whether naltrexone was appropriate for unstable patients, despite ASAM best practices stating naltrexone should not be administered to patients who have recently used an opioid.²⁴ The survey also suggested that nurse practitioners and physician assistants are more confident in their abilities to diagnose OUD than to treat it and also were not knowledgeable about newer formulations (namely, injectable and implantable buprenorphine). If education accreditation organizations, like the Commission on Collegiate Nursing Education and the Accreditation Review Commission on Education for the Physician Assistant, made MAT or OUD treatment a core requirement of the graduate nurse practitioner/physician assistant curriculum, the future respective workforces could be more knowledgeable about all available pharmacotherapies, and more confident in their ability to treat OUD.²⁹ Another approach could be to incorporate the entirety of CARA's training requirements into graduate programs, thereby equipping all graduating nurse practitioners and physician assistants with a buprenorphine waiver and the training necessary to effectively utilize it. The Physician Assistant Education Association, under a SAMHSA grant, is attempting to do just that with graduate physician assistant programs.³⁰
4. Connecting students/providers with MAT mentors: Besides making SUD and OUD treatment part of the core curriculum for nurse practitioner/physician assistant graduate programs, as in Policy Consideration 3, increasing students' and current professionals' access to active, peer MAT providers is key to training a competent MAT workforce. In some training/practice locations (e.g., rural settings,) students or providers may not have access to local MAT providers. Nurse practitioners and physician assistants reported this barrier in the online survey, stating they either did not have a local collaborating physician with a buprenorphine waiver. Telecommunication technology can alleviate this issue. Project ECHO, for instance, is a telehealth model that connects specialist care teams at an academic "hub" location with clinicians in various, distant sites or "spokes."³¹ Through the online platform, the distant clinicians can engage in mentoring, attend webinars, discuss specific cases, and engage with their specialist provider peers in a

way they otherwise could not. This same education method could be implemented in graduate program settings, or for continuing medical education credits.

5. **Integrating care settings:** From the online survey, it was clear that although nurse practitioners and physician assistants agree that supplementing MAT with peer support and counseling was ideal, many nurse practitioners and physician assistants reported a lack of psychosocial support and detoxification services in their community. Moreover, respondents felt that they would benefit from greater peer support of their own, much like physicians treating in this space,³² and perhaps this would increase their confidence in not just diagnosing but also treating OUD. One method for increasing access to these services, as well as increasing providers' competency in treating OUD, is to integrate behavioral health and medical provider settings. This could be achieved through physical co-location, or through quality telehealth.³³ Funding for SUD treatment integration can come from State Targeted Response grants authorized by the 21st Century Cures Act,³⁴ and any Medicare savings achieved through integration can be shared with the providers via the Affordable Care Act's Shared Savings program.³⁵ Methods for effectively launching statewide health system integration include the Maryland Collaborative Model of having one academic center serve as a statewide coordinator and educator for other healthcare centers,³⁶ and Vermont's Hub-and-Spoke model that coordinates care for OUD patients—regardless of where the patient enters the health system.³⁷
6. **Reversing stigma or MAT misconceptions:** Some nurse practitioners and physician assistants responded to the online survey believed that MAT is an immoral or dangerous practice. These opinions are not in keeping with the body of evidence on MAT.^{6–9} It is unclear whether these opinions are cultural or personal in nature, or were instead picked up during education and training. If the latter, then graduate programs for nurse practitioners and physician assistants could address these misconceptions by implementing coursework to help identify and reduce stigmas related to SUD. Continuing education courses and mentorships in addiction training could also include references to the peer-reviewed evidence evaluating MAT. Such interventions have proven effective at lowering stigma outcome measures both in the public, generally, and in medical students, specifically.³⁸

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