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Responding to Opioid Use Disorder: Identifying the Therapeutic Commitment of Maine Nurse Practitioners

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Responding to Opioid Use Disorder:
Identifying the Therapeutic Commitment of Maine Nurse Practitioners
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Abstract

Background: Buprenorphine, an underutilized pharmacotherapy, can play a key role in closing the substantial opioid use disorder (OUD) treatment gap in the United States. Although 2016 US legislation authorized trained nurse practitioners (NPs) to obtain the Drug Enforcement Agency waiver to prescribe buprenorphine for OUD, many NPs do not have the waiver, and a large proportion of waived NPs do not prescribe to capacity. **Purpose:** To identify the therapeutic commitment of Maine NPs to OUD as well as understand why Maine NPs do not adopt and utilize buprenorphine for the treatment of OUD. **Review of Evidence:** Commitment to OUD and adoption of buprenorphine in clinical practice is influenced by factors such as professional support and education. Few studies have examined NP commitment to OUD and adoption of buprenorphine. **Project Design:** A cross-sectional, Web-based survey measured the therapeutic commitment of Maine NPs to OUD with the Drug and Drug Problems Perceptions Questionnaire. Resources were identified that would encourage those without the buprenorphine waiver to obtain it and those with the waiver to accept more patients. **Methods:** The online survey was delivered to a convenience sample of NPs in Maine ($N=299$) in fall 2018. **Results:** Maine NPs have a moderately high degree of overall therapeutic commitment to OUD. Maine NPs in rural ($p=.018$) and urban ($p=.024$) practice settings and those with the buprenorphine waiver ($p<.001$) had significantly higher overall therapeutic commitment scores than their suburban and non-waivered NP counterparts. Professional support and education were priority resources to increase buprenorphine adoption and utilization. **Conclusion:** To facilitate NP commitment to OUD as well as NP adoption and utilization of buprenorphine, a comprehensive approach with special emphasis on professional support and education is warranted.

Keywords: DDPPQ, therapeutic commitment, nurse practitioner, opioid use disorder, buprenorphine

Introduction and Background

The United States (US) is in the midst of a devastating epidemic of fatal opioid overdoses. Provisional data from 2017 reveal that nearly 50,000 US overdose deaths involved opioid analgesics (e.g., morphine, oxycodone), along with heroin and illicit synthetic opioids (e.g., fentanyl, carfentanil), yielding a four-fold increase in the total number of US opioid overdose deaths since the turn of the 21st century (National Institute on Drug Abuse [NIDA], 2018). Consequently, on average, 130 Americans die every day from opioid overdoses (Centers for Disease Control and Prevention [CDC], 2018). Opioid overdose fatalities are closely linked with the rising rates of opioid use disorders (OUDs) (Soyka, 2015). At least 3 million people in the US meet the diagnostic criteria for an OUD (US Office of the Surgeon General, 2016), which is defined as a problematic pattern of opioid use causing significant impairment and failure to meet major responsibilities at home, work, or school (American Psychiatric Association, 2013). Untreated OUD increases the risk of early death, typically from overdose, trauma, suicide, or infectious disease transmission, by a factor of 20 (Evans et al., 2015; Schuckit, 2016; Schwartz et al., 2013; Teesson et al., 2015).

Despite the severity of the opioid epidemic, only 10% of the three-million Americans who meet diagnostic criteria for an OUD are receiving evidence-based medication assisted treatments (MATs) (US Office of the Surgeon General, 2016). Medication assisted treatment, which combines the use of medication (e.g., buprenorphine, methadone, naltrexone) with counseling and behavioral therapies, is the current standard of care for OUD and is endorsed by the World Health Organization (WHO) as an International Standard for the Treatment of Drug Use Disorders (Gerra, Koutsenok, Saenz, & Busse, 2015). Buprenorphine, one of the three medications used as part of MAT, has high potential to address the persistent OUD treatment

gap. Due to several of its favorable pharmacokinetic features (e.g., low side effect profile, limited abuse potential, ease of management), buprenorphine is currently approved for use in US primary care settings. Primary care-based buprenorphine demonstrated effectiveness at reducing the risk of opioid overdose, improving social functioning, and decreasing infectious disease rates (Kresina, Melinda, Lee, Ahadpour, & Robert, 2015; Mattick, Breen, Kimber, & Davoli, 2014; Schwartz et al., 2013).

Primary care-based buprenorphine is now a well-established (Gerra et al., 2015), evidence-based (Mattick et al., 2014; Schuckit, 2016), and cost-effective (Schackman, Leff, Polsky, Moore, & Fiellin, 2012) treatment approach for OUD. However, access to this life-saving treatment can be challenging. Historically, many of the barriers to accessing buprenorphine for OUD were related to the workforce. Workforce barriers include shortages of physicians, insufficient training, education, and experience, lack of peer and organizational support, stigma, and inadequate reimbursement (Haffajee, Bohnert, & Lagisetty, 2018). The Drug Addiction Treatment Act of 2000 (DATA 2000) was the first enacted US law of the 21st century that aimed to overcome several workforce barriers; therefore, improving MAT access for Americans by 1) increasing the pool of qualified physicians who could prescribe buprenorphine for OUD; and 2) recognizing buprenorphine as a standard of care in primary care settings (Thomas et al., 2017). Under DATA 2000, any physician who completes eight hours of training is eligible to obtain a Drug Enforcement Administration (DEA) waiver to prescribe buprenorphine for OUD (Thomas et al., 2017).

Although the pool of physicians with a DEA waiver has tripled since the enactment of DATA 2000 (Stein et al., 2015), Substance Abuse and Mental Health Resource Administration (SAMHSA, 2019) data indicate that less than 4% of all licensed US physicians are approved to

prescribe buprenorphine for OUD (Haffajee et al., 2018). Potential capacity for prescribing buprenorphine has increased nationwide, but the treatment gap has not significantly narrowed due to the rising numbers of Americans with OUDs (Jones, Campopiano, Baldwin, & McCance-Katz, 2015). Passage of the Comprehensive Addiction and Recovery Act of 2016 (CARA 2016) represented an important legislative step by US lawmakers towards improving MAT access by authorizing nurse practitioners (NPs) and physician assistants (PAs) to obtain the DEA waiver to prescribe buprenorphine for OUD after completing 24 hours of training (US Congress, 2016). Additional legislation passed in 2018 made this allowance permanent (US Congress, 2017). Representing a large portion of the healthcare workforce, NPs and PAs are projected to make significant contributions to buprenorphine treatment access (Andrilla, Patterson, Moore, Coulthard, & Larson, 2018b).

Problem Statement

Although the incorporation of trained NPs and PAs into the primary care MAT workforce has modestly increased the provider supply, the majority of NPs and PAs have not obtained the DEA waiver to prescribe evidence-based buprenorphine for OUD (Andrilla, Moore, Patterson, & Larson, 2018a). Further, of the small percentage of NPs and PAs who have obtained the DEA waiver to prescribe buprenorphine for OUD, many are not prescribing buprenorphine to full treatment capacity (Sigmon, 2015). Developing strategies to increase the pool of NPs and PAs who both receive the DEA waiver to prescribe buprenorphine and prescribe to full treatment capacity are critical to helping combat the opioid overdose epidemic and the rising rates of OUDs. However, actionable approaches to address workforce barriers to adopting and prescribing buprenorphine for OUD among NPs and PAs are lacking. If NPs and PAs face

similar challenges as reported by physicians, the impact of their potential contributions under CARA 2016 could be greatly diminished.

Purpose

The focus of the scholarly project is the therapeutic response of Maine NPs to the rising rates of OUDs nationwide. First, the scholarly project sought to identify the overall therapeutic commitment of Maine NPs in relation to caring for individuals with OUD. This included exploring the various attitudinal components that comprise role security (e.g., role adequacy, legitimacy, and support) and therapeutic commitment (e.g., role satisfaction and self-esteem) (Shaw, Cartwright, Spratley, & Harwin, 1978). Second, the scholarly project sought to characterize reasons that Maine NPs may not be waived to prescribe buprenorphine for OUD and reasons for not prescribing to full treatment capacity among waived Maine NPs. The goals of the scholarly project were to provide insight to the advanced practice registered nursing (APRN) community in Maine regarding actionable approaches that might raise NP therapeutic commitment to patient care involving OUD as well as augment adoption and prescribing of buprenorphine for OUD.

Research Questions

In alignment with the overarching aim of exploring the therapeutic response of Maine NPs in relation to caring for individuals with OUD, the scholarly project was designed to answer three fundamental questions:

1. How therapeutically committed are Maine NPs in relation to caring for patients with OUD?
2. Is buprenorphine waiver status (waivered or not waivered) associated with overall therapeutic commitment scores among Maine NPs?

3. Is practice setting (urban, suburban, or rural) associated with overall therapeutic commitment scores among Maine NPs?

Hypotheses

In alignment with the research questions outlined above, the scholarly project tested three hypotheses:

1. Collectively, Maine NPs will report an overall therapeutic commitment score greater than 100, demonstrating positive attitudes towards caring for individuals with OUD.
2. Maine NPs who have obtained the buprenorphine waiver will report higher overall therapeutic commitment scores than their non-waivered NP counterparts.
3. Maine NPs in rural practice settings will report higher overall therapeutic commitment scores than their NP counterparts in suburban and urban practice settings.

Rationale

Given the nationwide focus on the opioid epidemic, the project leader predicted that Maine NPs as a collective group will report moderately high scores of overall therapeutic commitment (>100) to individuals with OUD. The project leader also predicted that Maine NPs with the DEA waiver to prescribe buprenorphine for OUD will report higher overall therapeutic commitment scores than their non-waivered NP counterparts. Additional training and professional support—vital to the path of becoming a waived healthcare provider—are important factors that raise therapeutic commitment (Brooklyn & Sigmon, 2017; Sigmon, 2015). Lastly, since NPs are increasingly present in rural settings (Barnes, Richards, McHugh, & Martsolf, 2018) and the opioid epidemic is of particular concern in rural Maine where many residents encounter multiple socioeconomic vulnerabilities that negatively impact their ability to access care (Keyes, Cerdá, Brady, Havens, & Galea, 2014; Lenardson, Gale, & Ziller, 2016), the

project leader predicted that NPs in rural settings will report higher overall therapeutic commitment scores than their NP counterparts in urban and suburban settings.

Review of Evidence

Leveraging the NP Workforce

Until passage of CARA 2016, NPs have been an untapped resource that could be used to help alleviate the shortage of healthcare providers authorized and willing to prescribe buprenorphine for OUD. With more than 248,000 NPs licensed in the US, 86.6% are certified in an area of primary care (American Association of Nurse Practitioners [AANP], 2018). The CDC and WHO advocate for the expansion of buprenorphine into primary care for several reasons (Dowell, Haegerich, & Chou, 2016; Gerra et al., 2015). Patients with OUD tend to prefer primary care-based buprenorphine because it is often a holistic setting that offers more personalized and integrated care and the unique opportunity to develop a long-term relationship with their provider of choice (Barry et al., 2009; Fox, Masyukova, & Cunningham, 2016; Haffajee et al., 2018). Patients with OUD also report that primary care-based buprenorphine mitigates the stigma and shame of being seen at a specialty clinic (Rawson, Rieckmann, & Gust, 2014). With the profession's reputation as part of the most trusted and ethical profession nationwide for over a decade, coupled by their double-digit growth and one-billion patient visits annually, NPs are positioned as an essential component to the expansion of access to evidence-based buprenorphine for OUD in US primary care settings (AANP, n.d.). Since NPs in primary care provide high-quality, patient-centered care and have patient outcomes and satisfaction scores comparable to physician colleagues (Stanik-Hutt et al., 2013), leveraging the pool of trained NPs to prescribe buprenorphine can have a major impact in terms of improving treatment access, quality, and capacity.

Contributions of the NP Early Adopters

Since CARA 2016 was enacted, approximately 6,000 (2.4%) NPs have obtained the DEA waiver and become early adopters of buprenorphine treatment in their practices, which in turn created critical access points to more than 180,000 patients nationwide (Knestrick, 2018). The inclusion of NPs as prescribers of buprenorphine for OUD adds tremendous value for rural communities where one in four medical providers is a NP (Barnes et al., 2018). More than half of rural counties in the US lack a physician with a buprenorphine waiver (Andrilla et al., 2018a). Primary care-based buprenorphine delivered by trained NPs provides an effective alternative to receiving care in specialized treatment centers, which are often unavailable in most rural areas, have prolonged waiting periods, and require patients to drive long distances (Sigmon, 2015). Allowing NPs to obtain the DEA waiver and prescribe buprenorphine for OUD increases the overall number of rural patients potentially treated by 10,777, according to a recent projection (Andrilla et al., 2018b). Likewise, Wilson and Fagan (2017) demonstrated the addition of a buprenorphine-certified NP increased the number of patients with OUD treated in rural North Carolina. The evidence points to the urgent need for the development of innovative strategies to increase NP adoption and prescribing of buprenorphine in primary care, and ultimately, ensure timely and equitable MAT is available for individuals with OUD.

NP Workforce Barriers

The emerging role of trained NPs in buprenorphine treatment presents a unique set of regulatory challenges for the profession related to practice authority. Although CARA 2016 addresses the differences in state NP practice environments, laws that prohibit full practice authority can reduce buprenorphine access in almost half of the states in the nation (Fornili & Fogger, 2017). In states where NPs have full practice authority, a greater percentage of NPs were

expected to obtain and use their DEA waiver to prescribe buprenorphine for OUD than had done so by early 2018 (Andrilla et al., 2018b). Full practice authority states also saw larger actual and relative projected increases in the estimated number of patients with OUD being treated with buprenorphine (Andrilla et al., 2018b). Whereas physicians can prescribe buprenorphine for a maximum 275 patients with OUD, NPs are limited to 30 patients during their first year of prescribing and 100 thereafter (Andrilla et al., 2018b; Haffajee et al., 2018; Fornili & Fogger, 2017). Practice authority and patient limit barriers erode the potential contributions of NPs at a time when it is critical to recruit and retain NPs with the DEA waiver to prescribe buprenorphine in the healthcare workforce.

Facilitators of Effective Primary Care-Based Buprenorphine

The overarching aim of recent policy efforts by US lawmakers and public health leaders is to raise the commitment of the primary care workforce to patient care involving OUD. Commitment to OUD-related patient care is associated with increased professional motivation, self-esteem, and satisfaction (Becker & Fiellin, 2006; Palmer, Murphy, Piselli, & Ball, 2009; Shaw et al., 1978). However, the unique set of NP workforce barriers are a consequential threat to the long-term commitment and therapeutic response of NPs. To improve professional commitment to patient care involving OUD, the evidence suggests that 1) acknowledging a professional responsibility to respond, 2) professional training and education, and 3) professional support structures are necessary to recruit and retain buprenorphine-waivered prescribers, and to reach full treatment capacity. The identified facilitators showcase strategies to enhance the professional commitment of NPs in relation to the adoption and prescribing of buprenorphine for patients with OUD.

Professional Responsibility. Under CARA 2016, US lawmakers extended the professional responsibility of treating patients with OUD to trained NPs in primary care settings. The intentions of primary care-based buprenorphine are not only to improve MAT access, but also to further the perspective that OUD is similar to other chronic medical conditions (e.g., diabetes and hypertension), thereby diminishing the social stigma often attached to this patient population and long-term, evidence-based treatment (Rawson et al., 2014). Healthcare providers who believe it is their professional responsibility to respond to OUD in an evidence-based manner, similar to other diseases managed in their clinics, are more likely to execute an effective therapeutic response (Barnett, Hall, Fry, Dilkes-Frayne, & Carter, 2017; Shaw et al., 1978). Acknowledging a professional responsibility to respond to OUD with evidence-based buprenorphine in primary care is correlated with less stigmatizing attitudes (Duncan et al., 2015), and greater provider willingness to obtain and use the buprenorphine waiver to full treatment capacity (Andrilla, Coulthard, & Larson, 2017; Hutchinson, Catlin, Andrilla, Baldwin, & Rosenblatt, 2014). Organizations that promote a culture where responding to OUD is a professional responsibility are also more likely to see an effective therapeutic response to OUD in their frontline providers (Ober et al., 2017).

Professional Training and Education. Because primary care providers have largely been untrained or undereducated to respond effectively to OUD, they often feel they have nothing to offer the individual who presents with an OUD other than referral to a mental health specialist. Extending the ability to prescribe buprenorphine to trained NPs counters the common fallacy that they have nothing to offer patients with OUD in the primary care setting. Instead, the authority of trained NPs to prescribe buprenorphine gives this large portion of the primary care workforce an opportunity to furnish their patients with an effective, evidence-based MAT.

Primary care providers who engage in the professional training and education required to obtain the buprenorphine waiver improve their ability to detect OUD early and treat accordingly, contributing to enhanced care and outcomes for patients (Aldridge, Linford, & Bray, 2017). Additional training and education on OUD also facilitates provider confidence (Andrilla et al., 2017; Hutchinson et al., 2014), extinguishes provider skepticism of buprenorphine's effectiveness (Hutchinson et al., 2014), accelerates provider practices consistent with national guidelines (Quest, Merrill, Roll, Saxon, & Rosenblatt, 2012; Walley et al., 2008) as well as improves overall provider satisfaction with this patient population (Becker & Fiellin, 2006; Palmer et al., 2009).

Professional Support. Available professional support is vital for primary care providers, including NPs, as newly eligible prescribers of buprenorphine. This includes support from practice partners and organizational leadership as well as access to mental health specialists (Andrilla et al., 2017; Hutchinson et al., 2014; Molfenter et al., 2015). Effective communication and care coordination among the entire interdisciplinary team—primary care providers, practice partners, mental health specialists, social workers, nurses, counselors, and organizational leaders—boost the positive outcomes associated with primary care-based buprenorphine (Andrilla et al., 2017; Hersh, Little, & Gleghorn, 2011). The Vermont Hub and Spoke treatment model for individuals with OUD exemplifies ideal professional support, communication, and care coordination among the interdisciplinary team (Brooklyn & Sigmon, 2017; Sigmon, 2015). This innovative OUD treatment model, which creates specialized clinics (“hubs”) that provide consultation and support to a network of primary care providers (“spokes”), is predictive of obtaining the DEA waiver for buprenorphine and buprenorphine prescribing (Brooklyn & Sigmon, 2017; Sigmon, 2015).

The Theory of Therapeutic Commitment

Background

In London, England, during the mid-1970s, theorists Shaw and colleagues (1978) observed a general reluctance among non-specialist healthcare providers (equivalent to the 21st century US primary care provider) to work with the rising numbers of individuals with alcohol use disorder (AUD), hypothesizing that moralistic attitudes and behaviors were the primary contributors of this particular response. Since non-specialists felt like they had not received formal education or support to care for individuals with AUD, they were uncertain as to whether drinking problems came within their professional responsibilities. Consequently, many non-specialists felt insecure in their role when responding to individuals with AUD, which represented a considerable threat to their professional self-esteem. The non-specialist community did not blame their working situation for their feelings of insecurity, but chose a simpler rationalization of projecting their feelings of insecurity onto individuals with AUD, characterizing them as unmotivated and worthless. To protect their professional self-esteem, non-specialist providers safeguarded themselves by maintaining low commitment to individuals with AUD (Shaw et al., 1978).

Informed by their observations, Shaw and colleagues (1978) proposed that the key to leveraging the effectiveness of non-specialist providers was to provide education and training in a supportive working environment to improve their role security and therapeutic commitment. As their work progressed, Shaw and colleagues reconceptualized the question of how to improve the response into how to raise the therapeutic commitment of non-specialist providers to care for individuals with AUD. Shaw and colleagues firmly believed that improving the response to drinking problems was not a matter of connecting individuals with AUD to more specialists, but

rather focusing on broadening the base of the response to include non-specialist providers working within the community. A comprehensive community response could not be achieved without effective non-specialist providers. The non-specialist community, however, must be assisted in a direction away from role insecurity and towards a supportive environment in which they can attain the prime characteristics of clinical effectiveness—high therapeutic commitment (Shaw et al., 1978).

Overview

The theory of therapeutic commitment is a two-stage process in which the non-specialist healthcare provider first develops role security and then a sense of therapeutic commitment to individuals with substance use disorders (SUDs) (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007). Without role security, the healthcare provider cannot reach or maintain a position of therapeutic commitment to individuals with SUDs (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007). Figure 1 illustrates the project leader's visualization of Shaw and colleagues' (1978) theory of therapeutic commitment.

Stage 1: Role Security

Role security refers to the degree the healthcare provider feels secure about caring for individuals with SUDs (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007). The subconcepts that comprise role security include role adequacy, legitimacy, and support. Whereas *role adequacy* refers to the provider's knowledge base and skills in caring for patients with SUDs, *role legitimacy* refers to the provider's regard that care involving individuals with SUDs is his or her professional responsibility. *Role support* refers to the extent the provider feels supported to participate in care involving individuals with SUDs (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007).

Stage 2: Therapeutic Commitment

Therapeutic commitment refers to the degree the healthcare provider engages individuals with SUDs and finds this work personally and professionally rewarding (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007). The subconcepts that comprise therapeutic commitment include role motivation, satisfaction, and self-esteem. Whereas *role motivation* refers to the provider's desire to work with patients who have SUDs, *role satisfaction* refers to the provider's fulfillment of professional expectations while working with patients with SUDs. *Role self-esteem* refers to the provider's confidence while delivering care for patients with SUDs (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007).

The Relationship Between Role Security and Therapeutic Commitment

Strong role security is associated with high levels of therapeutic commitment (Anderson, 2006; Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007). To illustrate this relationship, the project leader created a new graphic visualizing role security as the key unlocking the healthcare provider's therapeutic commitment to individuals with SUDs in clinical practice (see Figure 1). To be role secure, the provider must maintain a firm grip on the key's bow, which represents role adequacy, legitimacy, and support. The lock, which represents the healthcare provider's therapeutic commitment to patients with SUDs in clinical practice, can only be opened by the key representing role security. The provider who maintains role security unlocks his or her therapeutic commitment to patients with SUDs and displays role motivation, satisfaction, and self-esteem (Shaw et al., 1978).

The Outcomes of a Role Secure and Therapeutically Committed Healthcare Provider

In relation to patient care involving SUDs, Shaw and colleagues (1978) posited that strong role security and high levels of therapeutic commitment among non-specialist healthcare

providers lead to improved clinical effectiveness, patient outcomes, and job satisfaction. Role security extinguishes the provider's role anxiety in relation to caring for individuals with SUDs, and therefore, positively impacts the provider-patient relationship. Non-specialist healthcare providers who are role secure and therapeutically committed will consistently and confidently demonstrate professional characteristics while engaging in care that involves individuals with SUDs, such as warmth and empathy, optimism about his or her clinical work, positive regard for the patient as a person of value and worth in lieu of placing blame, therapeutic listening skills, insight into the patient's lived experience, and the provision of sound professional advice (see Table 1) (Shaw et al., 1978).

Application

The general reluctance of non-specialist healthcare providers in London, England, during the mid-1970s, towards the rising number of individuals with AUD parallels the sentiments of many US primary care providers who are reluctant to engage in care involving patients with OUDs (Huhn & Dunn, 2017), despite the rising numbers of individuals with OUDs nationwide (Soyka, 2015). Although tapped by US policymakers to play a greater role in OUD treatment, many primary care providers lack clarity about their role, feeling unprepared and unsupported (Haffajee, Bohnert, & Lagisetty, 2018). Since NPs are increasingly filling critical gaps in primary care as evidenced by the recent authorization of trained NPs to obtain and use the DEA waiver to prescribe buprenorphine for OUD (US Congress, 2016), APRN leadership recognizes the urgent need to develop the NP's knowledge and skills related to the management of OUD in a supportive clinical environment, enabling NPs to deliver high-quality, cost-effective care for individuals with OUDs (Knestrick, 2018).

Inspired by Shaw and colleagues' (1978) theoretical framework, the aim of the scholarly project was to identify and describe the role security and therapeutic commitment of NPs in Maine in relation to caring for individuals with OUD. This aim was accomplished by measuring the overall therapeutic commitment of Maine NPs with the refined Drug and Drug Problems Perceptions Questionnaire (DDPPQ), which conforms to Shaw and colleagues' (1978) theoretical framework (Watson, Maclaren, & Kerr, 2007). For the purpose of the scholarly project, measuring the role security and therapeutic commitment of Maine NPs with the DDPPQ was an important first step to address factors that might raise the overall therapeutic commitment of Maine NPs to OUD, including but not limited to the knowledge and skills related to delivering quality care for individuals with OUD and the availability of professional support (Watson, Maclaren, & Kerr, 2007).

Project Design

Overview

A cross-sectional, Web-based survey design was constructed to collect data measuring the overall therapeutic commitment of Maine NPs to OUD as well as understand why NPs in Maine do not adopt and utilize buprenorphine for the treatment of OUD. The survey was delivered to a purposeful convenience sample of NPs licensed to practice in Maine known to the project leader or referred by project team members between October 2018 and November 2018. The survey was classified as exempt from human research by the Belmont University Institutional Review Board. Participation was voluntary and all responses were kept confidential and anonymous.

Population

There are approximately 1,700 NPs licensed to practice in Maine with a mean age of 49 (Skillman, Stubbs, & Dahal, 2018). Maine NPs currently have full practice autonomy and prescriptive authority (Nurse Practice Act, 32 M.R.S.A. § 2102; AANP, 2017). Shortly after the federal passage of CARA 2016, Maine state lawmakers authorized trained NPs to obtain the DEA waiver to prescribe buprenorphine for OUD. According to SAMHSA (2019) data, a total of 88 NPs in Maine are authorized to prescribe buprenorphine for OUD, meaning that 5% of NPs licensed to practice in Maine have obtained the DEA waiver to prescribe buprenorphine for OUD. To be eligible to participate in the survey for the scholarly project, respondents had to report being a NP currently licensed to practice in Maine. Maine NPs (both those who do and do not hold the buprenorphine waiver) were primarily recruited through the Maine Nurse Practitioner Association (MNPA) list serve. The project leader also queried search engine results and collegial referrals in order to compile email addresses. It was not possible to compute the response rate as the project leader was unable to determine how many email invitations were active or reached Maine NPs.

Survey Instrumentation

Overview. The finalized survey for the scholarly project was a combination of 1) the refined 20-item DDPPQ (Watson, Maclaren, & Kerr, 2007); 2) five questions from a previous study adapted to explore NP attitudes in Maine regarding buprenorphine adoption and prescribing for OUD (Huhn & Dunn, 2017); and 3) demographic data (see Appendix A for the finalized survey). The survey concluded with an invitation to enter the random drawing for a \$500 Visa gift card for participation. A pilot of the survey was sent to classmates, project team

members, and experts in the field of addiction medicine for face validity, clarity, and brevity prior to the official launch.

The Refined DDPPQ. The finalized survey included the refined DDPPQ, a valid and reliable 20-item tool (Cronbach's $\alpha=0.87$) used to measure the overall therapeutic commitment of Maine NPs in relation to caring for patients with OUDs (Watson, Maclaren, & Kerr, 2007). The refined DDPPQ contains five subscales—role adequacy, legitimacy, support, satisfaction, and self-esteem (conforming to Shaw's theory of therapeutic commitment). Items related to role motivation (a subconcept in Shaw's theory of therapeutic commitment) were subsumed within the subscale of role self-esteem, implying that the provider who holds greater confidence is more motivated and satisfied in his or her work involving patients with SUDs (Watson, Maclaren, & Kerr, 2007). Mahmoud and colleagues (2017) confirmed the 20-item five-factor DDPPQ structure. Likewise, the structure of the refined DDPPQ was retained, but the wording changed such that 'drug users' was replaced by 'patients with opioid use disorder,' and 'drugs' by 'opioids/opiates.'

Role security subscales in the DDPPQ (12 total items). The following descriptions of the three role security subscales contained in the DDPPQ are provided:

1. **Role adequacy subscale (7 items, Cronbach's $\alpha = 0.94$):** This subscale was modified to measure the extent to which NPs in Maine believe they have sufficient knowledge of the causes and symptoms of OUD to enable them to carry out their professional role in clinical practice (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007).
2. **Role legitimacy subscale (2 items, Cronbach's $\alpha = 0.80$):** This subscale was modified to measure the extent to which NPs in Maine view particular aspects of OUD-

related patient care as being their responsibility in clinical practice (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007).

3. **Role support subscale (3 items, Cronbach's alpha = 0.78):** This subscale was modified to measure the extent to which NPs in Maine acknowledge receiving support from colleagues to perform their role effectively for patients with OUD in clinical practice (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007).

Therapeutic commitment subscales in the DDPPQ (8 total items). The following descriptions of the two therapeutic commitment subscales are provided:

1. **Role satisfaction subscale (4 items, Cronbach's alpha = 0.89):** This subscale was modified to measure the extent to which NPs in Maine find professional satisfaction in caring for patients with OUD (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007).
2. **Role self-esteem subscale (4 items, Cronbach's alpha = 0.69):** This subscale was modified to measure the extent to which NPs in Maine have confidence in their ability to deliver care to patients with OUD (Shaw et al., 1978; Watson, Maclaren, & Kerr, 2007).

Scoring of the Refined DDPPQ. The refined DDPPQ respondents rated agreement on a seven-point Likert scale from *strongly disagree* (score of 1) to *strongly agree* (score of 7).

Before performing the analyses, each of the negatively worded items in the self-esteem subscale were reverse coded. The five subscales in the refined 20-item DDPPQ were combined to form an overall therapeutic commitment score ranging from 20 to 140. Higher mean Likert scores reflected more positive attitudes towards the concept (role adequacy, legitimacy, support, satisfaction, and self-esteem) and were associated with higher overall therapeutic commitment in relation to caring for individuals with OUD.

NP Attitudes on Buprenorphine Adoption and Prescribing. Pharmacology researchers Huhn and Dunn (2017) administered a short online survey measuring US physician attitudes towards the adoption and prescribing of buprenorphine for OUD. The project leader adapted the questions contained in Huhn and Dunn's (2017) survey by replacing the word 'physician' with 'nurse practitioner.' Specific components of Huhn and Dunn's (2017) study integrated into the finalized survey included 1) reasons that Maine NPs do not receive the buprenorphine waiver; 2) reasons that buprenorphine waived NPs in Maine do not prescribe to capacity; and 3) resources that might encourage more NPs in Maine to obtain the buprenorphine waiver and accept more patients with OUD.

NP Demographics. Current research advocates for placing demographic data at the end of surveys because they are often off-topic, less interesting and substantive, and potentially sensitive (Dillman, Smith, & Christian, 2014). Therefore, demographic questions were placed at the end of the survey. Since the survey was designed to be brief to encourage completion, detailed demographic information was not collected. Respondents were only asked to include their age, sex, highest level of education, types of NP certification(s), waiver status, clinical context for patient care (e.g., primary care, inpatient, emergency, psychiatric/mental health specialty care, other), and practice setting (e.g., urban, suburban, or rural).

Survey Methods

Participants received a personalized letter of invitation via email (see Appendix B) with a carefully selected subject line (e.g., "Survey for Maine NPs on the Opioid Crisis"). To maintain the integrity of the survey, quality control questions were included at the start of the survey (e.g., "Are you licensed to practice as a NP in Maine?"; "Have you completed this survey before?"; and "Will you give your best answers to each question?"). Participants then completed the 25-

item self-report survey that was hosted through the online manager, Qualtrics. To conclude the survey, respondents were asked whether they wished to be entered into a random drawing of a \$500 Visa gift card. If respondents answered “yes,” the respondents were asked to enter their preferred contact information, reminding them that all included contact information would be de-identified. Five short email reminders with varying messages were sent to engage unfinished respondents until the survey closed (see Appendix C for email reminder scripts). Figure 2 displays a timeline of survey events.

Strategies to Achieve Maximum Response Rate

A modified Dillman process for online surveys was used to achieve a maximum response rate (Dillman, Smith, & Christian, 2014). Evidence-based strategies employed by the project leader to achieve a maximum response rate centered on increasing benefits, decreasing costs, and building trust among participants, in addition to the potential use of a mixed modes survey design (Dillman, Smith, & Christian, 2014). Figure 3 represents a visual depiction of the strategies employed by the project leader to increase benefits, decrease costs, and build trust among participants eligible to complete the survey.

Increasing Benefits. Increasing the benefits of survey participation is one of the first steps to achieve maximum response rates (Dillman, Smith, & Christian, 2014). To increase benefits for participants, the project leader 1) asked for assistance from Maine NPs, conveying the value of their contribution by participating in a survey designed to address their particular strengths and challenges related to caring for Mainers with OUD; 2) communicated legitimate sponsorship from several public health and nursing leaders and organizations in Maine, including the MNPA and Penobscot Community Health Care, in addition to collegial support from Belmont University and the University of Maine; and 3) used a monetary incentive in the form of

a random drawing for a \$500 Visa gift card for participation (Dillman, Smith, & Christian, 2014). The project leader consistently communicated the benefits of survey participation in the letter of invitation and subsequent email reminders.

Decreasing Costs. In contrast to communicating the benefits of survey participation, the project leader considered various strategies to decrease the costs of survey participation (Dillman, Smith, & Christian, 2014). To decrease costs for participants, the project leader 1) reduced the burdens of length and complexity by only asking questions necessary to perform the analyses required to answer the research questions that motivated the survey in the first place, which limited the survey to an approximated time of 10 minutes or less to complete; 2) made it convenient to respond online by emailing a personalized, mobile-friendly link directly to Maine NPs; and 3) minimized requests to obtain personal or sensitive information (Dillman, Smith, & Christian, 2014).

Building Trust. One of the single most important issues affecting response to surveys in the 21st century is trust (Dillman, Smith, & Christian, 2014). To build trust among participants, the project leader 1) identified himself as the principal investigator from Belmont University and offered an opportunity for participants to contact him directly via email; 2) emphasized sponsorship from a well-known Maine nursing leader and the MNPA; 3) provided a token of appreciation in advance for participation; 4) assured participant confidentiality and protection of data; 5) appealed to the local identify of Maine in the Qualtrics survey design; and 6) designed all communications (e.g., letter of invitation and subsequent email reminders) with professionalism in mind.

Mixed Mode Survey Design. Although the primary mode for completion of the survey remained online via an emailed letter of invitation to Maine NPs, the project leader designed the

survey for the possibility of mixed-mode data collection with the intent of improving response rates and reducing nonresponse error (Dillman, Smith, & Christian, 2014). The project leader offered several other modes for survey completion. First, a paper version of the survey was distributed to Maine NPs at the MNPA state conference. Similar wording and visual formats were used across online and paper surveys. Second, to better engage the 88 waived NPs in Maine, the project leader faxed a one-page letter of invitation to their practice sites with a link to the online survey. Third, the one-page letter of invitation containing the link to the online survey was also circulated to Maine NPs through strategic engagement with trusted organizational leaders of several prominent healthcare organizations in Maine.

Evaluation Strategies

Descriptive statistics (i.e., frequencies and means) were computed for demographic and work characteristics, overall therapeutic commitment scores, and reasons Maine NPs might not be waived to prescribe buprenorphine as well as reasons for not prescribing to capacity among waived NPs. The project leader performed content analysis for “other” responses, manually folding them into established categories or new categories if the response occurred two or more times. An independent t-test was used to compare the overall therapeutic commitment scores between NP participants with and without the buprenorphine waiver. A one-way ANOVA was used to compare the overall therapeutic commitment scores among NP participants in urban, suburban, and rural practice settings. Post hoc analyses in the form of a Bonferroni correction were used to determine which of the means (regarding NP participants in particular practice settings) were statistically significant after the one-way ANOVA was found to be statistically significant. Alpha levels were set at the conventional $p < 0.05$ and analyses were conducted using IBM SPSS version 25.0.

Results

Demographic and Work Characteristics

Overall, 322 Maine NPs accessed the survey; of which a total of 299 NP responses were included for data analysis. Five participants were removed based on the quality control questions (e.g., “Are you licensed to practice as a NP in the state of Maine?”; “Have you completed this survey before?”; and “Will you provide your best answers to each question?”). An additional 18 NP participant responses were excluded for failing to complete a significant portion of the survey. Table 2 demonstrates the demographic and work characteristics of Maine NP participants. A majority of NP participants were female (93.6%, $n=277$, $N=296$), with an average age of 49.1 years. Most NP participants (86.9%, $n=258$, $N=297$) reported a master’s of science in nursing (MSN) as their highest nursing degree earned. The family nurse practitioner (FNP) certification was the most commonly reported NP certification (64.0%; $n=208$, $N=325$), with 37.0% ($n=110$, $N=297$) of NP participants reporting an area of primary care (e.g., family practice and adults only) as the clinical context for patient care. Nurse practitioner participants were from urban (36.0%, $n=107$, $N=297$), suburban (25.3%, $n=75$), and rural (38.7%, $n=115$) practice settings. Of 298 completed responses, a total of 49 (16.4%) NP participants reported having obtained the DEA waiver to prescribe buprenorphine.

Most Likely Clinical Response to Patients Screening Positive for Active OUD

Of 298 completed Maine NP responses (both waived and non-waived), the most commonly reported clinical response to patients screening positive for active OUD was referral to outpatient treatment (35.9%, $n=107$), followed by counseling or brief intervention (20.1%, $n=60$) (see Table 3). More than one in five (23.8%, $n=71$) NP participants reported that they do not routinely screen for OUD in clinical practice. Thirty-four (11.4%) NP participants reported

management of OUD with buprenorphine or other MATs as their most likely clinical response to patients screening positive for active OUD.

Overall Therapeutic Commitment Scores

With a total of 299 Maine NP participants, the data showed an overall therapeutic commitment score of 113 ($SD=14.9$) (possible score between 20 and 140). These positively skewed scores correlate with higher therapeutic commitment in relation to caring for individuals with OUD (see Table 4). On a mean Likert-format response of 1 (*strongly disagree*) to 7 (*strongly agree*), the highest DDPPQ subscale is evident in role legitimacy ($M=6.51$, $SD=0.62$). Role legitimacy reflected the extent to which Maine NP participants viewed particular aspects of OUD-related patient care as being their professional responsibility in clinical practice (e.g., performing comprehensive health histories that ask individuals about their opioid/opiate use). Collectively, NP participants held somewhat positive views regarding their role adequacy (e.g., adequate knowledge of the causes and symptoms of OUD) ($M=5.71$, $SD=0.88$) and role self esteem (e.g., confidence to deliver competent patient care to individuals with OUD in clinical practice) ($M=5.71$, $SD=1.02$). Of the three DDPPQ subscales representing the theoretical construct of role security, role support (e.g., professional support from colleagues to engage in OUD-related patient care) ranked the lowest ($M=5.50$, $SD=1.42$). Of the two DDPPQ subscales representing the theoretical construct of therapeutic commitment, role satisfaction (e.g., finding OUD-related patient care rewarding) ranked the lowest, revealing a somewhat positive attitude ($M=5.28$, $SD=1.09$).

Overall Therapeutic Commitment Scores and Buprenorphine Waiver Status

Overall therapeutic commitment scores were significantly higher among Maine NP participants who held the DEA waiver to prescribe buprenorphine ($M=128$, $SD=9.88$) than their

non-waivered NP counterparts ($M=111$, $SD=14.1$), $t(91)=10.2$, $p<.001$, $d=1.26$. Levine's test indicated unequal variances ($F=5.26$, $p=.022$), so degrees of freedom were adjusted from 296 to 91.1 (see Table 5 for independent t-test).

Overall Therapeutic Commitment Scores and Practice Setting

An analysis of variance showed that practice setting was significant $F(2, 294)=4.66$, $p=.010$, partial eta squared=.031 (see Table 6 for a one-way ANOVA and Bonferroni correction). Post hoc analyses using the Bonferroni correction indicated that NP participants in urban ($M=115$, $SD=16.7$, $p=.024$) and rural ($M=115$, $SD=13.1$, $p=.018$) practice settings had significantly higher overall therapeutic commitment scores than their NP counterparts in suburban ($M=109$, $SD=14.1$) practice settings.

NP Participants without a Buprenorphine Waiver

Likelihood to Obtain Buprenorphine Waiver in the Next Year. Of the 249 NP participants who identified themselves without the buprenorphine waiver, a majority (72.9%, $n=180$) indicated that they were moderately unlikely (22.3%, $n=55$) to extremely unlikely (50.61%, $n=125$) to obtain the buprenorphine waiver in the next year (see Table 7).

Alternatively, 49 (19.7%) NP participants without the buprenorphine waiver revealed that they were moderately likely (12.05%, $n=30$) to extremely likely (7.63%, $n=19$) to obtain the buprenorphine waiver in the next year.

Main Reasons for Not Obtaining the Waiver. Eight-two (33.1%) NP participants without the buprenorphine waiver perceived obtaining the buprenorphine waiver as not relevant to their current practice setting (i.e., work in subspecialty) (see Table 7). Lack of time (14.9%, $n=37$) and professional support (9.27%, $n=23$) emerged as important reasons for not obtaining the buprenorphine waiver. Six-percent ($n=15$) of NP participants reported that they were not

educated enough about OUD as their main reason for not obtaining the buprenorphine waiver. Nine (3.63%) NP participants reported that the training required to obtain the buprenorphine waiver was too cumbersome or time consuming.

Resources that Might Increase Willingness to Obtain the Waiver. Nurse practitioner participants without the buprenorphine waiver rated professional support from their practice partners and organization (20.9%, $n=72$) as well as being paired with or mentored by an experienced buprenorphine provider (18.0%, $n=62$) as the top two resources that might increase their willingness to obtain the buprenorphine waiver, followed by more continuing education courses on OUD (16.6%, $n=57$) (see Table 7). More than one in five responses from NP participants (23.5%, $n=81$) without a buprenorphine waiver revealed that nothing would increase their willingness to obtain the buprenorphine waiver.

NP Participants with a Buprenorphine Waiver

Percentage of Clinical Time Using Buprenorphine for OUD. Of the 49 NP participants who identified themselves with the buprenorphine waiver, approximately one in five (22.5%, $n=11$) reported they did not spend any clinical time caring for individuals with OUD using buprenorphine (see Table 8). Twenty (40.8%) NP participants with the buprenorphine waiver reported spending up to 25% of their clinical time caring for individuals with OUD using buprenorphine.

Treatment Capacity and Willingness to Add More Patients to Panel. Of the 49 NP participants with the buprenorphine waiver, four (8.16%) indicated that they were prescribing to full treatment capacity (see Table 8). Nurse practitioner participants with the buprenorphine waiver not treating at full capacity were then asked about their willingness to add more patients to their buprenorphine panel (see Table 8); of 34 completed responses, approximately two-thirds

(67.6%, $n=23$) revealed that they were willing to add more patients with OUD to their buprenorphine panel.

Resources that Might Increase Treatment Capacity. Of 79 total responses, the most commonly selected responses by NP participants with the buprenorphine waiver that might help them add patients with OUD to their panel and reach full treatment capacity were more local resources for people in recovery (19.0%, $n=15$), more potential practice partners (15.2%, $n=12$), and more referral resources for alternative treatments of chronic pain (11.4%, $n=9$) (see Table 8). Importantly, 8.86% of responses indicated that NP participants with the buprenorphine waiver had no barriers to adding patients.

Discussion

The scholarly project surveyed Maine NPs primarily through email postings to the list serve of the MNPA to assess the overall therapeutic commitment of Maine NPs in relation to caring for individuals with OUD as well as reasons Maine NPs do not adopt and prescribe buprenorphine for OUD. The findings of the scholarly project provide insight to these issues and demonstrate actionable approaches that could raise NP therapeutic commitment in relation to caring for individuals with OUD and potentially improve buprenorphine treatment access, quality, and capacity.

Maine NP Role Security

Shaw and colleagues (1978) postulated that role security (comprised of role adequacy, legitimacy, and support) is the key to unlocking the healthcare provider's therapeutic commitment to OUD in clinical practice. Collectively, Maine NPs scored highest on the role legitimacy subscale ($M=6.51$, $SD=0.62$), reflecting certainty in their professional responsibility to investigate a suspected OUD. Certainty over role legitimacy makes the healthcare provider

feel secure and therefore more inclined to approach the patient with a suspected OUD. This finding aligns with recent US legislation (U.S. Congress, 2016; 2017) legitimizing the role of trained NPs as prescribers of buprenorphine for OUD. This finding is also supported by previous studies showing greater NP interest and involvement in OUD-related patient care (Andrilla et al., 2018b; Buerhaus, DesRoches, Dittus, & Donelan, 2015; Doescher, Andrilla, Skillman, Morgan, & Kaplan, 2014).

Maine NPs reported somewhat positive attitudes towards their role adequacy ($M=5.71$, $SD=0.88$), exhibiting a working knowledge of OUD. This includes a fundamental understanding of the physical and psychological signs and symptoms of OUD, factors that place individuals at risk of developing OUD, and advising patients about opioid use. This finding is consistent with recent state and federal legislative efforts requiring mandatory continuing medical education for prescribers of opioids. In March 2017, Maine policymakers enacted a pivotal Maine opioid law that requires healthcare providers (physicians, NPs, PAs), as a condition of prescribing opioid medications, to complete three hours of continuing medical education every two years (An Act to Prevent Opiate Abuse by Strengthening the Controlled Substances Prescription Monitoring Program of 2017, 2016).

Alternatively, Maine NPs scored lowest on the role support subscale ($M=5.50$, $SD=1.42$), revealing somewhat positive attitudes towards their ability to find an available colleague with whom they could discuss any personal difficulties, clarify professional responsibilities, or help formulate the best approach to a patient presenting with active OUD. Shaw and colleagues (1978) believed healthcare providers unfamiliar with OUD-related patient care would be more likely to involve themselves in such care if provided with a milieu of support. Likewise, interventions aimed at expanding the availability of professional support statewide in

conjunction with comprehensive education is the most likely approach to increase the overall therapeutic commitment of Maine NPs.

Maine NP Overall Therapeutic Commitment

The mean score of overall therapeutic commitment of Maine NPs as a collective group was 113 ($SD=14.9$), with a possible score between 20 and 140. This project illustrated that Maine NPs had a constructive attitude and a moderately high degree of overall therapeutic commitment to individuals with OUD. Although there is limited research to directly compare these results, this finding is similar to other findings in attitudinal surveys measuring therapeutic commitment to OUD in registered nurses (RNs) in the US (Nilsen, Stone, & Burleson, 2013) and Australia (Ford, Bammer, & Becker, 2008).

Data from the survey demonstrated that Maine NPs with the buprenorphine waiver had significantly higher overall therapeutic commitment scores ($M=128$, $SD=9.88$) than their non-waivered counterparts ($M=111$, $SD=14.1$) ($p<.001$), scoring on average 17 points higher. This finding is plausible since NPs who obtain the DEA waiver to prescribe buprenorphine are displaying role legitimacy by electing to obtain the buprenorphine waiver. Waivered NPs are also required to complete 24 hours of additional training (US Congress, 2016), contributing to enhanced role adequacy. Prominent healthcare organizations across Maine are also strengthening infrastructural support for waivered healthcare providers by adopting innovative care models built on strong professional support (Maine Behavioral Healthcare, n.d.). These factors solidify role security, leading to higher therapeutic commitment, as evidenced by higher role satisfaction and self-esteem scores among waivered Maine NPs (Shaw et al., 1978).

The survey also revealed that Maine NPs in urban ($M=115$, $SD=16.7$, $p=.024$) and rural ($M=115$, $SD=13.1$, $p=.018$) practice settings had significantly higher overall therapeutic

commitment scores than their NP counterparts in suburban practice settings ($M=109$, $SD=14.1$), scoring on average six points higher. Given the size and scope of the opioid epidemic, raising the therapeutic commitment of Maine NPs in suburban areas is warranted. However, this finding is reassuring as Maine is largely rural and residents in rural Maine are often disproportionately affected by the opioid epidemic, with higher opioid overdose rates (Keyes et al., 2014; Lenardson et al., 2016). In 2015, approximately 25,000 Mainers with OUD did not receive treatment, according to surveys from SAMHSA (2017). Highly committed NPs in all practice settings play a critical role in closing the substantial OUD treatment gap in Maine, especially in areas with prolonged waiting periods and long driving distances for evidence-based care (Sigmon, 2015).

Maine NPs without the Buprenorphine Waiver: Actionable Approaches to Increase Receipt of the Waiver

A majority (83.6%, $n=249$) of Maine NP respondents reported not possessing the buprenorphine waiver and only 19.7% ($n=49$) revealed that they were moderately likely to extremely likely to obtain the buprenorphine waiver in the next year. This is a crucial target for future interventions in terms of recruitment. Non-waivered NP respondents were most likely to perceive the buprenorphine waiver as not relevant to their current practice setting (33.1%, $n=82$), citing employment in certain subspecialties such as pediatrics or women's health as their reason for not acquiring the waiver. It might be a misconception to some Maine NPs that the buprenorphine waiver is not compatible with their subspecialty. For instance, the buprenorphine waiver is especially applicable in pediatrics and women's health subspecialties as a large percentage of adolescents and pregnant women with OUD go without evidence-based treatment, according to SAMHSA data (Lipari, Park-Lee, & Van Horn, 2016; Smith & Lipari, 2017).

Additionally, Maine NPs reported lack of time (14.9%, $n=37$) and professional support from practice partners and organizations (9.27%, $n=23$) as the main reasons for not obtaining the buprenorphine waiver. Similarly, time constraints and lack of professional support have emerged in previous studies as main barriers to incorporating buprenorphine into clinical practice among physicians (Andrilla et al., 2017; DeFlavio et al., 2015).

Eighty-one (23.5%) non-waivered Maine NPs reported that nothing would increase their willingness to obtain the buprenorphine waiver. Provider stigma is often a leading factor preventing buprenorphine adoption and accompanied by beliefs that favor abstinence-only approaches over those that are evidence-based (Duncan et al., 2015; Fox et al., 2016; Molfenter et al., 2015). Facilitating positive attitudes through education tailored specifically to combating the stigma surrounding OUD treatment as well as highlighting buprenorphine's effectiveness and safety is needed (DeFlavio et al., 2015; Duncan et al., 2015; Molfenter et al., 2015).

Furthermore, peer and organizational support emerged as the top resource that might increase willingness of Maine NPs to obtain the buprenorphine waiver (20.9%, $n=72$), followed by mentorship with an experienced buprenorphine provider (18.0%, $n=62$) and more continuing education courses (16.6%, $n=57$). There are existing models of care in which these resources have been implemented to some degree of success. For instance, professional support can be addressed with the Vermont Hub and Spoke model, which links primary care providers with mental health specialists to provide ongoing support and guidance for patient management. Combined with a learning collaborative (Nordstrom et al., 2016), the Vermont Hub and Spoke model has shown significant gains in engaging healthcare providers and increasing buprenorphine adoption (Brooklyn & Sigmon, 2017; Sigmon, 2015).

Maine NPs with the Buprenorphine Waiver: Actionable Approaches to Reach Full Treatment Capacity

A majority (73.5%, $n=36$) of waived Maine NP respondents reported not prescribing to full treatment capacity and 22.5% ($n=11$) of waived NP respondents reported not spending any clinical time caring for individuals with OUD using buprenorphine, indicating that buprenorphine treatment is largely underutilized. Although differing in methodology, this finding is similar to other studies of waived physicians who reported not prescribing to full treatment capacity (Huhn & Dunn, 2017; Thomas et al., 2017). Waivered NPs reported expanding social services (i.e., peer mentoring, family supports, housing, employment, and transportation) for individuals with OUD as the top resource that might help them reach full treatment capacity. Recognizing the social disparities that often prevent individuals with OUD from accessing treatment (Keyes et al., 2014; Lenardson et al., 2016), this finding supports the conclusion that buprenorphine and other MATs alone are not going to solve the opioid crisis—a holistic, personalized approach is warranted.

Waivered Maine NP respondents consistently rated resources under the domain of professional support as vital to reaching full treatment capacity. Waivered NP respondents reported more potential practice partners (buprenorphine prescribers and mental health counselors) (15.2%, $n=12$) and mentorship from an experienced buprenorphine provider (10.1%, $n=8$) as top resources that might help them reach full treatment capacity. Similarly, a 2019 qualitative study conducting interviews of waived physicians found that lack of professional support was a main barrier deterring them from getting started and maintaining buprenorphine as a viable treatment option for OUD in their practices (Andrilla, Moore, & Patterson, 2019). Waivered physicians without access to local mentors reported that acquiring virtual mentors

through the Providers Clinical Support System (PCSS)—an online SAMHSA-sponsored site (PCSSNow.org) available to all healthcare providers including NPs—was beneficial in that the availability of a virtual mentor to answer questions and provide clinical support made the initial incorporation of buprenorphine into practice much less challenging (Andrilla, Moore, & Patterson, 2019).

Practice Implications

Even though primary care-based buprenorphine is associated with improved outcomes for individuals with OUD (Kresina et al., 2015; Mattick et al., 2014; Schuckit, 2016) and deemed compatible with various practice settings led by NPs (US Congress, 2016), this project revealed many Maine NPs face similar workforce barriers as physicians. According to Lewis and colleagues (2018), barriers to evidence-based practice are not usually due to a lack of understanding of what is most scientifically supported, but rather a lack of ability on part of the provider (Lewis, Harrison, & Wiland, 2018). Similarly, Shaw and colleagues (1978) aimed to improve the abilities of healthcare providers by refocusing the lens on raising their therapeutic commitment to individuals with SUDs. Given that NPs have been tapped to play a greater role in evidence-based OUD treatment services, healthcare organizations and practice sites examining the prospects of implementing sustainable buprenorphine services should carefully consider the infrastructure necessary to recruit and equip NP prescribers of buprenorphine and ultimately facilitate their long-term commitment.

Despite strong perceptions of role legitimacy, it is important for Maine NPs as a collective group to transfer their role legitimacy (and overall therapeutic commitment) into evidence-based action. A notable 23.8% ($n=71$) of Maine NPs disclosed that they did not routinely screen for OUD. This is an important statistic as Maine is a full practice state and NPs

are not only afforded the ability to obtain the buprenorphine waiver, but to also perform screenings, a form of secondary prevention. Despite the high prevalence of OUDs in Maine and nationwide, many Americans go without life-saving, evidence-based treatment—in part, because their OUD goes undiagnosed (SAMHSA, 2017; US Office of the Surgeon General, 2016). The SAMHSA (n.d.) and NIDA (n.d.) strongly recommend routine screenings for opioid use among people of all ages, regardless of specialty or practice setting. The use of validated screening tools like the Screening, Brief Intervention, and Referral to Treatment (SBIRT) (SAMHSA-endorsed and reimbursable) contributes to earlier identification of individuals with OUD as well as improved care and outcomes (Aldridge et al., 2017).

Strengths and Limitations

The scholarly project has several strengths and limitations. The refined DDPPQ, informed by the theory of therapeutic commitment, has not been tested previously with NPs. However, the refined DDPPQ is a valid and reliable tool (Watson et al., 2007) and the theory of therapeutic commitment is highly relevant to the practice of NPs. In terms of generalizability, the mean age and gender of the sample were consistent with current Maine NP workforce data (Skillman et al., 2018). Since Maine NPs were allowed to decide entirely for themselves to participate in the survey, an inherent self-selection bias might limit the generalizability of the findings. While the response rate could not be calculated accurately (unable to determine how many email invitations were active or reached Maine NPs), the relatively large number of respondents ($N=299$) indicated Maine NP interest in the topic and recruitment strategies as well as overall survey design (a modified Dillman approach) were effective.

Future Directions

Since the literature has focused exclusively on physician attitudes towards buprenorphine integration in primary care, more studies are needed to examine the attitudes of NPs regarding their emerging role in primary care-based buprenorphine services. The theory of therapeutic commitment not only provides an informative and practical framework to deconstruct the attitudes of NPs regarding their emerging role in OUD care, but also to broaden the base of the response by raising NP commitment to OUD. Researching NP-reported barriers and facilitators might help policymakers and the APRN community at large more fully understand the challenges of integrating buprenorphine services into primary care and guide evidence-based interventions aimed at overcoming the barriers. Additionally, the theory of therapeutic commitment postulates that healthcare providers with higher levels of overall therapeutic commitment are better positioned to achieve favorable outcomes for individuals with SUDs (Shaw et al., 1978). Future research should focus on the evaluation of patient outcomes in NP-led primary care practices with fully integrated buprenorphine services. Future research should also examine ways to make processes for the treatment of OUD more efficient, so primary care practices with waived healthcare providers can be fully utilized and ultimately increase the number of patients with OUD being treated with buprenorphine.

Conclusion

The rising incidence of OUD across the lifespan and in all areas of healthcare requires the collective therapeutic commitment of NPs in Maine and nationwide. The scholarly project identified actionable approaches that could raise NP therapeutic commitment to individuals with OUD as well as augment NP adoption and prescribing of buprenorphine for OUD. The findings suggested that increasing the number of waived Maine NPs without making additional

resources available to strengthen commitment and infrastructure is unlikely to have a large impact on buprenorphine adoption and prescribing. To leverage the role of waived NPs under CARA 2016 and ensure their potential contributions are not greatly diminished, policymakers and the APRN community in Maine should consider evidence-based interventions aimed at fostering professional support statewide in conjunction with comprehensive education.

Identifying attitudes and implementing resources that are useful in raising Maine NP commitment to OUD are crucial to improving treatment access and ultimately turning the tide on the opioid epidemic.

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Table 1: Professional Characteristics of the Role Secure and Therapeutically Committed Healthcare Provider

- Demonstrates warmth and empathy
- Feels optimistic about his or her work and contribution to the patient
- Regards the patient as a person of value and worth
- An interested and concerned listener
- Attempts to understand the patient's lived experience
- Gives sound professional advice by speaking the patient's language

Table 2: Demographic and Work Characteristics	
Age (N=289) (years)	
Mean (SD)	49.1 (12.2)
Range	25-75
Sex (N=296) % (n)	
Female	93.6% (277)
Male	6.08% (18)
Other	0.34% (1)
Highest Nursing Degree (N=297) % (n)	
Master's of science in nursing (MSN)	86.9% (258)
Doctorate of nursing practice (DNP)	5.05% (15)
Philosophy of science in nursing or related field (PhD)	2.69% (8)
Other	5.39% (16)
NP Certification(s) (N=325)^a % (n)	
Family nurse practitioner	64.0% (208)
Psychiatric mental health nurse practitioner	10.5% (34)
Adult nurse practitioner	7.38% (24)
Acute care nurse practitioner	3.69% (12)
Emergency nurse practitioner	0.31% (1)
Adult gerontology nurse practitioner	4.62% (15)
Women's health nurse practitioner	1.85% (6)
Pediatric nurse practitioner	4.62% (15)
Neonatal nurse practitioner	0.62% (2)
Other	2.5% (8)
Buprenorphine Waiver Status (N=298) % (n)	
Waivered	16.4% (49)
Not Waivered	83.6% (249)
Clinical Context for Patient Care (N=297) % (n)	
Primary care (family practice)	28.3% (84)
Primary care (adults only)	8.75% (26)
Inpatient/hospital care	12.5% (37)
Psychiatric/mental health specialty care	9.76% (29)
Pediatric care	6.40% (19)
Urgent/ambulatory care	6.40% (19)
Emergency care	1.01% (3)
Cardiology	3.03% (9)
Palliative care	2.36% (7)
Women's health	2.02% (6)
College health	1.68% (5)
Occupational health	1.68% (5)
Orthopedics	1.68% (5)
Outpatient surgery	1.68% (5)
Neurology	1.35% (4)
Pain management	1.01% (3)
Geriatric care	1.01% (3)
Urology	0.67% (2)
Diabetes care	0.67% (2)

Otolaryngology	0.67% (2)
Other	7.41% (22)
Practice setting (N=297) % (n)	
Urban	36.0% (107)
Suburban	25.3% (75)
Rural	38.7% (115)
^a means select all that apply question resulting in sums >299	

Table 3: Most Likely Clinical Response to Patients Screening Positive for Active Opioid Use Disorder (N=298)

Referral for outpatient treatment for opioid use disorder	35.9% (107)
I don't routinely screen for opioid use disorder	23.8% (71)
Counseling/brief intervention	20.1% (60)
Management of opioid use disorder with buprenorphine or other medication assisted treatment	11.4% (34)
Referral to inpatient treatment (detox) for opioid use disorder	4.36% (13)
Referrals are case dependent	3.02% (9)
Other	1.34% (4)

Table 4: Maine Nurse Practitioner Overall Therapeutic Commitment to Individuals with Opioid Use Disorder (Total N=299)

DDPPQ Subscales	Number of Questions	Mean Score (Likert score = 1-7)	Standard Deviation
Role adequacy*	7	5.71	0.88
Role legitimacy*	2	6.51	0.62
Role support*	3	5.50	1.42
Role satisfaction**	4	5.28	1.09
Role self-esteem**	4	5.71	1.02
Overall Therapeutic Commitment Score (Total Composite Score)	20	113 (possible score = 20-140)	14.9

Note: Higher scores denote higher therapeutic commitment.

*Represents a concept within the construct of role security.

**Represents a concept within the construct of therapeutic commitment.

Table 5: Overall Therapeutic Commitment Score and Buprenorphine Waiver Status										
Group Statistics										
	Waivered?	N	Mean	SD	SD Error Mean					
Overall Therapeutic Commitment	Yes	49	127.63	9.887	1.411					
	No	249	110.60	14.063	.891					
Independent Samples Test										
Levene's Test for Equality of Variances							T-test for Equality of Means		95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	Lower	Upper
Overall Therapeutic Commitment	Equal variances assumed	5.263	.022	8.090	296	.000	17.034	2.106	12.890	21.178
	Equal variances not assumed			10.206	91.124	.000	17.034	1.669	13.719	20.349

Table 6: Overall Therapeutic Commitment Scores and Practice Setting								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Urban	107	114.84	16.667	1.611	111.65	118.04	67	140
Suburban	75	108.92	14.054	1.623	105.69	112.15	69	137
Rural	115	114.98	13.090	1.221	112.56	117.40	80	140
Total	297	113.40	14.888	.864	111.70	115.10	67	140

Table 6 (Contin.): Overall Therapeutic Commitment Scores and Practice Setting (ANOVA)					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2015.536	2	1007.768	4.659	.010
Within Groups	63595.784	294	216.312		
Total	65611.320	296			

Table 6 (Contin.) Post Hoc Tests for ANOVA: Multiple Comparisons
 Dependent Variable: Overall Therapeutic Commitment
 Bonferroni

Practice Setting	Practice Setting Comparison	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Urban	Suburban	5.921 [*]	2.215	.024	.59	11.25
	Rural	-.141	1.975	1.000	-4.90	4.62
Suburban	Urban	-5.921 [*]	2.215	.024	-11.25	-.59
	Rural	-6.063 [*]	2.183	.018	-11.32	-.81
Rural	Urban	.141	1.975	1.000	-4.62	4.90
	Suburban	6.063 [*]	2.183	.018	.81	11.32

*The mean difference is significant at the 0.05 level.

**Table 7: NP Participants without a Buprenorphine Waiver
Total N=249**

Identification of likelihood to obtain buprenorphine waiver in the next year, main reasons for not obtaining the buprenorphine waiver, and resources that might increase willingness to obtain the buprenorphine waiver.

Likelihood to obtain buprenorphine waiver in the next year (N=249) % (n)

Extremely likely	7.63% (19)
Moderately likely	12.05% (30)
Neither likely nor unlikely	7.23% (18)
Moderately unlikely	22.3% (55)
Extremely unlikely	50.6% (125)

Main reason for not obtaining buprenorphine waiver (N=248) % (n)

Perceived as not relevant to current practice setting (work in subspecialty)	33.1% (82)
Lack of time (don't have enough time to be inundated with buprenorphine requests)	14.9% (37)
Lack of professional support from my practice partners and organization I work for	9.27% (23)
No OUD problem in my practice or community	8.47% (21)
Refer to practice partners or specialists in my community	6.45% (16)
Not educated enough about OUD	6.05% (15)
Training is too cumbersome or time-consuming	3.63% (9)
Concerned about diversion	2.82% (7)
Don't believe in buprenorphine treatment	2.82% (7)
DEA waiver to prescribe buprenorphine in progress	2.42% (6)
New to practice	2.02% (5)
End of career	1.61% (4)
Lack of interest or desire	1.61% (4)
Don't know how to get a waiver to prescribe buprenorphine	1.21% (3)
Need more integrated, holistic services paired with buprenorphine	1.21% (3)
Reimbursement concerns	0.40% (1)
Other	2.02% (5)

Resources that will increase willingness to obtain the buprenorphine waiver (N=344)^a % (n)

Nothing will increase my willingness	23.5% (81)
Professional support from practice partners and the organization I work for	20.9% (72)
Being paired with or mentored by an experienced buprenorphine provider	18.0% (62)
More continuing education courses on OUD	16.6% (57)
Financial assistance for waiver to prescribe buprenorphine for OUD	9.30% (32)
Change in practice setting	6.40% (22)
Dedicated time from my the organization I work for to obtain the DEA waiver to prescribe buprenorphine	1.16% (4)
DEA waiver to prescribe buprenorphine in progress	0.87% (3)
More integrated, holistic services available	0.58% (2)
Perceived community need	0.58% (2)
Other	1.74% (6)

^a means select all that apply question resulting in sums >249

Table 8: NP Participants with a Buprenorphine Waiver (N=49)

Identification of clinical time spent using buprenorphine, buprenorphine treatment capacity, willingness to add more patients to buprenorphine panel, and resources that might help reach full buprenorphine treatment capacity.

Percent of clinical time spent caring for individuals with OUD using buprenorphine (N=49) % (n)

0%	22.5% (11)
1-25%	40.8% (20)
26-50%	14.3% (7)
51-75%	12.2% (6)
76-100%	10.2% (5)

Prescribing to full treatment capacity (N=49) % (n)

Yes	8.16% (4)
No	73.5% (36)
Other	18.4% (9)

Willing to add more patients to buprenorphine panel (N=34) % (n)

*Includes only those who are not at full treatment capacity

Yes	67.6% (23)
No	32.4% (11)

Top three resources that would most help prescribe buprenorphine to full treatment capacity (N=79)^a % (n)

More local resources for people in recovery, including peer mentoring, family supports, housing, employment, and transportation	19.0% (15)
More potential practice partners (buprenorphine prescribers and/or addiction counselors) serving my local community	15.2% (12)
More referral resources for alternative treatments of chronic pain	11.4% (9)
Being paired with an experienced buprenorphine provider	10.1% (8)
I do not have any barriers to adding patients	10.1% (8)
More local counseling services	8.86% (7)
Financial reimbursement for patients who are uninsured or underinsured	7.59% (6)
Access to a regional or statewide network of clinicians to share problems, solutions, and best practices	5.06% (4)
Training and education for office staff on the opioid epidemic and workplace policies/protocols/processes	
Training and education for clinical staff on the opioid epidemic and evidence-based approaches	3.80% (3)
More clinical time allotted for this patient population	2.53% (2)

^a means select top three answers resulting in sums >49

Figure 1: The Theory of Therapeutic Commitment



Description of Figure 1: Role security is the key to unlocking the healthcare provider’s therapeutic commitment to OUD in clinical practice. To be role secure, the healthcare provider must maintain a firm grip on the key’s bow, which represents role adequacy, legitimacy, and support. The lock, which represents the healthcare provider’s therapeutic commitment to OUD in clinical practice, can only be opened by the key representing role security. The healthcare provider who maintains a position of role security will unlock his or her therapeutic commitment to OUD in clinical practice, as evidenced by role motivation, self-esteem, and satisfaction.

Figure 2: Timeline of Survey Events

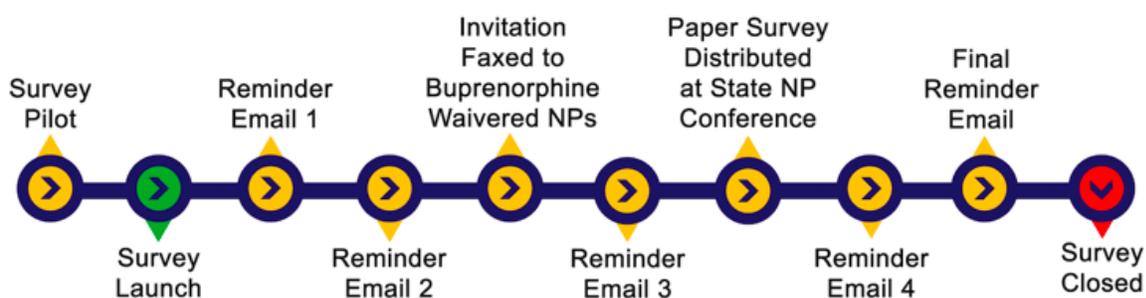
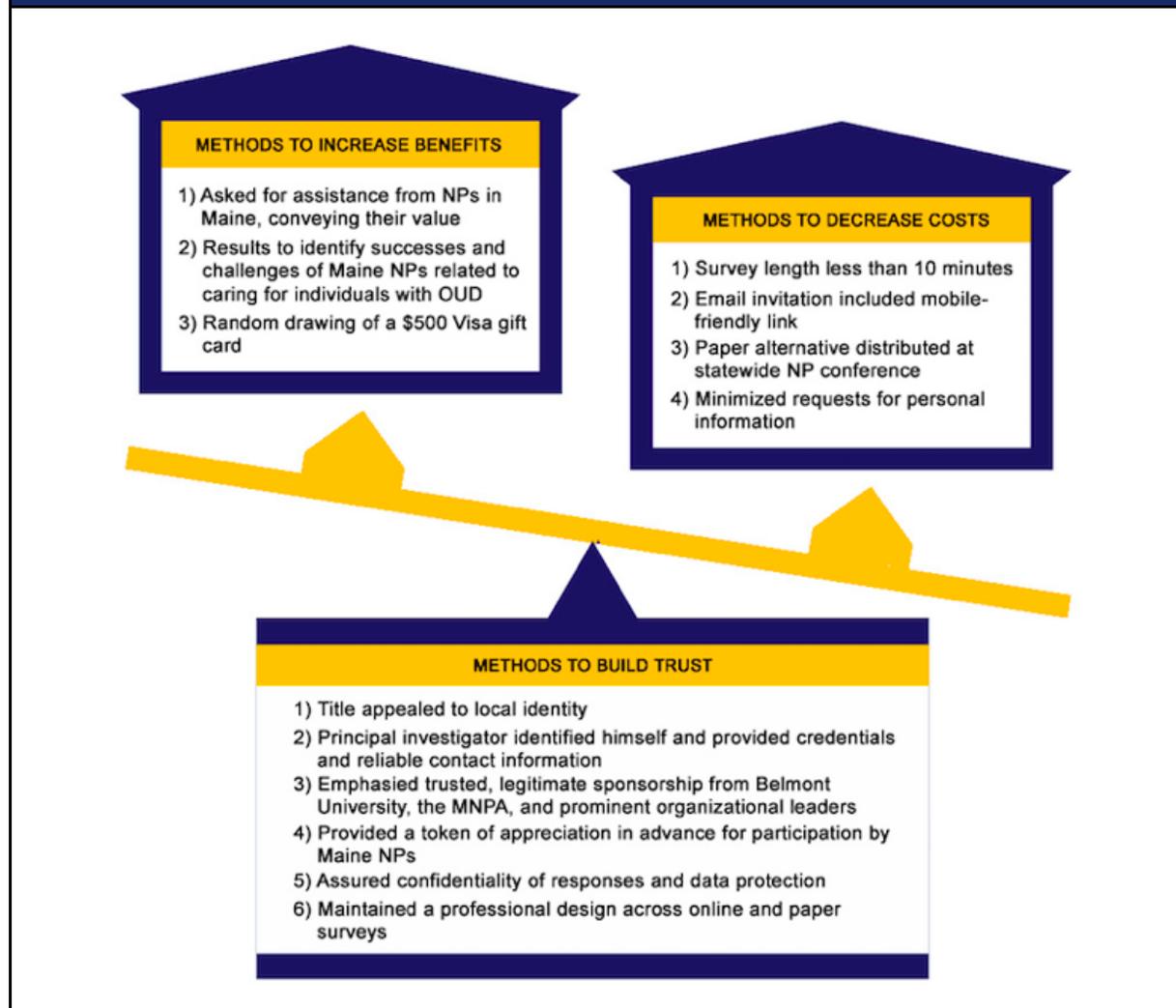
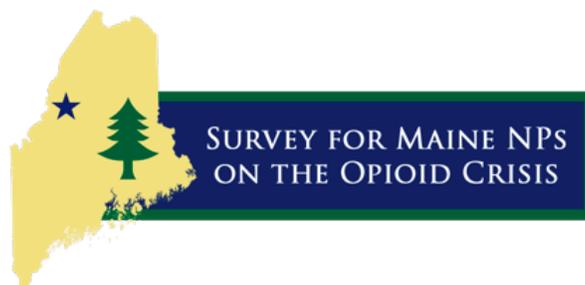


Figure 3: Strategies to Achieve a Maximum Response Rate

Appendix A: Survey



SURVEY DESCRIPTION

What is the purpose of the survey?

The survey aims to **identify particular strengths and challenges of Maine nurse practitioners related to the opioid crisis**, including caring for Mainers with opioid use disorder (OUD).

Who can take the survey and how long will it take to complete?

ALL licensed NPs in Maine can take the survey. Completion of the entire survey should take **LESS than 10 minutes**. You are encouraged to answer all questions.

Are my responses confidential?

Yes. All responses are confidential and anonymous and your participation is voluntary. This survey received verification of exemption from the Belmont University Institutional Review Board (IRB) in Nashville, Tennessee.

Is there a financial incentive to participate?

Yes. At the end of the survey, you will be asked whether you wish to be entered into a random drawing for a \$500 Visa gift card for participation. Please note: Your name will be entered **TWICE** into the random drawing of the \$500 Visa gift card if you answer **ALL** questions in the survey.

Background on the Principal Investigator

Jordan Porter is from Machias, Maine, and obtained his Bachelor's of Science in Nursing (BSN) at the University of New England (UNE). This survey is part of Jordan's scholarly work in pursuit of a Doctor of Nursing Practice (DNP) degree at Belmont University. Jordan aspires to practice as a family nurse practitioner in Maine after graduation in May 2019.

If you have any questions or concerns about this survey, please email Jordan at jordan.porter@pop.belmont.edu.

ALL MAINE NPs

Are you a nurse practitioner licensed in the state of Maine?

- Yes, I'm licensed as a nurse practitioner in Maine
- No

Have you taken this survey before?

- Yes
- No, I haven't taken this survey before

Will you provide your best answers to each question in this survey?

- Yes, I'll give my best answers
- No

Role adequacy subscale							
Please rate the following items addressing your current professional knowledge and skills as a NP on opioid use disorder in your practice from 1 (strongly disagree) to 7 (strongly agree).							
I feel I have a working knowledge of opioid use disorder and other opioid/opiate related problems.	1	2	3	4	5	6	7
I feel I know enough about the causes of opioid use disorder to carry out my role in practice.	1	2	3	4	5	6	7
I feel I know enough about the physical symptoms of opioid use disorder to carry out my role in practice.	1	2	3	4	5	6	7
I feel I know enough about the psychological symptoms of opioid use disorder to carry out my role in practice.	1	2	3	4	5	6	7
I feel I know enough about the factors which put people at risk of developing opioid use disorder to carry out my role in practice.	1	2	3	4	5	6	7
I feel I know how to counsel patients with opioid use disorder or other opioid/opiate related problems over the long-term.	1	2	3	4	5	6	7
I feel like I can appropriately advise my patients about opioids/opiates and their effects.	1	2	3	4	5	6	7

Role legitimacy subscale	
<p>Please rate the following items addressing your current professional responsibility as a NP to question patients about their opioid/opiate use in your practice from 1 (strongly disagree) to 7 (strongly agree).</p>	
I feel I have the right to ask patients questions about their opioid/ opiate use when necessary.	1 2 3 4 5 6 7
I feel I have the right to ask a patient for any information that is relevant to their opioid/ opiate use.	1 2 3 4 5 6 7

Role support subscale	
<p>Please rate the following items addressing your current professional support as a NP in responding to patients with active opioid use disorder or other opioid/opiate problems in your practice from 1 (strongly disagree) to 7 (strongly agree).</p>	
If I felt the need when working with patients who have opioid use disorder or other opioid/opiate problems, I could easily find someone with whom I could discuss any personal difficulties that I might encounter.	1 2 3 4 5 6 7
If I felt the need when working with patients who have opioid use disorder or other opioid/opiate problems, I could easily find someone who would help me clarify my professional responsibilities.	1 2 3 4 5 6 7

<p>If I felt the need when working with patients who have opioid use disorder or other opioid/opiate problems, I could easily find someone who would be able to help me formulate the best approach to a patient presenting to my practice with active opioid use disorder.</p>	<p>1 2 3 4 5 6 7</p>
---	--

<p>Role self-esteem subscale</p>	
<p>Please rate the following items addressing your current professional self-esteem as a NP in responding to patients with active opioid use disorder or other opioid/opiate problems in your practice from 1 (strongly disagree) to 7 (strongly agree).</p>	
<p>I feel that there is little I can do to help patients with opioid use disorder or other opioid/opiate related problems.</p>	<p>1 2 3 4 5 6 7</p>
<p>All in all, I am inclined to feel I am a failure with patients who have opioid use disorder or other opioid/opiate related problems.</p>	<p>1 2 3 4 5 6 7</p>
<p>In general, I have less respect for patients with opioid use disorder or other opioid/opiate related problems than for most other patients I work with.</p>	<p>1 2 3 4 5 6 7</p>
<p>I often feel uncomfortable when working with patients who have opioid use disorder or other opioid/opiate related problems.</p>	<p>1 2 3 4 5 6 7</p>

Role satisfaction subscale	
<p>Please rate the following items addressing your current professional satisfaction as a NP in responding to patients with active opioid use disorder or other opioid/opiate problems in your practice from 1 (strongly disagree) to 7 (strongly agree).</p>	
I feel I am able to work with those who have opioid use disorder as well as other patient groups.	1 2 3 4 5 6 7
In general, one can get satisfaction from working with patients who have opioid use disorder and other opioid/opiate related issues.	1 2 3 4 5 6 7
In general, it is rewarding to work with patients who have opioid use disorder and other opioid/opiate related issues.	1 2 3 4 5 6 7
In general, I feel I can understand patients with opioid use disorder and other opioid/opiate related issues.	1 2 3 4 5 6 7

Which of the following represents your MOST likely clinical response to patients who screen POSITIVE for active opioid use disorder in your current practice?

- Counseling/brief intervention
- Management of opioid use disorder with buprenorphine (Suboxone) or other medication assisted treatment
- Referral for outpatient treatment for opioid use disorder
- Referral to inpatient treatment (detox) for opioid use disorder
- None of the above, I don't routinely screen for opioid use disorder
- Other (please specify) _____

Have you obtained the Drug Enforcement Administration (DEA) waiver to prescribe buprenorphine (Suboxone) for opioid use disorder as a nurse practitioner in the state of Maine?

- Yes
- No

NON-WAIVERED BUPRENORPHINE MAINE NPs

How likely are you to obtain the DEA waiver to prescribe buprenorphine (Suboxone) for opioid use disorder as a nurse practitioner in the state of Maine within the next year?

- Extremely likely
- Moderately likely
- Neither likely nor unlikely
- Moderately unlikely
- Extremely unlikely

What is your MAIN reason for NOT obtaining the DEA waiver to prescribe buprenorphine (Suboxone) at this current moment? (Please select one answer).

- Lack of time (don't have enough time to be inundated with buprenorphine requests)
- Lack of professional support from my practice partners and organization I work for
- Not educated enough about opioid use disorder
- Reimbursement concerns
- Concerned about diversion
- Don't believe in buprenorphine treatment
- Don't know how to get a waiver to prescribe buprenorphine
- No opioid use disorder problem in my practice or community
- Other (please specify) _____

What resource(s), if any, will INCREASE your willingness to obtain the DEA waiver to prescribe buprenorphine (Suboxone) for opioid use disorder as a nurse practitioner in the state of Maine? (Select all that apply).

- Nothing will increase my willingness
- Being paired with or mentored by an experience buprenorphine prescriber
- Professional support from practice partners and the organization I work for
- More continuing education courses or professional development workshops on opioid use disorder
- Financial assistance for the DEA waiver to prescribe buprenorphine for OUD
- Other (please specify) _____

WAIVERED BUPRENORPHINE MAINE NPs

In your current practice, what percentage of your clinical TIME is spent caring for patients using buprenorphine (Suboxone) as treatment for active opioid use disorder?

- 0%
- 1-25%
- 26-50%
- 51-75%
- 76-100%

Are you prescribing buprenorphine (Suboxone) to FULL treatment capacity (i.e., the maximum number of patients with opioid use disorder you can treat on your buprenorphine panel)?

- Yes
- No
- Other (please describe) _____

Are you willing to ADD more patients with opioid use disorder to your buprenorphine panel in the next 3 months?

- Yes, I'd be willing to add more patients to my buprenorphine panel
- No, I'm not willing to add more patients to my buprenorphine panel

What THREE resource(s) would MOST help you prescribe buprenorphine (Suboxone) for opioid use disorder to FULL treatment capacity (i.e., the maximum number of patients with opioid use disorder you can treat on your buprenorphine panel)? (Please select no more than 3 answer choices).

- I do not have any barriers to adding patients
- More potential practice partners (buprenorphine prescribers and/or addiction counselors) serving my local community
- Being paired with an experienced buprenorphine provider
- Access to a regional or statewide network of clinicians to share problems, solutions, and best practices
- Training and education for clinical staff on the opioid epidemic and evidence-based approaches
- Training and education for office staff on the opioid epidemic and workplace policies/protocols
- Financial reimbursement for patients who are uninsured or underinsured
- More local counseling services
- More referral resources for alternative treatments of chronic pain
- More local resources for people in recovery, including peer mentoring, family supports, housing, employment, and transportation
- Other (please describe) _____

DEMOGRAPHICS

What is your age (in years)? _____

What is your sex?

- Male
- Female
- Other _____

What is your highest level of education?

- Masters of science in nursing (MSN)
- Doctorate of nursing practice (DNP)
- Philosophy of science in nursing or a related field doctorate (PhD)
- Both DNP and PhD
- Other (please describe) _____

What type(s) of nurse practitioner certification(s) do you currently hold? **(Select all that apply).**

- Family Nurse Practitioner (FNP)
- Psychiatric Mental Health Nurse Practitioner (PMHNP)
- Adult Nurse Practitioner (ANP)
- Acute Care Nurse Practitioner (ACNP)
- Emergency Nurse Practitioner (ENP)
- Adult Gerontology Nurse Practitioner (AGNP)
- Women's Health Nurse Practitioner (WHNP)
- Pediatric Nurse Practitioner (PNP)
- Neonatal Nurse Practitioner (NNP)
- Other (please describe) _____

Which of the following **BEST** describes your clinical context for patient care? **(Please choose one answer).**

- Primary care (family practice)
- Primary care (adults only)
- Pediatric care
- Urgent/ambulatory care
- Inpatient/hospital care
- Emergency care
- Psychiatric/mental health specialty care
- Other (please describe) _____

How would you describe your **MAIN** practice setting? **(Please choose one answer).**

- Urban
- Suburban
- Rural

RANDOM DRAWING

Do you wish to be entered into a drawing to receive a \$500 Visa gift card for your participation?

Please note: If you answered ALL questions, your name will be entered TWICE into the random drawing of a \$500 Visa gift card.

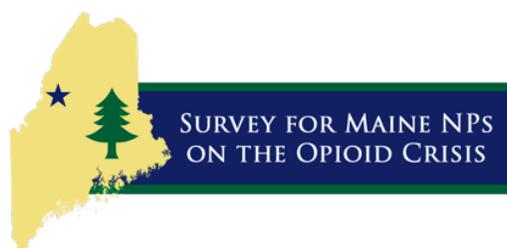
- Definitely yes** (Please enter name, phone number, and email address in the space provided. This information will be de-identified from your responses and remain confidential.)

Full name: _____

Email: _____

- Definitely not**

Appendix B: Initial Letter of Invitation



Thursday, October 11, 2018

Dear Maine Nurse Practitioner,

We are writing to ask for your help by participating in a short online survey that seeks to identify particular strengths and challenges of Maine nurse practitioners related to the opioid crisis, including caring for Mainers with opioid use disorder.

There will be a random drawing of a \$500 Visa gift card for survey participation. All Maine NPs are eligible to participate. The survey should take less than 10 minutes to complete. Your participation is voluntary and your responses are confidential and anonymous. If you have any questions, please reach out to Jordan and/or Kelley via the contact information below.

You can complete the online, mobile-friendly survey here:

[Survey for Maine NPs on the Opioid Crisis](https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5ylj4Uued7)

Or copy and paste the URL below into your internet browser:

https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5ylj4Uued7

Your responses are important to us. Thank you in advance for your participation on this important matter.

Best,

Handwritten signature of Jordan S. Porter in black ink.

Jordan S. Porter, RN

DNP Candidate, Belmont University

Nashville, TN

Maine Nurse Practitioner Association, Member

E: jordan.porter@pop.belmont.edu



Handwritten signature of Kelley Strout in black ink.

Kelley Strout, PhD, RN

Assistant Professor

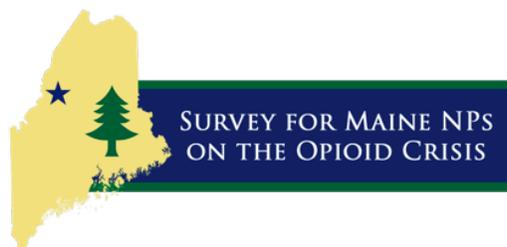
The University of Maine, School of Nursing

Orono, ME

E: kelley.strout@maine.edu



Appendix C: Email Reminder Scripts



Tuesday, October 16, 2018

Dear Maine Nurse Practitioner,

A couple days ago we sent an email to you asking for your participation in a short online survey for Maine NPs on the opioid crisis. **If you have not answered the online survey yet, we'd like to urge you to do so.** Your responses are important to us.

There will be a random drawing of a \$500 Visa gift card for survey participation. All Maine NPs are eligible to participate. The survey should take less than 10 minutes to complete. Your participation is voluntary and your responses are confidential and anonymous. If you have any questions, please reach out to Jordan and/or Kelley via the contact information below.

Follow this link to complete the online, mobile-friendly survey here:

[Survey for Maine NPs on the Opioid Crisis](https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5yj4Uued7)

Or copy and paste the URL below into your internet browser:

https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5yj4Uued7

Thank you in advance for your participation in this survey for Maine NPs on the opioid crisis.

Best,

Handwritten signature of Jordan S. Porter in black ink.

Jordan S. Porter, RN

DNP Candidate, Belmont University

Nashville, TN

Maine Nurse Practitioner Association, Member

E: jordan.porter@pop.belmont.edu



Handwritten signature of Kelley Strout in black ink.

Kelley Strout, PhD, RN

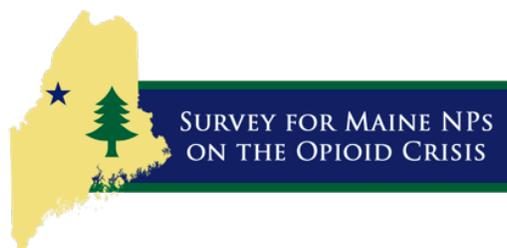
Assistant Professor

The University of Maine, School of Nursing

Orono, ME

E: kelley.strout@maine.edu





Tuesday, October 23, 2018

Dear Maine Nurse Practitioner,

Earlier this week we sent an email to you asking for your participation in a short online survey for Maine NPs on the opioid crisis. **We need your help to ensure the results are as precise as possible.**

There will be a random drawing of a \$500 Visa gift card for survey participation. All Maine NPs are eligible to participate. The survey should take less than 10 minutes to complete. Your participation is voluntary and your responses are confidential and anonymous. If you have any questions, please reach out to Jordan and/or Kelley via the contact information below.

Follow this link to complete the online, mobile-friendly survey here:

[Survey for Maine NPs on the Opioid Crisis](https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5yj4Uued7)

Or copy and paste the URL below into your internet browser:

https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5yj4Uued7

Thank you in advance for your participation in this survey for Maine NPs on the opioid crisis.

Best,

A handwritten signature in black ink that reads "Jordan S. Porter".

Jordan S. Porter, RN

DNP Candidate, Belmont University

Nashville, TN

Maine Nurse Practitioner Association, Member

E: jordan.porter@pop.belmont.edu



A handwritten signature in black ink that reads "Kelley Strout".

Kelley Strout, PhD, RN

Assistant Professor

The University of Maine, School of Nursing

Orono, ME

E: kelly.strout@maine.edu





Thursday, November 1, 2018

Dear Maine Nurse Practitioner,

Last week we sent an email to you asking for your participation in a short online survey for Maine NPs on the opioid crisis. **Close to 200 Maine NPs have responded. Let's keep the momentum going! We need your help to ensure the results are as precise as possible.**

There will be a random drawing of a \$500 Visa gift card for survey participation. All Maine NPs are eligible to participate. The survey should take less than 10 minutes to complete. Your participation is voluntary and your responses are confidential and anonymous. If you have any questions, please reach out to Jordan and/or Kelley via the contact information below.

Follow this link to complete the online, mobile-friendly survey here:

[Survey for Maine NPs on the Opioid Crisis](https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5ylj4Uued7)

Or copy and paste the URL below into your internet browser:

https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5ylj4Uued7

Thank you in advance for your participation in this survey for Maine NPs on the opioid crisis.

Best,

Handwritten signature of Jordan S. Porter in black ink.

Jordan S. Porter, RN

DNP Candidate, Belmont University

Nashville, TN

Maine Nurse Practitioner Association, Member

E: jordan.porter@pop.belmont.edu



Handwritten signature of Kelley Strout in black ink.

Kelley Strout, PhD, RN

Assistant Professor

The University of Maine, School of Nursing

Orono, ME

E: kelley.strout@maine.edu





Thursday, November 15, 2018

Dear Maine Nurse Practitioner,

A few weeks ago we sent an email to you asking for your participation in a short online survey for Maine NPs on the opioid crisis. **Close to 250 Maine NPs have responded. Let's keep the momentum going before the survey closes on Friday, November 30, 2018.**

There will be a random drawing of a \$500 Visa gift card for survey participation. All Maine NPs are eligible to participate. The survey should take less than 10 minutes to complete. Your participation is voluntary and your responses are confidential and anonymous. If you have any questions, please reach out to Jordan and/or Kelley via the contact information below.

Follow this link to complete the online, mobile-friendly survey here:

[Survey for Maine NPs on the Opioid Crisis](https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5ylj4Uued7)

Or copy and paste the URL below into your internet browser:

https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5ylj4Uued7

Thank you in advance for your participation in this survey for Maine NPs on the opioid crisis. We appreciate the work you do. Happy NP week!

Best,

Handwritten signature of Jordan S. Porter in black ink.

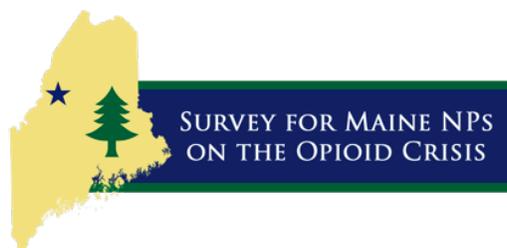
Jordan S. Porter, RN
DNP Candidate, Belmont University
Nashville, TN
Maine Nurse Practitioner Association, Member
E: jordan.porter@pop.belmont.edu



Handwritten signature of Kelley Strout in black ink.

Kelley Strout, PhD, RN
Assistant Professor
The University of Maine, School of Nursing
Orono, ME
E: kelley.strout@maine.edu





Tuesday, November 27, 2018

Dear Maine Nurse Practitioner,

Recently we sent an email to you asking for your participation in a short online survey for Maine NPs on the opioid crisis. **Close to 300 Maine NPs have responded. This is the final reminder to complete the survey if you have not already done so. The survey closes this Friday, November 30, 2018.**

There will be a random drawing of a \$500 Visa gift card for survey participation. All Maine NPs are eligible to participate. The survey should take less than 10 minutes to complete. Your participation is voluntary and your responses are confidential and anonymous. If you have any questions, please reach out to Jordan and/or Kelley via the contact information below.

Follow this link to complete the online, mobile-friendly survey here:

[Survey for Maine NPs on the Opioid Crisis](https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5ylj4Uued7)

Or copy and paste the URL below into your internet browser:

https://belmont.az1.qualtrics.com/jfe/form/SV_d7pbQ5ylj4Uued7

Thank you for your work as a Maine NP and your continued efforts to improve the health outcomes of Mainers.

Best,

A handwritten signature in black ink that reads "Jordan S. Porter".

Jordan S. Porter, RN

DNP Candidate, Belmont University
Nashville, TN
Maine Nurse Practitioner Association, Member
E: jordan.porter@pop.belmont.edu



A handwritten signature in black ink that reads "Kelley Strout".

Kelley Strout, PhD, RN

Assistant Professor
The University of Maine, School of Nursing
Orono, ME
E: kelley.strout@maine.edu

