

# Addition of a clinical pharmacist practitioner to an inpatient addiction triage team and related medication outcomes

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## Abstract

**Introduction:** At a Veterans Affairs Medical Center (VAMC), a clinical pharmacist practitioner (CPP) was added to an inpatient addiction triage team in August 2019 to provide education and recommendations regarding medications for alcohol use disorder (MAUD) and opioid use disorder (MOUD). Before the addition of the CPP, missed opportunities for MAUD and MOUD education and prescribing prior to discharge on non-psychiatric units were observed.

**Methods:** This was a single-center, single-site, retrospective, observational cohort study with a primary objective to compare initiation rates of MAUD/MOUD 12 months before and after the addition of the CPP to the addiction triage team. Secondary end points included 90-day medication possession ratio, 1- and 3-month emergency department visit rates, 1- and 3-month hospital readmission rates, and opioid education and naloxone distribution interventions for eligible patients with a diagnosis of opioid use disorder.

**Results:** Both statistically and clinically significant improvements in MAUD/MOUD initiation rates were found in the CPP intervention group compared with the historical control group (26.3% vs 4%,  $P < .0001$ ). Although secondary end points within this review were not found to be statistically significant, improvements were seen in the CPP intervention group compared with the historical control group related to medication possession ratio, and emergency department and hospital readmission rates.

**Discussion:** This study highlights the potential utility of a CPP to an inpatient addiction triage team to improve MAUD/MOUD prescribing rates in appropriate patients prior to discharge. Overall, the introduction of a CPP to an inpatient addiction triage team was feasible, well received by interprofessional team members, and required limited additional resources.

**Keywords:** medication treatment for opioid use disorder, medication treatment for alcohol use disorder, substance use disorder, buprenorphine, buprenorphine/naloxone, naloxone, naltrexone, acamprosate, topiramate, disulfiram, pharmacist, addiction consult, clinical pharmacist, clinical pharmacist practitioner

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## Introduction

According to the National Survey on Drug Use and Health (NSDUH), 19.3 million American adults (aged 18 years and older) had an SUD in 2019.<sup>1</sup> SUDs place a significant cost burden on American society of more than \$740 billion annually in lost workplace productivity, health care expenses, and crime-related costs.<sup>2</sup> Beyond the economic

burden, the presence of an SUD is associated with a 13.8-year reduction in life expectancy.<sup>3</sup>

It is estimated that 15% of patients who are hospitalized for either psychiatric or medical reasons have an active SUD diagnosis during admission that may introduce additional challenges with care.<sup>4</sup> For example, patients with OUD are more likely to require resource- and cost-intensive health care interventions and discharge without completing treatment, against medical advice.<sup>5</sup> An additional study demonstrated that patients with an SUD diagnosis or a combination of an SUD with an AUD diagnosis were more likely to return to the emergency department (ED) or be readmitted to the hospital within 30 days of discharge.<sup>6</sup> Moore and Rosenheck<sup>7</sup> evaluated 2 million veterans with psychiatric and/or SUD diagnoses and found AUD was the strongest predictor of medical surgical hospitalization. Despite previous studies showing medication initiation for SUD while inpatient is both feasible and effective, SUD treatment and medication initiation within general medical settings remains underused.<sup>6,8</sup>

Currently, the US FDA has approved 3 medications for the treatment of AUD including naltrexone (oral and the extended-release injectable [XR-NTX]), disulfiram, and acamprostate; however, there is also evidence to support the off-label use of topiramate and gabapentin.<sup>9,10</sup> At the time of this article, the Department of Veterans Affairs and the Department of Defense (VA/DoD) 2021 guidelines strongly recommend the use of naltrexone (oral and XR-NTX) or topiramate and suggest the use of acamprostate or disulfiram as first-line therapies for AUD. Gabapentin is suggested second-line when first-line therapy is contraindicated or ineffective. Concerning OUD, the 3 current FDA-approved medications for treatment include buprenorphine (excluding the buccal film or transdermal patch), methadone, and naltrexone (oral and XR-NTX). The 2021 VA/DoD Guidelines first-line recommendations for treatment include buprenorphine/naloxone or methadone.<sup>11</sup> Additionally, the 2021 guidelines<sup>11</sup> suggest the use of XR-NTX; however, there is insufficient evidence to recommend for or against oral naltrexone given the lack of efficacy in patients with poor medication adherence.

At a Veterans Affairs Medical Center (VAMC), an inpatient addiction triage team is available for consultation for patients with any underlying SUD admitted to acute medicine, psychiatric, or intensive care units. When this service was created, the team included addiction therapists and clinical psychologists to provide diagnostic assessment and recommendations for level of SUD care; however, a prescriber was not embedded as a core team member to directly address needs related to medications for alcohol use disorder (MAUD) and opioid use disorder (MOUD). There was not a standard process for screening and providing education related to MAUD/MOUD on nonpsychiatric

medical units prior to the addition of the clinical pharmacist practitioner (CPP) to the addiction triage team. If patients with AUD or OUD were candidates for pharmacotherapy, separate consults to both addiction and psychiatry consult teams were required to address both addiction counseling and medication needs. This process was complex, inconsistent, and missed opportunities for patients to meet with a prescriber for initiation of MAUD and/or MOUD prior to discharge were observed. This gap in care highlighted the need to have a prescriber readily available on the inpatient addiction triage team to assist with pharmacotherapy recommendations and educational needs.

The American Society of Health-System Pharmacists (ASHP)<sup>12</sup> endorses that pharmacists have the unique knowledge, skills, and responsibilities for assuming an important role in substance abuse prevention, education, and assistance. In August 2019, a CPP was added to the inpatient addiction triage team to increase access to MAUD and MOUD. The CPP member of the addiction triage team is a Board Certified Psychiatric Pharmacist (BCPP) with the specialized knowledge and skills to initiate and optimize MAUD and MOUD. Under this new model, the addiction therapist completing initial addiction triage consult assesses each patient with an SUD regarding interest in education and evaluation for pharmacotherapy treatment options by the team CPP if presenting with a diagnosis of AUD/OUD. The CPP provides comprehensive education on AUD/OUD diagnosis and guideline-recommended MAUD/MOUD options, including potential benefits, side effects, and treatment duration. Shared decision-making is used to secure patient agreement in a potential MAUD/MOUD plan prior to making recommendations to the consulting inpatient medical team. The CPP on the inpatient addiction triage team serves in a consultant role; it is their responsibility to document their assessment and recommendations within the patient's electronic medical record (EMR) as well as communicate directly with the consulting inpatient medical team to discuss recommendations and facilitate implementation. Although CPPs within the Veterans Health Administration (VHA) carry prescriptive authority, which allows them to initiate, continue, discontinue, and adjust medication therapy, the addiction triage CPP does not routinely prescribe unless needed to expedite timeliness of inpatient or outpatient medication orders when clinically indicated (ie, pending discharge). Because pharmacists are not permitted to prescribe buprenorphine for OUD per the Drug Addiction Treatment Act (DATA) of 2000, the addiction triage CPP partners with X-waivered physician members of the psychiatry consult team for inpatient comanagement and provision of discharge prescriptions.<sup>13</sup> The CPP is able to advise any prescriber with a Drug Enforcement Administration license on the consulting inpatient medical team on initiation and management of buprenorphine for opioid withdrawal for inpatient use. The goal of this study was to evaluate the impact of the addition

of a CPP to an inpatient addiction triage team on prescribing rates of MAUD/MOUD, provision of opioid education and naloxone distribution (OEND), and improve additional measures such as medication retention, ED visit, and readmission rates.

## Methods

This was a single-center, single-site, retrospective, observational cohort study conducted at a VAMC and exempt by the IRB. Study participants included patients  $\geq 18$  years of age admitted to the facility's acute medicine or intensive care units with an active diagnosis of AUD and/or OUD between August 1, 2018 to August 1, 2020. Patients also must have had an *Inpatient Addiction Consult* completed during hospitalization which required the patient to be seen for an initial evaluation by a member of the inpatient addiction triage team (addiction therapist or clinical psychologist) before discharge. Patients were excluded if the consult was placed for an SUD diagnosis other than AUD or OUD or if the patient was admitted or transferred to the inpatient psychiatry unit which had daily CPP coverage for MAUD/MOUD services prior to the addition of the CPP to the addiction triage team. Additionally, patients were excluded if they declined education and evaluation for MAUD and/or MOUD, were unable to be interviewed (eg, acute illness, altered mental status), or were palliative or hospice level of care. This information was gathered through chart review of completed *Inpatient Addiction Consult* notes to identify if a patient agreed to CPP education and evaluation for MAUD/MOUD. Review of MAUD/MOUD continuation and initiation was limited to naltrexone (oral and XR-NTX), acamprosate, disulfiram, topiramate, and buprenorphine/naloxone. Gabapentin was excluded from review because of difficulties differentiating the indication for use. Methadone was also excluded from review because the VAMC discussed within this study does not have an opioid treatment program to support methadone continuation upon discharge from medical admission. The historical control group was identified as patients with an addiction consult completed before the addition of a CPP (August 1, 2018 to July 31, 2019) and the CPP intervention group included those after the addition of the CPP (August 1, 2019 to July 31, 2020). The primary end point measured initiation rates of MAUD/MOUD before and after the addition of the CPP. For the historical control group, the primary end point was met if a member of the acute medicine team or psychiatry consult team evaluated the patient and implemented pharmacotherapy. For the CPP intervention group, the primary end point was met if the recommendation to begin pharmacotherapy was accepted and initiated by the consulting medical team. For medication implementation, this specifically included providing a new outpatient prescription for the designated MAUD/MOUD agent or administering XR-NTX before discharge. Of note, patients

who were established on MAUD/MOUD therapy at admission were not included in the primary end point analysis. Secondary end points were to compare 90-day medication possession ratio (MPR), 1- and 3-month ED visit rates, 1- and 3-month hospital readmission rates, and OEND intervention rates for eligible patients with a diagnosis of OUD before and after the addition of the CPP. To evaluate medication adherence for patients initiated on MAUD/MOUD, a 90-day MPR was calculated by dividing the sum of days' supply for all fills by the number of days. A cutoff of 0.8 was defined as a surrogate marker for acceptable medication adherence.<sup>14</sup> Eligibility for OEND was identified as patients with a diagnosis of an OUD who either did not have an active prescription of naloxone within the past 12 months or denied having current access to naloxone (eg, lost or used active prescription). Attempts were made to provide overdose prevention and naloxone education services to appropriate patients regardless of interest in MOUD; however, based on exclusion criteria, patients not interested in MOUD were excluded in final analysis. Both primary and secondary end points were examined using Fisher exact or  $\chi^2$  statistical analysis.

## Results

There were 336 patients identified during the study period who had an *Inpatient Addiction Consult* completed. Overall, there were 274 patients identified for study inclusion. The most common reasons for exclusion were SUD diagnoses other than AUD/OUD, patient declined CPP education and evaluation for MAUD/MOUD, or the patient was admitted or transferred to a psychiatric unit. There were 151 patients included in the historical control group and 123 in the CPP intervention group. No statistically significant differences in the baseline characteristics assessed were found, including previous trials of MAUD/MOUD or an active order of MAUD/MOUD on admission (Table 1). The most prevalent SUD diagnosis within 86% of the historical control group and 85% of the CPP intervention group was AUD, whereas OUD was present in only 9% and 11% of patients, respectively. There were also 5% of patients in the historical control group and 4% in the CPP intervention group who carried a co-occurring diagnosis of AUD/OUD. For the primary end point, 7.4% of eligible patients in the historical control group were initiated on MAUD/MOUD before discharge and 26.3% in the CPP intervention group ( $P < .0001$ ; Table 2). For patients started on MAUD/MOUD at discharge, the rate of MPR  $> 0.8$  was 40% in the historical control group compared with 57% in the CPP intervention group ( $P = .47$ ). Although not found to be statistically significant, there were decreased rates in both 1- and 3-month ED visits and readmissions in the CPP intervention group compared with the control group (Table 3). Concerning OEND, 3 of the 15 eligible patients in the

**TABLE 1: Baseline characteristics of the study**

Characteristic	Historical Control Group, n = 151	Clinical Pharmacist Practitioner Intervention Group, n = 123	P Value
Average age, y	56	57	.64
Age range, y	28-79	30-78	...
Sex, No. (%)			
Male	149 (99)	120 (98)	.82
Female	2 (1)	3 (2)	.51
Race, No. (%)			
White	110 (73)	83 (67)	.40
African American	39 (26)	37 (30)	.52
Native Hawaiian or Pacific Islander	1 (<1)	0	...
American Indian/Alaskan	0	1 (~1)	...
Declined to answer	1 (<1)	2 (2)	...
SUD diagnosis, No. (%)			
AUD	130 (86)	104 (85)	.85
OUD	13 (9)	14 (11)	.57
AUD + OUD	8 (5)	5 (4)	.85
No. of patients with prior MAUD/MOUD trials, N (%)	69 (46)	70 (56)	.08
MAUD/MOUD active at admission, N (%)	15 (10)	9 (7)	.58
Patients eligible for MAUD/MOUD during admission, No. (%)	136 (90)	114 (93)	.58

MAUD = medications for AUD; MOUD = medications for OUD.

historical control group and 4 of the 14 eligible patients in the CPP intervention group received naloxone prior to discharge ( $P = .68$ ).

## Discussion

This retrospective review of the addition of a CPP to an inpatient addiction triage team shows statistically and clinically significant improvements in MAUD/MOUD initiation rates prior to discharge. Although secondary end points within this review were not found to be statistically significant, improvements were seen in the CPP intervention group compared with the historical control group related to MPR, and ED and hospital readmission rates. Further studies would be needed to determine the clinical significance of these findings.

Overall, this review adds to the growing literature to support the expansion and use of CPPs to improve clinical

outcomes. Prior to this review, a previous study by Tran et al<sup>15</sup> discussed the implementation of a substance use intervention team (SUIT) service at an academic medical center. This interdisciplinary team was composed of physicians, nurse practitioners, a clinical pharmacist, social workers, and a nurse. The SUIT team's responsibilities included screening, consultation, and initiation of medication if appropriate. Of note, the service attributed the success of improved SUD medication initiation as being due to having a designated pharmacist to enhance strategies for medication use, including comprehensive disease state and medication education.<sup>15</sup> The present study replicates these findings of an increase in MAUD/MOUD prescribing rates associated with presence of a dedicated CPP on an addiction consult team. Clinical pharmacist practitioners with expertise in MAUD/MOUD management are uniquely positioned to enhance patient understanding and acceptance of these treatment options, which is essential to ongoing treatment retention. Optimizing the role of CPPs who are available in inpatient medical, or addiction consultant roles has the potential to improve the timeliness of MAUD/MOUD

**TABLE 2: Initiation rates of medications for AUD/medications for OUD in patients not actively on treatment at admission**

End Point	Historical Control Group, n = 136 <sup>a</sup>	Clinical Pharmacist Practitioner Intervention Group, n = 114 <sup>a</sup>	P Value
Initiation rates, No. (%)	10 (7.4)	30 (26.3)	.0001

<sup>a</sup>No. for Table 2 excludes patients on medications for AUD and/or medications for OUD prior to admission.

**TABLE 3: One- and three-month emergency department (ED) visit rates and hospital readmission rates**

End Point	Historical Control Group, n = 151	Clinical Pharmacist Practitioner Intervention Group, n = 123	P Value
1-mo ED visits, % patients with ED visit	19.8	17.1	.66
3-mo ED visits, % patients with ED visit	36	27.6	.16
1-mo Hospital readmissions, % patients rehospitalized	15.2	13	.72
3-mo Hospital readmissions, % patients rehospitalized	27.8	20.3	.20

services and increase this likelihood of implementation prior to discharge. For example, the previous model for MAUD/MOUD services at this facility relied on physician evaluation from the high-volume psychiatry consult service who may have been triaging several patients with potentially high acuity mental health needs. For patients admitted for a medical condition as the primary diagnosis with a secondary diagnosis of OUD with opioid withdrawal, the CPP can advise any prescriber with a Drug Enforcement Administration license on the consulting inpatient medical team on the initiation and inpatient management of buprenorphine.<sup>16</sup> Decreasing the time to effective opioid withdrawal management with buprenorphine has the potential to make meaningful differences in patient outcomes, such as preventing early discharge without an evidence-based OUD treatment plan in place. This CPP's collaborative relationship with psychiatry consult team physicians has been effective in enhancing provider resources while ensuring patient access to buprenorphine prescriptions for OUD at the time of discharge when an X-waivered provider is needed. Use of CPPs in this setting may also be valuable looking forward. By 2030, it is estimated there will be a 32% shortage of psychiatrists.<sup>17</sup> With the clinical expertise, comprehensive education, and flexibility in clinical responsibilities throughout the day, CPPs can be an asset to minimize gaps in psychiatric care in the future.

The addition of a CPP to the inpatient addiction triage team at this VAMC was feasible and required limited resources for implementation. To integrate the CPP into the inpatient addiction triage team, scheduled meetings occurred to adjust the current workflow of the consult to include the CPP. Additionally, a template was developed for the CPP to use to provide recommendations within a patient's EMR related to MAUD and/or MOUD. Finally, verbal education was provided to acute medicine providers, psychiatry consult providers, and residents on the new role of the CPP on the addiction consult team. The initiation of this role did not necessitate an additional full-time equivalent. With an average of 5 to 10 consults per week, this service was able to be integrated by the current CPP on the inpatient psychiatry unit with the assistance of postgraduate year 1 (PGY1) and PGY2 pharmacy residents. Further expansion of service may require additional full-time equivalent funding.

There are limitations within this study that should be considered. The manual chart review that was required for data collection is subject to human error. In addition, this review was not able to investigate reasons why MAUD or MOUD were not initiated following addiction consult team recommendations secondary to lack of documentation in the EMR by the primary team in both the historical control group and CPP intervention group. Because of this, it is unknown whether CPP recommendations (both for MAUD/MOUD and/or OEND) were not accepted by the acute medicine team, or if alternative factors limited implementation of therapy, such as patient discharge prior to implementation of accepted recommendations. This therefore limits the ability of the inpatient addiction triage team to evaluate improvements in workflow, including CPP use. Also, the initiation of gabapentin for the treatment of AUD was not evaluated in this study because of challenges assessing whether the use was related to AUD or another indication. Because gabapentin is not a first-line treatment for AUD according to VA/DoD guidelines, this should limit its detriment to the study's primary end point. Because this study overlapped into the COVID-19 pandemic, further challenges were seen in the feasibility of encounters and interventions. Although all patients in the historical control group had consults completed by face-to-face evaluation, a significant portion of the CPP intervention group had limited face-to-face evaluation and consults were typically completed via telephone. Although not analyzed, this significant adjustment in patient interaction may have impacted interventional outcomes related to this service.

Efforts to continue to expand the role of the CPP within the inpatient addiction triage team could potentially further improve clinical outcomes. Generally, the standard of practice for a consultant team is to defer initiation of recommendations to the primary team; however, the prescriptive authority CPPs carry within the VHA present an opportunity to expedite medication initiation when appropriate to ensure implementation prior to discharge. Although there are limitations in prescribing certain medications by a CPP (ie, buprenorphine for OUD), the CPP can ensure access to this important treatment option through collaboration with X-waivered physician members of the psychiatry consult team. Expansion to include CPPs in federal regulations for prescribing of buprenorphine for

OUD would significantly enhance access to this life-saving medication through this addiction consultant role and all other treatment settings across the health care continuum. Another area that may improve clinical outcomes is ongoing education regarding the use and role of the CPP on the inpatient addiction triage team for acute medicine and psychiatry consult team prescribers given the continuous change of residents on each service throughout the year. This may be best achieved by using clinical pharmacists embedded on the acute medicine teams to provide verbal education to new practitioners as they rotate within the service. Lastly, an opportunity to further increase attention to OEND among all inpatient pharmacists and providers was identified. Staff education can ensure awareness of quick order sets and the standing order that exists at this facility for any clinical pharmacist (regardless of prescriptive authority) to order naloxone for overdose prevention.

## Conclusion

Statistically and clinically significant improvements in MAUD/MOUD initiation rates can be seen with the addition of a CPP to an inpatient addiction triage team. Although secondary end points were not found to be statistically significant, there were improvements in MPR, ED rates, and hospital readmission rates in the CPP intervention group compared with the historical control group. This study highlights the potential utility of a CPP to an inpatient addiction triage team to improve accessibility and education to patients interested in MAUD and/or MOUD and increase prescribing before discharge. Future efforts should continue to focus on the integration of CPPs within an inpatient addiction triage team and overall clinical significance.

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