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Co-occurring implementation strategies: The effects of academic detailing for opioid use disorder campaign on the advancing pharmacological treatments for opioid use disorder (ADaPT-OUD) study

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Abstract

Background

Barriers at the system, clinician, and patient level limit access to medications for opioid use disorder (MOUD). The Advancing Pharmacological Treatments for Opioid Use Disorder (ADaPT-OUD) study implemented an external facilitation strategy within the Veterans Health Administration (VHA) aimed at facility-level barriers to improve uptake of MOUD. During ADaPT-OUD, an independent Academic Detailing Services Opioid Agonist Treatment of OUD Campaign was co-occurring and aimed to increase evidence-based practice for OUD at the clinician level. While both these initiatives aim to increase MOUD reach, they address different barriers and did not intentionally collaborate. Thus, understanding the interaction between these two independent implementation initiatives and their effect on MOUD reach will further inform and mold future implementation efforts of MOUD.

Methods

This was a secondary analysis of the ADaPT-OUD study that included 35 VHA facilities in the lowest quartile of MOUD reach; eight received the ADaPT-OUD external facilitation and 27 matched sites received implementation as usual. The number of academic detailing (AD) visits during ADaPT-OUD was used as a proxy for the intensity of Academic Detailing for OUD Campaign activity. The interaction between external facilitation status and AD intensity was evaluated by comparing the change in facility-level MOUD reach.

Results

There was a general increase in the number of AD visits, in both external facilitation and implementation as usual sites, over the course of ADaPT-OUD's implementation period. A non-statistically significant, positively sloped,

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linear relationship was observed between average number of AD visits per quarter and change in MOUD reach in facilities also receiving ADaPT-OUD external facilitation that was not observed in the implementation as usual sites.

Conclusion

Co-occurring initiatives focusing on different barriers to MOUD access have the potential to further increase MOUD in low-performing facilities, but further research into timing, quality, and collaboration between initiatives are warranted.

Plain Language Summary: Medication treatment of opioid use disorder (MOUD) is a key element in addressing the opioid epidemic. The development, approval, and effectiveness of buprenorphine and naltrexone have expanded access to MOUD from specialty opioid treatment programs to office-based treatment. However, uptake of these evidence-based treatments across the Veterans Health Administration (VHA) is variable. To address this gap in care within the VHA, The Advancing Pharmacological Treatment for Opioid Use Disorder (ADaPT-OUD) study implemented an external facilitation strategy aimed at facility-level barriers at low-adopting VHA facilities while the VHA Pharmacy Benefits Management Academic Detailing Services Opioid Agonist Treatment of OUD Campaign implemented academic detailing with the goal to address clinician-level barriers. This article evaluates the effect these two co-occurring and independent initiatives had on each other and MOUD reach. The results suggest a trend toward a positive synergistic relationship between the two initiatives, that warrants further study and evaluation to inform further implementation efforts.

Keywords

opioid use disorder, medication treatment for opioid use disorder, implementation science, substance use disorder, veterans

Introduction

Opioid use disorder (OUD) is complex, chronic, and relapsing. It is a major contributor to overdose deaths and negatively impacts individual, economic, and societal health (Alpren et al., 2020; Birnbaum et al., 2011; Griffin et al., 2015; Kirson et al., 2015; Perlman & Jordan, 2018; Rice et al., 2014; Strang et al., 2020). In the United States, formulations of naltrexone and buprenorphine are approved for the medication treatment of opioid use disorder (MOUD) and prescribed in office-based settings (Joudrey et al., 2021). Improving access to MOUD are national priorities for the United States and the Veterans Health Administration (VHA; Donohue et al., 2021; Perry et al., 2022; Wyse et al., 2018).

Barriers to access to MOUD have been identified at system, clinician, and patient levels (Gordon et al., 2011; Oliva et al., 2011). In response, the VHA has taken steps toward increasing access to MOUD through national initiatives and guidelines, and has developed a performance metric, the ratio of patients with OUD diagnoses receiving MOUD of all patients with OUD diagnoses, referred to as MOUD reach going forward (Management of Substance Use Disorder (SUD; 2021)—VA/DoD Clinical Practice Guidelines, n.d.). While these steps have increased MOUD nationally, in 2017, only 34.8% of VHA patients with an OUD diagnosis were receiving MOUD (Wyse et al., 2018). Furthermore, access to office-based treatments varies significantly across facilities, and clinicians who had acquired an X-waiver, a recently eliminated requirement for buprenorphine prescribing, were prescribing below capacity (Finlay et al., 2016; Oliva et al., 2012; Removal of DATA Waiver (X-Waiver) Requirement | SAMHSA, n.d.; Valenstein-Mah et al., 2018).

To address the interfacility gap, the Advancing Pharmacological Treatments for Opioid Use Disorder (ADaPT-OUD) study implemented an external facilitation strategy aimed at facility-level barriers to improve MOUD reach in low-adopting VHA facilities (Hagedorn et al., 2018, 2022). External facilitation is an implementation strategy that works by developing local implementation teams, building on local resources and strengths, tailoring strategies to specific facility-level barriers, and promoting sustained attention to implementation (Stetler et al., 2006).

During ADaPT-OUD's implementation period, there were co-occurring initiatives within VHA aimed at improving MOUD reach (Wyse et al., 2018). One initiative was the VHA Academic Detailing Services Opioid Agonist Treatment of OUD Campaign, referred to as the Academic Detailing OUD Campaign going forward, which was managed and operated by VHA Pharmacy Benefits Management (Wells et al., 2016). As the name implies, the Academic Detailing OUD Campaign employed the implementation strategy of academic detailing (AD). AD is designed to augment clinician's prescribing and clinical decision-making to be aligned with evidence-based practice by delivering unbiased information in one-on-one interactions (Avorn & Soumerai, 1983; Soumerai & Avorn, 1990). At the VHA, AD visits are delivered primarily by trained clinical pharmacist practitioners (Wells et al., 2016).

Understanding the effect implementation strategies have on each other and MOUD reach can inform if, when, and how to implement specific strategies either independently or in combination to have the greatest and most

cost-effective impact. Since the Academic Detailing OUD Campaign focused on clinician education and the ADaPT-OUD study focused on facility-level barriers, the implementation initiatives addressed different barriers to MOUD. Thus, the initiatives could be hypothesized to have a synergistic effect at a facility and lead to greater improvements in MOUD reach when in combination. To study the impact of the interaction of these two independent initiatives on facility MOUD reach, we determined the number of AD visits at VHA facilities during ADaPT-OUD's implementation period. We hypothesized that greater intensity of AD activity during active external facilitation would lead to a greater increase in MOUD reach than AD alone.

Methods

The ADaPT-OUD study used a 12-month external facilitation strategy to improve MOUD reach at eight VHA facilities in the lowest quartile of MOUD reach among all 140 VHA facilities at the time of eligibility (October 2017). Details of the study are described elsewhere (Hagedorn et al., 2018). In brief, 35 VHA facilities in the lowest quartile of MOUD reach were stratified into four homogenous strata based on a median split of a number of actionable patients (diagnosed with OUD but without a current prescription for MOUD) and MOUD reach. Both ADaPT-OUD and the Academic Detailing OUD Campaign focused on increasing access to buprenorphine because of the ability to prescribe in outpatient clinics. Eight facilities, two from each stratum, were randomly selected to participate in ADaPT-OUD's external facilitation. The remaining sites within the stratum were matched to external facilitation sites and received implementation as usual which may have included Academic Detailing OUD Campaign AD visits. During the study, the ADaPT-OUD team interviewed key implementation partners at the eight external facilitation sites; interviews were used to develop site reports detailing barriers and facilitators to the implementation of MOUD. Next, the external facilitation began with a 1-to-2-day site visit during which the reports were reviewed with local implementation teams and used to formulate individualized action plans consisting of implementation goals and corresponding strategies. Several didactic components were included in the site visit, based on the educational deficits and needs identified by the local implementation teams. Moreover, during the 12-month external facilitation, each site received monthly facilitation teleconferences, as-needed expert consultations with national clinical and implementation experts, and quarterly audits and feedback on the MOUD reach. Ethical approval and waiver of informed consent were obtained from the Veterans Affairs Institutional Review Board (#16-23) and the Standards for Reporting Implementation Studies (StaRI) checklist was used to report this implementation study (Pinnock et al., 2017).

At VHA, academic detailers engage with clinicians through targeted outreach using educational materials and real-time clinical dashboards that contain data on prescribing patterns and are used to identify patients eligible for intervention (Lau et al., 2019; Wells et al., 2016). Academic detailers work with clinicians to identify barrier-resolution strategies to align prescribing behavior with evidence-based practice. Most facilities had at least some AD visits during ADaPT-OUD's implementation period making it impossible to compare facilities with and without AD; therefore, the number of AD visits was a proxy for the intensity of Academic Detailing OUD Campaign activity. The number of AD visits specific to the Academic Detailing OUD Campaign for external facilitation sites and their matched implementation as usual sites were captured using Salesforce.com for the quarter prior to the site visit and for each of the four quarters during ADaPT-OUD's implementation period. Saleforce.com is an online cloud-based platform designed for customer relationship management, data collection, and reporting. To operationalize the number of AD visits co-occurring during the 12-month external facilitation, the average number of AD visits per quarter was calculated.

Facility-level MOUD reach was used as the primary outcome measure to assess practice change. Baseline MOUD reach was defined as the MOUD reach the quarter prior to the ADaPT-OUD site visit date (i.e., the start date of the 12-month external facilitation), and the postintervention MOUD reach was defined as the MOUD reach during the quarter that included the one-year post-site visit date (i.e., the final date of the 12-month external facilitation).

Statistical analysis

This post hoc analysis utilized mixed effect count data models to assess if there was a significant difference in number of AD visits at baseline and during ADaPT-OUD's implementation period between external facilitation sites and implementation as usual sites, and if there was a significant interaction (synergistic effect) between external facilitation status and co-occurring number of AD visits on change in MOUD reach between the two time periods. It is plausible to assume that sites nested within each stratum are correlated, therefore, a nested random site within the stratum effect term was included in the model. The number of AD visits and MOUD patients are assumed to have a Poisson or a negative binomial distribution, determined by a likelihood chi-squared test, where the log of their means was assumed to be a linear function of the following independent variables: external facilitation status, time, and their interaction. For both count variables, the negative binomial distribution was found to fit better than Poisson (AD visits

Table 1
Number of AD Visits During Different Time Periods and Change in MOUD Reach (%) for the 8 ADaPT-OUD External Facilitation Sites and Their Matched Implementation as Usual Sites.

Facility	Number of AD visits the quarter prior to site visit	Avg number of AD visits per quarter during external facilitation	Change in MOUD reach from baseline to 12 months postsite visit
1	0	0.3	9.5
Implementation as usual means	1.7	5.5	3.9
2	0	5.3	14.2
Implementation as usual means	4.3	3.4	10.2
3	1	5.5	3.7
Implementation as usual means	5.3	12.2	10.5
4	2	8.5	20.9
Implementation as usual means	0	8.6	9.7
5	0	9.0	20.3
Implementation as usual means	0	1.0	12.3
6	0	9.3	15.9
Implementation as usual means	17.5	6.1	11.8
7	5	11.5	12.7
Implementation as usual means	0.7	7.3	5.8
8	4	20.0	−1.4
Implementation as usual means	6.5	3.3	7.5

MOUD = medication treatment of opioid use disorder; ADaPT-OUD = Advancing Pharmacological Treatment for Opioid Use Disorder; AD = academic detailing.

$\chi^2 = 91.12$, $p < 0.001$; MOUD reach $\chi^2 = 22.71$, $P < 0.001$). For the MOUD reach outcome, the number of AD visits and its interactions with external facilitation status, time, and external facilitation status by time were also included along with an offset variable, the number of OUD patients. For the number of AD visits outcome, we were interested if the external facilitation sites and their implementation as usual sites differed during the baseline quarter and ADaPT-OUD's implementation period. For the MOUD reach, we were mainly interested in whether the interaction of external facilitation status with a number of AD visits was significantly different from zero.

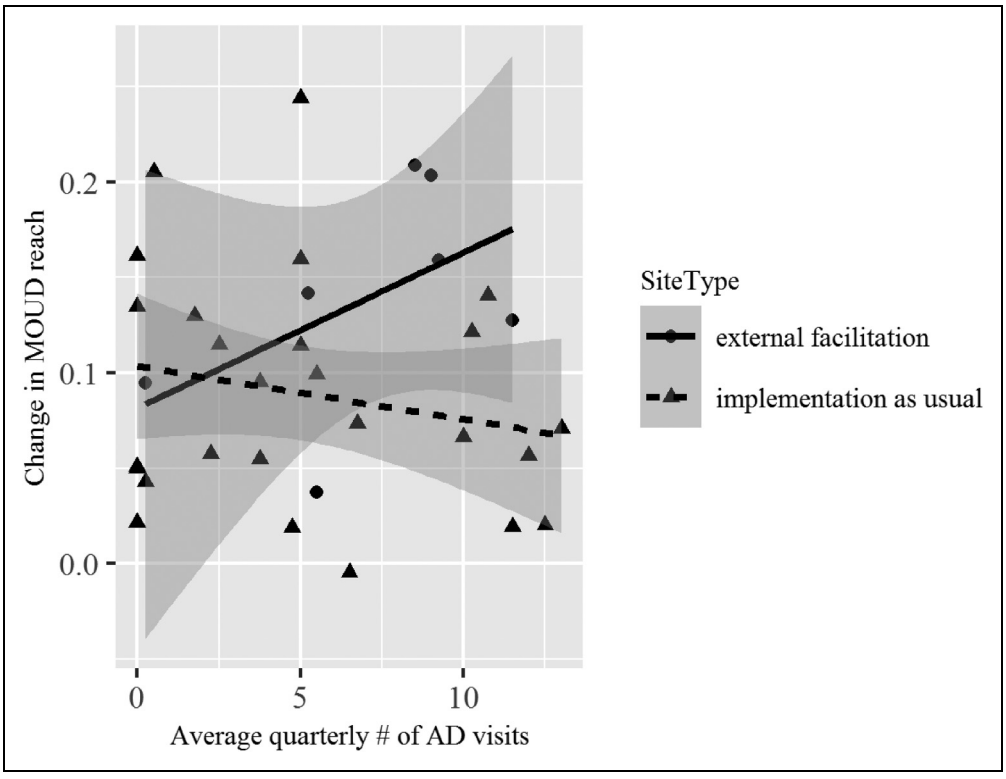
Results

The eight external facilitation and the 27 matched implementation as usual sites had a low number of AD visits the quarter prior to ADaPT-OUD's implementation period with an average of 1.5 (SD = 2, median = 0.5, range = 0 to 5) and 5.2 (SD = 14, median = 0, range = 0 to 69) visits, respectively. Four external facilitation and 16 implementation as usual sites had no AD visits prior to ADaPT-OUD's implementation period. These averages via expected log counts were not significantly different ($\beta = -1.25$, SE = 1.01, $z = -1.23$, $p = .22$). During ADaPT-OUD's implementation period, external facilitation sites had a range of 0.3 to 20 average AD visits per quarter and implementation as usual sites had a range of 0 to 24.8 average AD visits per quarter. The means of these averages were 8.7 (SD = 5.7) and 5.9 (SD = 5.8) visits, and medians were 8.8 and 5.0 visits, respectively. The expected number of AD visits was again not significantly different ($\beta = 0.23$, SE = 0.26, $z = 0.89$, $p = .37$; Table 1). Even though external facilitation sites had fewer AD visits than implementation as usual sites the quarter prior to ADaPT-OUD's implementation period, and then reversed with more AD visits than implementation as usual sites during ADaPT-OUD's implementation period, on average, there was no interaction of external facilitation status and time, yet there was a positive time effect overall ($\beta = 1.08$, SE = 0.33, $z = 3.26$, $p < .01$).

In assessing if there was a synergistic effect between the number of AD visits and external facilitation status with respect to MOUD reach over time, all two-way interactions (e.g., Number of AD Visits × External Facilitation Status; Number of AD Visits × Time; External Facilitation Status × Time), the three-way interaction (e.g., Number of AD Visits × External Facilitation Status × Time), and the number of AD visits were not significant. However, the time effect was again positive ($\beta = 0.41$, SE = 0.06, $z = 6.91$, $p < .001$).

Two sites (one external facilitation and one implementation as usual) had an average number of AD visits per quarter during ADaPT-OUD's implementation period more than two standard deviations above the mean. When these two sites were excluded, the scatterplot of the data showed a potential interaction pattern between external facilitation status and an average number of AD visits per quarter (Figure 1), therefore the analysis was rerun as a sensitivity analysis. With the two sites excluded, the three-way interaction (e.g., Number of AD Visits × External Facilitation Status × Time) was not significant,

Figure 1
Change in MOUD Reach as a Function of Average Number of AD Visits per External Facilitation Quarter.



and the interaction of external facilitation status and number of AD visits was the only two-way interaction significant at the 0.05 level ($\beta = 0.05$, SE = 0.03, $z = 1.96$, $p = .05$).

To explore further, we performed two separate subanalyses to estimate the magnitude of the effect that one additional AD visit would have on MOUD reach for both external facilitation and implementation as usual sites. Due to small sample sizes (seven external facilitation and 26 implementation as usual sites) neither of the two simple effects was significantly different from zero. However, the estimated effect one additional AD visit had for the external facilitation sites ($\beta = 0.04$, SE = 0.05, $z = 0.93$, $p = .35$) was slightly larger than for implementation as usual sites ($\beta = 0.00$, SE = 0.00, $z = 0.74$, $p = .46$). There was also a time effect for both groups in which each group increased their MOUD reach over the 1-year ($\beta = 0.52$, SE = 0.22, $z = 2.42$, $p = .02$ for external facilitation sites and $\beta = 0.37$, SE = 0.06, $z = 6.30$, $p < .001$ for implementation as usual sites).

Discussion

We sought to examine if the VHA's Academic Detailing OUD Campaign which used academic detailing as an implementation strategy targeting clinician barriers to MOUD and the ADaPT-OUD study which implemented an external facilitation strategy targeting facility-level barriers to MOUD were synergistic in improving MOUD reach in VHA facilities where they both had activities. In the current study, external facilitation and implementation as usual sites did not differ in the number of AD visits prior to and during ADaPT-OUD's implementation period, and both groups experienced a general increase in the number of AD visits and MOUD reach over the course of ADaPT-OUD's implementation period. Furthermore, there appeared to be a positive, nonsignificant, linear relationship whereby external facilitation sites with more AD visits had higher MOUD reach and vice versa as compared to implementation as usual sites where this positively sloped linear relationship did not seem to exist. However, simple effects, along with 95% confidence bands, show that this visual positive linear relationship was weak especially due to the small number of external facilitation sites.

There are limitations within this post-hoc study of the potential synergy between ADaPT-OUD and the Academic Detailing OUD Campaign. The sample size was small, and the study was not powered to detect the interaction between the external facilitation status and

AD visits. Furthermore, this study evaluated the number of AD visits as a proxy for the intensity of Academic Detailing OUD Campaign activity, not the reasons for, content or quality of the AD visits. Since "more" visits are not necessarily synonymous with "better" visits, specific characteristics of AD visits could be more associated with MOUD reach. In addition, there may be a ceiling effect in which additional AD visits result in diminishing returns. There was also no formal coordination between the two initiatives. While there was no difference in the number of AD visits the quarter prior to ADaPT-OUD's implementation period, it is plausible that engagement in the Academic Detailing OUD Campaign could either have promoted engagement in ADaPT-OUD (i.e., receiving additional support related to MOUD uptake) or discouraged engagement in ADaPT-OUD (i.e., the Academic Detailing OUD Campaign will solve the problem). Finally, this study evaluated the number of AD visits the quarter prior to and the quarters during ADaPT-OUD's implementation period, and it did not evaluate the number of AD visits after. Since external facilitation aims to provide resources to clinicians and leadership, identify barriers and facilitators, and employ appropriate implementation strategies to the identified barriers at the facility level, implementing external facilitation prior to clinician-focused AD visits could enhance impact.

While the ADaPT-OUD external facilitation had an independent positive effect on MOUD reach (Hagedorn et al., 2022), further research into the timing of external facilitation in coordination with AD visits would provide more information on the impact the two implementation strategies have on MOUD reach and each other. The possible trend identified in this study leads to many additional questions for exploration in future research. As the opioid epidemic continues, understanding in more detail how these implementation strategies interact could further inform implementation efforts of other evidence-based prescribing practices and has the potential to impact individual, economic, and societal health.

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Declaration of Conflicting Interests

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