ORIGINAL RESEARCH

Increasing North Carolina's Workforce Capacity for Prescribing Buprenorphine Products

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BACKGROUND Inadequate access to opioid use disorder (OUD) treatment is a public health concern. Rates of opioid-related poisoning deaths are increasing in North Carolina and access to OUD treatment is especially sparse in rural areas. DEA-X-waivered providers that can prescribe buprenorphine as a medication for opioid use disorder (MOUD) play an essential role in treating OUD. Increased workforce capacity to treat OUD in an evidence-based, equitable, and patient-centered way is needed. Gaps persist in continuing professional education and academic training.

METHODS Description of an interdisciplinary training team effort to engage medical residencies and advanced practice provider (APP) programs across North Carolina in a set of subsidized trainings about substance use disorder treatment and medication-assisted treatment (MAT), with the goal of increasing capacity to administer MOUD, based on each program's needs. Uptake was independently evaluated.

RESULTS Engagement exceeded initial goals: 72 unique trainings related to MAT were administered to 1512 providers from 30 residency and 7 APP programs. By the end of the grant period, 902 participants completed a training required to obtain a DEA-X waiver. Evaluation of training uptake identified facilitators and barriers specific to residents and APP trainees.

LIMITATIONS Limitations included difficulty coordinating training with existing didactic and clinical schedules during the project time frame and challenges identifying implementation leaders at training sites.

CONCLUSION This project highlights a successful and potentially replicable approach to offering structured MAT capacity-building training in combination with technical assistance (TA) within medical education programs.

Medication-assisted treatment (MAT) is the evidence-based approach recommended for people with opioid use disorder (OUD), considered a chronic illness by biomedical providers [1, 2]. This approach involves a combination of medication and psychosocial interventions including counseling and behavioral therapies to treat the "whole patient" [2]. Federal law requires those who would prescribe buprenorphine products to treat OUD to complete specific training and then obtain a DEA-X waiver from the Substance Abuse and Mental Health Services Administration (SAMHSA) [3]. To apply for the X waiver, physicians must complete 8 hours of training, while advanced practice providers (APPs), including physician assistants and nurse practitioners, must complete 24 hours [3]. As of early 2021, the US Department of Health and Human Services (DHHS) updated requirements for prescribing buprenorphine to allow physicians and APPs to prescribe it for 30 or fewer patients without the requisite training [4].

Despite the availability of safe, evidence-based medications, individuals with OUD still lack access to treatment [5], especially in rural areas and counties with higher overdose rates [6, 7]. Policy makers feel strongly that expanding the buprenorphine prescriber workforce is critical to turning the tide of the ongoing opioid overdose emergency. Increasing the number of X-waivered providers is a specified strategy in North Carolina's Opioid Action Plan 2.0, released by Governor Roy Cooper in 2019 [8].

Stigma is a known barrier to eligible providers' willingness to offer MAT, especially in rural areas [9]. Despite efforts to increase treatment availability, a gap between need for services and the availability of providers persists [6, 10]. The shortage and uneven distribution of buprenorphine providers in the South has impeded access to medications for opioid use disorder (MOUD) [10–15]. Facilitating APPs' ability to obtain waivers and prescribe for more patients could hold the greatest potential for sustainably expanding access to OUD treatment, especially in rural and underserved areas [16–19]. Increasing prescribing capacity may also be a step toward more equitable access to OUD treatment for historically and currently structurally marginalized communities that otherwise have even less ability to obtain MAT [20–24]. Data suggest that incorporating buprenorphine education into the undergraduate and graduate medical curriculum increases the pipeline of potential prescribers, reduces stigma, effectively satisfies requirements, and normalizes pharmacological OUD treatment options [25–28]. Less is known about efforts to scale up buprenorphine prescribing capacity in medical residency and APP programs. In an effort to fill that gap, we describe an innovative capacity-building project across North Carolina. In the context of opioid-related overdose deaths and inadequate access to evidence-based treat-

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ment options for many North Carolinians, the North Carolina Department of Health and Human Services (NCDHHS) contracted with the Mountain Area Health Education Center (MAHEC) to train medical residents and APP trainees in necessary skills for OUD treatment. With the goal of sustainably embedding MAT education in medical residency and APP curricula, from November 2018 through October 2019 UNC Health Sciences at MAHEC educators and staff designed and implemented trainings and technical assistance (TA).

Method

The initial goal was to engage 10 North Carolina family medicine residencies to participate. Recruitment involved directly reaching out to clinical contacts and medical education networks. The team also utilized recruitment letters and followed up on referrals. Inclusion criteria initially consisted of being in a residency program in family medicine.

Participation began with a signed memorandum of understanding that allowed participating sites to select trainings and TA opportunities and indicate their intention (yes, no, unsure) to integrate MAT education into ongoing curriculum and training. Participating programs identified a "MAT champion" who was expected to serve as the sustainable driving force of transformation of their curriculum. Programs scheduled and provided space to host at least 1 of the trainings offered. Participating programs agreed to endorse optional program faculty and resident participation in evaluation activities if their site was selected. The project leadership team designed an implementation plan focused on key components of capacity and infrastructure at the program level assumed likely to influence full implementation of MAT education.

Trainings

Four evidence-based technical trainings were developed with expert consultation and offered during the project timeline. The introductory course was *MAT 101*, an overview of MAT including recommendations for reducing stigma and bias toward patients with substance use disorder in the clinical setting. Second, trainers presented the MAT waiver training developed by the Providers Clinical Support System (PCSS) and the American Academy of Addiction Psychiatry (AAAP) [29]. The third course was *Recovery Within Reach* (now retitled *SUDs 101 for the Clinic Team*), intended as a companion to the waiver training to help clinic teams prepare to support prescribers offering office-based opioid treatment (OBOT). Lastly, an event titled *PCSS MAT Waiver Training for Prescriber Champions* provided an opportunity for champions to meet counterparts, learn best practices in teaching MAT education, practice presenting a module, share lessons learned, and strategize on how to achieve sustainability. Through this 2-day experiential training, participants learned about trauma- and resiliency-informed care models with a health equity approach to treatment and prevention. Each of the original trainings included specific information about overdose prevention and harm reduction, in addition to OUD treatment content [30].

The MAT waiver training course is one of the options for fulfilling current requirements by federal law for eligible providers to apply for the DEA-X waiver to prescribe buprenorphine products for OUD. This 1-time course counts toward the 8 hours required for physicians and the 24 hours required for APPs. To promote confidence and foster competence after the trainings, the interdisciplinary training group offered TA opportunities to programs' clinical and leadership teams: coaching calls, shadowing sessions at MAHEC's Family Health Center, co-teaching mentorship, and Project ECHO® (Extension for Community Healthcare Outcomes) [31] virtual learning sessions comprised of a didactic and case presentations for MAT and chronic pain. These assisted in implementing training as intended as well as adapting fit to each program's needs, goals, timelines, and capacity. To complement other TA opportunities, an interdisciplinary team of researchers; graduate and undergraduate students; public health professionals; and health care providers from UNC Health Sciences at MAHEC, UNC Gillings School of Public Health (Asheville), NCDHHS, and the AAAP compiled a training resource, the "MAT/MOUD Policies, Procedures, and Resources Manual." The manual is intended to support the overall efforts of the workforce capacity-building project.

Throughout the project, the training team supported each program's capacity-building within an MAT prescribing continuum of readiness (Wilson C, Fusco C, Ostrach B, Harless C. Continuum of Readiness for MAT prescribing in residency programs. Schema internally developed for evaluation planning. UNC Health Sciences at MAHEC; 2019). Given that champions can transform systems and create change in the primary care setting [32], the team designed an opportunity to identify key stakeholders within each program who could contextually embed MAT education and thus increase workforce capacity via an infrastructure that supports new instructional practices and thus new behaviors. Champions embodied: 1) effective communication for the purpose and scope of work, 2) leadership with adaptive vision to cultivate an environment for ongoing quality improvement within the curriculum as well as in practice, and 3) capacity to guide adaptation and integration of MAT education into curriculum.

Results

With the support and partnership of state networks including the Area Health Education Centers (AHEC), the project surpassed the initial goal of 10 programs, ultimately reaching 1512 trainees from 30 residency programs and 7 APP programs. The project expanded to other specialty training programs, including pediatrics, internal medicine, obstetrics and gynecology, psychiatry, emergency medicine, and urology. All engaged programs completed at least 1 training. Twenty-five residencies and training programs affirmed

an intention to, and need for support in, implementing MAT waiver training as an ongoing part of their curriculum. Five residencies and 3 PA training programs indicated they were "unsure" about their intention to add waiver training to curricula. All engaged programs received a tailored action plan to guide further implementation.

The project reached participants from 54 counties throughout North Carolina. A total of 63 champions statewide committed to embedding MAT education in curricula. Through those champions, 21 unique programs received some form of TA. In total, 8 unique programs participated in co-teaching. Two champions led a training on their own, engaging in a coaching call beforehand to review best practices in content delivery, as well as a post-session debrief to review lessons learned.

Evaluation

Upon project completion, independent evaluation researchers (the second and third authors) reported directly to funders on factors in training and TA uptake. The purpose of the evaluation was to assess what stakeholders at residency and training programs perceived as affecting their motivation and ability to uptake buprenorphine waiver and additional trainings and TA. The evaluation used data from key informants at 10 training sites selected with inclusion criteria consisting of: diversity of specialties, scope of practice, geographic distribution, public/private funding, and trainings selected. Evaluation data were collected through stakeholder interviews, training observations, site visits, surveys of training participants and stakeholders, and curriculum content review (Table 1). Two key themes related to training and TA uptake emerged: *training need, structure, and sustainability; and implementation challenges*. The biggest factor in uptake of trainings appeared to be the ability to integrate them into existing program schedules. Peer provider championing of the trainings, offering all necessary curriculum and materials with flexibility as to how, when, and where training could be offered, carried the most weight with program leadership. These perceptions are exemplified in quotes from distinct evaluation participants:

> *... it's just... wonderful... here I was looking at either doing it all online, or driving up to Asheville. And then to be told that, 'Oh, by the way, it's [in] 2 weeks, the first one—[here] in the next building... it was just easy. I think anything where... where you get it brought to you is wonderful...* (APP faculty champion)

> *[the trainers] just made it so accessible... I would have not thought to get my [waiver] at all. I mean, it's kind of like leading the horse to the water, and maybe the horse will drink. If you give it to us, it certainly makes it easier on us. Yeah, I wouldn't have [the waiver] right now, if it wasn't for [the training being offered].* (medical residency director)

Perceived need for more buprenorphine product availability in participants' regions and programs also motivated acceptance of training; yet, most program leadership had not pursued training prior to this effort. Subsidizing the trainings was a factor in their uptake: "*... having it be no cost is basically the incentive, it breaks down barriers, and having it be on campus, it breaks down more barriers than cost,*" said one medical residency faculty champion.

Evaluation participants expressed concerns that a lack of prescribing infrastructure at programs could affect skills implementation: "*I mean you can train all the residents you want, but if the infrastructure is not there, then it doesn't matter. So... it's great that I learned about this, you know, I learned about it back in September. Have I written a single buprenorphine script? No,*" another faculty champion said.

Their concerns included a lack of DEA-X-waivered and prescribing supervising faculty (preceptors), costs of becoming waivered/licensed, and additional requirements for APPs:

> *I think it's really [the] logistics of getting all of our faculty waivered because we really want to have those preceptors [for] the residents' waivers... that's a barrier...* (medical residency director)

> *So, our residents do not currently prescribe individually because our program is not in a position to pay for their DEA [license]. And they have to have their adult DEA [license], [and other required paperwork]... in order to have their Rx license... our program doesn't pay for that. So, when [the trainees] see Suboxone [prescribing], they see it with one of us faculty members...* (medical residency faculty champion)

> *As an NP my hands are tied in this state, due to supervision. Unless [my] supervising physician becomes waivered... Number 1 barrier for NPs is the lack of supervising physicians... There are barriers to getting trained. Extra 16 hours? It is difficult adding this to any curriculum. An extra 16 hours could be a whole module. Where are we going to stick this extra [module]?* (APP program director)

The evaluation found that residency and APP programs may not seek trainings unless these are directly offered free of charge. Trainings appeared likely to have more uptake and greater perceived impact with more program leadership and faculty buy-in. Uptake was also greater where faculty

TABLE 1.
Evaluation Data Sources

Evaluation Data Sources	Qualitative Sample	Quantitative Sample
Stakeholder interviews (residency directors; residency coordinators; faculty champions)	*n* = 20	n/a
Surveys (residency directors; faculty champions; other program faculty; residents)	n/a	*n* = 133
Training observations	*n* = 11	n/a
Site (program) visits	*n* = 5	n/a
Curriculum review	*n* = 6	n/a

(including preceptors) were already DEA-X-waivered, prescribing, and mentoring new trainees. Buy-in appeared more likely where program leadership received and shared more of the information they received about training content ahead of time. Evaluation participants indicated it would be ideal to assess current OUD awareness and training needs at a given residency or APP program before selecting the trainings to be offered. Program leadership, in particular, indicated that program readiness for buprenorphine prescribing was a factor in their sites' and trainees' ability to seek, participate in, and benefit from X waiver and related trainings. Challenges posed by X waiver and licensure fees and greater training requirements for APPs were all seen as factors that delayed or deterred trainees from obtaining an X waiver despite free training.

Discussion

As stated in the literature, there is a lack of access to buprenorphine treatment. This training and TA project sought to increase workforce capacity to prescribe. As a result of this project, many participants received training that would facilitate obtaining their waiver. However, the question of whether participants are actually prescribing after attending the training remains. Structural barriers impact prescribing. Curricula, policy, and procedures all affect individual clinician capacity to implement newly learned skills. Reconfirming earlier research, many training participants did not feel that their program or clinical site had the necessary structures in place to support them to effectively prescribe buprenorphine. So, while training provides the opportunity to increase waivered providers, it is important to consider the structural support needed for prescribing. The continued use of TAs from expert providers may offer an opportunity to bridge structural gaps. Subsidizing training motivates uptake, though content should address trainee specialties and requirements. Supporting faculty to obtain waivers and prescribe may have the greatest impact on trainees' obtaining waivers and eventually prescribing. Training should be targeted to programs' current level of readiness as assessed by current and planned curriculum, current and desired prescribing, and faculty readiness. Allocating subsidies for waiver and license fees may increase likelihood that investment in training will result in skills implementation. Further, APP prescribers can address buprenorphine access gaps, particularly in rural areas. Addressing the unequal burden of waiver requirements might maximize opportunities to improve MOUD access in underserved areas. Exemplary quotes from the evaluation highlight the need for program-level commitments to support providers who are willing, able, and ready to implement and expand evidence-based practice changes to ultimately benefit patients.

The 2021 DHHS guidelines [4] removed a training barrier, which will have an impact on our model as we continue our efforts to increase the workforce capacity to prescribe buprenorphine. By adapting our model and content based on the emergent provider needs and changing policy landscape, our team will continue to support champions and partnering educational sites to have the tools to train and prepare the workforce for best practices for prescribing MOUD.

Limitations

The training project had the following limitations: identifying program contacts to coordinate scheduling, navigating bureaucratic processes to finalize agreements, balancing didactic and clinical schedules, lack of TA uptake given competing priorities, and participant uncertainty of completion of the MAT waiver training and credentialing. To address these, trainings were scheduled to best fit the need of each program, TA was promoted to all stakeholders, leaders encouraged interdisciplinary champions beyond clinical roles, and a "welcome letter" was developed to explain the next steps to obtain an X waiver after the training. In addition, 6 faculty were coached to teach a waiver class on their own after being approved by PCSS.

Conclusions

All participating programs were engaged with the intention to sustainably address opioid-related overdose rates and increase equitable access to buprenorphine products as a form of MAT. By offering trainings and TAs for buprenorphine product prescribing to medical residents and APP trainees in a state disproportionately affected by opioid-related overdoses and lacking adequate access to OUD treatment, this project increased the potential prescribing capacity of the North Carolina workforce, provided those trained receive adequate infrastructural support to obtain X waivers and begin prescribing. Program leaders strove to continue bridging gaps between theory and practice with innovations that can be feasibly implemented by champions and sustained to support the health care workforce in providing substance use treatment and preventing overdoses. The ultimate goal was for each of the 37 participating programs to eventually go on to independently train and support trainees on a yearly basis to provide MAT-related education and obtain buprenorphine waivers to eventually prescribe. Given that system change is required in order to facilitate practice change, as exemplified by the new 2021 DHHS guidelines, MAHEC will develop a specialty-specific blueprint of options for integrating substance use disorder education into the curriculum, including highlights for didactics, rotations, accreditation milestones, and other relevant resources. This blueprint will then serve to contextualize the TA—specifically the coaching sessions—to be targeted to a program's level of readiness in terms of current curriculum content, planned curriculum development, current level of prescribing, desired level of prescribing, and degree of faculty/preceptor readiness. If MAT training is sustainably embedded in the academic curriculum for every generation of prescribers in the medical education pipeline, then workforce capacity may be increased at the front lines. The proj-

ect leadership continues to develop and implement ongoing training and TA for residency and APP programs statewide, using lessons learned in the first year to inform current and upcoming efforts. NCMJ

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