Journal of Substance Abuse Treatment 108 (2020) 33–39

Contents lists available at ScienceDirect

Journal of Substance Abuse Treatment

journal homepage: www.elsevier.com/locate/jsat

The Washington State Hub and Spoke Model to increase access to medication treatment for opioid use disorders

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A B S T R A C T

Introduction: The federal Opioid State Targeted Response (Opioid STR) grants provided funding to each state to ramp up the range of responses to reverse the ongoing opioid crisis in the U.S. Washington State used these funds to develop and implement an integrated care model to expand access to medication treatment and reduce unmet need for people with opioid use disorders (OUD), regardless of how they enter the treatment system. This paper examines the design, early implementation and results of the Washington State Hub and Spoke Model.

Methods: Descriptive data were gathered from key informants, document review, and aggregate data reported by hubs and spokes to Washington State's Opioid STR team.

Results: The Washington State Hub and Spoke Model reflects a flexible approach that incorporates primary care and substance use treatment programs, as well as outreach, referral and social service organizations, and a nurse care manager. Hubs could be any type of program that had the required expertise and capacity to lead their network in medication treatment for OUD, including all three FDA-approved medications. Six hub-spoke networks were funded, with 8 unique agencies on average, and multiple sites. About 150 prescribers are in these networks (25 on average). In the first 18 months, nearly 5000 people were inducted onto OUD medication treatment: 73% on buprenorphine, 19% on methadone, and 9% on naltrexone.

Conclusions: The Washington State Hub and Spoke Model built on prior approaches to improve the delivery system for OUD medication treatment and support services, by increasing integration of care, ensuring "no wrong door," engaging with community agencies, and supporting providers who are offering medication treatment. It used essential elements from existing integrated care OUD treatment models, but allowed for organic restructuring to meet the population needs within a community. To date, there have been challenges and successes, but with this approach, Washington State has provided medication treatment for OUD to nearly 5000 people. Sustainability efforts are underway. In the face of the ongoing opioid crisis, it remains essential to develop, implement and evaluate novel models, such as Washington's Hub and Spoke approach, to improve treatment access and increase capacity.

1. Introduction

The nation continues to struggle with an opioid crisis (Centers for Disease Control and Prevention, n.d.; U.S. Surgeon General, 2018). The federal Opioid State Targeted Response (Opioid STR) grants provided funding to each state to ramp up the range of responses to reverse this tide. Medication treatment (also known as medication-assisted treatment or MAT) to address opioid use disorders (OUD) is an evidence-based practice (American Society of Addiction Medicine, 2015; SAMHSA, 2018), although it is underutilized, especially by primary care providers (Jones, Campopiano, Baldwin, & McCance-Katz, 2015; Lagisetty et al., 2017; Rosenblatt, Andrilla, Catlin, & Larson, 2015). Very few people with OUDs receive medication treatment and only a small proportion of those remain on it for at least 6 months (A.R. Williams, Nunes, Bisaga, Levin, & Olfson, 2019). Calls continue to emphasize the urgency of improving our delivery models (Saloner, Stoller, & Alexander, 2018; Volkow, Jones, Einstein, & Wargo, 2018).

The Opioid STR funding allowed states to specify the approaches that fit their needs. At that time, Washington State's existing Interagency Opioid Task Force Working Plan already had a goal to link people with OUD to treatment support services, and a strategy to expand access to and utilization of OUD medication treatment in communities. Washington's Medicaid and publicly-funded treatment system covered methadone, buprenorphine and naltrexone, yet significant treatment gaps existed. In 2017, 341 physicians were waivered to prescribe buprenorphine and were listed in the SAMHSA locator (Washington State, 2017). However, most waivered physicians prescribe well below their patient limits (Thomas et al., 2017). Further, Washington's Opioid Treatment Programs (OTPs) were estimated to meet only 60% of treatment need (Washington State, 2017) in part due

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https://doi.org/10.1016/j.jsat.2019.07.007
Received 31 January 2019; Received in revised form 8 July 2019; Accepted 16 July 2019

to rural access issues.

Washington thus developed an integrated care model for OUD medication treatment that built on the "Hub and Spoke" model first used in Vermont (Rawson, 2017; Rawson, Cousins, McCann, Pearce, & Van Donsel, 2019), the Massachusetts nurse care manager model (Alford et al., 2011; LaBelle, Han, Bergeron, & Samet, 2016), and the Baltimore Collaborative Opioid Prescribing (CoOP) model (Stoller, 2015; Stoller, Stephens, & Schorr, 2016). The goal was to expand access and reduce unmet need for people with OUD regardless of how they enter the treatment system. An important innovation in the Washington State Hub and Spoke Model was the flexibility to allow primary care providers, not just addiction treatment programs, to serve as hubs. Washington committed about $5 million, or half of its Opioid STR funding, to this approach.

This paper examines the rationale and conceptualization of the Washington State Hub and Spoke Model, describes the hub and spoke networks, and discusses how the networks evolved over the first 18 months. Lessons learned are discussed to offer guidance to other delivery systems considering approaches to improve access to OUD medication treatment.

1.1. Medication treatment for opioid use disorders

The three FDA-approved medications to treat OUDs (methadone, buprenorphine, and naltrexone) are effective and cost-effective in reducing opioid use (Fullerton et al., 2014; Lee et al., 2018; Murphy et al., 2018; Schackman, Leff, Polsky, Moore, & Fiellin, 2012; Thomas et al., 2014). Clinical practice guidelines and treatment recommendations encourage medication treatment as a front-line treatment (American Society of Addiction Medicine, 2015; SAMHSA, 2018). Despite increasing access and acceptability (Knudsen & Roman, 2014; Reif et al., 2016; Reif, Creedon, Horgan, Stewart, & Garnick, 2017), medication treatment remains underutilized (Volkow et al., 2018; Wakeman & Rich, 2018).

Barriers are wide-ranging and include patient, provider, and system factors (Abraham, Knudsen, Rieckmann, & Roman, 2013; Knudsen, Abraham, & Oser, 2011; Oliva, Maisel, Gordon, & Harris, 2011; SAMHSA, 2016). Structural barriers pose key challenges, such as proximity to an OTP or availability of waivered buprenorphine prescribers accepting new patients (Oliva et al., 2011).

1.2. Role for non-specialty settings

Delivery of clinically integrated behavioral health and general medical care often results in improved access and clinical outcomes (Gerrity, 2015; Woltmann et al., 2012). Many integrated care models exist; key features include behavioral health and primary care coordination and delivering services where patients seek care (Gerrity, 2015). Primary care physicians are often hesitant to address substance use. They have limited time, training, and referral resources even for screening and brief intervention (Friedmann, McCullough, & Saitz, 2001; Sigmon, 2015; E. C. Williams et al., 2016) and just over half routinely refer patients with a substance use disorder (SUD) to formal treatment (Friedmann et al., 2001). Even if willing to treat patients with addictions, structural barriers to medication treatment in primary care are also limiting (Hutchinson, Catlin, Andrilla, Baldwin, & Rosenblatt, 2014; Reif et al., 2016). Integrated care or care management models could increase uptake in primary care settings, with support of specialty SUD settings and providers (Korthuis et al., 2017; McCarty, Priest, & Korthuis, 2018; Reif et al., 2016).

1.3. Models for OUD medication treatment

The hub and spoke model, in general, forms a system of care with a center (hub) to integrate care for a chronic disorder through a network of providers (spokes). OUD-focused hub and spoke models have been developed in Vermont (Brooklyn & Sigmon, 2017; Rawson, 2017; Rawson et al., 2019), Baltimore (Stoller, 2015; Stoller et al., 2016), and elsewhere. Vermont's hub and spoke model substantially increased its OUD treatment capacity, using OTPs as hubs and primary care providers as spokes (Brooklyn & Sigmon, 2017). Reported benefits include increased communication, greater ability to deliver appropriate services, and healthier clients due to treatment in a network that addresses behavioral and medical needs (Rawson, 2017).

The Baltimore Collaborative Opioid Prescribing "CoOP" model links primary care with an addiction treatment program. In a stepped care approach, clients who are unstable in primary care-based treatment are moved to more structured addiction treatment programs for stabilization and counseling, then returned to their "home" programs (Stoller, 2015; Stoller et al., 2016). Los Angeles County implemented a similar model to expand use of extended-release naltrexone, resulting in a 59% increase in its initiation (Cousins, Crevecoeur-MacPhail, Kim, & Rawson, 2017).

The Massachusetts Collaborative Care Model brings in nurse care managers to work with prescribing physicians, to address the complex needs of people receiving buprenorphine (Alford et al., 2011; LaBelle et al., 2016). Nurse care managers have a key role, evaluating and monitoring patients, thus expanding capacity by extending physicians' ability to engage with patients. It has been successful when implemented within community health centers, and in initiating and maintaining people on buprenorphine over time (Alford et al., 2011; LaBelle et al., 2016; Weinstein et al., 2017).

The Washington State Hub and Spoke model incorporated aspects of each of these existing models. The State felt that it was important to build on successful elements of the existing approaches, while facilitating the ability of each network to function in a manner that made the most sense for its component agencies and the people it would serve.

2. Methods

This paper provides an overview of the rationale, design, early implementation, and lessons learned of the Washington State Hub and Spoke Model for OUD medication treatment. Both the Brandeis University Institutional Review Board and the Washington State Institutional Review Board reviewed this study. We report two types of information: (1) the conceptual framework for and selection of hub and spoke networks, and (2) characteristics of the funded networks.

First, to understand the framework for and selection of hub and spoke networks, we relied on conversations with key informants from the Washington State Division of Behavioral Health and Recovery (DBHR) who conceptualized and developed the model. These informants ($N = 7$) included the director of the Office of Behavioral Health and Prevention (where the Opioid STR grant is housed), the manager of adult behavioral health treatment, the project manager for the Washington STR activities, the project manager for the Hub and Spoke activities, and three staff leading data collection and analytic work from Washington's Research and Data Analysis division. Washington State is a partner in the research grant, thus these conversations are ongoing; they began in March 2017 soon after Washington submitted their Opioid STR proposal. We met with the Washington team at least monthly from September 2017 to August 2018 and quarterly since September 2018. In January 2018, two members of the research team spent a day in Washington to obtain a deeper understanding of the initial implementation. We also reviewed Washington's RFA that requested applications for proposed hub and spoke networks.

Second, we were able to define the characteristics of the funded hub and spoke networks using several data sources: (1) Grant applications submitted by the proposed networks in June 2017, which identified the specific agencies and roles in each network and detailed which already provided OUD medication treatment services. (2) Washington's Hub

and Spoke Directory (updated regularly), which details the sites in each network that are providing medication treatment, the type of OUD medication available at each site, the number of medication treatment providers within each site, and the reported medication treatment patient capacity for each site in the network. (3) Phone calls conducted by the Brandeis research team in December 2018 and January 2019 with key staff at each Hub agency to confirm and update network information. These allowed the team to identify and confirm further changes to network partners and the number and location of specific types of staff.

Data documenting access to medication treatment were obtained in aggregated format from patient-level data reported monthly by the hub and spoke networks to Washington State. For each person, networks report demographics, treatment start and discharge dates, type of medication treatment, whether they were inducted within the network, and referral source.

3. Results

3.1. Rationale underlying the design

The goal of the Washington State Hub and Spoke Model is to increase statewide access to all three FDA-approved medications to treat OUD by developing and implementing multiple hub and spoke networks to create a system of integrated care for adults with OUD. The model stemmed from Washington's environmental scans of OUD medication treatment and the opioid crisis more broadly and built on key assumptions that had already been refined by the State Opioid Work Plan. Since medications for OUD treatment are covered under the Washington State Medicaid benefit, Washington also looked at medication utilization rates compared to state estimates of people with OUD. Further, Washington already had two grants – SAMHSA Prescription Drug and Opioid Addiction (MAT-PDOA) and Prevent Prescription Drug/Opioid Overdose (WA-PDO) – which provided both data and perspectives of current state conditions and informed the Hub and Spoke treatment goals. Multiple state agencies worked together, with input from the University of Washington Alcohol and Drug Abuse Institute (ADAI), to provide a contextual framework for the Hub and Spoke model based on this information.

The Hub and Spoke model thus relied on several key assumptions: (1) People with OUD seek services in a variety of places from a variety of providers. (2) Many SUD treatment agencies have no medication treatment prescribers nor relationships with prescribers. (3) Primary care settings, even if they have a prescriber, often lack relationships with SUD treatment providers that would allow for “warm handoffs” for people seeking additional support services such as counseling. (4) Outreach sites, such as agencies for homeless individuals or syringe exchange programs, rarely have the resources to help people access medication treatment or counseling. (5) SUD treatment agencies rarely have the resources to reach out to people in need.

These assumptions required that the approach build on the integration of primary care and substance use treatment, relying on formalized collaborations. It also required the participation of different kinds of service agencies, to provide the range of support services people with OUD might need. And it incorporated the expectation of an integral role for non-treatment organizations, such as outreach sites, that are often the first contact for people in need of OUD treatment but require solid referral pathways that formal collaborations would provide. Further, it required that each hub and spoke network must provide at least one agonist medication (i.e., buprenorphine or methadone) and one antagonist medication (extended-release naltrexone), to incorporate the range of willing providers and patient interest.

The Opioid STR funds were planned to support multiple geographically-based integrated networks of care for treatment of people with OUDs using medication treatment. The timeline for development and implementation was fairly constricted due to the Opioid STR funding, which was announced in December 2016 and awarded in April 2017 for a 2-year cycle. Washington State released its RFA for proposed hub and spoke networks in May 2017, selected sites in June 2017, and expected them to be active by August 2017. It was essential, with this timeline, to build upon approaches and collaborations that already worked.

3.2. Planned design of the Washington State Hub and Spoke Model

Washington's Opioid STR RFA specified the minimum requirements for the structure of the Hubs and Spokes within each network. The Hub is the primary organizing agency that identifies, collaborates, and subcontracts with Spokes to provide integrated medication treatment care. Hubs could be primary care providers, office-based medication treatment providers, OTPs, federal qualified or other health centers, or full-service behavioral health treatment providers. The Hub must provide at least two FDA-approved OUD medications (one had to be extended-release naltrexone), and have at least two physicians waivered to prescribe buprenorphine. Further, the Hub had to have capacity to expand the number of both waivered physicians and people that they induct and maintain on OUD medication treatment.

At least five Spokes were required to be part of each Hub's network. Each network had to include at least two SUD treatment providers and one mental health provider, who were “willing to embrace [medication treatment] and provide treatment to promote sustained recovery”; at least one primary care provider “with waivered prescribers, willing and able to join a recovery network that allows and builds cross-network collaborations to provide exemplary care”; and optional social support and/or referral agencies. The Spokes must participate in medication treatment education and skills training, and be willing to incorporate intensive case management services.

Within each network, the Opioid STR grant funds nurse care managers and spoke care navigators to assist with patient management and support, and reduce the administrative and clinical burden for prescribing physicians. Nurse care managers assist with screening, medication treatment education, care planning, stabilization, maintenance, and relapse prevention, and support ongoing care coordination and patient self-management. The spoke care navigators focus more on screening, education, referrals and coordination of care. Washington set a moderate target of 25 people with OUD to be initiated onto medication treatment each month within each network.

The RFA specified that each network would receive up to $831,659 per year (i.e., $5 million divided by 6 networks, including 10% indirect costs) to offer services as described above. The budget could include nearly $59,000 for Hub development costs related to the establishment of the networks. The awarded budget was cost-based, so some networks may have received a lesser amount; unexpended funds were reallocated by the State, remaining within the Hub and Spoke activities (e.g., adding a spoke care navigator to a larger site).

3.3. Initial implementation

In June 2017, Washington selected 6 networks from 14 applications, emphasizing the strength of each network and its capacity and likelihood of success. The selected networks already had developed deep community connections. Two were located in the Seattle metropolitan area; the remaining networks were also in the western half of the state. Eastern Washington is largely rural and frontier, thus the proposed networks were less cohesive and had less capacity to expand; the State decided to focus on this region in the future.

Each hub and spoke network as proposed is unique. Three networks are led by primary care organizations with integrated behavioral health services, two are led by behavioral health organizations and one is led by an OTP. The networks vary in size, ranging from 8 to 21 organizations per network. Additionally, some have a broader range of direct service providers, such as federally qualified health centers, OTPs, emergency department induction sites, and telehealth SUD treatment.

They also involve a broad range of referral partners, including syringe exchange programs, homeless services, recovery supports, criminal justice agencies (jail, police, drug court), tribal health agencies, and a managed care organization. In many cases, these networks expanded fairly rapidly.

Hubs created memoranda of understanding (MOUs) with Spoke agencies in their networks. Spokes receive support through the spoke care navigators and access to the Hub's expertise and nurse care manager, as well as training and technical assistance offered through the State's contractor.

Washington awarded annual contracts to each Hub of up to $789,825 per year. Performance based contracts were developed and intentionally front-loaded to provide Hubs with significant start-up capital to develop the network spokes, and incentives for inducting the first participant. Payments tied to specific deliverables in the first year included startup ($90,000), initial service provision ($100,000), meeting a benchmark of 200 unique individuals served ($25,000), ongoing service provision ($25,000), monthly reports ($39,000/month), and sustainability plan ($25,000). The second year increased the incentives for reporting, maintained the incentive for ongoing service provision, and increased the benchmark incentive to 300 unique individuals served.

3.4. Later implementation

As of January 2019 the Hubs reported that, on average, they had 7.8 unique agencies in their networks (see Table 1). Since some agencies involve multiple sites, the partnerships include 79 sites overall, or an average of 13.2 sites per network but with a fairly wide range. Many spokes provide health (3.8 organizations, on average) or behavioral health (6.0 organizations, on average) services. Three networks include tribal health organizations. Other partnerships include social services, housing organizations, and criminal justice organizations, such as drug courts, corrections, local jails and the police department. One network partners with local fire and rescue organizations, involving eight separate fire and rescue organizations in their region. One network partners with emergency departments and three partner with syringe exchange programs that provide referrals to medication treatment services.

To facilitate collaboration and referrals across the networks, all networks employ spoke care navigators to connect with the range of partners (mean = 6.2), although these may not all be full-time positions. All networks employ nurse care managers (mean = 1.3). In one network, the nurse care manager role is filled by a combined medical assistant and SUD counselor, reflecting a shortage of nurses in its more rural region.

When they applied to participate, the networks reported an average of 3.0 organizations providing medication treatment services (data not shown). After 18 months of implementation, the networks have more than doubled with an average of 6.8 organizations providing medication treatment services. On average, the networks have 25.2 prescribers, totaling 151 prescribers across the 6 networks. Nearly all medication treatment sites (92.5%) prescribe buprenorphine and 82.5% offer extended-release naltrexone, while only 15% offer methadone since it is limited to licensed OTPs. The networks report that they can serve 8590 medication treatment patients at any given time (average of 1432 patients per network), which is determined in part by the buprenorphine waiver limits and available methadone slots. It is not known, however, how much of an increase from baseline these waivered prescribers and patient capacity represent.

Nearly 18 months into the implementation, the Hubs remained the same. In some cases, however, the broader networks have changed and/or expanded. Two networks have not changed their partnerships at all. Four networks added and dropped spokes; spokes were dropped, because they did not formally connect with the Hub or they did not provide sufficient referrals to make the formal partnership worthwhile for either organization.

Over 18 months of implementation, the networks inducted 4977 unduplicated patients onto OUD medication treatment (Speaker & Cummins, 2019), far surpassing their target of 2400 patients; 72% were prescribed buprenorphine, 19% methadone and 9% naltrexone. After a six-month start-up period where clinics were able to increase capacity, the six networks now average 309 inductions per month. Two networks, which both include OTP sites, account for half of all inductees, and the remaining four networks each account for 11% to 15% of the inductees. Very few patients moved even within the network; that is, most remained on maintenance at the site where they were inducted.

4. Discussion

In short, the Washington State Hub and Spoke Model is a nurse care manager model, within a hub and spoke network that extends the reach and capacities of each agency within the network. At minimum, the networks include behavioral health and primary care, but flexibility was built into the process, to ensure that the approach works best for each network. The state explicitly allows social support agencies and referral partners as spoke agencies, due to recommendations from direct service providers during the planning phase.

The Washington State Hub and Spoke Model appears to be successful in this early assessment of implementation and access to medication treatment. The six networks have demonstrated feasibility of this approach, and have made use of the flexibility that Washington State built in, to adjust their networks (e.g., by changing partners) to best serve the needs of both the people with OUD in those communities and

Table 1
Characteristics of Washington State Hub and Spoke Networks, as of January 2019.

Hub and spoke network (HSN)	HSN 1	HSN 2	HSN 3	HSN 4	HSN 5	HSN 6	Total	Mean
Unique agencies (N)	10	12	5	7	5	8	47	7.8
Sites (N)	21	13	15	10	8	12	79	13.2
Medication treatment sites (N)	7	7	7	9	7	4	41	6.8
Buprenorphine	7	4	7	9	7	3	37	6.2
Naltrexone-XR	7	3	7	7	7	2	33	5.5
Methadone	1	3	0	1	1	0	6	1
Prescribers (N)	20	13	9	26	52	31	151	25.2
Spoke care navigators (N)	8	4	5	9	4	7	37	6.2
Nurse care managers (N)	1	1	2	3	1	1	9	1.3
Types of organizations in network (N)								
Health	2	3	6	3	5	4	23	3.8
Behavioral health	6	7	7	7	3	6	36	6.0
Emergency department	2	0	0	0	0	0	2	0.3
Criminal justice	2	1	2	0	0	1	6	1.0
Social service	0	1	0	0	0	0	1	0.2
Tribal organization	2	0	0	2	0	1	5	0.8

the organizations themselves. The real strength in the model is that people seeking SUD services seek them in their locale and from the providers and organizations that they trust and have good reputations of service. The Washington Opioid STR grant provided funding to expand access to these local providers.

The Washington State Hub and Spoke model differs from other OUD medication treatment models. Vermont and other hub and spoke models use addiction treatment providers as the hub, whereas Washington allowed the hub to be any organization that had OUD medication treatment expertise and capacity to manage the network and serve as a champion for medication treatment. As a result, three of the networks had some form of primary care provider as the hub. The Washington model also includes a nurse care manager as a key element, drawing from the Massachusetts model.

Traditionally, the hub and spoke model has been used both as a way to extend reach to experts and expand service provision to underserved areas; it relies on the experts placed at the hub, and supports those with less expertise at the spokes. A challenge of this traditional model is that people who need the higher level of expertise – such as those who continue using opioids despite medication treatment – need to travel to obtain that care, imposing a burden that may be too great when people are most in need. The Washington Hub and Spoke Model, in contrast, created a hub whose agency has a functional role to manage the integrated care network. As with the traditional approach, the hub is a center of OUD medication treatment expertise, but the hub is not the sole expert within a network. With a more decentralized model of medication treatment expertise, the burden on the person with OUD is lessened.

4.1. Lessons learned

The development and early implementation process brought a number of lessons learned. The first, described as essential, is a willingness to be nimble and flexible. In designing their model, Washington believed that it was essential to understand what is already working in communities and learn from what is happening. From that base of knowledge, one can expand the approach and formalize the successful pieces. With such a rapid implementation under Opioid STR funding, this approach was the only way to be nimble enough to be successful. A corollary is that success is most likely when it builds on natural relationships and collaborations. Communities differ in their populations, capacities, needs and services. This creates opportunities, but also barriers such as a lack of physicians who are credentialed in and have expertise with OUD medication treatment, limited referral capacity among outreach, social service and primary care organizations, and a lack of formal referral networks. The Washington model allowed each community to build on its strengths and respond to its needs. It also meant that the "champion" of medication treatment in that network (i.e., the Hub) did not need to look the same across networks. Flexibility also allowed for both growth and pruning of networks, to ensure that they are and remain appropriate to meet the patient and agency needs, including services offered and geographic location. This lesson is particularly important for expansion into rural areas, where specific types of providers or agencies may not be available, and other agencies may do more types of work. For instance, community health centers are often available in underserved areas, thus the networks that use primary care as a hub may be the best examples in areas where addiction treatment specialty settings may not be present or even nearby. Telemedicine was planned in only one site, but may be another approach that would be ideal for rural areas.

A second lesson focused on skills and knowledge. The RFA for the hub and spoke networks described the types of agencies and the staffing roles that were required. However, it did not specify the qualifications for the spoke care navigator staff. These staff had a significant focus on care coordination, but may not have had sufficient knowledge of medication treatment or motivational interviewing skills that would help them to successfully engage with patients at the early decision-making stages of seeking OUD treatment. Licensed counselors were reported to be too advanced for this role. Community health workers provide a better option, but must be supportive of medication treatment for OUD. Training, education, and supervision thus became even more important, since staff turnover is common in this field. Washington foresaw the need for ongoing training and contracts with the Advancing Integrated Mental Health Solutions (AIMS) Center at the University of Washington Alcohol and Drug Abuse Institute to conduct routine training with the networks using a Learning Collaborative approach.

Third, and perhaps most important from the agency and state perspectives, is to consider sustainability early and often. This is a common refrain in pilot programs, especially when grant-funded; in the case of the Opioid STR grants, funding was only available for 2 years. The Washington State Hub and Spoke Model focused on building relationships among agencies, sharing knowledge about the availability and value of medication treatment to treat OUD, and increasing the numbers of providers who are willing and able to offer medication treatment. These aspects of the model inherently encourage sustainability, as they are capacity-building efforts, regardless of formal funding. On the other hand, the Opioid STR funding directly pays for the nurse care managers and spoke care navigator staff, thus sustainability of these supports is a more urgent question. Washington State began, early in this process, to consider ways to fund nurse care managers in their Medicaid program and through their behavioral health organizations, and to address reimbursement rates for OUD medication treatment. This is an ongoing process.

4.2. Challenges

With built-in flexibility, community-centric implementation, and six different networks, the model becomes more a level of guidance, and less of a standardized approach. A key informant said, "sometimes innovation looks like this." Flexibility, however, can also be a strength. The guidance offers a base from which to develop networks, identify support services, and increase capacity to serve people with OUD. It also serves to reduce the stigma around OUD and medication treatment and increase the knowledge base. Yet, having six networks that are unique in their composition of partners, how they use their nurse care manager and spoke care navigator staff, and what services they offer makes it complicated to replicate.

Several networks had significant changes in partners over the first 18 months. In some cases, this reflected the rapid implementation of the networks and expectations for service delivery due to the Opioid STR grant timing. The proposed networks that worked quite well on paper and for other collaborations may not have been the strongest partnerships for this expansion of OUD medication treatment. In other cases, partners may have been interested in referrals but not becoming a medication treatment site or willing to offer induction as well as maintenance, thus were less likely to contribute to an increase in initial access to medication treatment.

4.3. Next steps

Washington State remains committed to their hub and spoke model. The FY2019 state budget included funding for five additional hub and spoke networks, in part to address the lack of networks in mostly rural eastern Washington under the Opioid STR funding. The federal government has transitioned to the State Opioid Response (SOR) funding mechanism, and Washington is considering how to maintain their investment in these hub and spoke networks as it moves forward. The Washington SOR-funded project is underway to develop 17 second-generation hub and spoke models called Opioid Treatment Networks (OTN) that focus on even smaller more nimble models, to increase access for persons needing treatment. This model has jails, EDs, syringe exchange programs, homeless outreach services and fire departments

serving as hub sites, with each required to have at least one local OUD medication treatment provider as a spoke. These smaller OTNs are expected to work better in rural areas, where there are fewer service providers, since the "networks" of the current hub and spoke model may not be as feasible in these areas.

The results reported here focused on increased capacity and access to OUD medication treatment. Ongoing research about the Washington State Hub and Spoke Model will include a more thorough understanding of the implementation within each network, compare and contrast across networks, and identify common elements across networks and the most important elements within networks. An effectiveness study is also underway that will use patient-level data to examine outcomes such as quality of medication treatment (e.g., length of time maintained), additional services received (e.g., counseling), and likelihood of overdose and death.

4.4. Limitations

Although this is primarily a description of the Washington State Hub and Spoke Model, there are limitations. We cannot report baseline information that would indicate new or expanded capacity for OUD medication treatment due to this approach, versus existing capacity that has been reorganized into the hub and spoke networks. Similarly, at this time, we do not know if the people receiving OUD medication treatment are "new" or if they would have been served anyway. We are in the process of evaluating data that will answer these questions. Last, we do not have information on how the funding to the hubs was actually spent or even if it was shared with the spokes beyond the required staffing. Our ongoing implementation evaluation is expected to capture information about how the networks operate, which should further our understanding.

4.5. Conclusion

The Washington State Hub and Spoke Model built on prior approaches to improve the delivery system for OUD medication treatment and support services, by increasing integration of care; ensuring "no wrong door" by increasing access to medication treatment in a variety of service settings where people with OUD may first appear (e.g., mental health agencies, primary care) rather than requiring direct contact with an OTP or specialty SUD treatment provider; engaging with community agencies; and supporting providers who offer medication treatment. It used essential elements from existing integrated care OUD treatment models, but allowed for organic restructuring to meet the population needs within a community. To date, there have been challenges and successes, but with this approach, Washington has provided medication treatment for OUD to nearly 5000 people in 18 months. In the face of the ongoing opioid crisis, it remains essential to develop, implement and evaluate novel models, such as Washington's Hub and Spoke approach, to improve treatment access and increase capacity.

Acknowledgments

The authors gratefully acknowledge members of the Washington State Opioid-STR and Hub and Spoke team, in particular Michael Langer, Stephanie Endler, and Debra Cummins from the Division of Behavioral Health and Recovery and James Mayfield and Sawir Yakup from Research Data and Analysis. We also acknowledge the individuals and agencies who are part of the Washington State Hub and Spoke Model. Brandeis University colleagues also contributed to the overall project: Margot Davis, Robert Dunigan, Constance Horgan, Margaret Lee, Carol Prost, Grant Ritter, Alexandra Kritikos, Kevin Renna, and Morgan Shields. We appreciate the thoughtful comments from the anonymous reviewers.

Funding sources

This work was supported by the National Institute on Drug Abuse at the National Institutes of Health [grant number R33DA045851]; and the Washington State Opioid STR grant from the Substance Abuse and Mental Health Services Administration [grant number 7H79TI026803]. The funding agencies had no role in study design, data collection, analysis or interpretation of data, writing or review of manuscript, or decision to submit the manuscript for publication.

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