



ELSEVIER

Contents lists available at ScienceDirect

Preventive Medicine

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

Patient perceptions of treatment with medication treatment for opioid use disorder (MOUD) in the Vermont hub-and-spoke system

Richard A. Rawson^{a,b,*}, Traci Rieckmann^{c,d}, Sarah Cousins^b, Michael McCann^a, Regina Pearce^a

^a Vermont Center for Behavior and Health, Lerner School of Medicine, University of Vermont, 1 South Prospect Street, Burlington, VT 05733, USA

^b Integrated Substance Abuse Programs, Geffen School of Medicine, University of California at Los Angeles, 11075 Santa Monica Blvd., Ste. 200, Los Angeles, CA 90025, USA

^c GreenField Health, Portland, OR, USA

^d School of Medicine, Department of Psychiatry, Oregon Health and Science University, 3181 SW Sam Jackson Park Road, CB669, Portland, OR 97239, USA

ARTICLE INFO

Keywords:

Opioid use disorder
Medication-assisted treatment
Medication treatment for opioid use disorders (MOUD)
System of care
Hub and spoke

ABSTRACT

In 2013, Vermont leaders implemented the “hub-and-spoke” (H & S) system to increase access to medication treatment for opioid use disorder (MOUD). “Hubs” are licensed specialty opioid treatment programs (OTPs) with the authority to dispense buprenorphine/naloxone and methadone. “Spokes” are primary care practices that provide office-based opioid treatment, primarily with buprenorphine/naloxone. This report describes the qualitative component of an evaluation of the H&S system, conducted in 2016. The qualitative data collection assessed patient perspectives about the positive and negative aspects of treatment in the H & S system. The data collected included 80 responses to five open-ended questions and 24 in-depth interviews. Five open-ended questions were completed with hub ($n = 40$) and spoke ($n = 40$) participants. In-depth qualitative interviews were conducted with different hub ($n = 12$) and spoke ($n = 12$) participants. Findings from both data collection approaches suggest positive perceptions about treatment overall by patients treated in both settings. Participants treated in spokes reported a positive treatment environment, minimal stigma, and few obstacles to treatment and a strong positive relationship with their prescriber. Hub patients valued the MOUD and expressed gratitude for having access to MOUD, but reported the treatment environment was somewhat challenging, with long lines and drug talk in the clinic, high staff turnover and “cookie cutter” treatment. There appear to be some differences in patient perceptions of MOUD treatment between patients treated in primary care settings and specialized OTP settings.

1. Introduction

Opioid overdose deaths in the United States are expected to increase over the next decade (Blau, 2017). From 2006 to 2015, the Northeast and Midwest United States experienced the highest number of deaths involving heroin and synthetic opioids (O'Donnell et al., 2017). Vermont's opioid crisis reflects a six-fold increase in opioid deaths over the last decade (CDC, 2017). In 2013, Vermont public health and Medicaid officials and political leaders collaborated to develop a “hub-and-spoke” (H & S) system of care to increase access to evidence-based medication treatment for opioid use disorder (MOUD; Simpatico, 2015). The H & S system was created to expand treatment capacity and access to buprenorphine and methadone, together with supportive services for patients with opioid use disorders (OUDs; U.S. Department of Health and Human Services, Office of the Surgeon General, 2016). As of 2019, Vermont's H & S system comprises nine hub clinics and over 75

spoke sites and provides treatment to more than 8000 patients (1.4% of Vermont's population over the age of 15).

“Hubs” are licensed specialty opioid treatment programs (OTPs) with the authority to dispense buprenorphine and methadone to treat individuals with OUDs. “Spokes” are primary care practices that provide office-based opioid treatment, primarily with buprenorphine/naloxone. Spokes provide addiction care that is integrated into general medical care. Hubs and spokes differ in their services and staffing and, in general, hubs treat more complex and chronic users. Both hubs and spokes assess patients for appropriate level of care (i.e., hub or spoke). The large majority of patients are able to obtain their medications at no cost (Medicaid-65% of patients) or with a small co-pay (insurance-35% of patients). A detailed description of the elements of the H & S system is provided in Rawson et al. (2019). The H & S system has expanded access to MOUD (Brooklyn and Sigmon, 2017) and reduced health care costs for Medicaid beneficiaries receiving MOUD (Mohlman et al.,

* Corresponding author at: Center for Behavior and Health, Department of Psychiatry, University of Vermont, 1952 Rte 73, Brandon, VT 05733, USA.
E-mail address: rrowson@uvm.edu (R.A. Rawson).

<https://doi.org/10.1016/j.ypmed.2019.105785>

Received 25 February 2019; Received in revised form 17 July 2019; Accepted 24 July 2019
0091-7435/© 2019 Elsevier Inc. All rights reserved.

2016). Furthermore, H & S participants showed significant reductions in substance use, overdoses, emergency department visits, police contacts, and family conflict, and improvements in mood and satisfaction with all areas of life, except work/school participation (Rawson et al., 2019).

While the H & S system has demonstrated positive benefits, there is little information on patients' perceptions of their treatment experience within the H & S system. Furthermore, the literature is sparse on patients' experiences receiving MOUD care within a primary care setting. In order to gain a more "person-centered" perspective on the treatment experience within the H & S system, we sought more in-depth input from those treated within the system. This paper describes the results of that endeavor. This report is a companion report to an earlier study involving quantitative data collection using a structured questionnaire (Rawson et al., 2019.)

2. Methods

A total of 100 participants participated in a quantitative evaluation of the H & S system. Of these participants, 20 were individuals with OUD who were currently out of treatment and 80 were patients with OUD who were currently taking methadone or buprenorphine/naloxone in the H & S ($N = 80$). All hub patients received methadone and all patients from spokes received buprenorphine/naloxone. This report describes data from the 80 in-treatment patients. These participants were recruited from all H & S regions in Vermont using recruitment flyers posted in facility waiting rooms. Individuals were eligible if they were currently receiving MOUD in the H & S system for at least 3 months, were at least 18 years of age, were willing to provide informed consent, and, in the opinion of the interviewer, were not experiencing psychotic symptoms or severely intoxicated. An equal number of males and females and from hubs and spokes were recruited, which is the approximate male-female representation in the Vermont H & S system. Structured questionnaires were administered by the Project PI (Rawson) and another very experienced interviewer (McCann). The quantitative data from these participants was reported in Rawson et al., 2019. At the completion of the quantitative questionnaire, these individuals were asked 5 open-ended questions (listed below). Data from these open-ended questions is included in this report. This qualitative data collection is an exploratory and descriptive exercise and we view it as a starting point to better examine the patient experience in the H & S system.

Once data collection on these 80 participants was complete, 24 different participants were recruited using the same recruitment methods for in-depth qualitative interviews. The demographic and drug use characteristics of this sample were comparable to the sample above and an equal number of males and females were interviewed. The lead investigator of these interviews (Rieckmann) supervised three experienced qualitative interviewers. There was no overlap between the two data collection teams and no information was shared until data analysis was complete.

All evaluation activities were reviewed and approved by the University of Vermont Institutional Review Board (IRB) and the IRB from the State of Vermont. Informed consent was conducted prior to participation in study procedures.

2.1. Open-ended questions: participants and procedures

Participants ($N = 80$) were administered a questionnaire battery by experienced researchers who were not associated with the H & S system nor the delivery of clinical treatments. The questionnaire covered demographics, drug history, drug use, and other behavior and functioning, perceptions of treatment, and open-ended questions. Five open-ended questions covered perspectives regarding (a) the aspects of their treatment experience that they valued and found helpful, (b) aspects of their treatment experience they found unhelpful or unpleasant, (c) the

Table 1
Demographic characteristics of in-treatment participants by hub and spoke ($N = 80$).

	Hub ($n = 40$)	Spoke ($n = 40$)	Total ($N = 80$)
Age (in years), M (SD)	39.9 (11.1)	36.5 (10.9)	38.2 (11.1)
Age, %			
18 to 25	2.5%	12.5%	7.5%
26 to 35	40.0%	40.0%	40.0%
36 to 45	30.0%	30.0%	30.0%
Over 45	27.5%	17.5%	22.5%
Gender, %			
Male	50.0%	50.0%	50.0%
Female	50.0%	50.0%	50.0%
Race, %			
Non-Hispanic white	97.5%	92.5%	95.0%
Latino or Hispanic	0.0%	7.5%	3.8%
American Indian or Alaska native	2.5%	0.0%	1.2%
Marital status, %			
Single (never married)	42.5%	50.0%	46.2%
Married/living together as married	40.0%	25.0%	32.5%
Divorced	17.5%	25.0%	21.3%
Education (in years), M (SD)	12.5 (2)	12.7 (2)	12.6 (2)
Parole or probation %	32.5%	20.0%	26.3%

specific services they found most helpful, (d) services they would have liked to have added to their treatment, and (e) obstacles to treatment. Interviews were conducted using a conversational, nonjudgmental style by experienced interviewers. The 5 questions were read to the participants and notes, paraphrasing the participants' responses were produced. Data from these notes simply tallied up the number of individuals who mentioned the key words or phrases in the notes from the responses. All interviews were administered in a private office at the University of Vermont or at private office space at a hub clinic or a primary care office. All participants were compensated with a \$40 gift card for their involvement. Table 1 provides a description of the participants.

2.2. In-depth qualitative interviews: participants and procedures

Twenty-four different participants were recruited separately for in-depth interviews. These participants met the same inclusion and exclusion criteria and were recruited as described above. An equal number of participants from hubs and spokes and men and women were enrolled. Participant characteristics were comparable to the larger sample above.

In-depth interviews elicited participants' perspectives and experiences within the H & S system. Three experienced interviewers, supervised by an experienced qualitative researcher, conducted the interviews. They had no information from the data collected in the open-ended question project component. Interview guides were used to probe for participant perceptions of the characteristics of the H & S system (e.g., treatment quality, engagement, adaptability), impact of services and the perceived effectiveness of services, clinic/spoke settings, provider characteristics, and the overall treatment process. Before the interview began, participants reviewed and signed consent forms. Interviews were audio taped, and all identifying information was removed from transcripts and notes. All interviews were conducted in a private space or group room at the sites and lasted 45–60 min. Study participants received a \$30 gift card for their involvement.

2.3. Data analysis brief questions and in-depth interviews

Notes paraphrasing the 80 participant responses were made by the two quantitative interviewers. On numerous occasions, direct quotes were recorded verbatim. The open-ended responses were analyzed using counts of the key words/phrases to derive categories of responses

(e.g., the number of participants who discussed long wait lines). This data provided an overview of patient feedback and experiences.

The 24 in-depth interviews (from a different 24 participants than above) were audio-recorded, transcribed, reviewed, and summarized by a research assistant, supervised by the lead qualitative researcher (Rieckmann). Qualitative analysis software (Atlas.ti) was used to organize the data, facilitate coding, and apply thematic analysis. The research team collaborated prior to project initiation to develop an a priori preliminary coding scheme of relevant concepts and themes and organized the guide that was then applied to each transcript. Following the iterative process common in qualitative research, the research assistants and a project manager then independently coded transcripts and reviewed their work together; proposed changes to the guide were reviewed and the coding scheme was modified with clarified concepts and themes. Two members of the research team then coded the transcripts using the final guide (Neuendorf, 2002). At the conclusion of document coding, 35% of the documents ($n = 46$) were selected for “check-coding.” The discrepancy between coder and check-coder code choice was calculated using percent agreement to assess inter-coder reliability. A 0.89 index demonstrated a strong coder to check-coder consistency.

Reports from the ATLAS.ti software were then used to support review of the frequency and overlap of themes for the aggregate summary and analysis of the qualitative data.

3. Results

3.1. Open-ended responses ($N = 80$)

3.1.1. Helpful and valued aspects of treatment

3.1.1.1. Hubs. Over half of the 40 hub participants said that the medication ($n = 26$) and the counselor ($n = 21$) were the most valued aspects of treatment. Counselors were viewed as nonjudgmental, empathetic, easy to talk to, open, honest, and caring. Other valued aspects were: the convenience (e.g., location and operating hours) of treatment ($n = 12$), the early hours of the clinic ($n = 14$), and some of the special groups ($n = 12$). It is interesting to note that only 4 individuals listed their prescriber as a valued aspect of their treatment.

3.1.1.2. Spokes. The benefits of the medication were cited by almost all spoke patients ($n = 36$). In addition, 28 of the 40 spoke participants (70%) cited the doctor and/or their relationship with the doctor as a valued aspect of treatment. This question elicited a great deal of discussion from spoke participants, who often volunteered that the relationship with their doctor was the most important aspect of their treatment. Common descriptors of doctors were that they were nonjudgmental, empathetic, flexible, and caring. The other members of the treatment team were described positively by 40% of the participants ($n = 16$); 15 participants reported that they valued treatment in a doctor's office, where they were treated the same as any patient and experienced minimal stigma.

3.1.2. Unhelpful/unpleasant aspects of treatment

3.1.2.1. Hubs. Thirty-two of the 40 hub participants found some clinical procedures unhelpful/unpleasant in the hub clinic environment. These participants described the environment as disruptive, with counter-therapeutic “drug talk” by patients (including stories about drug use, as well as plans to use drugs, purchase drugs, commit crimes to obtain drugs, and offers to buy or sell drugs). One participant noted that “You can buy drugs at the clinic easier than anywhere in town.” Twenty-four participants reported that the drug talk was common and upsetting. As one participant noted, “Last week I was offered Klonopin for sale twice, on my way to the car after dosing.” One hub participant coped with these disturbances by “wear[ing] earphones all the time in the clinic and while waiting in

line” so that they didn't have to hear all the offers to buy drugs.

Other negative aspects of treatment in hubs included having to wait in long lines for dosing ($n = 22$), which participants found to be a dehumanizing process. A quarter ($n = 10$) of participants felt that treatment was “cookie cutter,” with little individualization of care. One hub participant said, “When you give a dirty test, or report almost any physical symptom, or tell your counselor or the nurse you feel anxious or upset, the response is the same: ‘Why don't you see the doctor and get your dose increased.’” Fifteen participants (37.5%) reported that high staff turnover was problematic. “I have been here in treatment for 8 months and have had six different counselors,” said one, while another noted, “I've given up talking to my counselor about anything important because he probably won't be my counselor tomorrow.” In addition, 15 participants reported that the limited dosing hours and daily (or frequent) visit requirements made it difficult to get and maintain employment.

3.1.2.2. Spokes. Participants in spokes reported very few negative aspects of treatment. Twelve participants (30%) had no negative responses. Just under 50% ($n = 19$) said they felt the counseling was not useful, and they did not like mandatory counseling. Seven participants reported that the waiting list and/or the difficulty in finding a doctor who would accept them in a spoke was the major problem they had. Other issues, each cited by less than 10% of participants were: urine testing, medication call backs, limited hours, and lax rules (e.g., “Patients are allowed to use and are not kicked out.”).

3.1.3. Services that helped the most

3.1.3.1. Hubs. Twenty-three participants reported that counseling was the most useful aspect of treatment and 21 cited the medication as being most helpful.

3.1.3.2. Spokes. Twenty-six participants reported that the services they valued most were doctor visits and the medication (each, $n = 24$) and counseling ($n = 16$). As above, many of the patients were quite vocal about their perception that their sessions with their doctor were of great help to them.

3.1.4. Additional services desired

3.1.4.1. Hubs. Services desired included: mental health treatment ($n = 9$), help with employment ($n = 9$), more attention to discharge planning ($n = 7$), medical services and more counselor availability ($n = 6$ for each).

3.1.4.2. Spokes. Twenty participants did not give a response. Suggestions included mental health treatment ($n = 13$) and help gaining employment ($n = 11$) or transportation ($n = 7$).

3.1.5. Obstacles to treatment

3.1.5.1. Hubs. Transportation problems were named by over half ($n = 22$) of the hub participants as a major obstacle. Other issues listed by 10% or fewer of the participants were: long lines in the clinic, child care, stigma, cocaine availability in the community, and alcohol use.

3.1.5.2. Spokes. Forty-five percent of spoke participants ($n = 18$) could not name an obstacle to treatment. The most often cited obstacle was transportation ($n = 12$) and co-pays ($n = 6$).

3.2. In-depth interviews

The sections below represent themes that emerged from the transcript analysis.

3.2.1. The treatment “environment” of hubs and spokes

The hub or spoke “environment” refers to how the participants experienced their visits to their treatment facility and interactions with staff and other patients.

3.2.1.1. Hubs. For some participants, the clinic represented a place of stability in an otherwise chaotic life. “The hub was really good in a lot of ways because of the structure, the discipline. It makes you get back on track if you want to get back on track,” said one. However, over half (7 of 12) of hub participants interviewed found the attitudes and behaviors of their fellow patients at the hub to be a negative aspect of their treatment process. One participant said:

People need to stop talking about their extracurricular drug use in line while waiting for a dose of [buprenorphine] or methadone. If they don't need the help or don't want the help that the hub or the spoke is offering, they need to get the hell out of there because there's a lot of people out here dyin' that need it.

Other participants expressed frustration with arguments and fighting. “People are swearing, or they're arguing, or they're fighting....It's like, ‘Can't you just take your dose and go?’”

3.2.1.2. Spokes. Participants described a generally satisfying environment in the spokes. Most (10 of 12) found that their treatment experience was enhanced by receiving treatment in a primary care setting. Participants appreciated receiving treatment at a medical clinic and being treated like other medical clinic patients, that is, not being singled out as “addicts.” “I go into the clinic and I get a friendly hello from the receptionist and then I go in to see the nurse and doctor like other patients,” said one. Similarly, another participant stated, “None of the other patients in the clinic know that I am there for [buprenorphine]. I feel good and normal in the waiting room.” Other patients noted that the fact that they received their MOUD in a doctor's office was critical to their treatment involvement. One participant said, “If I had to go to the [hub] clinic, for treatment, I would not be in treatment.”

3.2.2. Perceptions of staff at hubs and spokes

3.2.2.1. Hubs. Staff within hubs were perceived as important agents in supporting and helping participants maintain a positive attitude toward treatment. As one participant explained, “If you have a question, they know where to tell you where to go, even though they don't have it here. The willingness to get people to stop using and to get their live back to normal. That stuff is a really big help.” Hub participants reported generally positive and supportive interactions with the clinic staff. As one participant said, “They treat you as a human being, not as another number, not as a junkie, not as an addict. Like an everyday, normal person.”

3.2.2.2. Spokes. Among spoke participants, the comments about staff were almost uniformly positive. Staff were perceived as compassionate and as supportive health care professionals. The most striking finding was the perceived importance of their relationship with the doctor. Almost every interviewee (10 of 12) stated that their relationship with the MD was the central focus of their treatment experience. One participant who reported that their relationship with their doctor “[was] a huge motivating factor,” explained:

It's 50% of the success. What I mean is the [buprenorphine] stops the cravings and allows me to live a stable life. The other 50% comes with a relationship with my doctor, and the trust, and respect, allowing me to be able to do what I need to do and know that he is going to be there for me. It just wouldn't work without both parts working together. People gotta have a good doctor.

Another reflected on the non-punitive stance of their physician:

I have had a couple of times where I've slipped up. Instead of threatening, we're gonna kick you off the program, [my doctor] said, ‘You know what? We're gonna move you to twice a week for the next couple of weeks.’ He's like, ‘I just really wanna support you and work through this with you.’

3.2.3. Clinic procedures and routines at hubs and spokes

3.2.3.1. Hubs. The most frequently mentioned negative aspect of hub clinic procedures was the long lines, which were viewed as serious obstacles to a positive treatment experience. The following quotes from two participants reflect those feelings:

You go stand in line; that's the only thing that really stinks, is you've got to stay in that line....That's the only thing I would change is that line thing because I feel like a dog waitin' for, it's crazy how they do this.

There's days when I come in, and I check in, and I'm waiting in line for 30 min to use the bathroom. Then, I'm waiting in line for another hour and a half before I get my dose. Then, I'm hearing people swear and curse, and ‘Hey, let me sell you my dose when I leave.’ That, to me, is not a fun day. I'm here to be sober, and I don't wanna hear anything that disrupts that when I'm in a sober facility.

In addition to long lines, many also noted that there were time restrictions as to when they could get their medication at the hubs.

I saw some guy who got there 5 min late. Who knows? Maybe he didn't really hitchhike, but he was like, ‘I just hitchhiked all the way in a rainstorm, and you're not gonna give me my medication?’

3.2.3.2. Spokes. Spoke participants had appointments and were treated as the clinics' other medical patients were treated. The spokes were generally flexible as far as treatment times and plans. One participant reported: “It started out twice a week, and then they let me go to once a week, and then, just regular routine checkups. My treatment was like the treatment when you're normally pregnant. It wasn't much different there...the support team was great.”

3.2.4. Treatment services at hubs and spokes

3.2.4.1. Hubs. The counseling services were generally viewed in a positive light by hub participants. One participant reported, “I like the meetings. I get a lot out of them. Even if it's just emotional value, I get a lot out of the meetings.” However, 4 of the 12 participants viewed the counseling services as an obstacle to their progress. A particular criticism was the high case-loads of counselors. As explained by a participant:

My counselor is like—she's way over her head with too many people. All of them here are. It's not as much individual care as it could be, but it works. In the past, when there was more counselors, it definitely worked well here with the counseling. I don't know, I think it will get better once they get a couple more counselors.

3.2.4.2. Spokes. There was limited discussion of the counseling services offered at the spokes by participants, but to the extent that they were discussed, they were generally viewed as positive. However, several participants found the mandatory counseling services to be unnecessary and a negative aspect of treatment. As one participant noted, “I have trouble getting child care to come to the counseling meetings. But, I think they might kick me out if I don't attend. I don't think it's a good idea to require counseling.”

3.2.5. Barriers to accessing treatment at hubs and spokes

3.2.5.1. Hubs. Distance to the hubs and waiting lists were reported as obstacles to treatment. One participant reported that this wait time

resulted in continued use of opioids. “The first time I ever put my name on the list, it was 2 years, if not longer, 3 maybe? While I was waiting, I just kept using and committing crimes.”

Some people were fast-tracked into treatment, including pregnant women and individuals referred from the syringe exchanges:

Needle exchange gave me a new way and a new life. I listened to two people there. One was XXXX and one was YYYY. YYYY is the man that runs the place. He's the one I talked to. He's the one that is responsible for getting me into treatment quickly.

3.2.5.2. Spokes. The only barrier mentioned by spoke participants was that there were not enough waived prescribers in their geographic area.

3.2.6. Benefits in participants' lives due to treatment at hubs and spokes

3.2.6.1. Hubs. A majority of hub participants reported that their involvement in treatment produced substantial life improvements.

I have my own apartment. I can pay my bills. I'm just not chained down. If I wanna go camping in the woods for a couple days, I can do it, without either having to have drugs, or—so I have more fun. I'm happier.

3.2.6.2. Spokes. Participants reported that in addition to helping them not use opioids, MOUD also allowed them to make major improvements with regard to employment and income, health, feelings of shame, housing stability, and schooling. As an example, two participants reported significant life changes:

I have my own house now. I have my own car. I'm engaged in school. Like I said, I got all F's in high school. Dropped out in ninth grade. To be just involved into college now, taking college courses, is a big step from where I was at. The fact that I am seeking a job, a paying job. I have a house. Financially stable. I'm not running the streets. I'm home every night. I eat a lot better. I'm a lot more healthier. Legally, I don't have any more issues with the law.

The shame goes away. I don't have to lie to my family and whatnot. Then, everything else falls into place after that. There's no deceit, secrets, hiding. You're not spending—I have insurance, thankfully, 'cause otherwise, it just wouldn't be possible.

3.2.7. Stigma around addiction and treatment at hubs and spokes

3.2.7.1. Hubs. There were numerous quotes from hub patients about feeling stigmatized by attending the hub clinics. “If you are in treatment at the hub, you are immediately associated with opioid addiction, drug addicts, or ‘junkies.’”

3.2.7.2. Spokes. Participants reported feeling very little stigma at the primary care offices where they received MOUD. However, when they had other contact within the healthcare system, they still encountered some degree of stigma. As one participant said:

Not even so much by police or authority figures. That doesn't matter. It's more the healthcare, physicians, and doctors because with my disability, there's a lot of times where I need pain meds. They see the [buprenorphine]. They automatically assume that you're a heroin addict.

4. Discussion

This study examined participants' perspectives of treatment within hubs (OTPs offering MOUD) and spokes (primary care practices offering MOUD) of the Vermont opioid treatment system. Findings from the open-ended survey questions and in-depth interviews of participants'

experiences in the H & S system suggest that they valued and appreciated their treatment regardless of setting. Participants attributed access to MOUD within the H & S system to substantial reductions in their drug use, helping stabilize and improve their housing, becoming employed, and helping them improve their emotional health and feel “normal.” The qualitative findings in this report support the quantitative findings of improved functioning among H & S patients (Rawson et al., 2019).

This patient-perspective report was designed to collect information from sets of patients who received treatment in both hubs and spokes, but it is not designed to be a systematic comparison of patient perspectives based purely on the treatment setting. The procedures of the H & S system attempt to direct individuals with more severe OUDs for MOUD in hubs (primarily with methadone) and those with less severe OUDs to spokes with buprenorphine/naloxone. Therefore, the view of treatment in these settings is confounded by patient characteristics. In the following discussion, we will describe some differences in perspectives between patients in treatment in the two settings; however, we recognize that these perception differences are a function of both the setting and patient characteristics.

In the earlier quantitative paper, patients within spokes reported a significantly higher cumulative score of self-assessed treatment effectiveness (using the Treatment Effectiveness Assessment) than did those treated in the hubs (Rawson et al., 2019). Similarly, findings from the patient perspectives indicate that hub participants more often recounted negative aspects of their care than did those treated in spokes. Participants within hubs reported being exposed to negative/counter-productive interactions with other patients and long lines at some clinics for dosing that created an assembly-line, somewhat dehumanizing atmosphere. None of the participants treated in the spoke settings reported that they felt the treatment environment was a negative part of their treatment. Rather, participants treated in the spokes were positive about their treatment experience in primary care offices.

In addition, participant perceptions of key staff were quite different in the two settings. Among hub participants, their relationship with a counselor was the key connection. Among spoke participants, most perceived the relationship with the buprenorphine/naloxone prescriber as critically important to a positive treatment experience. Despite brief and infrequent (once per month) visits with MDs, spoke participants felt that their visits with the doctor had great impact on their thinking and behavior. These findings are in line with research that indicates patients may prefer office-based MOUD treatment due to perceptions that providers are more supportive and nonjudgmental in these settings (Korthuis et al., 2010). Nonjudgmental attitudes during patient encounters are a known facilitator of treatment, while fear of stigma can act as a barrier (Hewell et al., 2017; Fox et al., 2016). Several studies have shown that a positive relationship with treatment providers can improve medical initiation, adherence, and treatment outcomes (Dimatteo et al., 2002; Korthuis et al., 2011).

There were other common themes. Many participants in both hubs and spokes reported that they would like to have more access to mental health treatment and employment assistance. In addition, a considerable number in both groups reported that difficulties with transportation to treatment visits and child care were significant obstacles. Findings from this study suggest that MOUD treatment in the Vermont H & S system was greatly valued by participants and produced benefits for them.

Spoke participants reported fewer negative aspects of treatment, less stigma, and a high degree of appreciation of their prescriber. Spoke participants valued the anonymity and lack of being labeled as an “addict.” The perception by patients in primary care settings that their treatment was for a health condition requiring ongoing care and the fact that they could receive this care from their primary care doctor appeared to reduce their feelings of stigma and “normalize” their view of addiction treatment. This was in contrast to the patients treated in the hubs, who discussed how they were required to go to a “special

clinic” where everyone knows you are an addict. The view of the patients in spokes highlights the potential importance of characterizing OUD as a chronic health condition, similar to diabetes or cardiovascular disease (McLellan et al., 2000). Incorporation of OUD treatment into primary care may provide an important avenue for increasing the perception of OUD as a chronic condition treatable within a mainstream healthcare setting.

4.1. Limitations

The Vermont H & S system continues to be modified and expanded to meet the needs of patients. This study reflects a snapshot in time, during which participants' experiences with MOUD were captured. It is possible that participant perspectives will change as the H & S system adapts. Due to budgetary considerations, patients in hubs treated with buprenorphine/naloxone were not sampled. As noted, there was a confound between treatment setting and severity of OUD. The qualitative components of the project were exploratory and represented a first step in our work in understanding patient views of treatment in hubs and spokes. There was not an overarching theoretical framework. Data from the open-ended questions were collected in notes and themes and key words were identified by their frequency in notes. Therefore, this informal methodology is a limitation of the project. Despite these limitations, these findings add to the literature on the experiences of patients with OUDs treated in primary care and OTP settings.

5. Conclusions

Qualitative data from patients treated with MOUD in the Vermont hub-and-spoke (H & S) system indicated that participants felt they received tremendous benefits from their treatment. Individuals treated in the hubs reported that the program structure, medication, and their relationship with counselors was useful. However, many participants found the long dosing lines, accompanied by frequent drug talk by others in line, along with the impersonal, assembly-line procedures at the hubs were negative aspects of their treatment experience. Individuals treated in spokes were very positive about almost all aspects of their treatment. Of particular note were their perceptions that their relationship with their prescriber was a powerful and positive influence and that treatment in a primary care office substantially reduced the stigma they had previously felt in addiction treatment programs.

For over 60 years, individuals with OUD have benefited from receiving methadone treatment delivered in OTPs. Data on the use of MOUD in primary care settings has been far less well established. Data presented in this paper suggest that patients have very positive perceptions of the treatment experience in primary care settings.

Funding Agencies

This project was funded through the Centers for Disease Control and

Prevention's Preventive Health and Health Services Block Grant (NB01OT009090-01) and the Substance Abuse and Mental Health Services Administration's Substance Abuse Prevention and Treatment Block Grant (TI010055-17). In addition, the project was supported in part by the National Institutes of Health Center of Biomedical Research Excellence award P20GM103644 from the National Institute of General Medical Sciences (NIGMS). The content is solely the responsibility of the authors and does not necessarily represent the official views of the CDC, SAMHSA, NIGMS, or NIH.

References

- Blau, M., 2017, June 27. STAT forecast: opioids could kill nearly 500,000 Americans in the next decade. STAT Blog. <https://www.statnews.com/2017/06/27/opioiddeaths-forecast/>.
- Brooklyn, J.R., Sigmon, S.C., 2017. Vermont hub-and-spoke model of care for opioid use disorder: development, implementation, and impact. *J. Addict. Med.* 11 (4), 286–292. <https://doi.org/10.1097/ADM.0000000000000310>.
- Centers for Disease Control and Prevention, National Center for Health Statistics, 2017. About multiple cause of death, 1999–2017 on CDC WONDER online database, 2017. Retrieved November 2018 from: <https://wonder.cdc.gov/mcd-icd10.html>.
- Dimatteo, M.R., Giordani, P.J., Lepper, H.S., Croghan, T.W., 2002. Patient adherence and medical treatment outcomes a meta-analysis. *Med. Care* 794–811.
- Fox, A.D., Masyukova, M., Cunningham, C.O., 2016. Optimizing psychosocial support during office-based buprenorphine treatment in primary care: patients' experiences and preferences. *Subst. Abuse* 37 (1), 70–75.
- Hewell, V.M., Vasquez, A.R., Rivkin, I.D., 2017. Systemic and individual factors in the buprenorphine treatment-seeking process: a qualitative study. *Subst. Abuse Treat. Prev. Policy* 12 (1), 3.
- Korthuis, P.T., Gregg, J., Rogers, W.E., McCarty, D., Nicolaidis, C., Boverman, J., 2010. Patients' reasons for choosing office-based buprenorphine: preference for patient-centered care. *J. Addict. Med.* 4 (4), 204.
- Korthuis, P.T., Saha, S., Chander, G., McCarty, D., Moore, R.D., Cohn, J.A., Beach, M.C., 2011. Substance use and the quality of patient-provider communication in HIV clinics. *AIDS Behav.* 15 (4), 832–841.
- McLellan, A.T., Lewis, D.C., O'Brien, C.P., Kleber, H.D., 2000. Drug dependence, a chronic medical illness: implications for treatment, insurance, and outcomes evaluation. *JAMA* 284 (13), 1689–1695.
- Mohlman, M.K., Tanzman, B., Finison, K., Pinette, M., Jones, C., 2016. Impact of medication-assisted treatment for opioid addiction on Medicaid expenditures and health services utilization rates in Vermont. *J. Subst. Abuse Treat.* 67, 9–14. <https://doi.org/10.1016/j.jsat.2016.05.002>.
- Neuendorf, K.A., 2002. *The Content Analysis Guidebook*. Sage Publications, Thousand Oaks, CA.
- O'Donnell, J.K., Gladden, R.M., Seth, P., 2017. Trends in deaths involving heroin and synthetic opioids excluding methadone, and law enforcement drug product reports, by census region—United States, 2006–2015. *MMWR Morb. Mortal. Wkly Rep.* 66 (34), 897.
- Rawson, R.A., Cousins, S.J., McCann, M., Pearce, R., Van Donsel, A., 2019. Assessment of medication for opioid use disorder as delivered within the Vermont hub and spoke system. *J. Subst. Abuse Treat.* 97, 84–90. <https://doi.org/10.1016/j.jsat.2018.11.003>.
- Simpatico, T.A., 2015. Vermont responds to its opioid crisis. *Prev. Med.* 80, 10–11. <https://doi.org/10.1016/j.ypmed.2015.04.002>.
- U.S. Department of Health and Human Services (HHS), Office of the Surgeon General, 2016, November. *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health*. HHS, Washington, DC.