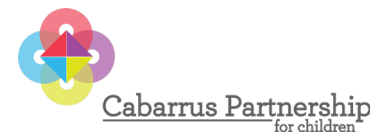


Examining the Collaborative Approach to the Treatment of Pregnant Women with Substance Use Disorders

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Executive Summary

A team at UNC School of Government designed and implemented a research protocol to gain a more nuanced understanding of the effort and outcomes associated with the Substance Use Network (SUN) project. It gathered quantitative and qualitative data from the SUN project partner organizations and program participants. This is a full report on the findings of this study—funded by the Cabarrus Partnership for Children.

The research design focused on the structure, process, and outcomes of the program as a means of identifying its strengths and weaknesses. This involved collecting information from agency partners, program participants, and participant files.

Gathering data from three sources allowed us to obtain a full understanding of program activities and participant experiences and outcomes. Results were then assessed in comparison to local and national outcomes. SUN partners were given surveys to examine the collaborative strengths and challenges. Program participants were given surveys focused on the experience of receiving service from partner organizations. Some of the participants were also interviewed to provide a more contextual understanding of their experiences. Institutional Review Board (IRB) approval was obtained through UNC Research.

The study found the following strengths and outcomes:

- The governance group contributed to improving the structure and processes of the SUN project to improve outcomes for program participants.
- Program participant outcomes demonstrate high adherence to medication-assisted treatment (MAT) 81% (13) among the SUN project participants receiving MAT 73% (16).
- Program participants had moderate to high rates for remaining in the program (95.45%) between six and 12 months of treatment.
- Program participants with moderate to high adherence to MAT had higher birth weights and gestational age at delivery.
- Direct maternal results indicate that the average gestational period for women in the program was 38.37 weeks.
- The integrated approach of the program has led to meeting approximately 61% of program participant needs.

Based on the overall findings, the research team generated three central recommendations:

1. Strengthen the formalized system of care between systems by improving communication channels, relationships, and trust across partners by clarifying approaches for decision making and continuing to develop and share goals, objectives, and measures.
2. Improve data tracking by adopting a shared knowledge management system to avoid duplication in service delivery and data collection, and to track patient outcomes.
3. Further improve the program participant experience and access to MAT by evaluating partner needs as they relate to training, integrating educational components into a knowledge management system, and improving methods to increase awareness of access to MAT and the SUN project.

Purpose

Substance abuse during pregnancy leads to a multitude of health problems for both mother and child, including miscarriage, prematurity, physical malformations, and neurological damage. Fear, stigma, and systematic barriers to care have led to inequitable health outcomes for pregnant women (Chavkin 1990; House, Coker, and Stowe 2016; van Boekel et al. 2013; Crane et al. 2019).

In North Carolina, the number of neonatal abstinence syndrome (NAS) cases per 1,000 hospital births has increased from 1.8 in 2008 to 8.2 in 2014. In Cabarrus County in 2016, that number hovered around 7.6.

To address this issue in Cabarrus County, the SUN project developed a cross-sector system of compassionate care that uses best practices recommended by the Substance Abuse and Mental Health Association (SAMHSA). The project is a partnership between several partners, including Atrium Health Behavioral Health Services, Cabarrus Health Alliance, Cabarrus Partnership for Children, Cabarrus County Department of Human Services, and the Rowan County Department of Social Services. The goal of the project is to provide coordinated care across sectors and organizations. This collaborative system of care focuses on supporting the health, safety, wellbeing, and recovery of pregnant patients with an opioid use disorder (OUD), their babies, and their families.

Evidence-based outcomes for pregnant women with an OUD are sparse and underutilized (Rausgaard et al. 2020; Crane et al. 2019; The American College of Obstetricians and Gynecologists 2018). Much of the existing research has focused on patient care from a single source. However, there is evidence that collaborative or coordinated care services that focus on the quality of care can lead to attaining key outcomes (Crane et al. 2019).

UNC researchers examined the SUN project's functions using quantitative and qualitative research methods. The research goal was to contribute to the sparse body of research that aims to show that coordinated care with a measurement-based focus can lead to improved quality of care and outcomes for pregnant women recovering from OUD and their children (Crane et al. 2019). This research focused on examining the strategies utilized by the SUN project, the perspective of partner organizations, participant experiences, and participant outcome data.

Guiding Framework: Quality of Care Improvement

The research was guided by a quality-of-care improvement framework, which focuses on measurement-based approaches and proactive data collection to coordinate patient-centered care plans across partner organizations (Kilbourne et al. 2018).

There are three key concepts involved in the quality improvement framework that can be used to improve the quality of care for program participants. These three concepts focus on the structure, process, and outcomes for program participants.

Structure: The structural components of the collaborative should be supported by a governance structure and adequate administrative staff that support decision making, coordination, and interdependence.

Process: The process portion examines the evidence-based practices being implemented.

Outcomes: Outcome measures assess whether patient care has produced improved symptoms for the program participants in comparison to other studies and national averages.

Methodology

The research study was a retrospective review of secondary data, in combination with surveys and interviews to examine the strategies being used to advance health equity and improve outcomes for clients.

The first phase of the study included observing data collection and data-sharing protocols. The data included the following items:

- Client charts
- Referral forms
- Mother and child intake forms
- Medical notes
- Case management notes
- Clinical team review notes
- Child development assessment measures and reports
- End-of-service documents

The second phase of the study focused on examining the structure of the program. We surveyed SUN partners and observed meetings, conducted discussions with partners, interviewed the program manager, and visited the SUN clinic to understand how services were being coordinated. The goal was to identify any systemic barriers in the collaborative process.

The third phase involved an examination of the process and experience of program participants. Program participants were given patient satisfaction surveys and interviews were done with a few program participants (n=4). Participant surveys and interviews provided insight into their experience.

Quantitative data was analyzed using Excel. Qualtrics was used to administer both patient and SUN partner surveys. Qualitative data was analyzed using MaxQDA.

The research objective was to review the SUN project's protocols to ensure that they support the outlined project goals in a way that also supports a continuous quality improvement plan.

The cross-sector assessments from 2019 and 2020 identified five primary opportunities for improvement: having a formalized system of care coordination between systems, data tracking between systems to monitor outcomes, improving access to MAT, having the appropriate levels of care for women, and access to a full range of services to be provided in conjunction with MAT. The research team focused on these areas by examining the structure, process, and outcomes of the project.

Structure

The SUN project established a governance structure to address system-level barriers, disparate patient encounter practices, restrictive admitting procedures, superficial application of community input, and data-sharing limitations. The structure of the organization is horizontal, but the SUN project program manager is central to the program's operations, functioning to provide support for collective decision making and identifying solutions by engaging necessary stakeholders. The project is comprised of a governance group, working groups, and clinical health providers. The collaborative approach is guided by the Substance Abuse and Mental Health Services Administration (SAMHSA) framework which is used to facilitate evidence-based practices.

The research team assessed the level of collaboration across partner organizations using a collaborative framework to examine four areas of collaboration: governance, administration, autonomy, and norms (Thomson and Perry 2006). The research team used a collaborative assessment that focuses on the four dimensions of collaboration to highlight the areas that facilitate or constrain the SUN project. The results of the collaborative assessment were in line with the baseline cross-sector assessments done one year prior, which demonstrated an increase in collaboration and the use of best practices. Of the 28 SUN partners, 19 partner organizations participated in the collaborative assessment. Most of the partners reported that the SUN project has helped to improve coordination of care (25% moderately agree, 75% strongly agree). In line with the recommended SAMHSA protocols for improving quality of care through coordination, partner organizations reported that coordination of care helped to improve reduction in stigma around OUD care for pregnant women (25% moderately agree, 75% strongly agree) and improved efficiency (6.25% slightly agree, 18.75% moderately agree, 75% strongly agree). The following section reviews the four dimensions of collaboration based on partner responses by focusing on the areas where improvement is needed.

Governance refers to the organizational processes that support the partner organizations’ ability to work together to provide services to program participants and meet the goals of the program. The governance structure facilitates and manages the actions and relationships by determining who makes decisions, the information that needs to be exchanged, and the actions that are not allowed. Optimistically, most of the respondents indicated they were in support and agreement with the governance structure (79% (15)). However, 21% (4) of the respondents stated that they slightly, moderately, or strongly disagreed with the governance structure (see Table 1). This sentiment could be attributed to a lack of formal communication structures and clear information-sharing protocols (Curnin and O’Hara 2019).

Understanding of the processes that govern information sharing and accessibility is critical to ensuring organizations know how they contribute to the overall mission (Curnin and O’Hara 2019). The annual cross-sector assessment indicated that some partner organizations felt the need for a “clear understanding of working relationships, referral systems, and care coordination.” Similar findings were reported in the qualitative responses of the latest SUN partner survey. Identified barriers to collaboration efficiency referenced difficulty in getting people together and not knowing the information in advance. Others indicated a need for clarification of the referral process to maximize available services to the patient.

TABLE 1. Collaborative assessment: GOVERNANCE

Survey questions	Agree	Disagree
Partner organizations take your organization’s opinions seriously when decisions are made about the collaboration.	84.44% (16)	15.78% (3)
Your organization brainstorms with partner organizations to develop solutions to mission-related problems facing the collaboration.	84.21% (16)	15.79% (3)
All partner organizations (including your organization) have to agree before a decision is made about the goals and activities of the collaboration.	68.42% (13)	31.58% (6)
Your organization relies on informal personal relationships with partner organizations when making decisions about the collaboration.	73.68% (14)	26.32% (5)
You, as a representative of your organization in the collaboration, understand your organization’s roles and responsibilities as a member of the collaboration.	78.95% (15)	21.05% (4)

Administration refers to the implementation and operational management necessary for the collaboration to be successful. Administrative processes move the governance decisions towards action to achieve the collaboration’s goals. The results of the administrative assessment revealed that 70% (13) of the respondents strongly supported the functions of the administrative structure. However, 30% (5) slightly, moderately, or strongly disagreed with the administrative structure. For simplicity, the results are displayed as “agree” or “disagree” in Table 2.

Most of the administrative coordinating and communication duties are executed by the program manager. The program manager’s role is vital in maintaining communication, information sharing, and creative problem solving. The structure of the collaboration has improved the coordination of care. However, the current approach relies on a single individual to manage communication between all of the partners. This is not sustainable, especially without a shared knowledge management system that aligns measures across partner organizations.

When bringing organizations together across different sectors, responsibilities and directives need to be addressed to establish role clarity and to improve communication between partner organizations (Curnin and O’Hara 2019). The annual cross-sector assessment completed by the SUN partners indicated a need to “operationalize the parameters of the relationship to best serve women.” Operationalizing the goals, objectives, and measures of success for the network is essential to addressing the ambiguity around role and responsibilities (Ansell and Gash 2007).

Partner responses show improvements in positive and effective information sharing systems that lead to successful referrals. However, many partner organizations commented on the need for meetings before and/or after more involved patients are seen to ensure all partner organizations are on the same page and to limit confusion during the patient’s visit.

TABLE 2. Collaborative assessment: ADMINISTRATIVE

Survey questions	Agree	Disagree
Partner organization meetings accomplish what is necessary for the collaboration to function well.	78.95% (15)	21.05% (4)
Partner organizations (including your organization) agree about the goals of the collaboration.	68.41% (13)	31.59% (6)
Your organization’s tasks in the collaboration are well coordinated with those of partner organizations.	78.95% (15)	21.05% (4)
Your organization brings conflicts with partner organizations out in the open to work them out among the organizations involved.	73.68% (14)	26.32% (5)
Your organization relies on formal communication channels when contacting partner organizations about issues related to the collaboration.	84.22% (16)	15.78% (3)

Autonomy refers to the ability of a partner to maintain their own distinct identities separate from the collaborative identity (Thomson, Perry, and Miller 2009). Partners in a collaborative have two identities: the identity associated with the collaborative and the identity associated with their authoritative organizations. The organizational philosophies and the collective interest of the collaborative should be examined to avoid conflicting goals and reduced trust (Linden 2010). The majority of respondents stated that they did not perceive an issue with autonomy (80% (15)). However, a small number of participants reported having an issue with autonomy. This could be due to a potential overlap in services offered by multiple organizations in the collaborative or ambiguity surrounding the difference in collective mission and organizational mission (Curnin and O’Hara 2019). Partner responses from the recent surveys mentioned difficulty coordinating and aligning vision and goals based on motives of the organization and a “difference in the goals of the SUN project clinic and the partner organizations.” Those reporting disagreement with autonomy may be having difficulty distinguishing their mission and service base from that of the group.

TABLE 3. Collaborative assessment: AUTONOMY

Survey questions	Agree	Disagree
The collaboration hinders your organization from meeting its own organizational mission.	31.58% (6)	68.42% (13)
Your organization’s independence is affected by having to work with partner organizations on activities related to the collaboration.	31.58% (6)	68.42% (13)
You, as a representative of your organization, feel pulled between trying to meet the expectations of both your organization and the collaboration.	31.58% (6)	68.42% (13)
Your organization feels it worthwhile to stay and work with partner organizations rather than leave the collaboration.	68.42% (13)	31.58% (6)
Partner organizations (including your organization) have combined and used each other’s resources, so all partners benefit from collaborating	63.16% (12)	36.84% (7)

Mutuality refers to the shared interests of the collaborative. The benefits of the collaboration should be of mutual benefit to all partners. Norms are the informal repeated interactions between partner organizations that build and establish trust. These both involve placing a high importance on working together and building trust in other organizations through frequent and clear communication (Curnin and O’Hara 2019). In understanding everyone’s capabilities, organizations can place trust in others to contribute to shared goals knowing motivation is equally distributed (Curnin and O’Hara 2019). Respondents discussed positive feelings towards the collaborative indicating mutually beneficial outcomes for partner organizations. Many agency partners described satisfaction, with testimonials such as “[the collaboration is] very functional, influential (for both agencies and clients), and a great demonstration of what wonderful successes can be found in a collaborative approach.” On the other hand, the levels of disagreement are demonstrated through common themes, such as confusion of partner roles, how to reach out for specific needs, and lack of information regarding where patients are being seen and referred. Although disagreement on mutuality and norms is relatively low, fine-tuning these areas would greatly improve treatment processes.

TABLE 4. Collaborative assessment: MUTUALITY AND NORMS

Survey questions	Agree	Disagree
Your organization shares information with partner organizations that will strengthen their operations and programs.	68.42% (13)	31.58% (6)
You feel what your organization brings to the collaboration is appreciated and respected by partner organizations.	73.69% (14)	26.31% (5)
Your organization achieves its own goals better working with partner organizations than working alone.	68.42% (13)	31.58% (6)
Partner organizations (including your organization) work through differences to arrive at win-win solutions.	73.69% (14)	26.3% (5)
The people who represent partner organizations in the collaboration are trustworthy.	68.95% (15)	31.05% (4)

Overall, the results of the collaborative survey identified strengths and areas for improvement in the SUN project. Most respondents discussed high levels of appreciation for the collaboration. Respondents were very satisfied with how they benefited from improved information sharing that had an impact on patient outcomes. Much of this was attributed to trust that was created by increased communication. Trust and communication within relationships are built over time as groups continue to work together (Curnin and O’Hara 2019). By focusing on the areas for improvement, the SUN project can continue the process of improving quality of care within the collaborative. Most frequently indicated by survey respondents is the need for improved communication and information sharing by increasing access to documentation of services provided for each member and by clarification of the referral process. The collaborative literature emphasizes the importance of utilizing a knowledge sharing platform to support communication among everyone (Curnin and O’Hara, 2019).

Process

As previously stated, the SUN project has adopted a comprehensive approach to providing care using evidence-based practices informed by the SAMHSA best practices (Substance Abuse and Mental Health Services Administration 2016). A comprehensive approach is an effective tool in creating sustainable system-level changes to increase access to care and improve coordination across sectors to increase access to care, coordination across sectors, and improved maternal and child outcomes (Substance Abuse and Mental Health Services Administration 2016). Patients with an OUD diagnosis are offered

a medication-assisted treatment (MAT) plan in combination with therapy to help support and sustain recovery. The SUN partners meet monthly to review the participant’s medical conditions and social determinants of health impacting their overall recovery.

A formalized system of care

The formalized system of care used by the SUN project has been continuously developed over time. The system of care is supported by coordinated care case management meetings. The coordinated case management meetings function as the mechanism for tracking and exchanging information. These meetings, where partners from every sector and across multiple agencies are present, are held monthly and the information is tracked by the program manager and the clinical management team. Barriers identified in the care coordination meetings are then communicated to the governance group. The governance group addresses broader systemic issues, while the coordinated case management meetings focus on improving patient care based on the needs identified by partners, as discussed below.

The governance group is made up of individuals from partner organizations to include, Cabarrus Health Alliance, Cabarrus Partnership for Children, Cabarrus County Department of Human Services, Atrium Health, NC Departments of Public Safety, Genesis A New Beginning, McLeod Addictive Disease Center, Cardinal Innovations Healthcare, Daymark Recovery Services, Partners Health Management, and Rowan County Department of Social Services. The goal of the group is to support decision making, guide implementation of services, identify systemic barriers, support communication and good working relationships, establish a shared understanding of outcomes, and generate mechanisms for identifying new patients.

To support a formalized system of care, the governance group developed a memorandum of understanding (MOU) and a patient release-of-information (ROI) form. According to the collaborative literature, an MOU is useful for enhancing communication and mutual responsibilities (Linden 2010). The ROI permits partner organizations to lawfully share patient information. The MOU and ROI were developed with the assistance of faculty with legal expertise from the UNC School of Government. While many networks may not have access to legal expertise, guidance was essential for navigating multiple confidentiality laws, including the federal law governing substance use disorder (SUD) patient records (42 C.F.R. Part 2). The MOU outlined the purpose and expectations of the SUN project, set protocols for the use and disclosure of information among partner organizations with different service philosophies and confidentiality obligations, and incorporated best practices recommended by SAMHSA for a formalized system of care. The law faculty at the School of Government continue to review the MOU and ROI to ensure that they address the respective laws and missions of child welfare and treatment organizations. Hence, the development of the MOU and ROI have provided both the forum and the tools for addressing the sharing of information across multiple agencies for a common purpose. To our knowledge, this is the first time that a group in North Carolina has developed the legal mechanisms for sharing highly protected SUD information across organizations to improve collaboration and coordination of care.

Trust-based relationships are important to the outcomes of a collaborative (Linden 2010). The governance group focuses its efforts on improving trust and communication by organizing quarterly meetings to discuss ongoing issues, support communication efforts, and ensure good working relationships. The governance group also has topic-specific working groups that

meet monthly. These working groups were created in response to the highest priority needs areas identified by the governance group. The governance group is also responsible for ensuring that all necessary agencies are involved in the coordination of the care group. The role of coordinating all necessary agencies is handled mostly by the program manager. The program manager's role is vital to continuing the functions of the SUN project, but the communication efforts need to be better supported by a knowledge management tool that supports two-way communication between partner organizations. Input across multiple partner organizations would allow the governance group to identify systemic issues.

The formalized system of care was assessed by surveying SUN partners in 2019, 2020, and again in 2021. Based on the results of the cross-sector assessment and the collaborative survey there have been improvements in the formalized system of care. As of 2019, only a few partner organizations saw an improvement in coordination of care because of the SUN project (12% yes, 38% to some extent). During the follow-up assessments in 2020 and 2021, the perception of the formalized system improved. In addition, the collaborative survey responses indicated that administrative and governance processes have led to an improvement in coordination of care (72% strongly agree), reduced stigma for program participants (89% strongly agree, 9% moderately agree), and improved outcomes for program participants (67% strongly agree, 23% moderately agree). Largely, the functions of the governance group have contributed to improving the formalized system of care. Many of the partner organizations, however, acknowledge that there is still work to be done around outlining the vision and goals of the SUN project, roles, knowledge building around legal barriers, and methods for improving communication.

Data tracking between systems to monitor outcomes

Data tracking and data sharing are necessary to support a collaborative system of care (Linden 2010). The governance group and the coordination care group members created the coordinated care management system to improve information sharing across agencies. In addition, the MOU that was developed helped to address some of the issues associated with sharing information and the proper use of information. The results of the SUN partner surveys indicated that most of the partner organizations believe that the current processes have helped to improve the efficiency of service delivery (72% strongly agree). However, many responses referenced communication issues related to the lack of a knowledge management tool and issues related to limited knowledge related to the legal barriers of information sharing. Based on observations of the SUN project's current processes, the research team concluded that information was primarily only shared during the coordination of care meetings which leads to duplicated efforts. Many of the partner organizations collect the same information from patients during multiple visits and that information is not shared with the other partner organizations. Currently, the SUN project lacks a platform to exchange information outside of group meetings to improve the efficiency of care and monitor outcomes. Still, the SUN project has been successful largely due to support from all the partner organizations and to the efforts of the program manager and the clinical team.

Improving access to medication-assisted treatment, appropriate levels of care, and a full range of services

Improving access to medication-assisted treatment (MAT), ensuring that the appropriate levels of care are in place, and coordinating a full range of services underscore the foundational

goals of the SUN project. To continuously support these goals, the program manager promotes and encourages continuous communication between partner organizations through coordinated care case management meetings and smaller workgroups. Like the governance group, the workgroups focus on the objectives that support the larger goals. In addition, monthly care coordination meetings are held regularly to review each participant's medical condition and social determinants of health impacting their overall recovery. The coordination of care meetings provide an opportunity for staff to identify gaps in the community and identify stakeholders and opportunities to educate obstetric partner organizations not associated with the SUN project. Services are provided based on needs identified during the coordination of care meetings. The SUN project coordinates a full range of services to include case management services, prenatal care, mental health services, nutritional counseling, dental care, recovery support, newborn care, parenting support/education, home-visitation programs, and many other basic supportive services.

The SUN project is focused on ensuring that services are culturally responsive, appropriate, and satisfactory by incorporating patient feedback into the quality assurance processes. The full range of services (e.g., individual and group counseling, residential, etc.) are provided in conjunction with medication-assisted treatment. Patients receive care all in one convenient location at the Cabarrus Health Alliance. The sleek and modern building is both warm and welcoming to ensure patients feel confident going to their appointments and are excited to get care in an aesthetic space. The beautiful building is a large contributor to the SUN project's goals of reducing the stigma associated with getting help. The comforting environment in conjunction with the ease and accessibility of having a wide range of services in one location

through cross-sector coordination provides patients with a positive care experience. The research team gathered information through surveys and interviews to assess program participant satisfaction with the range of services, level of care, and access to MAT. Surveys focused on timely access to treatment, support received, and general experience. To strengthen confidence in the process, program participants were reassured that partner organizations would not gain direct access to survey results.

Generally, participant surveys and interviews provided insight into satisfaction with the SUN project clinic. Increased accessibility and a supportive, holistic-care approach contributed to the

“You have somebody who cares about the people in the program. They care about you, they’re there for you, they want to help you. You can feel that.”

high satisfaction. Some participants did mention appointment timing as an issue and were unsure if they could request a more convenient time. Others mentioned certain actions made them uncomfortable, for instance,

having their conversations written down. The explanation of some processes is necessary to ensure participants are not left feeling uncomfortable or triggered. Otherwise, the results indicated that the comprehensive, patient-centered approach creates an environment that reduces many of the barriers to care that cause women to delay treatment.

Studies show that most adults delay receiving treatment for their substance use disorder and less than half of pregnant women have access to safe treatment (Qato 2021). Program participants stated that before becoming patients at the SUN project clinic, finding adequate and safe treatment for OUD was difficult. Several

of the participants described situations where they received inadequate care that was detrimental to their health. One participant relayed this sentiment, “the doctor that I was seeing at the time, she said she didn’t deal with Blue Cross Blue Shield, and I would have to call around to the pain clinics to see what they could do for me. The pain clinic that gave me the medication, that was not safe for me to take ... ” Although anecdotal, this highlights the need to make MAT available as part of comprehensive managed care programs for pregnant women. Mounting evidence indicates that maternal health is a huge motivating factor for program participants to seek out treatment (Wright et al. 2016; Titus-Glover et al. 2021; The American College of Obstetricians and Gynecologists 2018).

To enhance treatment and to reduce stigma and alienation, the SUN project promotes a low-barrier pathway for restarting treatment when recovery has been interrupted. Reducing barriers to treatment includes taking a less punitive approach to relapses (Gryczynski et al. 2014). Program participants are encouraged to communicate symptom recurrence, although urine testing is done regularly. During the interviews, many program participants reported being treated with respect as the primary reason for their continued success after symptom recurrence. For example, one patient stated, “I will tell them at [the SUN project clinic] ... there may be something in my system if maybe I had one or two this week and I will just have to be honest.” Program participants felt safe to disclose when they were using without fear of retribution.

“I think it’s the lack of knowledge about the SUN Clinic ... I don’t think people are scared to come in. I didn’t know about it until I was brought into it. I just think it’s the lack of knowledge that it’s there and that it’s available to anybody.”

Increasing awareness of treatment programs that improve treatment retention and reduce barriers to treatment re-entry is essential to improving access to MAT (Gryczynski et al. 2014).

“I would have to say getting the help with [MAT] was a big part of it ... knowing that the support is there, and the whole program really has been a very big blessing because I never thought I would be where [I am today].”

According to SAMHSA, there is limited consensus among obstetricians on the benefits of MAT (SAMHSA 2016). To further support access to MAT, the SUN project has focused attention on increasing awareness of the benefits of MAT during pregnancy in the community. In addition, program participants

reported that they were unaware of the services being provided by the SUN project. Many stated that they had been to other treatment centers before, but the personalized comprehensive approach to care was more effective to their recovery.

Outcomes

The overall summary of findings indicates that the SUN project’s patient-centered approach supports the expected outcomes for MAT based on the SAMHSA’s recommendations. To enhance treatment and to reduce stigma and alienation, the SUN project provides services in conjunction with (MAT). Studies show that MAT recipients are 1.82 times more likely to stay in treatment than those who do not receive it (NIDA 2021; SAMHSA 2016). Outcomes indicate high adherence to MAT (81% (13)) among the SUN project participants receiving MAT (73% (16)). In addition,

more than half of the program participants have moderate to high retention rates (95.45%) between six and 12 months of treatment. These outcomes are consistent with research on treatment outcomes for OUD treatment (Timko et al. 2016). Based on patient interviews, continued improvement was attributed to the full range of services provided by the SUN project (coping mechanisms through involvement with SUN, respectful interactions with program staff, and a strong social support system). Results indicated that 12 (54.5%) program participants demonstrated sustained remission levels for three months to more than one year.

Drug screenings and the approach to drug screening are other indicators of program success. Program participants had urine drug tests that were negative 38% of the time. This is on par for program participants that have symptom reoccurrence but are adhering to MAT (Yonkers et al. 2011; Bagley et al. 2018; Zippel-Schultz et al. 2016). Based on comments from service partner organizations and the program participants, women were likely to report substance use before testing. While there is limited consensus in the literature, research shows that self-reporting could be similarly accurate to urine samples—specifically when patients are comfortable reporting in an environment where they feel supported (Bagley et al. 2018; Grekin et al. 2010; Yonkers et al. 2011).

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Direct maternal outcomes. The results indicate that direct maternal outcomes have been promising. Of the 19 women who had already given birth, the average gestational period was 38.37 weeks. These findings are in line with studies reporting on successful program outcomes for a gestational period (Gemmill, Kiang, and Alexander 2019; Debelak et al. 2013). On average, the results indicate that program participants with moderate to high adherence to MAT had higher birth weights and higher gestational age at delivery (see Table 5). As a result, only four (18%) program participants had NICU admissions with two (9%) premature births. The length of time spent in the program ranges from 3.5 to 15 months with the average length of time at 9.75 months. In addition, although the program cannot be credited for reduced emergency service use, only four of the 22 women requested emergency room care during treatment.

TABLE 5. AVERAGE MATERNAL OUTCOMES

Level of MAT adherence	Months in program	Gestational age at delivery (in weeks)	Birth weight (in pounds)
High	9.07	38.68	6.67
Moderate	9.70	39.57	7.12
Low	6.16	37.8	5.48

Long-term outcomes. The SUN project has launched a holistic program that focuses on program participant needs that go beyond MAT and therapy. Integrated programs that focus on long-term needs related to employment and transportation generate

protective factors to improve the lives of program participants (Lusk and Veale 2018; Fleury et al. 2017). A summary of SUN partner notes and patient surveys indicated that approximately 61% of program participants' needs were being met. More than half of program participants reported an improved mood over the course of their visits (12 (54.55%)). The program participant service needs are identified during visits and shared with partner organizations during the coordination of care meetings.

“The [SUN project is] strangers making sure you’re safe and you’re taken care of. And it’s heartwarming.”

TABLE 6. MAT PROGRAM PARTICIPANT NEEDS

Service	Participants with need	Need met
Financial	8	3 (38%)
Food	3	3 (100%)
Education	3	0 (0%)
Employment	3	2 (67%)
Childcare	1	1 (100%)
Transportation	5	4 (80%)
Legal	1	0 (0%)
Prenatal care	1	1 (100%)
Health care	4	1 (25%)
Primary care	4	2 (50%)
Childbirth	5	5 (100%)
Dental	8	6 (75%)
TOTAL	46	28 (61%)

Summary of Findings

Our findings indicate that the SUN project has made improvements in the structure and process to improve outcomes for program participants. Program participant outcomes demonstrate high adherence to MAT (13 (81%) among the SUN project participants receiving MAT (16 (73%)). In addition, more than half of the program participants have moderate to high retention rates (95.45%) between six and 12 months of treatment. Program participants with moderate to high adherence to MAT had higher birth weights and higher gestational age at delivery. Direct maternal results indicate that the average gestational period for women in the program was 38.37 weeks. These findings are in line with studies reporting on successful program outcomes for a gestational period (Gemmill, Kiang, and Alexander 2019; Debelak et al. 2013). In addition, a summary of the SUN partner notes and patient surveys indicates that the integrated approach of the program has led to meeting approximately 61% of program participant needs. The SUN project governance group has implemented changes to improve the processes that lead to improved outcomes for program participants. However, the research group made three recommendations that could help further the SUN project's growth.

Recommendations

After systematic observations of the SUN project, our research team generated three main recommendations related to the structure, process, and outcomes of the SUN project. These recommendations fall in line with the stated opportunities for improvement identified by the partners in the assessments, which include a formalized system of care coordination between systems, data tracking between systems to monitor outcomes, improving access to MAT, the appropriate levels of care for women, and a full range of services to be provided in conjunction with MAT.

Recommendation 1. Strengthen the formalized system of care between systems

1A: Strengthen communication channels, relationships, and trust across partner organizations

SUN project partners mentioned the need for a “clear understanding of working relationships, referral systems, and care coordination to improve care.” Therefore, we recommend developing a knowledge management system that supports communication between partner organizations, outlines the relationships, resources, and care provided by each partner. A knowledge management system could also provide support to partner organizations when there are turnovers or changes in contact persons.

In addition to a knowledge management system, the partners need to engage in several group norming activities to collectively decide on the process for working together. Partners stated that they did not necessarily know how to handle conflict due to differing philosophies. For example, child protective services

function with a different operating philosophy and legal mandate than healthcare providers. These differences need to be discussed across open channels of communication to support the alignment of the SUN project's goals.

To further build trusting relationships, partners should be invited to lead workgroups around issues that play to their strengths. The outcomes of these workgroups should be highlighted, and successes should be communicated to the partner agencies to ensure continued buy-in.

1B: Clarify approaches for decision making

Decision making is another area of concern for the partners. It should be discussed as a group to ensure that all partner concerns are addressed. The SUN project is meant to support all partners so that the program participant experience can be improved. Therefore, the partners need to have brainstorming sessions to identify problems experienced by each partner to identify how the SUN project can provide solutions.

1C: Develop shared goals, objectives, and measures

SUN project partners frequently asked for a better understanding of expectations, roles, and goals. Although these were developed collectively as a group, the need still exists for these to be revisited regularly. Expectations and priorities need to be developed and revisited together as a team. The cross-sector assessments from 2019 and 2020 identified five primary opportunities for improvement: a formalized system of care coordination between systems, data tracking between systems to monitor outcomes, improving access to MAT, the appropriate levels of care for women, and a full range of services to be provided in conjunction with MAT. These areas of opportunity are

the goals of the project. Although the project manager tracked and reported on these goals to funders, these efforts were not enough to allow partners to feel they fully understood their roles in that process. The partners should come together to develop a project plan that outlines the objectives needed to meet these goals, the action steps, and the perceived measures of success on a more regular basis. This will allow the project to adequately assess outcomes over time. Developing clear measurements for the project's success also creates an added level of accountability that will be appreciated by funders and future partners.

Recommendation 2: Strengthen knowledge management system to improve sharing data and tracking outcomes

Develop or extend data-sharing platforms across partners. The current process for sharing information involves verbal notification during the coordination of care meetings. While this approach provides a critical level of care for the program participants being discussed, it often results in important information being unintentionally withheld. The result is inefficiency in care. Furthermore, duplication in data collection processes is an issue. Many of the partner organizations collect the same information from patients during multiple visits and that information is not shared with the other partner organizations. Currently, the SUN project lacks a platform to exchange information outside of group meetings to improve the efficiency of care and monitor outcomes.

Data should be shared by partners so that outcomes for program participants' improvement can be tracked. Confidentiality concerns should be minimal because SUN project partners have signed an MOU that addresses most confidentiality law issues. Ongoing training on this topic is needed to minimize barriers to data and information sharing. A separate management system

that collects specific types of information may limit the concerns of partners. It is also important to discuss differences in partners' working philosophies (e.g., punitive approaches associated with the criminal justice system versus harm reduction approaches associated with OUD treatment).

A centralized database will contribute to determining opportunities for policy development, building value for the SUN project, encouraging collaboration with potential partners, support the development of feedback mechanisms, identifying useful information such as trends, systemic issues, and successes, and providing clear outcomes for future funding opportunities.

Recommendation 3: Further improve the program participant experience and access to MAT

3A: Evaluate partner needs as they relate to training

Discuss training needs with partners to understand the types of training that would improve service delivery. For example, many partners stated that they saw the need for additional training related to trauma-informed care, the care and treatment of prenatally exposed infants, and OUD in pregnancy. Some mentioned that the staff interfacing with program participants was not necessarily required to complete trauma-informed care training or training specific to OUD. Lastly, cultural competency training was considered unnecessary because most of the participants were Caucasian. However, cultural competency extends beyond race. According to the American Psychological Association, cultural competency refers to the ability to understand, appreciate, and interact with people from cultures, belief systems, and day-to-day life activities that are different from

one's own (DeAngelis 2015). Cultural competence issues related to when appointments are offered and the day-to-day duties of program participants were noted as a concern.

3B: Integrate educational component into a knowledge management system

Develop an educational component that is supported by a knowledge-management system. The educational component of the program that informs program participants on different aspects of their care is provided by the clinical care team. The program participants benefit from this approach because it allows the information to be catered to the needs of the program participant based on their progress. However, program participants' progress is not saved in a knowledge management system, so it's unable to be evaluated along with outcomes.

3C: Improve methods to increase awareness of access to MAT and the range of services

Identify solutions for unmet needs related to education and legal services by reaching out to nonprofit organizations that provide pro bono legal advice and continuing education. Develop a campaign to educate primary care physicians about the benefits of providing MAT care to women progressing from the program with the support of the SUN project. Create educational material for women that are new to the SUN project to reduce some of the perceived stigma associated with treatment. Offer group therapy or activity sessions to allow program participants to build a community during recovery.

Appendix

TABLE 7. PARTICIPANT CHARACTERISTICS

Race		Average Age	Employment status	
White	Black	29.9 years	Employed	Unemployed
19 (86%)	3 (13%)		6 (27%)	16 (73%)

Education		
College degree or some college	High school or GED	Some high school
8 (40%)	11 (55%)	1 (5%)

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