Center for Care Innovations Addiction Treatment Starts Here: Primary Care

Final Evaluation Report

November 2020

ACKNOWLEDGMENTS

We are grateful to Meaghan Copeland at CCI for coordinating and validating all the quantitative aspects of the Addiction Treatment Starts Here (ATSH) procedures and data collection. We are also thankful to Tammy Fisher, Brianna Harris-Mills and Sandra Newman of CCI, as well as ATSH coaches Brian Hurley, Katie Bell and Shelly Virva for informing the approach to the evaluation and the content of the major capability and performance measure sets. We acknowledge the dedication, advocacy and inspiration exemplified by the many ATSH teams and their remarkable champions involved in this project. Lastly, we thank student volunteers Mina Yuan, Hifsa Khan, and Fernando Ramirez for assistance with data entry and visualization.

ABOUT THE REPORT

This technical evaluation was prepared for Center for Care Innovations (CCI) through funding from the State of California Department of Health Care Services and Cedars-Sinai Community Benefit Giving Office. All data reported were collected from ATSH clinic participants between February 2019 and September 2020. Report authors are: Mark P. McGovern, Hannah Cheng, and Helene Chokron Garneau. More information can be obtained from Dr. McGovern, 1520 Page Mill Road, Suite 158, Palo Alto CA 94304. Email: mpmcg@stanford.edu

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EXECUTIVE SUMMARY

In 2019, the Center for Care Innovations (CCI) launched Addiction Treatment Starts Here (ATSH) for primary care. We evaluated the ATSH primary care program for the full 18-month duration, including the last seven months that co-occurred with the COVID-19 pandemic. The program funded 56 primary care clinics in California to launch and scale medications for opioid use disorder (MOUD) programs. These clinics were divided into two waves: Wave 1 consisted of 39 participating clinics and launched in February 2019; Wave 2 consisted of 17 participating clinics and launched in August 2019. Several participating clinics elected to report data for more than one clinic location, totaling 59 data reporting teams. This evaluation report analyzes data for 59 clinic teams.

The overarching goal of the ATSH initiative was to increase access and deliver high quality MOUD services to patients in these primary care clinics. The ATSH program overall impact was evaluated following the RE-AIM framework: 1) **Reach:** Increased by 1,092 patients on MOUD or 64%; **Effectiveness:** The national benchmark six-month retention rate of 50% is typical, which ATSH clinics surpassed or met (wave 1 at 60%, wave 2 at 49%) — however, the overall retention rate remained relatively stable over time (wave 1: 63% to 60%, wave 2: 49% to 49%); 3) **Adoption:** Increased by 103 x-waivered prescribers or 37.2%, and the number of x-waivered prescribers actively prescribing increased by 80, or 45.2%; and 4) **Implementation Quality:** As measured by the Integrating Medications for Addiction Treatment (IMAT) Index, capability increased from “Partially Integrated” at baseline to between “Partially Integrated” and “Fully Integrated”. Across all four quantitative measures, two important facts must be considered: 1) The shorter time frame of implementation supports for wave 2 (12- versus 18-months) resulting in less significant changes for these practices relative to wave 1; and 2) The impact of COVID-19.

Among all ATSH implementation support activities, coaching had the highest level of participation (100%). Learning sessions were the next most-attended activity (89%). Site visits were the third most-attended activity (82%). Average clinic attendance across 26 expert- and ATSH team-led webinars was 45%. Attendance increased with the COVID shift to entirely virtual formats. All implementation support activities were highly rated for Overall Experience and Overall Value and perceived as essential from team perceptions gathered via key informant interviews and activity end survey polls. A survey of all ATSH clinics found remarkable resilience to COVID-19, with virtual modifications to medical and behavioral health visits, duration of refills, reduced urine drug screens and responsiveness to patient needs. Concerns about unstable patients, especially those with mental health issues, were raised. Staff themselves noted increased anxiety and some variation in leadership supports. Key informant interviews were coded for barriers and facilitators to MOUD implementation. Noteworthy were significant improvement in MOUD practice, team-based care and provider self-efficacy. Issues pertaining to stigma and sustainment persisted as barriers.

Few changes to the ATSH program for Wave 3 are needed. But enhanced use of primary care peer-to-peer experiences, clarity in the performance measures and improvements in the coaching role might be considered. In summary, the ATSH program was successful in achieving the overarching goal to increase access and deliver high quality MOUD services to patients in 59 primary care clinic teams. The backstory of this success was clearly the intentional development of a cohesive network of connections and relationships among the CCI staff, coaches and primary care teams. The strength of these relationships enabled the ATSH program to adapt and thrive despite the COVID-19 pandemic affecting all.

1.0: BACKGROUND AND PURPOSE

1.1: The Opioid Epidemic in the United States

Between 1999 and 2018, opioid-related overdose was the reported cause of 450,000 deaths in the United States.[1] Although from 2017 to 2018 there was a small decrease in the number of overdose deaths involving opioids, mortality rates were five times higher than in 1999. Furthermore, deaths from synthetic opioids increased from 9.0 per 100,000 population in 2017 to 9.9 in 2018—accounting for two-thirds of all opioid-related deaths.[2] The opioid epidemic has resulted in a devastating economic burden, with an estimated cost of $696 billion in 2018 and more than $2.5 trillion in spending between 2015 and 2018.[3]

1.2: The National Landscape of Opioid Use Disorder Treatment

With the Drug Addiction Treatment Act (DATA) of 2000, licensed medical providers (physicians, nurse practitioners, physician assistants) could obtain a U.S. Drug Enforcement Administration (DEA) x-waiver and prescribe an FDA approved medication—buprenorphine—for the treatment of opioid use disorder (OUD).[4–7] Two other FDA-approved medications for OUD exist, methadone and naltrexone. But methadone can only be prescribed and dispensed for addiction in accredited, DEA- and state-regulated specialty clinics. And naltrexone, including the long-acting formulation (Vivitrol) has yet to be widely adopted by providers or preferred by patients. All three of these medications are referred to as medications for opioid use disorder (MOUD), and are often combined with psychosocial support for a patient-centered approach.[8] Evidence for MOUD consistently demonstrates that mortality rates among persons with opioid addiction are cut in half or more.[9]

Widespread efforts have been focused across the United States to expand patients' access to MOUD. Yet there remains a significant gap in availability. In fact, only 18% of treated persons with OUD receive any of these medications.[10–12] This gap in care is amplified among low-income patients, racial and ethnic minorities, and those living in rural areas.[13,14]

Primary care, especially in safety net contexts such as Federally Qualified Health Centers (FQHCs), is well-positioned to screen, triage, and treat OUD. FQHCs are often the first point of contact for identifying and treating health conditions, especially in medically underserved communities. Nonetheless, only approximately 21% of OUD patients in primary care clinics receive MOUD. This gap in care is due to barriers such as lack of x-waivered prescribers, provider comfort, institutional support, adequate reimbursement, stigma towards OUD, and poor medical infrastructure to implement and sustain MOUD.[15–17] Moreover, primary care providers (PCPs) are concerned about self-efficacy in prescribing MOUD, which inhibits seeking the necessary training and x-waiver required to prescribe and monitor MOUD.[18] To overcome the barriers in expanding MOUD within primary care, there is an urgent need to accelerate provider and team capability in MOUD prescribing through high quality implementation support.

1.3: The COVID-19 Pandemic Accelerates the Opioid Crisis

Complicating the aforementioned challenges, the COVID-19 pandemic of 2020 has caused major disruptions to the care of patients with OUD. California was among the first of states with confirmed COVID-19 cases, and the first to employ a state-wide stay at home order. State edicts prompted health care delivery to transition as much as possible to virtual. Federal and state health authorities relaxed requirements for in-person MOUD care. Pre-COVID, MOUD guidelines included in-person medication initiations, at least once monthly visits, short refill length, counseling, and frequent urine drug screens. These guidelines became challenging to maintain with the COVID-19 risks.[19] With the knowledge that patient retention is essential to reduce opioid overdose death, the DEA dropped the in-person exam requirement for buprenorphine initiations, allowing prescribers to use telemedicine in late March 2020.[20] The Department of Health and Human Services (HHS) revised Health Insurance Portability and Accountability Act (HIPAA) rules, permitting health care providers—across medical specialties—to use non-public facing communications technology for telehealth appointments.[21] With no federal mandate for urine drug screens or visit frequency or type, clinics adjusted their own protocols to balance this urgent need while minimizing COVID risk.

1.4: The Overarching Goal of Addiction Treatment Starts Here

In this report, we evaluate the Center for Care Innovations' Addiction Treatment Starts Here (ATSH) program. ATSH transpired from February 2019 through September 2020. The last seven months of the program co-occurred with the COVID-19 pandemic.

The overarching goal of the ATSH initiative was to increase access to MOUD for patients in primary care who could benefit. In order to achieve this goal, ATSH aimed to increase the number of x-waivered prescribers (physicians, nurse practitioners, physician assistants) and the number of waivered prescribers who were actively treating patients with OUD in the primary care context. These objectives correspond to implementation outcomes of reach (patient access) and adoption (delivery of care). Because reach and adoption may not have the desired impact without considerations of quality, the ATSH initiative also incorporated measures to ensure MOUD practice was conducted within the guidelines offered by the FDA, Substance Abuse and Mental Health Services Administration, the American Society of Addiction Medicine, and expert consensus.

The goal of the evaluation was to determine if increased reach, adoption, and high-quality implementation were achieved as the result of the CCI support activities to participating primary care teams.

2.0: ATSH PROGRAM OVERVIEW

ATSH was designed to support primary care clinics in MOUD program design, implementation, and expansion. There were two general clusters of clinics participating that were organized by CCI leadership and coaches into tracks. **Track 1** consisted of clinics that did not have a MOUD program in place or that were in the early stages of development with a small number of MOUD patients treated by a small number of x-waivered clinicians. These clinics sought to design new programs or refine and standardize existing programs. Track 1 clinics may be generally termed as "start-up" MOUD practices. **Track 2** clinics had existing MOUD services in place and were managing the care of a consistent number of MOUD patients. These clinics were more focused on the optimization, standardization, or expansion of their current program. Track 2 clinics therefore were termed as "scale-up" MOUD practices. These distinctions were made *a priori*, at the start of the project. But clinics from each track were invited to participate in the same types of implementation support activities, "one-room-schoolhouse" like. However, within these activities, particularly in relationship to their coaches, start-up and scale-up practices had different goals and were working on different things.

2.1: ATSH Program Offerings

Participating clinics were offered training, tools, expert coaching, and implementation support to design new or expand existing MOUD programs. Content addressed clinical and operational issues associated with high quality MOUD practice, including:

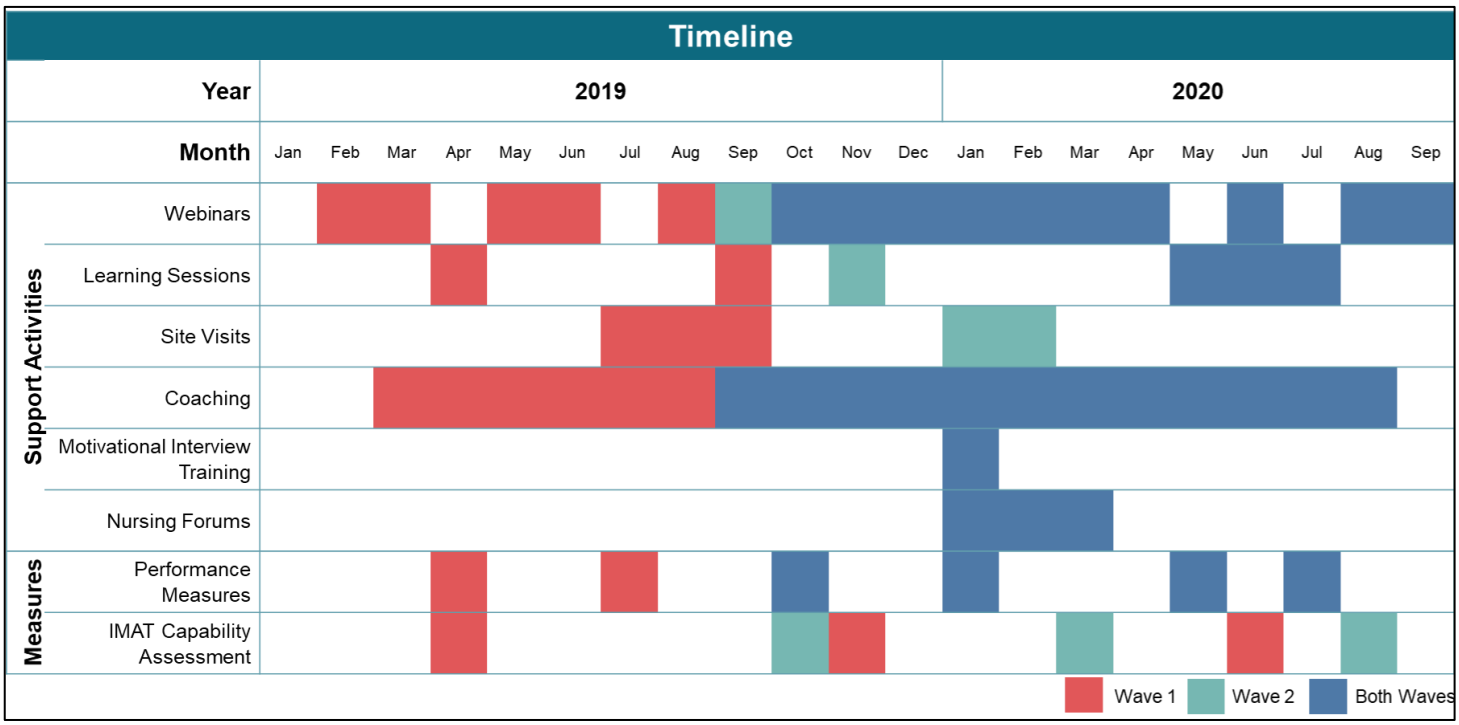
- Building a culture around treating addiction as a chronic disease;
- Developing or scaling a MAT model for the organization;
- Regulations for confidentiality and MOUD operations;
- Buprenorphine, Naltrexone, and Naloxone 101;
- Patient identification and selection;
- Managing buprenorphine inductions, stabilization, and maintenance;
- Assessing levels of care and building strong referrals to specialty care and community services;
- Building partnerships to promote collaboration across health care transition points, such as the emergency department and hospital;
- Effective strategies for tapering patients on chronic opioid therapy for non-cancer pain;
- Managing complex chronic pain and harm reduction;
- Managing co-occurring substances such as methamphetamines, alcohol, and benzodiazepines;
- Contingency management;
- Managing diversion; and
- Addressing stigma.

All participating clinics were provided up to $50,000 in funding based on completion of program milestones to offset the costs associated with MOUD program start-up or scale-up.

2.2: ATSH Program Timeline

There were two cohorts of ATSH participants with staggered rollout of start and length of participation. The ATSH Wave 1 started in February 2019 and ended in September 2020 (~18 months). The ATSH Wave 2 started in August 2019 and ended in September 2020 (~12 months). An overview of ATSH program activities by wave is illustrated in Figure 1.

Figure 1: ATSH program activity and measurement timeline



3.0: ATSH PARTICIPANTS

3.1: Recruitment, Enrollment, and Retention

Upon receipt DHCS and Cedars-Sinai funding, CCI advertised the ATSH opportunity on its website and by recruitment email. Clinics that were interested submitted an electronic application. CCI screened the applications to ensure participants' eligibility. Inclusion criteria were clinics that: 1) provided care in the State of California; 2) met the definition of a safety net health care organization; 3) met the definition of a non-profit and tax-exempt entity under 501(C)(3) of the Internal Revenue Service Code (IRC) or a governmental, tribal, or public entity; 4) provided comprehensive primary care services; and 5) could be at either the phase of MOUD start-up (no MOUD capability) or scale-up (optimize and expand MOUD capability). Exclusion criteria were clinics that: 1) submitted an incomplete application; 2) provided care outside of California; and 3) did not meet the definition of a non-profit. Eligible participants were further queried for MOUD program readiness, overall fit, and project team and leadership commitment.

3.2: Clinic Characteristics

ATSH clinic participants were divided into two waves: Wave 1 consisted of 39 participating clinics and launched in February 2019; Wave 2 consisted of 17 participating clinics and launched in August 2019. Several participating clinics elected to report data for more than one clinic location, totaling 59 data reporting teams. This evaluation report analyzes data for 59 clinic teams.

Clinic participants consisted of: Federally Qualified Health Centers (FQHCs), FQHC look-alikes, Hospital Affiliated Ambulatory Care Clinics, Indian Health Service sites, and Rural Health Clinics. Participating clinics were mainly FQHCs. Most clinics were located in an urban area with many in underserved communities and majority of the patients insured with Medicaid. The clinics varied by number of employees, patient panel size, and stages of MOUD implementation (e.g., number of x-waivered prescribers, number of patients prescribed buprenorphine). Figure 2 is a geographic representation of participating clinics by start-up and scale-up designation. Interestingly, the majority of start-up clinics were located in Southern California, whereas the majority of the scale-up clinics were located in Northern California. All ATSH participating clinics are listed in Table 1. Detailed baseline characteristics of ATSH participants are presented in Table 2. Overall, the clinics represent a wide range and representative sample of primary care safety net practices in California.

Figure 2: Geographic dispersion of ATSH clinics by track

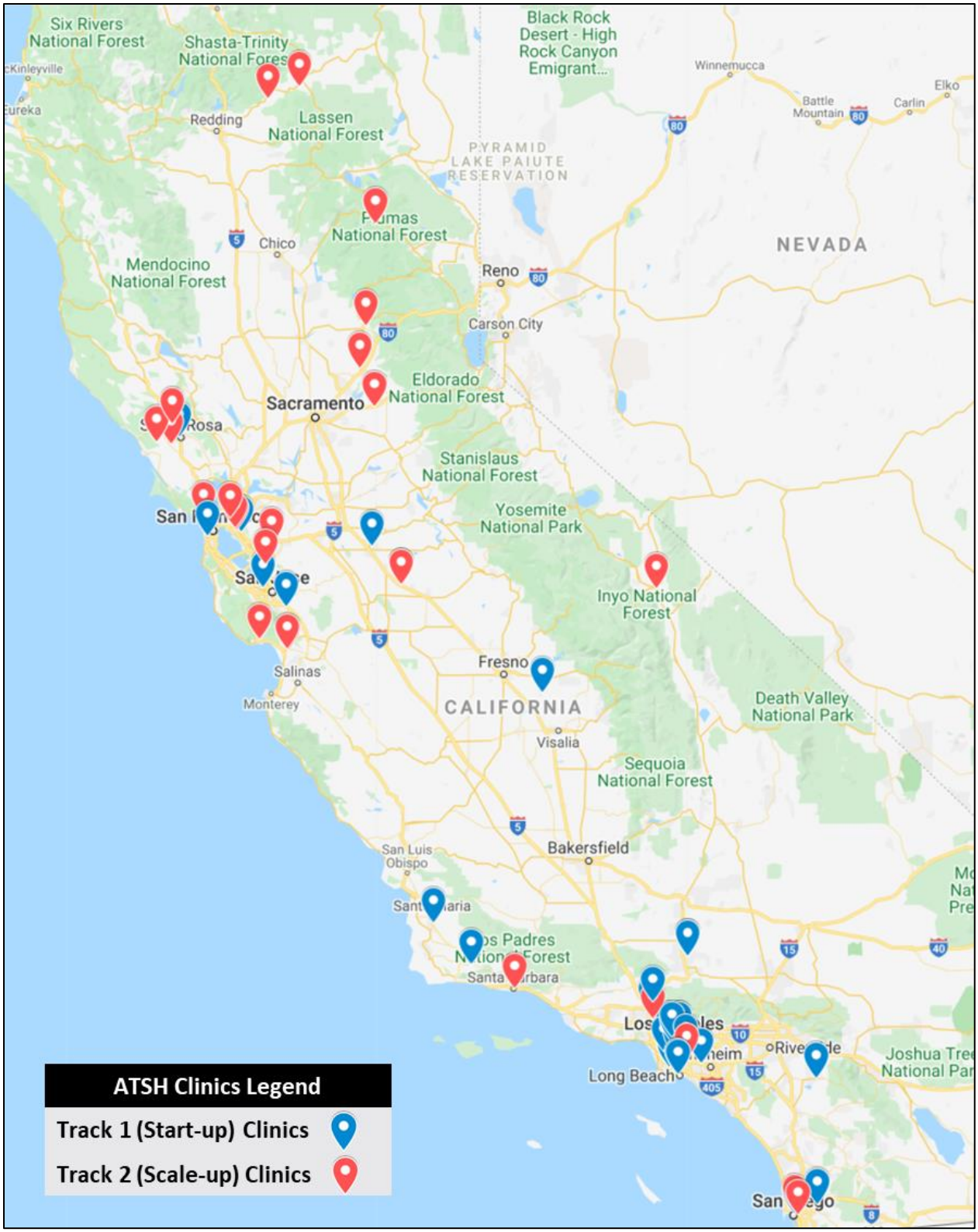


Table 1: ATSH data reporting clinic participants

Clinic Name	Track	Wave
Alameda Health System – Eastmont Wellness Center	Start-up	1
Alameda Health System – Highland Wellness Center	Scale-up	1
Alliance Medical Center	Start-up	1
Axis Community Health	Scale-up	1
Bartz-Altadonna Community Health Center	Start-up	1
Chapa-De Indian Health – Auburn	Scale-up	1
Chapa-De Indian Health – Grass Valley	Scale-up	1
Clinica Msr. Oscar A. Romero	Start-up	1
Community Health Centers of the Central Coast-Santa Maria	Start-up	1
El Dorado Community Health Center	Scale-up	1
Family Health Centers of San Diego – Downtown	Start-up	1
Family Health Centers of San Diego – Hillcrest	Scale-up	1
Golden Valley Health Center – Senior Health & Wellness	Start-up	1
LA DHS Harbor-UCLA Medical Center – General Internal Medicine	Start-up	1
LA DHS Harbor-UCLA Medical Center – Family Medicine	Start-up	1
LA DHS - Hubert H. Humphrey CHC	Start-up	1
Hill Country Health & Wellness Center – Round Mountain	Scale-up	1
Kheir Clinic	Start-up	1
KCS Health Center	Start-up	1
La Clinica de la Raza	Scale-up	1
LAC USC - Adult West Clinic	Start-up	1
LAC USC - Adult East Clinic	Start-up	1
MLK Outpatient Center	Start-up	1
Marin City Health & Wellness Center	Scale-up	1
Mission City Community Network – San Fernando	Start-up	1
Mission City Community Network – South Bay-Los Angeles	Start-up	1
Mountain Valleys Health Centers – Burney	Scale-up	1
Neighborhood Healthcare – Hemet/Devonshire	Start-up	1
Neighborhood Healthcare – El Cajon	Start-up	1
Northeast Valley Health Corporation	Scale-up	1
Plumas District Hospital – Plumas Rural Health Center	Scale-up	1
Santa Cruz County Health Services Agency - North County Clinics	Scale-up	1
Santa Ynez Tribal Health Clinic	Start-up	1
Sonoma County Indian Health Project	Start-up	1
South Central FHC- Huntington Park	Start-up	1
South Central FHC- South Los Angeles	Start-up	1
St. John's – Compton CHC	Start-up	1
St. John's – Traynham Clinic	Start-up	1
Tri-City Health Center (now Bay Area Community Health)	Scale-up	1
UCSF Health – Primary Care at Lakeshore	Start-up	1
West County Health Centers - Gravenstein CHC	Scale-up	1
West County Health Centers - Occidental Area HC	Scale-up	1
Adventist Health – Reedley	Start-up	2
Alliance Medical Center – Windsor	Scale-up	2
Bartz-Altadonna Community Health Center – California City	Start-up	2
BHS Health Center Network	Scale-up	2
Family Health Care Centers of Greater Los Angeles	Start-up	2
Father Joe's Villages	Scale-up	2
JWCH Institute	Scale-up	2
Livingston Community Health	Scale-up	2
Livingston Health Campus	Scale-up	2
Northern Inyo Healthcare District	Scale-up	2
Olive View-UCLA Medical Center	Start-up	2
Salud Para La Gente	Scale-up	2
Santa Barbara Neighborhood Clinics	Scale-up	2
Santa Cruz Health Services Agency – Watsonville	Scale-up	2
School Health Clinics of Santa Clara County	Start-up	2
TCC Family Health Center – Century Villages Cabrillo	Start-up	2
TCC Family Health Center – Multi-Service Center for the Homeless	Start-up	2

Table 2: ATSH Clinic Characteristics (N=59)

		N	%
Track: MOUD capability	Track 1: Start-up	33	56
	Track 2: Scale-up	26	44
Wave	Wave 1	42	71
	Wave 2	17	29
Rurality	Urban/Metropolitan	50	85
	Rural	9	15
Primary care shortage	Non-Medically Underserved Area	36	61
	Medically Underserved Area	23	39
Clinic type	FQHC	43	73
	FQHC Look-Alikes	2	3
	Ambulatory Care Clinic	8	14
	Indian Health Service Clinic Rural Health Clinic	4 2	7 3
Organization patient panel size	Small (0-14,999 patients)	25	42
	Medium (15,000-59,999 patients)	18	31
	Large (≥60,000 patients)	16	27
		Mean	**Range**
General organization characteristics	Number of patients	51,553	2,400 – 870,000
	Number of employees	758	29 – 12,000
General clinic characteristics	Number of physicians	15	0 – 184
	Number of certified nurse practitioners	21	0 – 29
	Number of physician assistants	19	0 – 13
	Number of addiction certified physicians	18	0 – 2
	Number of psychiatrists	18	0 – 5
	Number of addiction certified psychiatrists	18	0 – 3
	Number of mental health & addiction certified behavioral clinicians	18	0 – 6
MOUD clinic characteristics	Number of all providers eligible for an x-waiver	20	0 – 186
	Number of x-waivered prescribers	5	0 – 23
	Number of active x-waivered prescribers	3	0 – 15
	Number of all patients with OUD	84	0 – 1,106
	Number of patients on MOUD	29	0 – 301
Payer mix	Medicaid (%)	59	0 – 86
	Medicare (%)	11	0 – 99
	Dual eligibility (%)	7	0 – 40
	Private insurance (%)	7	0 – 58
	Uninsured (%)	18	0 – 55

4.0: IMPLEMENTATION SUPPORT ACTIVITIES

ATSH participating clinics were offered four key implementation support activities (See Figure 3).

Figure 3: ATSH implementation strategies

4.1: Learning Sessions

All participating clinics were required to attend in-person two-day learning sessions. Wave 1 had two in-person learning sessions. Due to COVID-19, Wave 2 only had a single in-person learning session. These in-person sessions featured two components: 1) Clinical content focused on MOUD practice; and, 2) quality improvement strategies. The clinical content component consisted of presentations by experts and primary care peers on various topics related to MOUD, such as: how to kick-start MOUD; strategies to manage complex cases such as diversion, patients with co-occurring stimulant use disorders, and pregnant women; and, approaches to address negative stigma, beliefs, and attitudes related to addressing addiction in primary care. The quality improvement segment consisted of interactive workshop activities in which clinics identified SMART goals, drivers and barriers to implement/expand MOUD practice, and setting measurable and achievable goals with team members to take back to their clinic. Previous studies showed that learning sessions improve both quality and quantity-type outcomes during the implementation of MOUD.[22,23]

4.2: Coaching

Each clinic was assigned a coach at the start of the program to provide expert facilitation and implementation support. Coaches were both expert and experienced in providing MOUD care in the primary care and specialty care setting. Table 3 displays the qualifications of the ATSH coaches. Coaches ranged in discipline from addiction psychiatry to nursing to social work to behavioral health. Expertise ranged from clinical guidance to team-based care to clinic culture. Clinics were given access to up to 25 hours with their assigned coach during the program and were encouraged to meet with their coach at least once a quarter. The coaches met with clinic staff regularly via teleconferencing to review

Table 3: ATSH coaches

Coaches Name	Current Full-time Position	Affiliated Organization
Brian Hurley, MD	Addiction Physician and General Psychiatrist	L.A. County Department of Mental Health
Candy Stockton, MD	Medical Director	Humboldt Independent Practice Association
Dominique McDowell, RLPS, SUDCC II	Director of Substance Abuse and Homeless Services	Marin City Health and Wellness Center
Joe Sepulveda, MD	Assistant Medical Director	Family Health Centers of San Diego
Shelly Virva, LMSW, CSW	Senior Consultant	Health Management Associates
Katie Bell, MSN, RN, PHN, CARN	Nurse Case Manager, Substance Use Disorders	Chapa-De Indian Health (formerly)

ongoing MOUD expansion efforts, discuss successes, identify areas for improvement, and trouble-shoot solutions to existing barriers. Coaching, implementation facilitation, and mentoring are common terms used to describe this implementation support activity. In its various formats it has been studied and utilized extensively across implementation efforts for MOUD and in other medical and non-medical domains.[24–28]

4.3: Webinars

A mix of expert- and high performing primary care practice-led didactic webinars were offered to participants on topics related to MOUD and shared activities in the ATSH program (e.g., data collection procedures). A total of 26 webinars were held over the course of ATSH program. There were five required webinars which covered general program information, MOUD overview, and data portal training. The remaining 21 optional webinars covered a range of topics such as MOUD management, contingency management, teleconsultation support for clinicians, peer recovery, and fundamentals of compassionate care. A special series of four hour-long webinar sessions dedicated to COVID-19 were designed to provide pandemic-transition support, including a focus on staff self-care and wellness. Didactic webinars as an implementation support activity were used extensively in CCI's former implementation program of MOUD and had demonstrated its positive impact on program outcomes.[29] Table 4 displays the complete list of required and optional webinars offered during the ATSH program.

Table 4: ATSH webinars

Date	Webinar Title	Wave	Required/ Optional
02/13/19	Kickoff Webinar	1	Required
02/27/19	Pre-Work Webinar	1	Required
03/08/19	Measurement Strategy Office Hours Webinar	1	Optional
03/11/19	Measurement Strategy Office Hours Webinar	1	Optional
03/13/19	Journey Mapping Webinar	1	Optional
03/15/19	Measurement Strategy Office Hours Webinar	1	Optional
03/18/19	Data Portal/Measures Webinar	1	Required
05/22/19	Buprenorphine & Methadone Webinar	1	Optional
06/19/19	Developing, Implementing, Integrating MAT Webinar	1	Optional
08/06/19	Contingency Management Webinar	1	Optional
09/04/19	Kickoff Webinar	2	Required
10/02/19	Data Portal Training Webinar	2	Required
10/15/19	"Warm Line" 24/7 Tele-Consultation Support for Clinicians Webinar	1 & 2	Optional
11/21/19	How Peer Recovery Can Improve MAT for Your Patients Webinar	1 & 2	Optional
12/09/19	MAT in Youth Webinar	1 & 2	Optional
12/11/19	MAT for Everybody webinar	1 & 2	Optional
01/28/20	Staged-Matched Interventions Webinar	1 & 2	Optional
02/28/20	Promising Practices Webinar	1 & 2	Optional
03/09/20	Expanding Access to MAT through Telehealth	1 & 2	Optional
03/25/20	Treating Addiction in Primary Care and Behavioral Health Settings During COVID-19	1 & 2	Optional
04/01/20	Telehealth and Care Team Wellness During COVID-19	1 & 2	Optional
04/08/20	Managing Care for Your MAT Patients During COVID-19	1 & 2	Optional
04/15/20	Managing Complex Clinical Cases and Virtual Group Visits during COVID-19	1 & 2	Optional
06/17/20	The ED and Health Center – Learning from Two Effective Partnerships Webinar	1 & 2	Optional
08/19/20	Adjusting the Sails - Refining and Sustaining Your Work	1 & 2	Optional
09/29/20	ATSH Celebrate & Learn Webinar	1 & 2	Optional

4.4: Site Visits

ATSH participants could participate in one of the 12 site visits facilitated by CCI. During the site visits, participants traveled to an established MOUD practice or exemplar organization to observe a mature MOUD model, their processes and procedures, and team structure. The host organizations included Boston Medical Center, Cherokee Health Systems, CommuniCare Health Centers, Contra Costa Health Services, El Dorado Community Health Center, Family Health Centers of San Diego, Santa Cruz County Health Services, and Venice Family Clinic.

4.5: Performance Feedback and Monitoring

ATSH participants were asked to use standardized measures to evaluate baseline and progress in their MOUD practice. All the ATSH clinics were provided with performance feedback at project start and at regular intervals throughout the project. "Audit and feedback" are evidence-based implementation strategies.[30,31] For ATSH, clinics were provided with their own clinic's data and aggregate averages of all other clinics' data for de-identified normative comparisons. The data provided were: The Integrating Medications for Addiction Treatment (IMAT) capability measure of MOUD implementation quality at three timepoints, and performance measures of reach (numbers of MOUD patients), adoption (numbers of x-waivered MOUD prescribers and numbers actively prescribing) and effectiveness (six-month retention rates). These measures of performance and monitoring align with the RE-AIM framework of implementation outcomes.

4.6: Additional ATSH Implementation Supports

ATSH participants were also offered an online communications forum, an online resource hub, Motivational Interviewing (MI) training, and a nursing forum to support their MOUD start or expansion. The online communications forum enabled ATSH participants to create a virtual community, ask questions, and provide MOUD tips and support for one another. The online resource hub offered a library of MOUD resources provided by experts and peers. These resources cover topics such as Building External Partnerships, Culture and System Changes, Financing MOUD, Patient Education, and COVID-19. Furthermore, clinics were offered two sessions of MI training to learn about this evidence-based, non-confrontational person-centered approach. MI has been shown to be effective for enhancing motivation for change in substance use disorder treatment and is a basic practice to engage patients in addiction treatment and recovery.[32,33] A series of weekly coach-led nursing forums was also offered to nurses and medical assistants directly involved in the care of MOUD patients. Patient care topics such as assessments, starting MOUD, essentials of follow-up care in early stabilization, interventions on high-risk behaviors, and the value of urine drug screens were discussed.

5.0: METHODS

In this section, we first outline the **Evaluation Aims** derived in consensus with CCI leadership (Tammy Fisher, Sandy Newman) and ATSH program coordinators (Meaghan Copeland, Briana Harris-Mills). We then detail the **Methods and Measures** used to collect quantitative data and qualitative information. Finally, we describe the **Analytic Approach** to address the seven aims.

5.1: Evaluation Aims

Aim A: To measure the change in primary outcomes (performance measures and clinic capability) for each participating ATSH clinic, by track, and in total.

Aim B: To evaluate the engagement of ATSH participants in and to summarize the quantitative and qualitative participant evaluations of specific implementation support activities.

Aim C: To categorize barriers and facilitators to MOUD implementation, and examine how participant perception of barriers changed from baseline to the conclusion of the ATSH project.

Aim D: To summarize the practice adaptations made by ATSH participants in response to COVID-19.

Aim E: To identify positive outlier practices by highest rates of change in reach outcomes, search for and document distinguishing attributes, ATSH activities and/or other internal strategies that account for success across positive outlier practices.

Aim F: To characterize emergent innovative and practical models.

Aim G: To explore perception of ATSH participants about lessons learned, surprises, and recommendations to guide CCI's future MOUD implementation or sustainment support initiatives.

5.2: Types of Data and Our Approach

A set of benchmark and performance measures were selected and iteratively refined from the beginnings of planning for the ATSH program. The program evaluator met with CCI monthly to define and improve upon these measures based on field testing and participants' feedback. All program measures, collection methods, and their analytic approach by aim are described as follows.

These evaluative measures were selected to track both quantity (reach, adoption) and quality of MOUD implementation (effectiveness, practice guideline/expert consensus adherence).

5.2.1: Performance Measures of Reach, Adoption and Effectiveness

Reach, Adoption and Effectiveness of the RE-AIM framework were selected as the key program performance measures. The RE-AIM framework is designed for and has been adopted widely in various efforts to enhance the quality, speed, and public health impact of efforts to implement

evidence-based practices in real-life setting.[34,35] For ATSH, Reach and Adoption are captured in patient and prescriber factors respectively. Effectiveness is captured in a measure of patient retention in MOUD care at six months. Six-month retention rates are typically used as a MOUD quality of care indicator such as in the addiction care cascade.[36] Although patient level outcomes, such as reduction in opioid use confirmed by negative urine drug screens, are more objective and rigorous measures of effectiveness, these are costly if not impossible for clinics to gather data on for a project with this level of funding. Retention is regarded as an acceptable proxy for effectiveness and overall patient benefit. Outcomes are operationalized as described below:

Adoption: Number of x-waivered prescribers refers to the total number of physicians, certified nurse practitioners or physician assistants, onsite and with whom the health center has contracts, who have obtained a DATA 2000 waiver to treat OUD with medications approved by the FDA for this indication.

Adoption: Number of x-waivered prescribers actively prescribing refers to the total number of prescribers who have prescribed buprenorphine or naltrexone long-acting injectable for OUD to at least one patient over the three months prior to or on the reporting date.

Reach: Number of patients prescribed MOUD (buprenorphine and naltrexone long-acting injectable) refers to the total number of unique patients in participating health center locations with a current, active prescription for buprenorphine for OUD. “Active” is defined as a prescription covering any of the past 30 days of the reporting month.

Effectiveness: Number of new patients prescribed MOUD six months prior who have adhered for six consecutive months refers to the total number of patients started on either buprenorphine or naltrexone long-acting injectable at six months prior to the reporting date, and who have remained in care continuously and without interruption. This includes new patients who have started on medication and continued with refills and who have attended clinic visits. This also includes established patients who may have discontinued treatment for at least two months and have been “restarted”.

Effectiveness: Proportion of new patients prescribed MOUD six months prior who have adhered for six consecutive months of all new patients initiated MOUD in the six months prior is a calculated measure. The numerator is the number of new patient prescribed MOUD six months prior who have adhered for six consecutive months. The denominator refers to the total count of all patients started on either buprenorphine or naltrexone long-acting injectable at six months prior to the reporting date.

In addition to reporting the above required performance measures, participating clinics were encouraged to report one of the following optional quality measures.

- Screening: Proportion of patients screened for OUD of all patients seen during the last quarter.
- Initiation: Proportion of patients with one follow-up visit within 14 days of starting MOUD.
- Engagement: Proportion of patients with two follow-up visits within 30 days of the date of the initial prescription for MOUD.
- Toxicology Initial: Proportion of patients prescribed MOUD who received a urine toxicology test within three days of starting of all patients starting their medication.
- Toxicology Monitoring: % of patients taking MOUD receiving a urine toxicology test at least once per month in the six months prior to the reporting period, of all patients taking MOUD prior to the reporting period.

Clinics reported performance measures quarterly using a data portal constructed by the National Institute for Children's Health Quality (NICHQ) in partnership with CCI, and customized for the ATSH program. The NICHQ data portal generated automatic run charts using the reported data in real-time and enabled clinics to compare their performance against the previous quarter(s) and the program average.

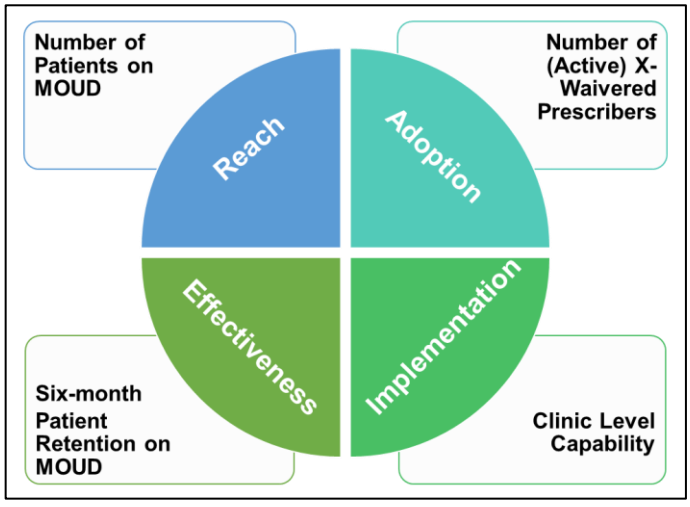
Given the complexity of the data definitions, data measurement webinars and optional "office hours" (with Copeland and McGovern) were offered to clinics to support their data collection efforts. An expert member from the CCI team (Copeland) conducted quality assurance checks quarterly to validate data for accuracy and completeness as well as resolve discrepancies and provide additional training.

These performance measures are part of the primary outcomes for this evaluation (Figure 4). ***Aim A*** summarizes these performance measures in total, by track (start-up or scale-up), and by wave. The number of patients on MOUD is also used to determine positive outliers in ***Aim F***.

5.2.2: Clinic-level Capability Measure of MOUD Implementation Quality

Clinic level capability for MOUD services is a novel approach to assessing the quality of MOUD implementation (Figure 4). In the RE-AIM framework this would be the "I" for implementation quality. For this purpose, a team composed of CCI staff (Fisher, Newman, Copeland, Harris-Mills), CCI coaches (Hurley) and Stanford (McGovern, Cheng, Chokron Garneau) developed the Integrating Medications for Addiction Treatment (IMAT) capability measure. The IMAT can be used as a benchmarking measure to gauge the quality of MOUD implementation in primary care.

Figure 4: Primary outcomes



After an introductory training, the IMAT was completed by ATSH participating teams at project start (Wave 1 in April 2019; Wave 2 in October 2019), at midpoint (Wave 1 in November 2019; Wave 2 in March 2020), and at the project endpoint (Wave 1 and 2 both in August 2020). The IMAT incorporates elements of the Addiction Care Cascade and assesses guideline adherence based on federal policies, expert consensus recommendations, and best practices.[23,36–46] The IMAT has 47 benchmark items across seven domains summarized with a composite IMAT Total Score. The seven domains are: 1 – Infrastructure; 2 – Clinic Culture and Environment; 3 – Patient Identification and Initiating Care; 4 – Care Delivery and Treatment Response Monitoring; 5 – Care Coordination; 6 – Workforce; and 7 – Staff Training and Development. MAT team members collectively rated all items on a 5-point scale ranging from: *1-Not Integrated to 3-Partially Integrated to 5-Fully Integrated*. The full instrument is included in Appendix A.

At program baseline, midpoint, and endpoint, ATSH clinics were instructed to work with their MAT team to complete the IMAT capability assessment to document their current state, identify areas for realistic improvement, and evaluate change (intended and unintended) over time. Team assessment scores were averaged across the 47 items. After collecting the assessment from all clinics at each reporting timepoint, a score report was provided to each clinic, allowing the clinic to compare its performance against the previous timepoints, program average, and program maximum. The report included actual data in numbers and visualized in line graphs.

Clinic level capability is presented in ***Aim A*** where it is summarized in total, by track, and by clinic. Aggregate data of all items in each domain are presented to elucidate the domain(s) of MOUD capability that resulted in the most drastic change as a result of ATSH implementation support activities.

The potential benefit of the IMAT was hypothesized to be three-fold:

1) ATSH clinics could use the IMAT to know their current state and then develop SMART goals and quality improvement strategies to elevate their scores on benchmarks that were both meaningful and achievable;
2) With normative feedback provided shortly after each of the three times the IMAT was completed, the ATSH clinics could check their performance against others—providing a sense of encouragement, competition, inspiration, and/or validation; and,
3) The IMAT provides an improved understanding of clinic capabilities by learning different perspectives from various care team members and using this a tool to refine aims/goals.

5.2.3: ATSH Clinic Participation in Key Implementation Support Activities

For the purpose of this evaluation, attendance by individual by clinic provides an estimate of clinic participation and engagement. During in-person learning sessions and virtual webinars, clinic attendance was recorded through sign-in documentation by paper, Salesforce, or Zoom. Similarly, the coaches utilized facilitation logs to track monthly consultations with their assigned

clinics. A clinic was counted as having attended an activity if at least one staff member from the clinic attended the activity.

The rank order of clinic attendance data is described in ***Aim B***. We highlight activities that are highly attended and examine trends of attendance overall.

5.2.4. Self-Reported Experience Measures

At the end of each ATSH implementation support activity, participants were encouraged to complete self-report survey polls on their experience during and satisfaction in the activity. Two key questions included:

(1) **Overall Experience: "**On a scale of 1-5, please select the number below that best represents your overall experience with this event" (1=poor; 2=fair; 3=good; 4=very good; 5=excellent).
(2) **Overall Value:** "Please select the number below that best represents your response to the statement: 'This was a valuable use of my time.'" (1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree).

As part of ***Aim B***, we present the respondent rate and overall participant experience with these implementation support activities. Highly rated activities can be retained for the next wave of the program, and poorly rated activities present opportunities for future improvements.

5.2.5: Key Informant Interviews

Key informant interviews were conducted with 12 (20%) of all ATSH teams (See Table 5). These clinic teams were purposefully sampled by track, wave, and rurality to represent the larger ATSH cohort. Teams were identified and approached during the first in-person learning sessions (wave 1 and wave 2). Teams were selected based on start-up or scale-up status, urban or rural location, size and overall organizational size. Interviews took place across wave 1 and wave 2 at the same three time points as the IMAT (baseline/start, mid-point (either 6 or 8 months depending on the wave) and at project conclusion (12 or 18 months). Group interviews were attended by team members, using the virtual Zoom platform (video and audio). Teams interacted with a series of open-ended prompts about how MOUD practice was going, what was working and what was not working for them in achieving their

Table 5: Clinics participating in key informant interviews (N=12)

Clinic Team	Wave	Track
Axis Community Health	1	Scale-up
El Dorado Community Health Center	1	Scale-up
Hill Country Health & Wellness Center	1	Scale-up
Kheir Clinic	1	Start-up
La Clinica de la Raza	1	Scale-up
LAC USC – Adult West Clinic	1	Start-up
LAC USC – Adult East Clinic	1	Start-up
Plumas District Hospital – Plumas Rural Health Center	2	Scale-up
Northern Inyo Healthcare District	2	Scale-up
Olive View-UCLA Medical Center	2	Start-up
Salud Para La Gente	2	Scale-up
TCC Family Health Center	2	Start-up

goals, lessons learned and biggest surprises, and overall perceptions about the ATSH program. Challenges and facilitators to their goals were rated after the interview using the Consolidated Framework for Implementation Research (CFIR) Index.[47–49] Clinic team discourse was coded using the CFIR Index across four key domains: The Intervention (MOUD), the System & Community, the Clinic, and Providers. Each of the four domains includes items that assess specific constructs within these domains along a five-point scale from *Barrier (-2)* to *Facilitator (+2)*, with "0" being a neutral influence.

Findings from key informant interviews are summarized as part of ***Aim C*** to provide insights to the major barriers to MOUD implementation at the onset of the project, what happened to these barriers during the course of the project and with ATSH implementation support, and what were the barriers at the conclusion of the project. Concluding barriers may represent persistent challenges and the focus of future implementation support projects. Lessons learned and recommendations for the next iteration of the program from these key informant interviews are also summarized in ***Aim G***.

5.2.6: COVID-19 Adaptations

Given the various DEA policy changes and new challenges faced by clinics due to COVID-19, the ATSH program evaluator and CCI designed a Qualtrics survey to document how the ATSH clinics adapted their MOUD practices to cope with the pandemic. The survey was composed of 14 items across seven domains: 1) medication visits; 2) behavioral health visits; 3) medication management; 4) urine drug screens; 5) workflow; 6) patient demand; and, 7) staff experience. Each category assessed both frequency (increase, decrease, no change) and delivery modalities (all virtual, all in-person, and combination). Respondents could select multiple response options in each set of questions, marking all that apply. Respondents were also asked to estimate the percent of virtual visits, patients on buprenorphine injectable/implants, and patients on injectable naltrexone before and since April 2020. The survey had an open-ended textbox at the end of survey for respondents to comment on their experiences with adaptations to their clinic practice. The Qualtrics survey was emailed to ATSH participants in April 2020. The full survey can be found in Appendix B.

Summary findings from the COVID-19 survey are presented in ***Aim D***. Descriptive statistics depict respondent characteristics at the clinic- and the staff-level. Aggregated response percentages assessed clinic-level adaptations since the pandemic. We explored if there were differences in "start-up" versus "scale-up" clinic responses and in wellness comparisons of leadership versus other staff members. Emergent themes from the qualitative response to the open-ended survey question are presented by frequency and representative quotes.

5.2.7: Final Progress Reports

All participating clinics were asked to complete a narrative final progress report about their experience throughout the program and lessons learned. Key questions addressed in the report include:

1) Regarding participation in ATSH, what are the three most impactful changes you made that led to increased access to MAT?
2) Describe the MAT adaptions your team made that were driven by COVID-19 that you want to keep as part of your MAT workflow or program design, even once the pandemic has run its course.
3) What challenges do you still face in expanding access to MAT to your clients and in your community?
4) Please provide one or two recommendations to clinics interested in starting a MAT program or growing their MAT program: "If I were you, I would..."
5) ATSH offered six main types of support to participating teams: learning sessions (in person), webinars (virtual), site visits, coaching, resource hub and listserv. Which was the most helpful to your MAT program?
6) You tracked your ATSH progress in two ways: (1) program measures on number of waivered prescribers, client volume, and other processes and (2) the capability assessment survey (the "IMAT"). What did you learn from tracking your progress and from being able to access data for the entire cohort?
7) In thinking about the ATSH program as a whole, what could the Center for Care Innovations team have done differently or better?

Free Text categorization of emergent themes for each of the questions above is presented throughout the Evaluation Report for ***Aim B through Aim G***. Representative quotes are summarized to highlight participant stories, innovative models, and constructive feedback.

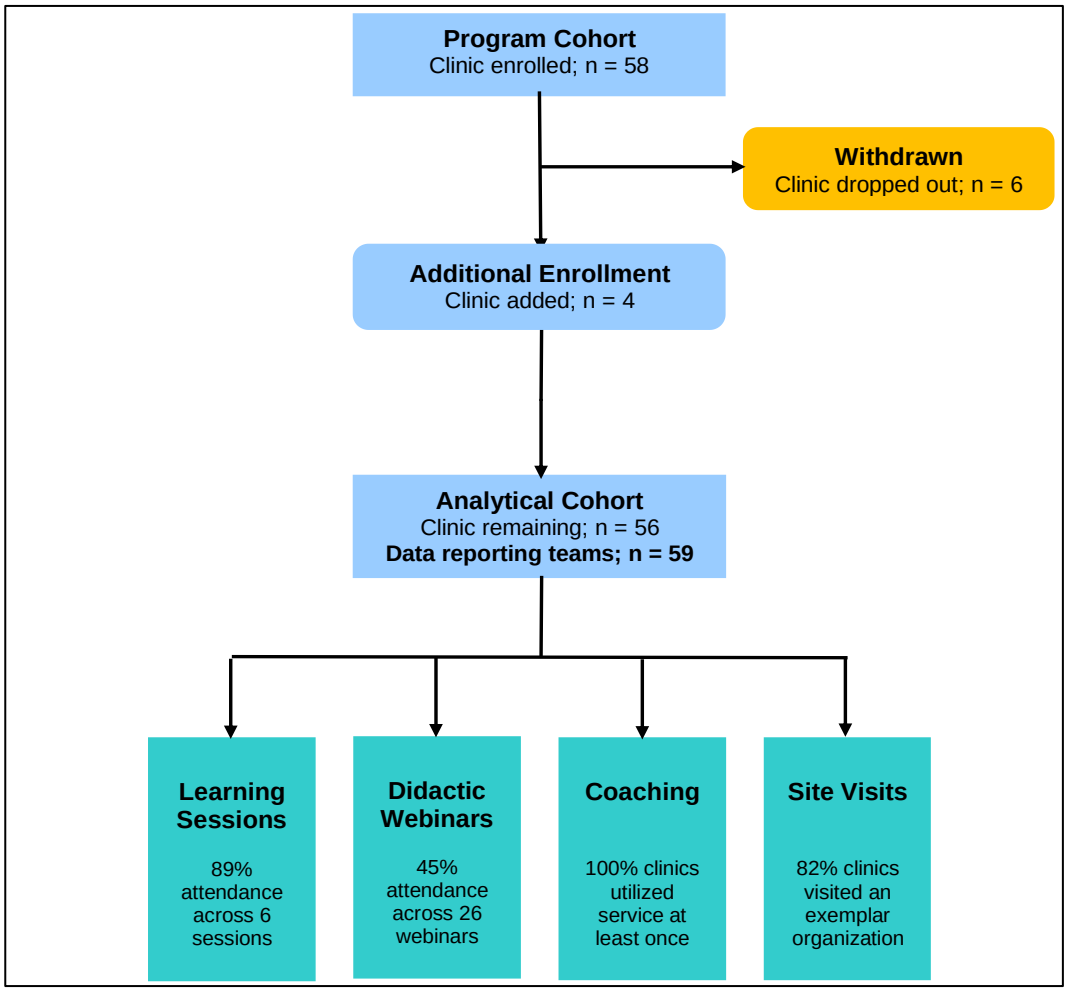
6.0: RESULTS: PERFORMANCE MEASURES AND CLINIC LEVEL CAPABILITY

In this section, we first report on the enrollment and continuation of ATSH clinic participants. We then address ***Aim A***: To measure the change in primary outcomes (performance measures and clinic capability) for each participating ATSH clinic, by track, and in total.

6.1: Diagram of ATSH Participant Flow and Implementation Supports

The final program cohort represented a mix of MOUD start-up and scale-up teams, a variety of rural and urban clinics, diverse patient populations, balance of organization size, geographic regions, including those areas that were the hardest-hit by the opioid epidemic. Among 95 applicants, 58 clinics were enrolled in the program, six clinics withdrew, and four clinics were added as replacements. Several participating clinics elected to report data for more than one clinic location, totaling 59 data reporting teams as our analytical cohort. Figure 5 displays an extended CONSORT Diagram to describe program recruitment, enrollment, retention, and participation efforts.

Figure 5: Extended CONSORT diagram of clinic enrollment, retention, and participation



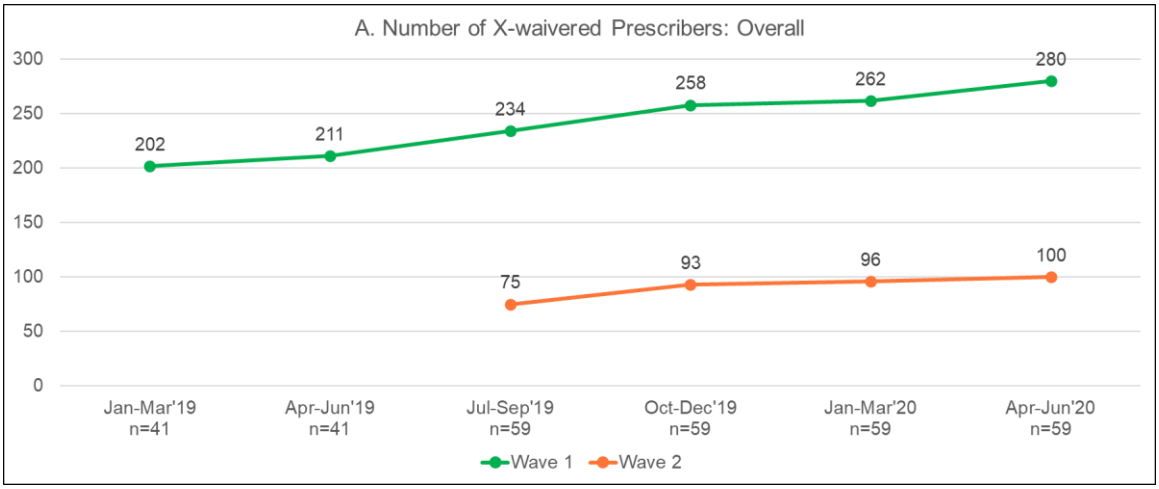
6.2: Performance Measures

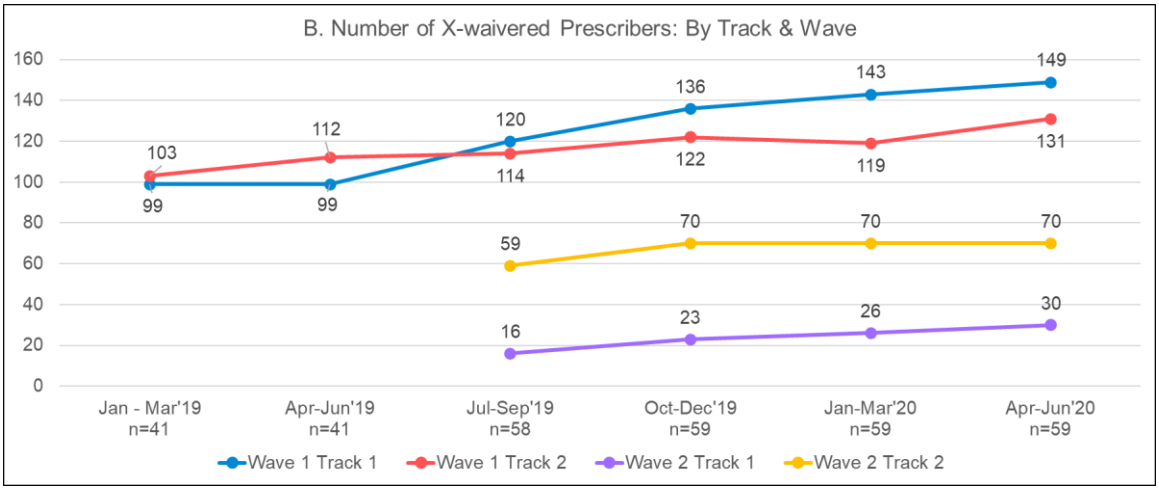
6.2.1: Adoption: X-Waivered Prescribers

With DATA 2000, qualified providers including physicians, nurse practitioners, and physician assistants are required to obtain special training for a DEA x-waiver prior to prescribing MOUD. Given the added training barrier, many primary care clinics experienced shortages in x-waivered prescribers.

The reach goal of ATSH is to increase the number of patients receiving evidence-based FDA-approved MOUD. In order to achieve this goal, clinics need first to be staffed with x-waivered prescribers**. Over the span of the ATSH program, there is an increase of 103 x-waivered prescribers (202 to 280 for wave 1, 75 to 100 for wave 2) or a 37.2% overall increase from baseline.** This is close to an average of two new x-waivered prescribers at each participating clinic. Figure 6A-B displays the progression of growth in x-waiver prescribers for the overall program and by track and wave.

Figure 6A-B: Number of x-waivered prescribers



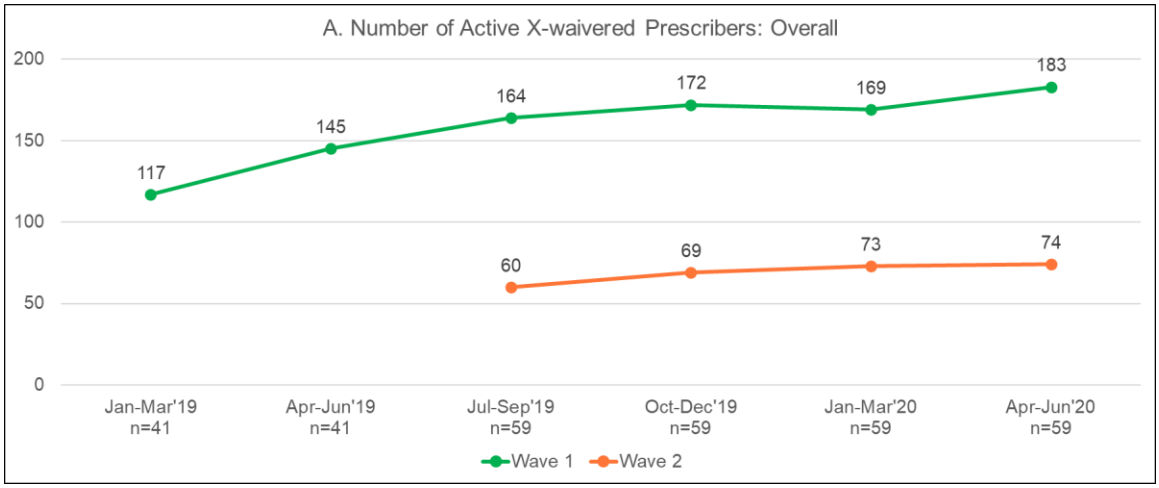


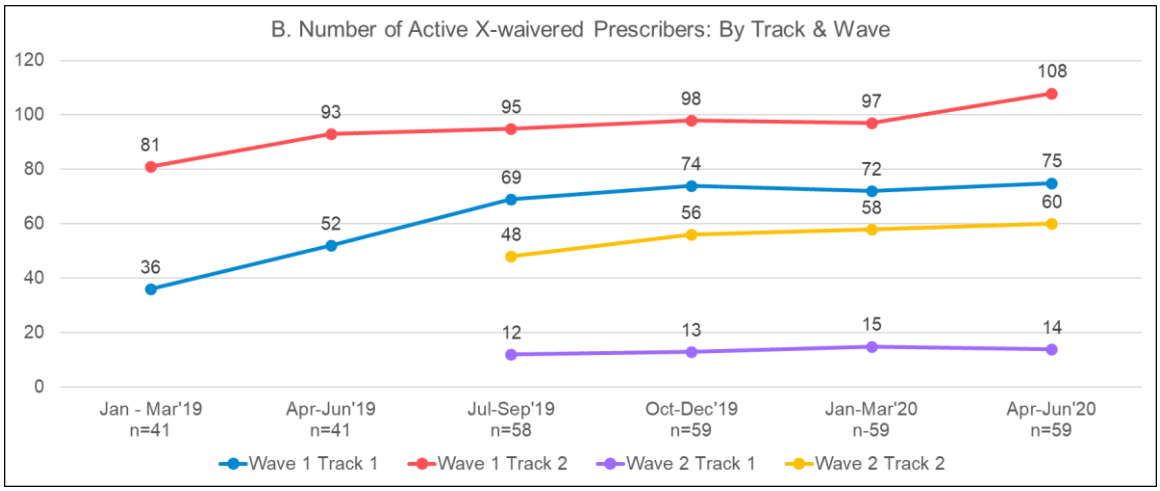
More detailed inspection of these data by wave 1 and wave 2 reveals that for wave 1, over six quarters (18 months) there was an 38.6% (+78) increase from 202 to 280 x-waivered prescribers. Similarly, wave 2 had a nearly equivalent 33.3% (+25) increase from 75 to 100 x-waivered prescribers over four quarters (12 months).

Two mediators of these effects must be considered: 1) the shorter time frame of implementation supports for wave 2 (12- versus 18-months); and 2) the impact of COVID-19. The COVID-19 pandemic influences both the prioritization of MOUD practice expansion within the clinics and also the shift in implementation support activities, such as in-person learning sessions and coaching, to entirely virtual formats.

For a related adoption outcome, it is important to assess whether prescribers are actively prescribing MOUD once they are x-waivered. **During ATSH, there is a growth of 80 active x-waivered prescribers (117 to 183 for wave 1, 60 to 74 for wave 2), which is a 45.2%**

Figure 7A-B: Number of active x-waivered prescribers





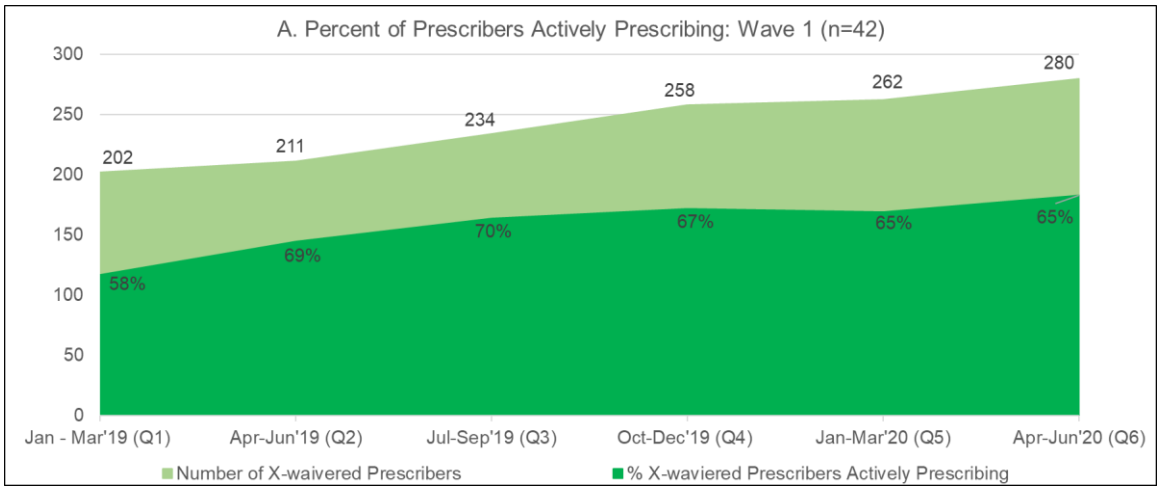
increase in providers treating OUD in their clinics. Figure 7A-B displays the progression of active x-waivered prescribers in the overall program and by track and wave.

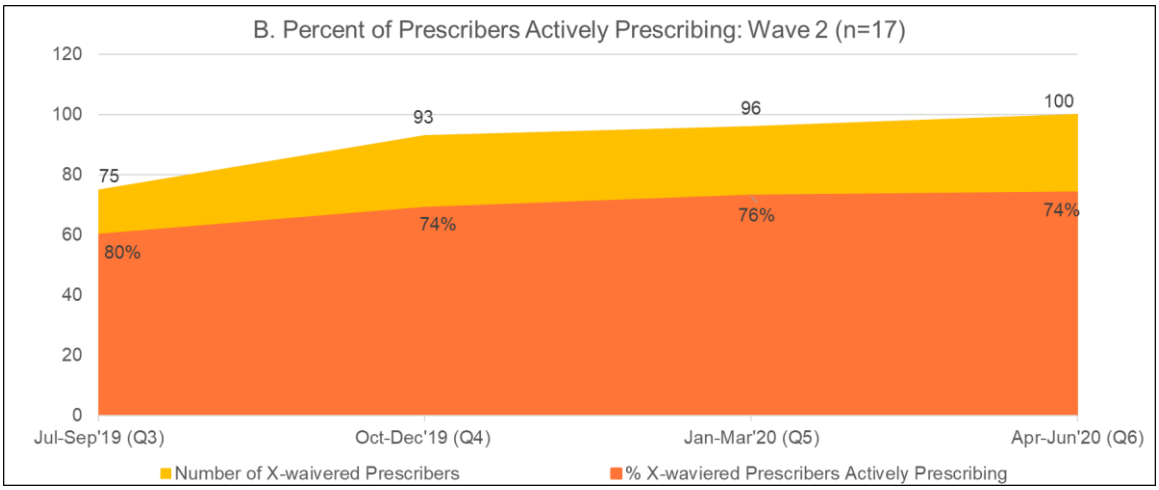
In addition to the growth in the number of x-waivered prescribers, **the proportion of x-waivered prescribers actively prescribing among all x-wavered prescribers also grew from 58% at the start of the program to 65% by program end for wave 1 but decreased from 80% at the start of the program to 74% by program end for wave 2.** Figure 8A-B displays the progression of the proportion of active x-waivered prescribers by wave.

More detailed inspection of these data by wave 1 and wave 2 reveals that for wave 1, over six quarters (18 months) there was a 56.4% (+66) increase from 117 to 183 active x-waivered prescribers. Whereas for wave 2, there was a 23.3% (+14) increase from 60 to 74 active x-waivered prescribers over four quarters (12 months).

As with the overall increase in x-waivered prescribers, two mediators of the active prescriber effects must be considered: 1) the shorter time frame of implementation supports for wave 2 (12- versus 18-months); and 2) the impact of COVID-19. The COVID-19 pandemic influences

Figure 8A-B: Percent of prescribers actively prescribing





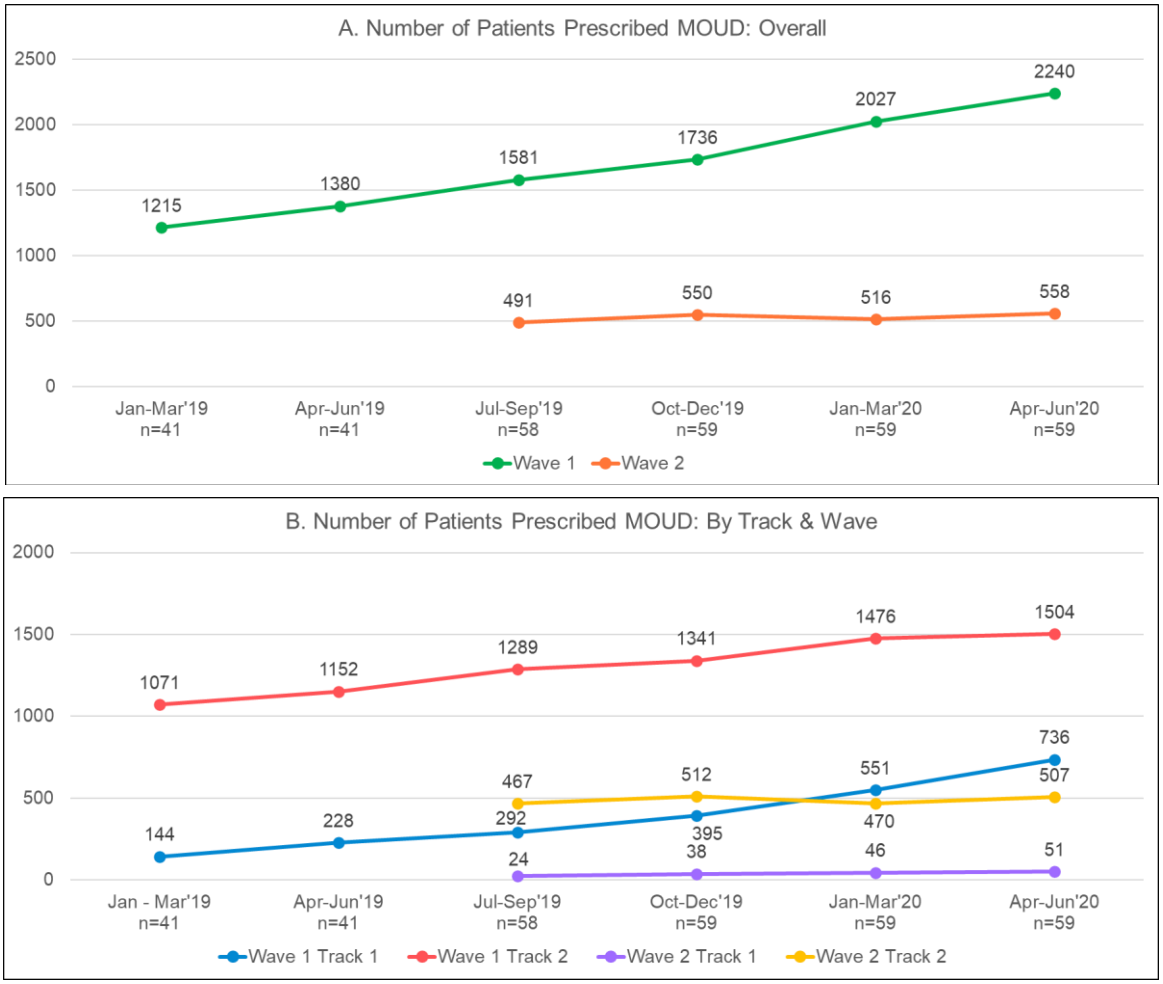
both the prioritization of MOUD practice expansion within the clinics and also the shift in implementation support activities, such as in-person learning sessions and coaching, to entirely virtual formats.

6.2.2: Reach: Number of Patients Prescribed MOUD

Given the growth in number of x-waivered prescribers and proportion of x-waivered prescribers actively prescribing, the number of patients receiving MOUD should increase. In fact, this is the overarching goal of the ATSH program: Getting patients the treatment they need.

From 1,706 to 2,798 (wave 1 from 1,215 to 2,240, wave 2 from 491 to 558), ATSH incurred a total growth of 1,092 patients prescribed MOUD. This is a 64% increase in patients on MOUD from baseline to program end. *Wave 1 Track 1* (start-up) clinics had the largest magnitude of growth. They started with 144 patients prescribed MOUD and ended with 736 patients on MOUD at program end, *a five-fold increase*. Figure 9A-B displays the progression of number of patients prescribed MOUD in the overall program and by track and wave.

Figure 9A-B: Number of patients prescribed MOUD



More detailed inspection of the reach data by wave 1 and wave 2 reveals that for wave 1, over six quarters (18 months) there was an 84.4% (+1025) increase from 1215 to 2240 active patients receiving MOUD. Whereas for wave 2, there was a 13.6% (+67) increase from 491 to 558 patients over four quarters (12 months).

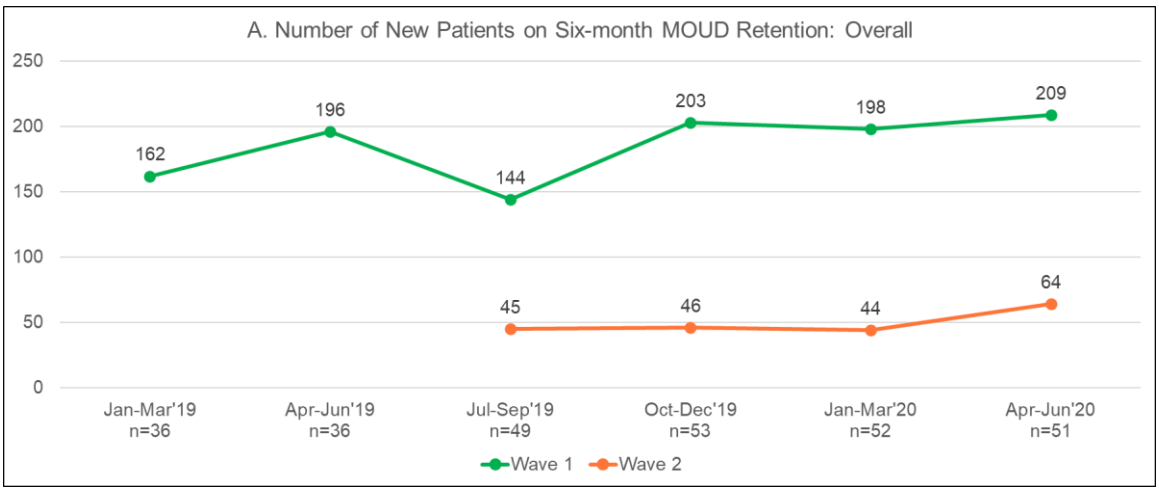
As with the overall increase in the measures of adoption, two mediators of the active MOUD patient growth must be considered: 1) the shorter time frame of implementation supports for wave 2 (12- versus 18-months); and 2) the impact of COVID-19. COVID-19 likely influenced the numbers of patients seeking MOUD treatment, the prioritization of MOUD practice expansion within the clinics, the capabilities of clinics to adapt their policies/protocols to mostly virtual, staffing shortages, and also the shift in implementation support activities, such as in-person learning sessions and coaching, to entirely virtual formats.

6.2.3: Effectiveness: New Patients on Six-Month MOUD Retention

A standard proxy for MOUD effectiveness is patient retention. Patients who remain on MOUD for a minimum of six months have significantly better outcomes. The risk of relapse increases greatly after patients discontinue the medication. Throughout the ATSH program, clinics were offered training from experts, coaches, and peers on various strategies to retain patients.

Figure 10A-B displays the progression of the number of new patients on six-month MOUD retention in the overall program and by track and wave. Figure 11A-B displays the progression of the six-month retention of patients on MOUD in the overall program and by wave and track. While there is an increase in the count of patients on six-month MOUD retention, the proportion of six-month retention tends to remain relatively stable. **A benchmark six-month retention rate of 50% is typical, and overall, the ATSH clinics surpassed this mark—however, the retention rate did not improve markedly over time.**

Figure 10A-B: Number of new patients on six-month MOUD retention



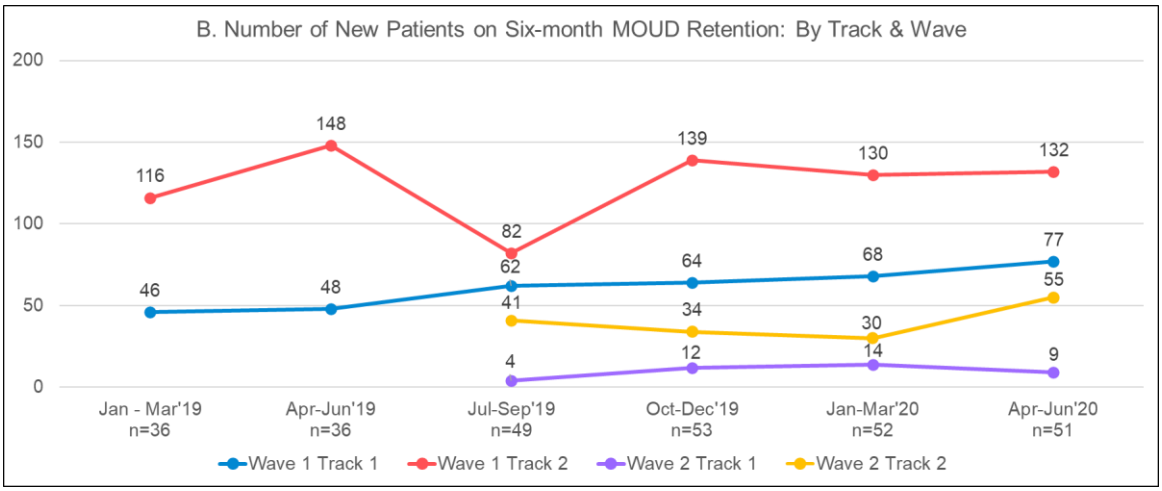
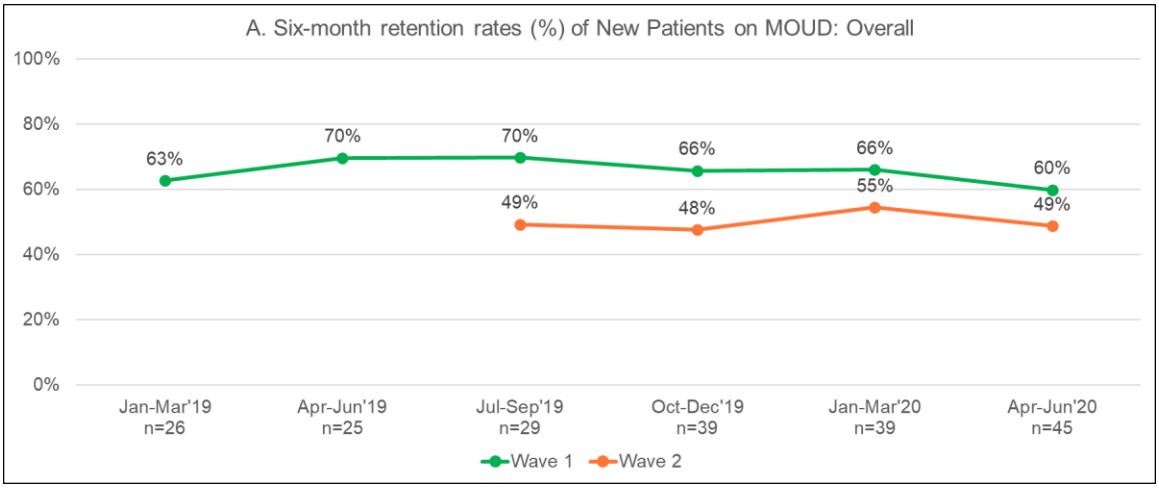
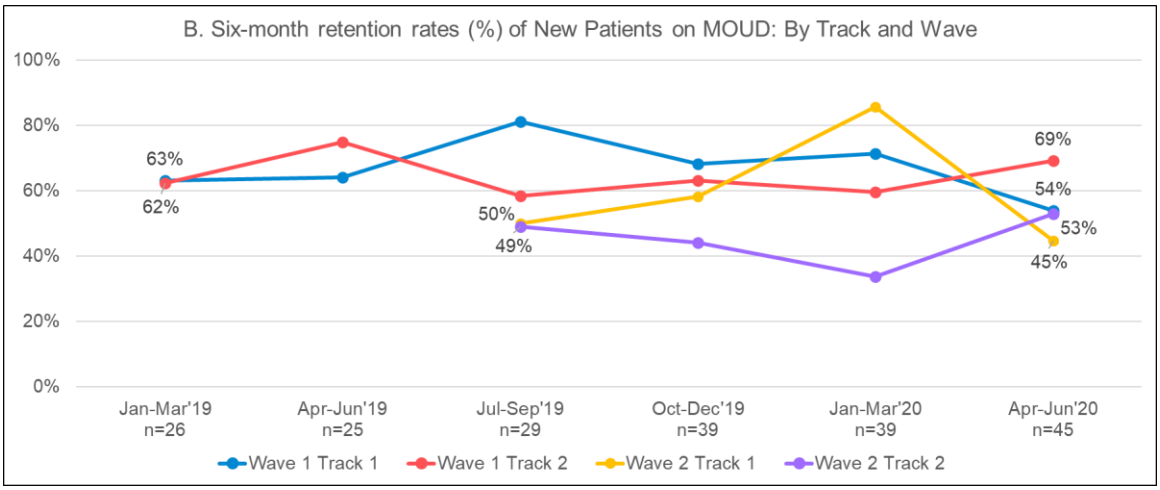


Figure 11A-B: Six-month retention rates (%) of new patients on MOUD





One possible explanation to the lack of observed improvement was some confusion in how to calculate retention. There were two major issues. One was the challenge of backtracking only those patients newly admitted into MOUD care at the six-month prior index period (not new AND established patients). And second, the measure involves continuous treatment. In some instances patients left treatment, relapsed, but later returned after several months but within the six-month window. These cases did not count as patients retained in continuous treatment for six months. Thus, during the first two quarters of the ATSH program (Jan-Mar'19 and Apr-Jun'19), many reported data for the number and percent of new patients on six-month retention of MOUD that did not pass data validation. As a result, re-training was offered to all clinics in the program to improve clarity. Nevertheless, perhaps due to the aforementioned challenges in tracking panels of new patients, the number of clinics reporting this measure remained significantly lower than for other measures. It is important to note that clinics that were able to track retention found the development of registry-type panels to be extremely useful in understanding gaps in care quality.

6.2.4: Optional Measures

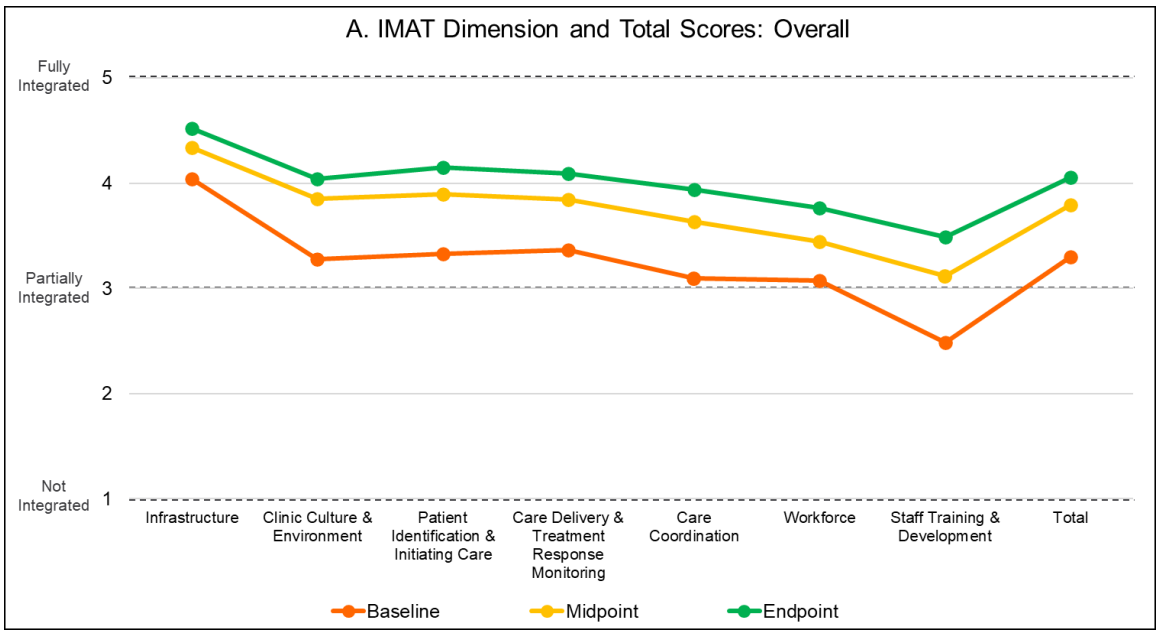
Given that only 7% (n=4) clinics reported the optional measures with wide variation and extensive missing data, these can neither be summarized or interpreted in this report.

6.3: MOUD Implementation Quality: ATSH Clinic Level Capability

To assess clinic level capability in MOUD care, clinic teams completed the IMAT at program baseline, midpoint, and endpoint.

Overall, ATSH clinic level capability went from an average of 3.3 or "partially integrated" at baseline to an average total of 4.05, or midway between "partially integrated" and "fully integrated" at program endpoint. Track 1 (start-up) clinics entered the program with much lower capability at baseline than the Track 2 (scale-up) clinics. Figure 12A-B displays the progression of the IMAT total and dimension scores in the overall program and by track. Figure 13 depicts the baseline and endpoint IMAT scores for all 59 clinics. This visualization was shared with each clinic in reports and presented at ATSH data webinars for them to view their clinic capability scores and progression relative to other clinics within the ATSH program.

Figure 12A-B: IMAT dimension and total scores



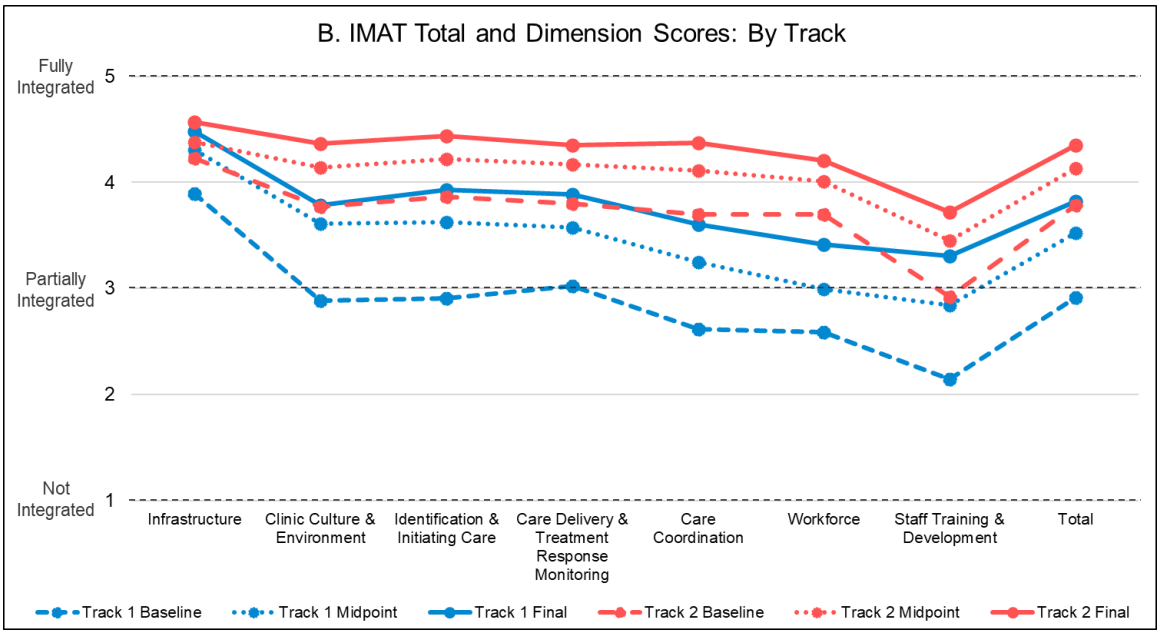
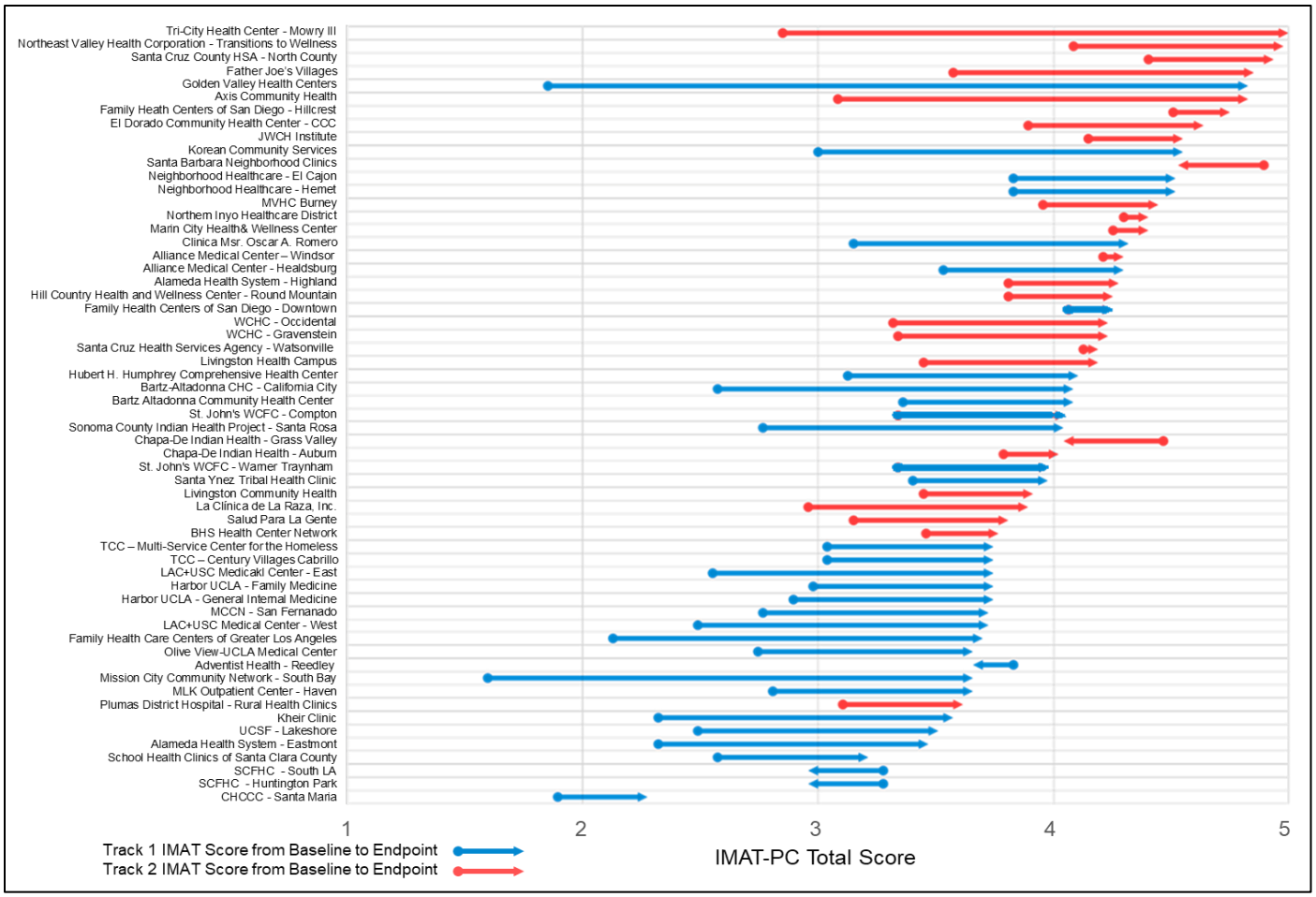


Figure 13: Change in IMAT-PC total score from baseline to endpoint by clinic



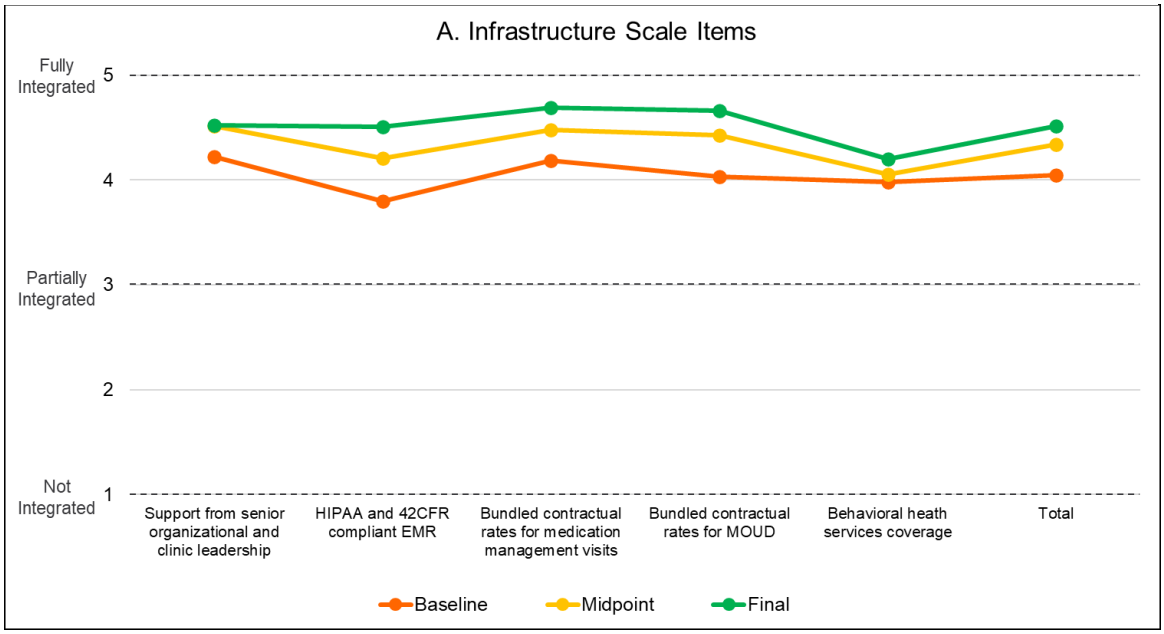
Among all participating clinics, three clinics (Golden Valley Health Centers, Tri-City Health Center (now Bay Area Community Health), and Mission City Community Network – South Bay) had the most significant improvements. For example, Golden Valley Heath Centers started from "Not Integrated" at baseline (1.85) to "Fully Integrated" at endpoint (4.83).

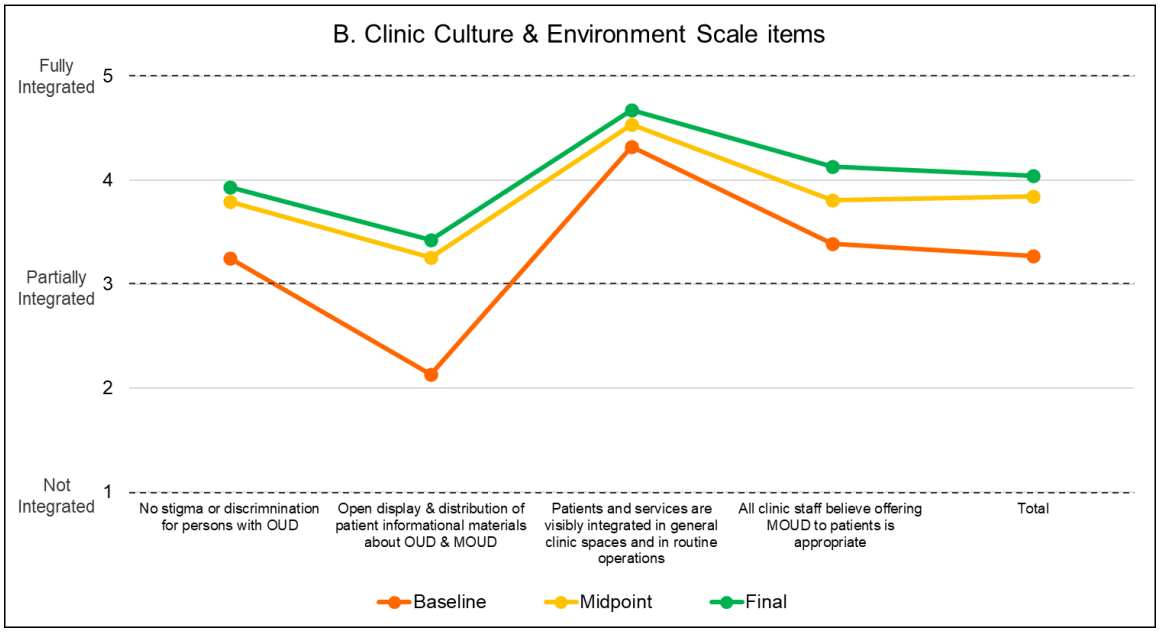
In addition to examining the IMAT scores in total, we also examined the scores by domain and scale items. **The Staff Training and Development domain had the largest improvement in capability from program baseline to endpoint.** The average program capability score in Staff Training and Development increased by one point, from below to above "Partially Integrated" (2.49 to 3.49). **The Infrastructure domain had the lower level of change between program baseline and endpoint,** as many clinics already had close to "Fully Integrated" infrastructure by program start. Figure 14A-J depicts the progression of IMAT scores by dimension and the individual scale items.

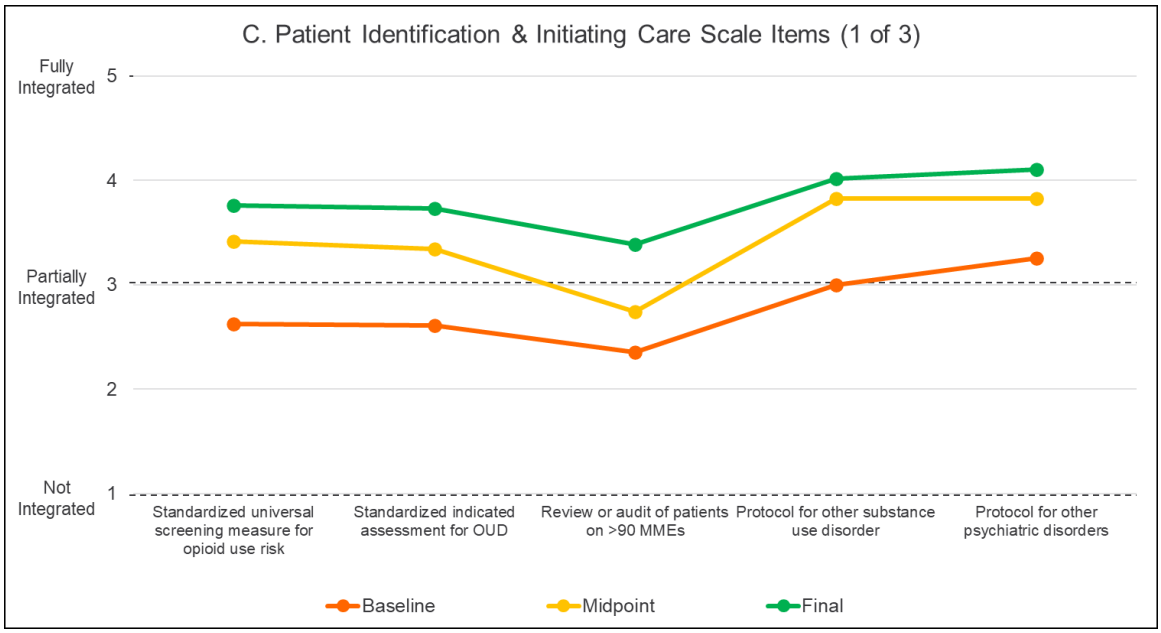
The overall change in ATSH clinic level capability from "Partially Integrated" at baseline to midway between "Partially Integrated" and "Fully Integrated" at program endpoint is a significant

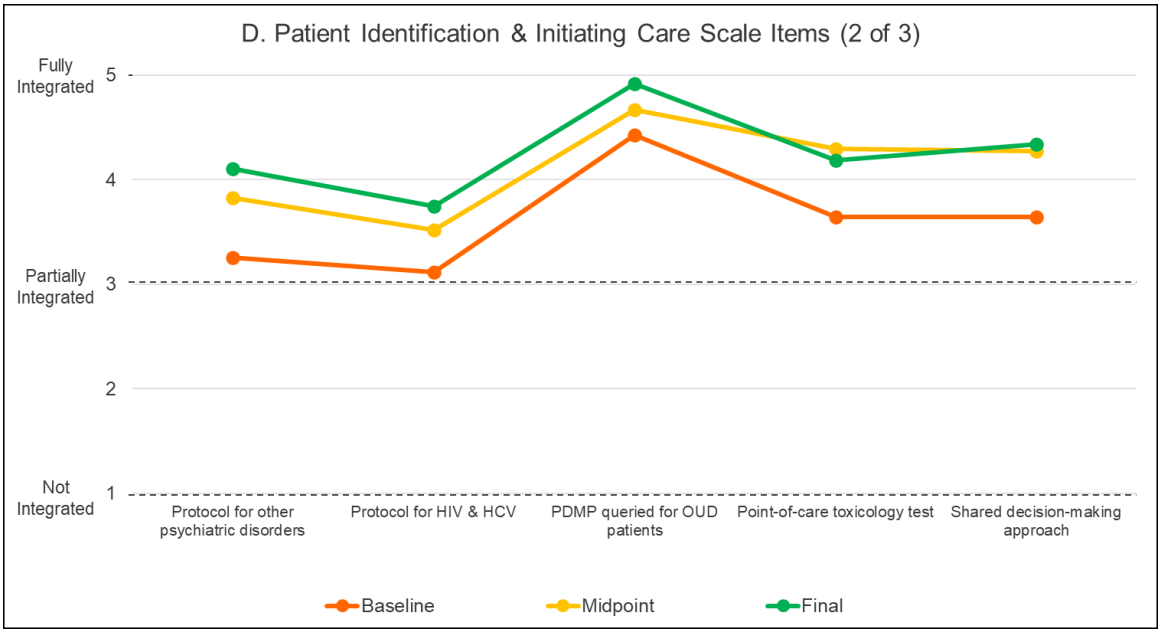
improvement in overall MOUD implementation quality. Notable is the jump in Staff Training & Development and Clinic Culture and Environment domains. Clinics clearly identified these domains as early targets for improvement. The clinical domains of Patient Identification & Initiating Care, Care Delivery & Treatment Response Monitoring, and Care Coordination also progressed over time. The domain that demonstrated the least change, albeit with a potential ceiling effect, is Infrastructure. This domain can reflect issues outside the clinic (e.g., policy, insurance reimbursement) and are therefore factors outside the clinics' control.

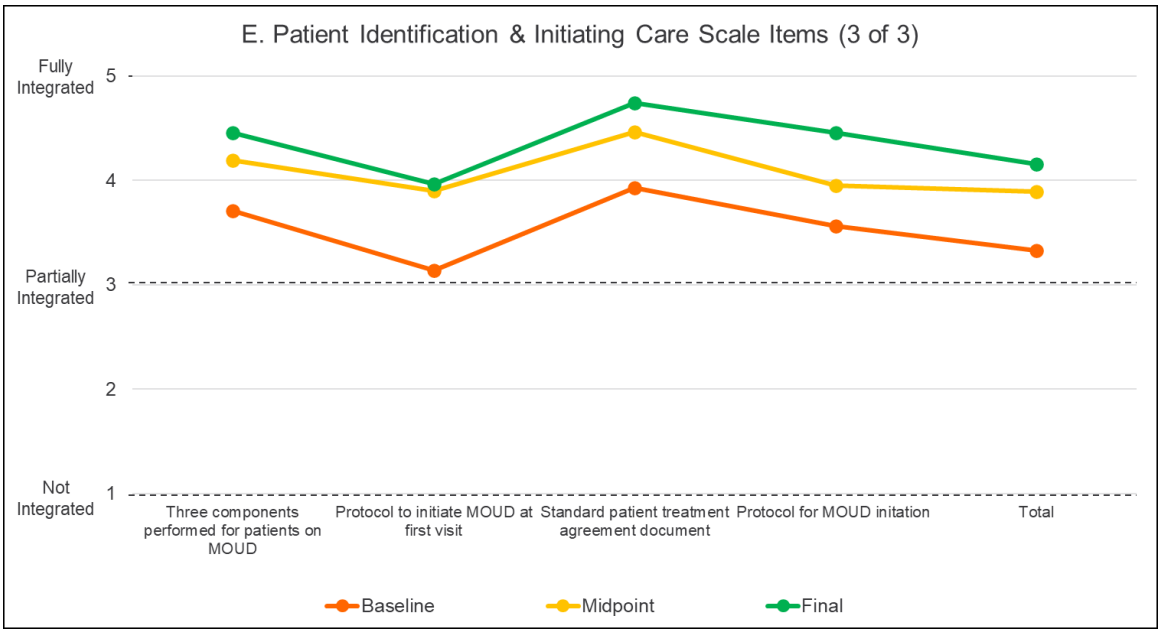
Figure 14A-J: IMAT scores by dimensions and scale items

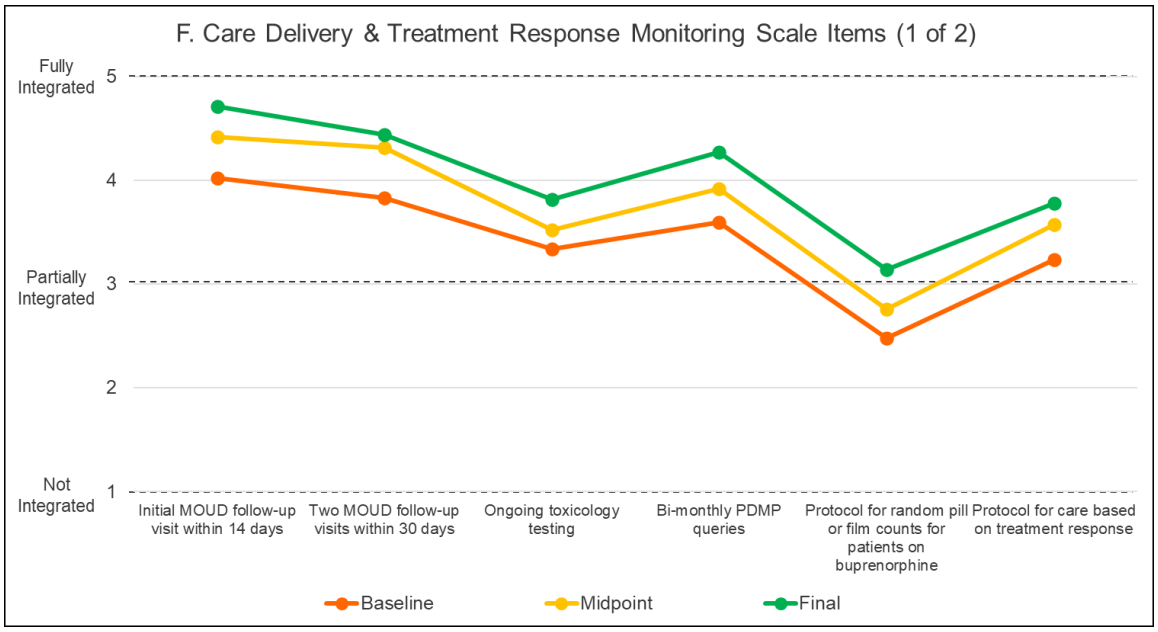


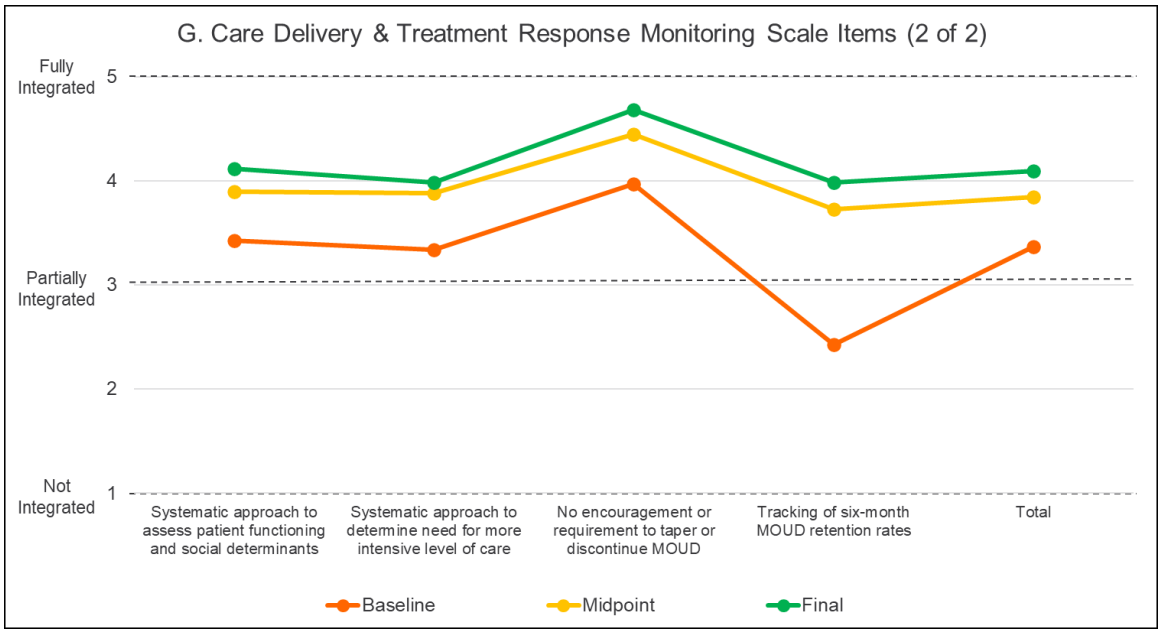


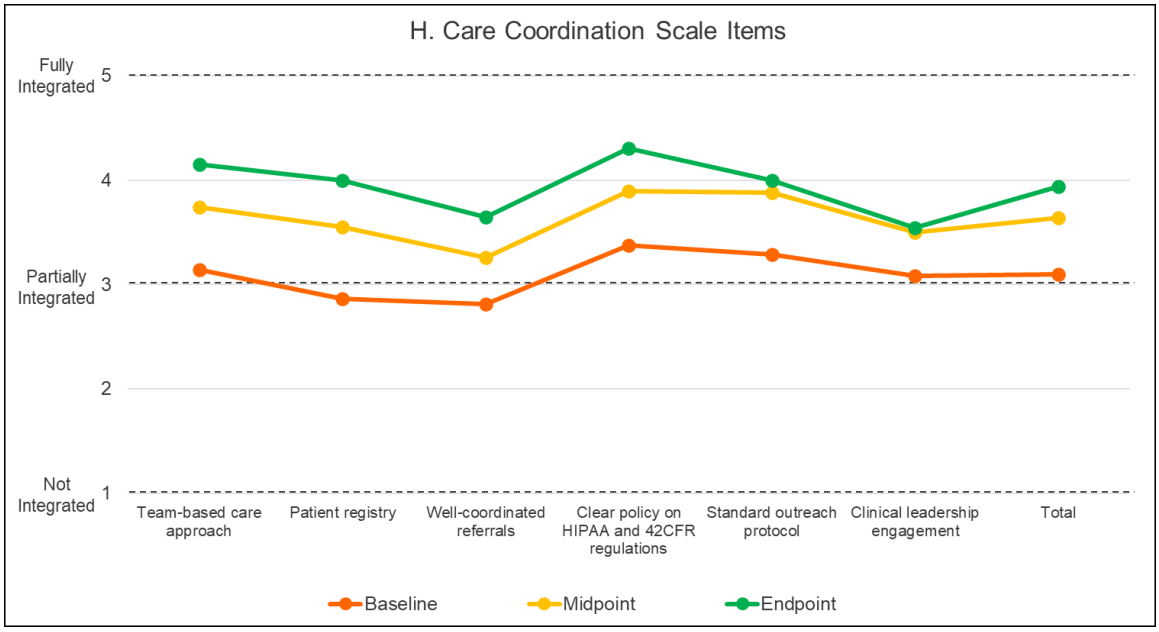

C. Patient Identification & Initiating Care Scale Items (1 of 3)
Fully Integrated
5
4
Partially Integrated
3
2
Not Integrated
1
Standardized universal screening measure for opioid use risk
Standardized indicated assessment for OUD
Review or audit of patients on >90 MMEs
Protocol for other substance use disorder
Protocol for other psychiatric disorders
Baseline
Midpoint
Final

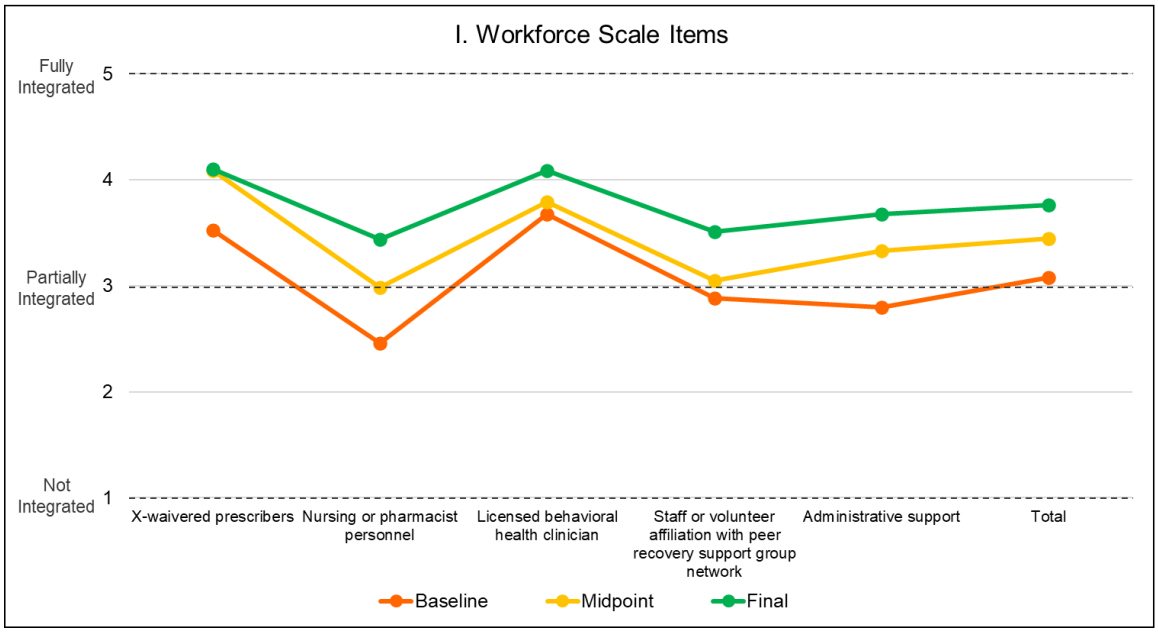

D. Patient Identification & Initiating Care Scale Items (2 of 3)
Fully Integrated
5
4
Partially Integrated
3
2
Not Integrated
1
Protocol for other psychiatric disorders
Protocol for HIV & HCV
PDMP queried for OUD patients
Point-of-care toxicology test
Shared decision-making approach
Baseline
Midpoint
Final

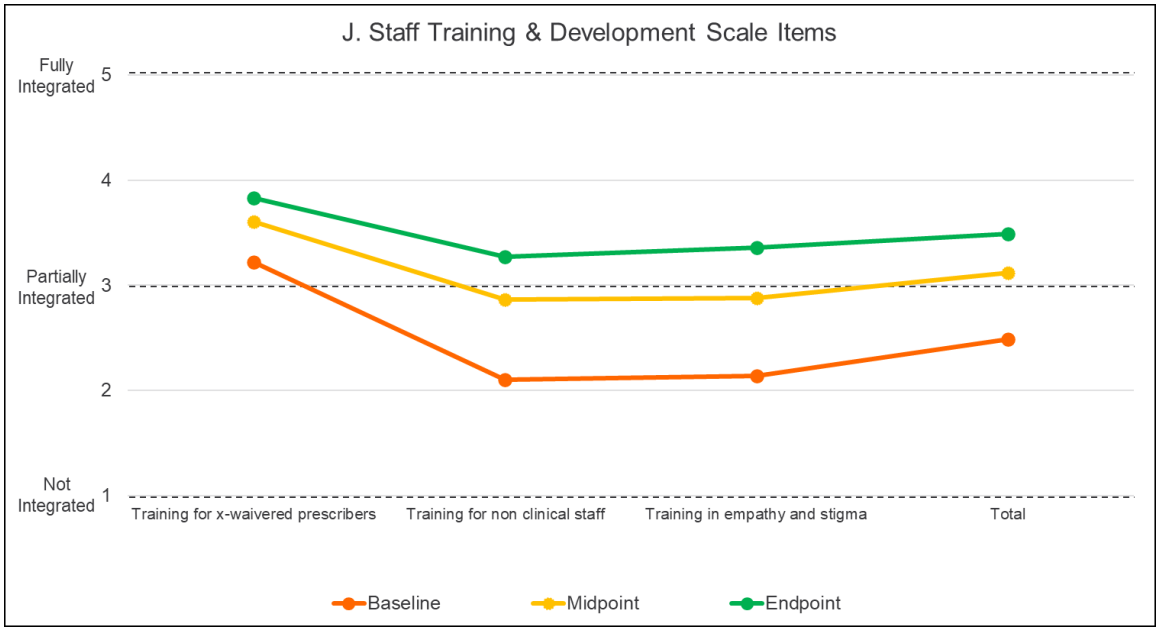

E. Patient Identification & Initiating Care Scale Items (3 of 3)
Fully Integrated
Partially Integrated
Not Integrated
5
4
3
2
1
Three components performed for patients on MOUD
Protocol to initiate MOUD at first visit
Standard patient treatment agreement document
Protocol for MOUD initation
Total
Baseline
Midpoint
Final


F. Care Delivery & Treatment Response Monitoring Scale Items (1 of 2)
Fully Integrated
Partially Integrated
Not Integrated
5
4
3
2
1
Initial MOUD follow-up visit within 14 days
Two MOUD follow-up visits within 30 days
Ongoing toxicology testing
Bi-monthly PDMP queries
Protocol for random pill or film counts for patients on buprenorphine
Protocol for care based on treatment response
Baseline
Midpoint
Final


G. Care Delivery & Treatment Response Monitoring Scale Items (2 of 2)
Fully Integrated
5
4
Partially Integrated
3
2
Not Integrated
1
Systematic approach to assess patient functioning and social determinants
Systematic approach to determine need for more intensive level of care
No encouragement or requirement to taper or discontinue MOUD
Tracking of six-month MOUD retention rates
Total
Baseline
Midpoint
Final


H. Care Coordination Scale Items
Fully Integrated
5
4
Partially Integrated
3
2
Not Integrated
1
Team-based care approach
Patient registry
Well-coordinated referrals
Clear policy on HIPAA and 42CFR regulations
Standard outreach protocol
Clinical leadership engagement
Total
Baseline
Midpoint
Endpoint


I. Workforce Scale Items
Fully Integrated
5
4
Partially Integrated
3
2
Not Integrated
1
X-waivered prescribers
Nursing or pharmacist personnel
Licensed behavioral health clinician
Staff or volunteer affiliation with peer recovery support group network
Administrative support
Total
Baseline
Midpoint
Final


J. Staff Training & Development Scale Items
Fully Integrated
5
4
Partially Integrated
3
2
Not Integrated
1
Training for x-waivered prescribers
Training for non clinical staff
Training in empathy and stigma
Total
Baseline
Midpoint
Endpoint

6.4: Summary of Quantitative Results

As aligned with the RE-AIM framework of implementation outcomes, we measured Reach, Effectiveness, Adoption, and Implementation aspects of the acronym. We did not evaluate Maintenance as this is typically at least two years post-active implementation support (September 2022) and an indicator of sustainment.

The ATSH program can be quantitatively summarized for impact as follows:

Reach: Increasing from 1,706 to 2,798 individual patients, the ATSH initiative demonstrates a positive delta of 1,092 patients prescribed MOUD. This is a 64% increase to the number of patients on MOUD at program baseline.

Effectiveness: The count of patients retained across all ATSH participating programs increased by 29.0% (47) and 42.2% (19) for wave 1 and 2 respectively at the final month of the clinics' retention tracking (wave 1 from 162 to 209, wave 2 from 45 to 64). A benchmark six-month retention rate of 50% is typical, and overall, the ATSH clinics surpassed or met this mark (wave 1 at 60%, wave 2 at 49%) — however, the overall retention rate remained relatively stable over time (wave 1: 63% to 60%, wave 2: 49% to 49%).

Adoption: There is an increase of 103 x-waivered prescribers (277 to 380) or a 37.2% increase from baseline. With 80 newly active x-waivered prescribers (from 177 to 257), there is a 45.2% increase in providers treating OUD in their clinics. The actual proportion of x-waivered prescribers who are actively prescribing among all x-waivered prescribers grew from 58% at the start of the program to 65% by program end for wave 1, but decreased from 80% at the start of the program to 74% by program end for wave 2.

Implementation: As measured by a common yardstick–the IMAT Index—the overall change in ATSH clinic level capability from "Partially Integrated" at baseline to midway between "Partially Integrated" and "Fully Integrated" at program endpoint is a significant improvement in overall MOUD implementation quality. IMAT domain scores demonstrate the greatest improvement in Staff Training & Development and Clinic Culture and Environment, however, clinical practice domains also reveal significant strides in guideline adherence and MOUD quality.

Across all four quantitative measures, two important facts must be considered:

1) The shorter time frame of implementation supports for wave 2 (12- versus 18-months) resulting in less significant changes for these practices relative to wave 1; and,
2) The impact of COVID-19. COVID-19 likely influenced the numbers of patients seeking MOUD treatment, the prioritization of MOUD practice expansion within the clinics, the capabilities of clinics to adapt their policies/protocols to mostly virtual, staffing shortages, and also the shift in implementation support activities, such as in-person learning sessions and coaching, to entirely virtual formats.

7.0: EVALUATING IMPLEMENTATION SUPPORT STRATEGIES

In this section, we report on ***Aim B***: To evaluate the participation of ATSH clinics in and to summarize the quantitative and qualitative participant evaluations of specific implementation support activities

7.1: Participation

Among all ATSH implementation support activities, coaching had the highest level of participation. In fact, all clinics received coaching support. **Learning sessions were the next most-attended activity, averaging 89% attendance.** Site visits were the third most-attended activity, with 82% clinics having visited the MOUD program at one of the exemplary clinics to learn from their workflow.

Throughout the program, 26 expert- and ATSH practice-led webinars were offered. Even though providers and staff were juggling clinic responsibilities, these webinars had an average attendance of 45%. Noteworthily, these webinars were recorded and made available online, so participants had the opportunity to listen to recordings of these webinars if they were not able to attend in real-time. Lastly, only 22% of clinics attended the Motivational Interviewing (MI) trainings. The rank order of participation in implementation support activities is displayed in Table 6.

Table 6: Participation in implementation support activities

Type of Activity	Number of Events	Degree of Participation
Coaching	Variable	100%
Learning Sessions	6	89%
Site Visits	12	82%
Webinars	26	45%
MI Trainings	2	22%

With the COVID-19 shift in implementation support activities to strictly virtual formats, team attendance dropped from 100% for in-person learning sessions to a range of 73 – 80% for virtual formats. Site visits took place prior to the pandemic restrictions. Percent of team attendance at webinars increased during the COVID-19 pandemic. Because MI is a foundational evidence-based practice for addiction, it was an important offering. However, the low attendance suggests that many clinicians may have already completed MI training or alternatively it was not perceived as valuable. A summary of the percent team attendance and number of attendees by specific events for Learning Sessions and Webinars are listed in Table 7. A summary of the total count of coaching sessions for each clinic and key topics discussed is depicted in Table 8. Clinic participation in coaching, listed by coach, is summarized in Table 9. Although there were no differences between in-person and virtual learning sessions in quality ratings, overall attendance decreased. Of the 26 webinars, in general, the evaluation data are very positive (4+ of 5) with the ATSH project management specific sessions (pre-work, data portal, celebration) among the most attended. The COVID-19 four-part series and “MAT for Everybody” were among the best attended.

Table 7: ATSH learning sessions and webinars

Date	Required Learning Sessions (n=6)	Wave	% Clinic Attended	Number of Attendees	Survey Response Rate	Average Overall Experience	Average Overall Value
04/10/19	In-person Learning Session 1	1	100%	175	69%	4.23	4.44
09/18/19	In-person Learning Session 2	1	100%	179	47%	4.53	4.69
11/06/19	In-person Learning Session 1	2	100%	90	48%	4.47	4.7
05/26/20	Virtual Learning Session Part 1	1 & 2	73%	108	58%	4.29	4.35
06/11/20	Virtual Learning Session Part 2	1 & 2	80%	100	52%	4.17	4.4
07/23/20	Virtual Learning Session Part 3	1 & 2	80%	102	45%	4.43	4.52
Date	**Required Webinars (n=5)**	**Wave**	**% Clinic Attended**	**Number of Attendees**	**Survey Response Rate**	**Average Overall Experience**	**Average Overall Value**
02/13/19	Kickoff Webinar	1	79%	90	0%	N/A	N/A
02/27/19	Pre-Work Webinar	1	83%	133	0%	N/A	N/A
03/18/19	Data Portal/Measures Webinar	1	90%	42	10%	5	4.75
09/04/19	Kickoff Webinar	2	100%	45	0%	N/A	N/A
10/02/19	Data Portal Training Webinar	2	76%	28	0%	N/A	N/A
Date	**Optional Webinars (n=21)**	**Wave**	**% Clinic Attended**	**Number of Attendees**	**Survey Response Rate**	**Average Overall Experience**	**Average Overall Value**
03/08/19	Measurement Strategy Office Hours Webinar	1	24%	12	0%	N/A	N/A
03/11/19	Measurement Strategy Office Hours Webinar	1	24%	15	0%	N/A	N/A
03/13/19	Journey Mapping Webinar	1	26%	91	0%	N/A	N/A
03/15/19	Measurement Strategy Office Hours Webinar	1	7%	3	0%	N/A	N/A
05/22/19	Buprenorphine & Methadone Webinar	1	62%	42	12%	4.2	4.6
06/19/19	Developing, Implementing, Integrating MAT Webinar	1	33%	38	0%	N/A	N/A
08/06/19	Contingency Management Webinar	1	17%	39	10%	4.25	4.75
10/15/19	"Warm Line" 24/7 Tele-Consultation Support for Clinicians Webinar	1 & 2	7%	47	6%	4.33	4.33
11/21/19	How Peer Recovery Can Improve MAT for Your Patients Webinar	1 & 2	17%	32	41%	4.62	4.54
12/09/19	MAT in Youth Webinar	1 & 2	44%	52	35%	4.72	4.5
12/11/19	MAT for Everybody webinar	1 & 2	39%	70	37%	4.62	4.38
01/28/20	Staged-Matched Interventions Webinar	1 & 2	15%	24	46%	4.45	4.73
02/28/20	Promising Practices Webinar	1	41%	42	38%	4.4	4.7
03/09/20	Expanding Access to MAT through Telehealth	1 & 2	37%	51	0%	N/A	N/A
03/25/20	Treating Addiction in Primary Care and Behavioral Health Settings During COVID-19	1 & 2	49%	79	0%	N/A	N/A
04/01/20	Telehealth and Care Team Wellness During COVID-19	1 & 2	49%	78	0%	N/A	N/A
04/08/20	Managing Care for Your MAT Patients During COVID-19	1 & 2	42%	76	8%	4.83	4.83
04/15/20	Managing Complex Clinical Cases and Virtual Group Visits during COVID-19	1 & 2	46%	70	30%	4.71	4.76
06/17/20	The ED and Health Center – Learning from Two Effective Partnerships Webinar	1 & 2	29%	60	37%	4.32	4.45
08/19/20	Adjusting the Sails - Refining and Sustaining Your Work	1 & 2	58%	57	42%	4.17	4.38
09/29/20	ATSH Celebrate & Learn Webinar	1 & 2	73%	77	64%	4.61	4.55

Table 8: Coaching participation and key topics discussed, by clinic

Clinic	Coach	Session Count	Key Topic(s) Discussed
Alameda Health System – Eastmont Wellness Center	Shelly	6	Engaging behavioral health department, program development, challenges with inductions
Alameda Health System – Highland Wellness Center	Shelly	13	Staffing, MOUD education and stigma
Alliance Medical Center – Healdsburg	Katie	13	MOUD group
Axis Community Health	Katie	18	Screening, refill stabilization group
Bartz Altadonna Community Health Center – Lancaster	Katie	19	Urine drug screening, patient outreach
Chapa-De Indian Health – Auburn	Shelly	8	Contingency management, team dynamics
Chapa-De Indian Health – Grass Valley	Shelly	8	Contingency management, team dynamics
Clinica Msr. Oscar A. Romero	Shelly	2	Billing, sustainability planning, team structure
Community Health Centers of the Central Coast – Santa Maria	Shelly	8	Identifying champion, behavioral health integration
El Dorado Community Health Center – CCC	Katie	14	Referrals, stigma, over-prescribing
Family Health Centers of San Diego – Downtown	Shelly	8	Screening, scheduling, role confusion
Family Health Centers of San Diego – Hillcrest	Shelly	8	Training, staffing, behavioral health program
Golden Valley Health Centers	Shelly	5	Patient outreach, referrals, training
Harbor UCLA – General Internal Medicine	Brian	10	MOUD protocols, refill group
Harbor UCLA – Family Medicine	Brian	10	MOUD protocols, refill group
Hubert H. Humphrey Comprehensive Health Center	Brian	19	Workflow to integrated behavioral health clinicians into assessment and treatment
Hill Country Health and Wellness Center – Round Mountain	Shelly	14	Data collection, SBIRT, coordinating with pharmacy
Kheir Clinic	Katie	17	Translating patient materials, case reviews
Korean Community Services	Shelly	9	Refill groups, incarcerated patient populations
La Clínica de La Raza, Inc.	Katie	31	Staffing, case reviews
LAC+USC Medical Center – West	Brian	18	Urgent care/Emergency department referrals
LAC+USC Medical Center – East	Brian	18	Urgent care/Emergency department referrals
MLK Outpatient Center – Haven	Brian	12	Patients with multiple substance use, patient outreach/engagement
Marin City Health& Wellness Center	Katie	15	Integrating BH, staffing
Mission City Community Network – San Fernanado	Katie	21	Patients with multiple substance use, stabilization
Mission City Community Network – South Bay	Katie	21	Patients with multiple substance use, stabilization
Mountain Valleys Health Centers – Burney	Shelly	12	Workflow, treatment tiers
Neighborhood Healthcare – Hemet/Devonshire	Shelly	3	Stigma, screening
Neighborhood Healthcare – El Cajon	Shelly	3	Credentialling, patient outreach
Northeast Valley Health Corporation – Transitions to Wellness	Katie	13	MOUD for homeless populations, contingency management, stabilization
Plumas District Hospital – Rural Health Clinics	Katie	17	Care for perinatal patients, telehealth
Santa Cruz County Health Services Agency – North County	Shelly	3	Internal staff conflicts, referrals
Santa Ynez Tribal Health Clinic	Katie	7	Staff turnover, patient outreach
Sonoma County Indian Health Project, Inc. – Santa Rosa	Katie	13	MOUD policy/procedures, patient outreach
SCFHC – Huntington Park	Katie	28	Leadership buy-in, staff workflow, stabilization
SCFHC – South LA	Katie	28	Leadership buy-in, staff workflow, stabilization
St. John's Well Child & Family Center – Compton	Brian	15	Not recorded
St. John's Well Child & Family Center – Warner Traynham	Brian	15	Not recorded
Tri-City Health Center (now Bay Area Community Health)	Katie	13	Screening and referral, access to MOUD program
UCSF – Lakeshore	Katie	8	Case review of patients with high risk behavior
WCHC – Gravenstein	Katie	25	Standardization of MOUD procedures
WCHC – Occidental	Katie	25	Standardization of MOUD procedures
Adventist Health – Reedley	Katie	10	MOUD team building, outreach and screening
Alliance Medical Center – Windsor	Katie	9	Transition from methadone to buprenorphine
Bartz-Altadonna Community Health Center – California City	Katie	13	Induction procedures, urine drug screening
BHS Health Center Network	Joe	12	Stigma, leadership buy-in, MOUD with high risk populations
Family Health Care Centers of Greater Los Angeles	Brian	15	Not recorded
Father Joe's Villages	Joe	12	MOUD processes, homeless service, contingency management, MOUD refill group
JWCH Institute	Brian	13	Not recorded
Livingston Community Health	Katie	14	Interdepartmental communication, compliance and engagement, patients with multiple substance use
Livingston Health Campus	Katie	14	Interdepartmental communication, compliance and engagement, patients with multiple substance use
Northern Inyo Healthcare District	Katie	10	Staffing for Urine Drug Screens, stabilization
Olive View-UCLA Medical Center	Brian	6	Not recorded
Salud Para La Gente	Candy/Dom	3	Outreach to homeless, immigrants , justice-involved
Santa Barbara Neighborhood Clinics	Joe	12	Patients with multiple substance use, homeless/adolescent populations
Santa Cruz Health Services Agency – Watsonville	Katie	7	MOUD policy/procedures, de-escalation of distressed patients, contingency management
School Health Clinics of Santa Clara County	Candy/Dom	3	MOUD policy/procedures, providers/staff hiring
TCC Family Health Center – Century Villages Cabrillo	Candy/Dom	3	MOUD policy/procedures, documentation
TCC Family Health Center – Multi-Service Center for the Homeless	Candy/Dom	3	MOUD policy/procedures, documentation

Table 9: Clinic participation in coaching sessions, by coach

Coach	Number of Clinics	Average Number of Coaching Sessions
Wave 1		
Brian Hurley, MD	8	15
Katie Bell, MSN, RN, PHN, CARN	19	18
Shelly Virva, LMSW, CSW	15	7
Wave 2		
Brian Hurley, MD	3	11
Katie Bell, MSN, RN, PHN, CARN	7	11
Candy Stockton, MD & Dominique McDowell, RLPS, SUDCC II	4	3
Joe Sepulveda, MD	3	12

Coaching was a highly valued activity across the ATSH program. The alliance between coach and practice team is an important, individualized relationship that can provide encouragement and support, as well as technical expertise. All clinics had contact with an ATSH coach. The number of contacts ranged from a minimum of two (1 clinic) and three (6 clinics) upwards to 28 (2 clinics) and 31 (1 clinic). The average number of sessions by coach ranged from 3 to 18. This wide variation may reflect aspects of the coach, the ATSH team or relationship factors. Although wide variation in coaching, expert facilitation, and mentoring dynamics are typical in multi-site projects, little is known about this issue.

7.2: Quantitative Evaluation of Strategies: Survey Poll Ratings

To assess participant experience of ATSH implementation support activities, ratings were obtained on perceived Overall Experience and Overall Value at the end of each implementation support activity in a brief 2-item survey poll (see Section 5.2.4. for details). The survey poll ratings are averaged across events and reported below.

All implementation support activities received Overall Experience and Overall Value rating between 4=very good and 5=excellent. Among all implementation support activities, MI trainings were given the highest Overall Experience score of 4.81 out of 5 and site visits were given the highest Overall Value rating of 4.82 out of 5. Although webinars and learning sessions had lower average ratings among all implementation support activities, the ratings were still well above four and respondent completion of the survey questions was limited. Only an average of 20% (webinars) and 55% (learning sessions) of participants completed such a survey. The rank order of ratings on implementation support activities is displayed in Table 10.

Table 10: Rank order of rating on implementation support activities

Type of Activity	Number of Rated Events	Average % of Evaluations Completed	Average Overall Experience (Scale: 1-5)	Average Overall Value (Scale: 1-5)
MI Trainings	2	82%	4.81	4.79
Site Visits	12	87%	4.72	4.82
Webinars	28	20%	4.52	4.59
Learning Sessions	3	55%	4.35	4.52

Despite the fact that the MI training was the least attended by clinics, it was highly rated. Because clinics value the opportunities to interact with and learn from other clinics, both the site visits and learning sessions were highly rated. There was much more variation in the survey polls regarding webinars. A summary of the average ratings by specific events for learning sessions and webinars is listed in Table 7.

Insights obtained from the ATSH clinics and individuals are deepened in the next section on qualitative information.

7.3: Qualitative Evaluation of Strategies

As part of their final progress report, clinics were asked to describe the ATSH implementation support activities that were most helpful to their MOUD program. In addition, teams were queried about the implementation support strategies at the conclusion of the ATSH initiative. This query was via key informant interviews with 13 (22%) of wave 1 and wave 2 teams.

7.3.1: In-Person Learning Sessions

7.3.1.1: From the final reports:

"Our staff benefited significantly from the in-person learning sessions. Having time to brainstorm and develop a game plan as a team was priceless given that we would rarely have the opportunity to do this while on site at the clinic."

"The in-person learning session was such a great way to get to know your team!"

"The learning sessions were by far the most helpful part of this grant. We appreciated that everything was based upon quality improvement practices and we put those tools to use to improve our workflows and processes."

"The in-person learning sessions provided structured and protected time for us to really brainstorm as a team together, while simultaneously inspiring us."

"I think the in-person sessions were extremely helpful for all our staff that attended. We also used those i- person sessions for team building, to bring other clinic staff, and prescribers that might have been resistant or on the fence to each of those sessions that we could. Our staff loved it and felt like they learned so much from other experts in the field and it helped prescribers feel comfortable and confidant in providing these services. It also gave staff a sense of pride that they were a part of helping people out and they were a part of an agency that does this."

7.3.1.2: From the key informant interviews:

"A couple of days together as a team was great—it gave us time to bond and focus."

"We got really pumped up at the in-person sessions. I liked the blend of clinical information and team building process improvement stuff."

"Really enjoyed the ability to travel and hang together as a team—processing all the information together and seeing how we compared to other teams was really helpful."

"It was great to meet with teams not as far along as us. We could be helpful to them. But it also left us feeling pretty good about all the work we have been doing."

"We did not know how much work we needed to do until I saw what other clinics were doing. Very humbling. Very inspirational."

"The switch to the Zoom format was hard for us. I appreciated the effort, but it was difficult to stay focused and we lose the connection with other teams—I don't really have a suggestion on how this could have worked better though."

"We were so on fire after we left the meeting in Oakland, everyone was so amazing and helpful…and then COVID hit."

7.3.1.3: Qualitative Summary:

The in-person learning sessions were clearly the most valued of all implementation support activities. The dual content (clinical and quality improvement), the variety of formats (presentations, panels, breakouts sessions, storyboards, organic interactions) were all appreciated. What seemed to emerge most soundly was the benefit of peer-to-peer interactions. These interactions enabled teams to learn from and affirm one another. In addition, bonds were formed around the need to reduce stigma and increase advocacy for addiction treatment in their primary care settings. The transition from in-person to virtual format because of COVID was challenging.

7.3.2: Webinars

7.3.2.1: From the final reports:

"Virtual webinars offering a mix of didactic and small group sessions, available for providers to participate from afar and in some cases watch later at their convenience."

"The virtual webinars during the beginning of COVID were really helpful because we were able to learn about how COVID could affect the specific population we work with plus we were able to hear and learn about what other MAT programs in CA were doing during COVID.

7.3.2.2: From the key informant interviews:

"*What is interesting about Zoom is that you can turn off your camera and do other things—in person you are more connected."*

"The content about billing and regulations for telehealth and MAT was practical and really useful."

"It was nice to hear from other teams about what they were doing."

"When we were asked to present our program on the webinar it made us very nervous but also made us feel very good about what we were doing—that it had been recognized! This gave us confidence and helped us grow as a staff."

"Wish there was more information and dialogue about empathy—how to have empathy and understand people with addiction. Perhaps a presentation from people in recovery or with lived experience."

"It was clear to us that our program needed to expand to address other substances like alcohol, stimulants, kratom, and meth…we could have used more information about how to deal with these things in our MAT program."

7.3.2.3: Qualitative Summary:

Webinar content was highly valued and seen as appropriate. With many of the primary care practices shifting to virtual or telephone formats, attending Zoom webinars appeared challenging as pandemic restrictions wore on. A suggestion made by two teams from the key informant interviews was for less frequent but longer in duration webinars. The perception was that it was it was more realistic to make time for webinars at this pace without simultaneous multi-tasking and distraction.

7.3.3: Coaching

7.3.3.1: From the final reports:

"Katie Bell, Joe, Dom, Brian, Shelly and all the coaches were the bomb!!!! They helped in so many situations."

"The coaching calls were extremely beneficial for problem solving, brainstorming, and learning that we weren't alone in some of our challenges!"

"Coaching Calls were also extremely helpful. It gave our providers confidence in prescribing for complex patients. It also assisted program staff in ensuring we are following the most up to date regulations, which was especially helpful during COVID pandemic."

"The other very helpful support was the coaching from Brian Hurley for day to day questions, and the check-ins with Mark McGovern. Brian was particularly helpful because he understands the struggles that are unique to our health system, including things like when we will formally launch the NIDA screening across the Department of Health Services. Mark was particularly helpful in providing examples of what other groups are doing that we may be able to learn from."

7.3.3.2: From the key informant interviews:

"Worked closely with Katie Bell….she gave us another set of eyes, examples of what she does at her clinic. To be honest, I knew nothing and was totally lost—Katie essentially held my hand through this."

“Coach Shelly kept us on track—she really knows this stuff.’

“Because we were in LA County, Dr. Hurley gave us pointers on how to navigate the system—from getting people into psych care to dealing with problematic pharmacy stuff. He was also brilliant when it came to the clinical stuff.”

“Having a coach that was available by phone or text was really helpful. Things come up between arranged meeting times.”

“Not sure we really got much out of the opportunities with the coach. It may have been helpful to have some kind of instruction on how to use the coach—like what was supposed to happen.”

7.3.3.3: Qualitative Summary:

ATSH teams’ experience with coaching was extremely positive overall. There was some variation in how coaches were perceived in terms of areas of expertise and usefulness. Some coaches established deep relationships with teams, whereas other teams were not sure how to make use of this resource.

7.3.4: Site visits

7.3.4.1: From the final reports:

“Site visits were especially helpful because our providers and coordinators were able to actually observe other models who have been providing MAT programs for a long time already.”

“The site visits allowed us to think outside the box in considering options that we had never considered.”

“The site visits really gave us an in-depth look at how things work on the ground. It gave us ideas for patient/group flows and the opportunity to share/ get feedback on how we were currently operating.”

“The site visits grounded the theory and more abstract concepts learned by demonstrating its real-life application.”

7.3.4.2: From the key informant interviews:

“We visited Venice Family Clinic. It was awesome to see how the staff were all behind MAT—signs of welcome, full of encouragement and inspiration. Going face-to-face with another doctor was really helpful.”

7.3.4.3: Qualitative Summary:

The site visits were highly valued for reasons similar to the in-person learning sessions. These enabled teams to spend time together, to learn from peers and to witness—via role modeling—how more mature MAT programs worked in a real world non-theoretical way.

7.3.5: Performance Feedback and Monitoring

7.3.5.1: From the final reports:

“Completing the IMAT has been useful in creating points for reflection. For instance, should observed urine toxicology tests be the norm? What additional trainings could we do? Some of the prompts caused us to think more broadly than we otherwise would have done.”

“Completing this assessment and noticing our progress helped us know where to target our efforts.”

“Data collection was also useful, particularly as it relates to program retention. Retention is notoriously difficult with SUD, and we hope to further drill down the data to determine commonalities in patients who relapse or leave the program before abstinence is attained/maintained, which can help us refine our program."

“The capability assessment survey helped our team understand the lack of infrastructure that we had in place. It also helped us identify specific gaps in MAT care."

“Tracking patients as closely as we did, allowed us to provide targeted outreach to those patients who may have otherwise "fallen through the cracks." The capability assessment allowed us to step outside our own silo as providers (social workers, providers, nursing, substance use councilors) to see how other members of the team are functioning as part of the whole team.”

"Completing the IMAT was great because we were able to identify weakness. An example of this would be the realization that not all frontline staff members have received training in stigma and how this may impact vulnerable patients. It caused us to really take an honest look at our capabilities and where we are lacking. The program measures were also helpful because it gave us a concrete number to strive for as far as patient MAT access and retention. Also, it was eye-opening to see other agency's data and how it compares to our own.”

"Tracking the data helped us realize that we had greatly expanded the number of new patients in a short period of time, yet still needed to work on patient retention.”

“The IMAT helped us to identify areas of weakness and choose to improve on the ones most likely to have the greatest impact with the least effort."

7.3.5.2: From key informant interviews:

“The measure of retention was helpful to us. To do it we ended up building a patient MAT registry. This tracking of the data gave everything a level of rigor and focus we don’t usually have on projects. It gave us a clear problem to address with our team and our coach.”

“We used the capability tool to identify gaps in our process and our quality. At first when we were reviewing it together we tended to lie to ourselves about what we were doing. But after a little while we accepted the fact there was a whole lot we were not doing.”

“The capability measure was like a yardstick for us. Maybe more of a map of where we want to go. We plan to keep using it every 6 months from now on.”

“The performance measures were too complicated. I know that every grant has these kinds of requirements but this was not helpful. Too much math for me.”

“The capability re-assessment helped us to have a clear focus—we wanted to keep doing better and increase our score. We’re high achievers. It gave us a clear structure and checklist. We built our P&P using it as a guide.”

7.3.5.3: Qualitative Summary:

There was mixed experience with the performance measures with some teams finding this to be a useful process and others finding it overly complicated and obligatory. In contrast, the capability measure (IMAT) was repeated described as useful for both program design and standardization.

8.0: CHALLENGES AND BARRIERS OVER TIME

In this section, we address ***Aim C***: To categorize barriers and facilitators to MOUD start-up or scale-up, and then to examine how these barriers changed from baseline to the conclusion of the ATSH project. This information is based on the key informant interviews with 12 teams across the 12-months (wave 2) and 18-months of the ATSH project, and feedback from the ATSH final reports submitted by participating clinics.

8.1. Key Informant Interviews

8.1.1: Narrative findings

By far the most consistent barrier identified throughout the project was stigma both at the staff and patient level. ATSH teams described stigma toward persons with OUD exhibited by all clinic disciplines, from leadership to front desk to security. Teams addressed these barriers in multiple ways, from organized presentations to in-service trainings to one-on-one teaching moments. One clinic developed a video comparing empathic and un-empathic dialogue with patients with diabetes and patients with addiction—focusing on the similarities in chronic disease management. Other clinics developed informational briefs and another clinic created t-shirts that read “Got Suboxone?”. Most clinics believed that there was favorable impact on negative stigma, but these efforts needed to be ongoing and repetitive. Patient stigma was apparent in rural areas (where there was less anonymity and greater familiarity among patients and staff), culturally (shame in Latino and Asian communities), and between prescription narcotic and heroin use disorders.

Another key barrier was related to staffing. This ranged from physician turnover to nurse recruitment to difficulty finding behavioral health staff. Several clinics reported specific problems finding behavioral health staff with addiction treatment experience or even minimal willingness to deal with substance use problems. Some behavioral health staff had no training or comfort in conducting groups. Some addiction counselors had ambivalence about using medication for addiction treatment.

Start-up clinics experienced barriers such as identifying and engaging patients, securing time to meet as a team and develop a MAT program, and in connecting with other organizations in the community with whom to partner.

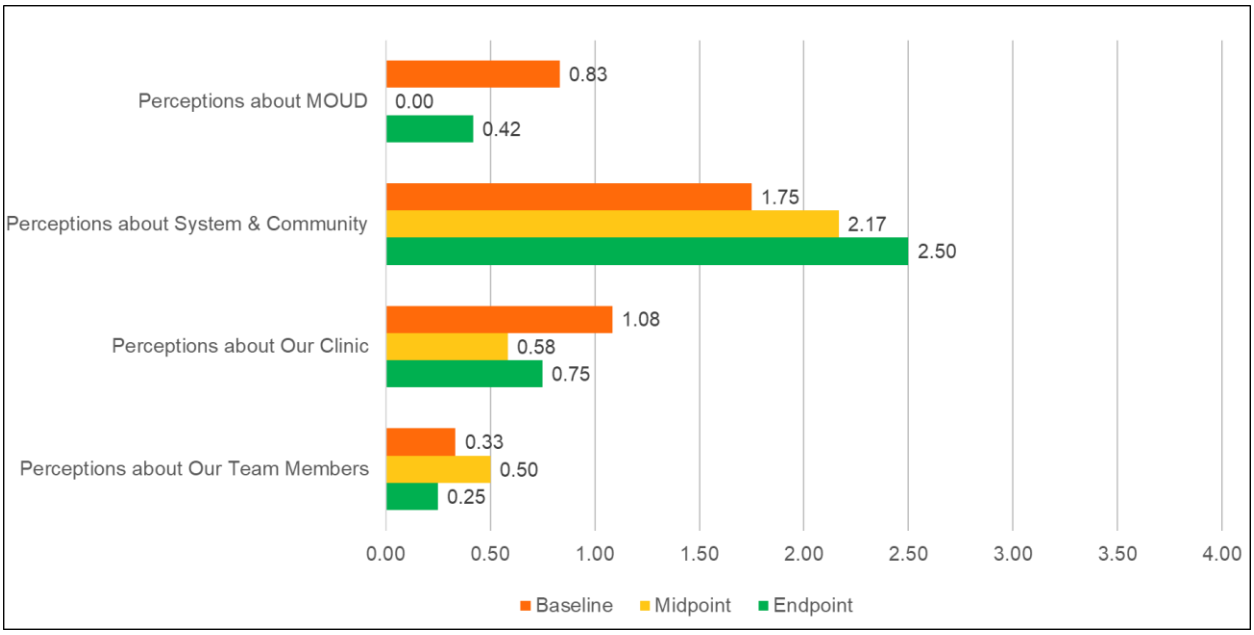
Scale-up clinics reported barriers related to consistency in staff approaches to the use of other substances, dubious views about the effectiveness of harm reduction and low-barrier access to MAT, and in confronting resistance in other clinic locations and among other providers in their organization.

8.1.2: CFIR Index

Based on the key informant interview discourse, after the interviews, barriers (and facilitators) were organized by theme and inventoried using the CFIR Index. Among the 12 clinics interviewed, there were five Track 1 (start-up) clinics and seven Track 2 (scale-up) clinics.

Figure 15 depicts the average number of barriers organized by CFIR domain for the overall program. The average frequency of barriers related to the Perceptions of the Intervention (MOUD), Perception of the Clinic, and Perceptions of the Clinicians Who Will Use the Intervention all reduced by the program end. This is consistent with the targets of the multi-level implementation supports offered in ATSH. MOUD expertise, team-based functioning, and provider self-efficacy increased. However, System and Community level barriers increased. This increase may reflect the dramatic change in the ecosystems across California associated with COVID as well as wildfires. ATSH implementation supports were no match for these naturally occurring impingements to MOUD practice. Yet, barriers in this domain may also reflect increase awareness of policy and financing issues—especially with the end of grant funding.

Figure 15: Average number of CFIR domain barriers by domain (n=12)



We identified the top five CFIR Index barriers by item within the four domains at baseline and at endpoint. The top five itemized barriers at baseline were Network Connectivity, Resource Availability, MOUD Complexity, Clinic Culture, and Patient Needs and Resources. Figure 16 depicts the progression of these top five barriers from baseline to endpoint. The top five barriers either emerging at or persisting through endpoint were Clinic Culture, External Policy and Incentives, Relative Priority, Organizational Incentives, and Leadership Engagement. Figure 17 depicts these top five barriers at endpoint.

The CFIR data suggest that over time, some ATSH teams increased connections and partnerships with other organizations in their community regarding the care of patients with OUD. Clearly resource availability increased, and the complexity of MOUD practice decreased. Interestingly, Clinic Culture and Patient Needs and Resources (i.e., social determinants) persisted as challenges.

By examining the top five barriers at the endpoint of the ATSH project, and tracking them from early on, several interesting patterns emerge. Culture persists as a barrier. Efforts to address it must be continuous and ongoing. New barriers, likely related to two factors—COVID and sustainment—arise. External Policy and Incentives and Organizational Incentives reflect MOUD practice inhibitory concerns at the outer setting level (the organization, the community) and inner setting levels (the participating ATSH clinic) that are indicative of sustainment barriers. Because of COVID, MOUD practice lost momentum in some clinics. Anxiety about sustainment emerges as practices face the end of the ATSH funding runway. What provisions are in place to cover the cost of staff—such as care coordinators, behavioral health clinicians or provider time—now that the grant is ending?

Figure 16: Progression of top five CFIR item barriers at baseline (n=12)

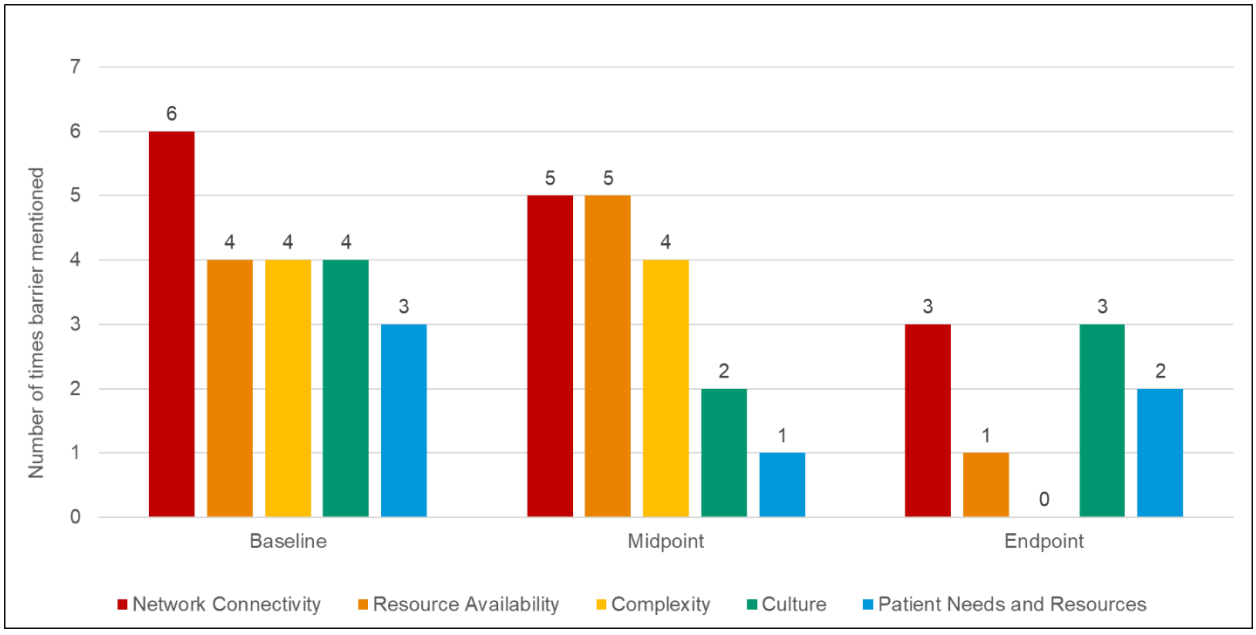
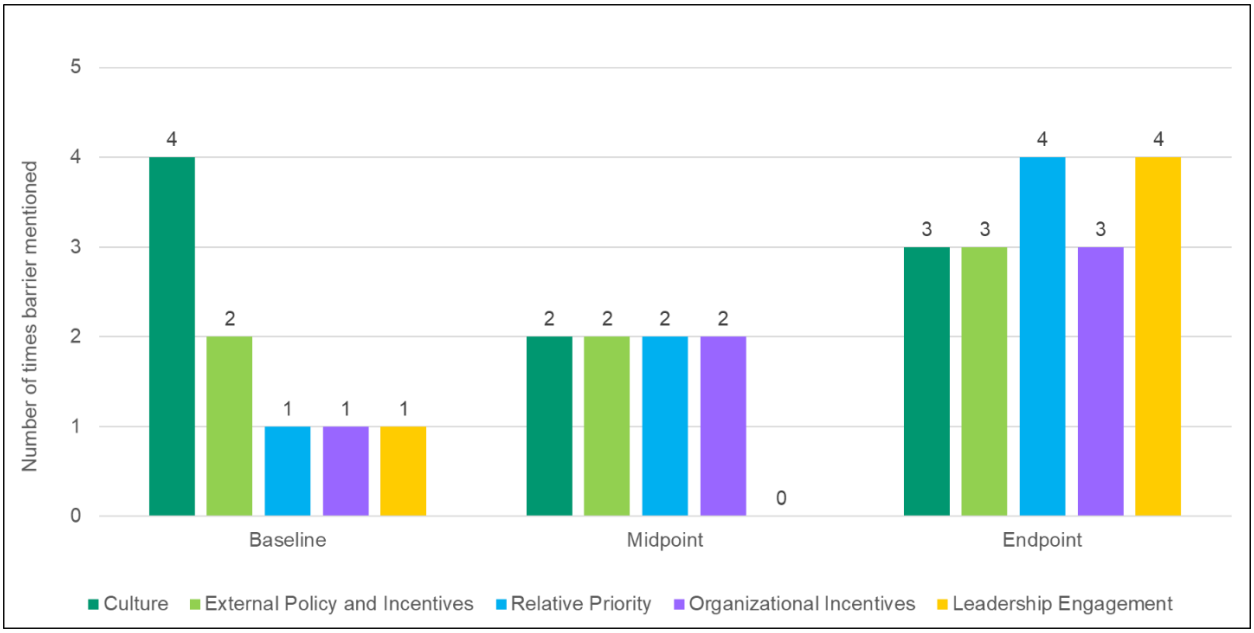


Figure 17: Persistence or emergence of top five CFIR item barriers at endpoint (n=12)



8.2: Barriers and Challenges Identified in Final Report

As part of the final progress report, all 59 clinics were asked to describe persistent challenges in providing MAT to their patients and in their community. Emerging themes from their responses are described below.

The top five challenges in expanding access to MOUD and illustrative quotes are as follows:

8.2.1: Patient Identification

"Identification and screening of patients for OUD is still problematic."

"Identification of SUD patients in our standardized primary care visit screening (i.e., not currently using NIDA quick screen)."

8.2.2: Telehealth Treatment Capability

"*There is a technological gap in our country as many residents do not have adequate services (i.e., cell phone and internet). This serves as barrier in the current COVID-19 climate."*

"Comfort level with telephonic or video visits among both providers and patients is a challenge."

"Tele-health is an excellent tool for existing and stabilized clients. However Very High Risk and involves liability for new and unstable clients."

8.2.3: Stigma

"Stigma in our community remains high."

“Stigma regarding SUD for patients, community, and healthcare team still play a role in patient's engaging in MAT.”

“The primary challenge in expanding access to MAT concerns widespread stigma that surrounds OUD. Stigma runs through our communities, affecting the justice system and healthcare industry.”

8.2.4: Lack of Community Awareness

“There remains a lack of community awareness in the rural area of the MAT Program”

“Outreach limited/difficult due to COVID-19 crisis”

8.2.5: Social Determinants

“Transportation in the frontier area is another barrier to increasing access to MAT services.”

“Lack of support for housing and other social determinants of health for our patients in the community.”

8.3: Summary of challenges

Many initial challenges were overcome through the ATSH implementation support activities. Strides were made in clinical practice and resources, connections with other community partners in addressing OUD, and in developing a standardized MAT program. Persistent challenges such as clinic culture and stigma, and new concerns related to sustainment emerged. Further, the onset of COVID and the tremendous impact on all these clinics shifted care toward the virtual, reduced monitoring of patients with urine drug screen and face-to-face visits, stressed staff at work and home, and became an overwhelming priority. Challenges pertaining to technology capability were ongoing—perhaps indicative of the “digital divide” for patients with limited resources. Within the larger organizations the ATSH clinics were based, a de-prioritization of some MOUD services took place in some, and in others they were deemed essential.

9.0: COVID-19 ADAPTATIONS TO MOUD PRACTICE

In this section, we address ***Aim D***: To summarize the MOUD practice adaptations made by the clinics in response to COVID-19. In an effort to capture the impact of the COVID-19 pandemic on MOUD start-up and expansion among ATSH participants, we administered a Qualtrics survey to gather information on how clinics adapted their MOUD practices.

9.1: ATSH Participants and Survey Response

At least one staff member from 57 clinics completed the survey. Response rate by ATSH clinics was therefore 100% and that of individual staff members was 34.8% (118 out of 338 surveyed individuals responded).

Respondents were evenly distributed across role category: prescribers (32.2%), behavioral health staff (27.1%), and others (33.9%). Prescribers include physicians, nurse practitioners, and physician assistants (Table 11). The "Other" category is comprised of nurse managers, nurses, medical assistants, clinical administrators, and program coordinators.

Table 11: Characteristics of COVID-19 survey respondents

By Clinic (N = 57)		N	%
Adaptations during COVID-19	Yes	52	91.2
	No	5	8.8
By Individual (N = 118)		N	%
Respondent role	Prescribers	38	32.2
	Behavioral health personnel	32	27.1
	Other	40	33.9
	Prefer not to answer	8	6.8
Leadership role	Clinic leaderships	24	20.3
	Other staff members	94	79.7

9.2: Adaptations for Medication and Behavioral Health/Counseling Visits

Adaptations for medication visits and behavioral health and counseling visits are illustrated in Figures 18 and 19. A majority (52/57, 91.2%) of clinics made adaptations. The majority of clinics reported that changes were made to both their medication and behavioral health visits. Most notably, appointments transitioned to a virtual format. In-person visits tended to be for medication starts although some medication initiation occurred virtually. Frequency of visits was unchanged.

Clinics reported prescribing buprenorphine for longer durations (65.4%) than pre-COVID-19. Rates of injectable buprenorphine or naltrexone remained essentially unchanged pre- and post-COVID-19, with only a slight 3.8% and 1.9% uptick, respectively. Sixty-seven percent of clinics reduced the frequency of urine drug screens for established patients. Scale-up clinics were significantly more likely to write prescriptions for longer durations than start-up clinics.

The most significant workflow adjustments were: changes in CPT codes to bill for virtual visits (59.6%), more assertive outreach to patients (48.1%), and lowered barriers for patients to start and continue on medications (61.5%).

Figure 16: Reported COVID-19 adaptations for medication visits (N=57)

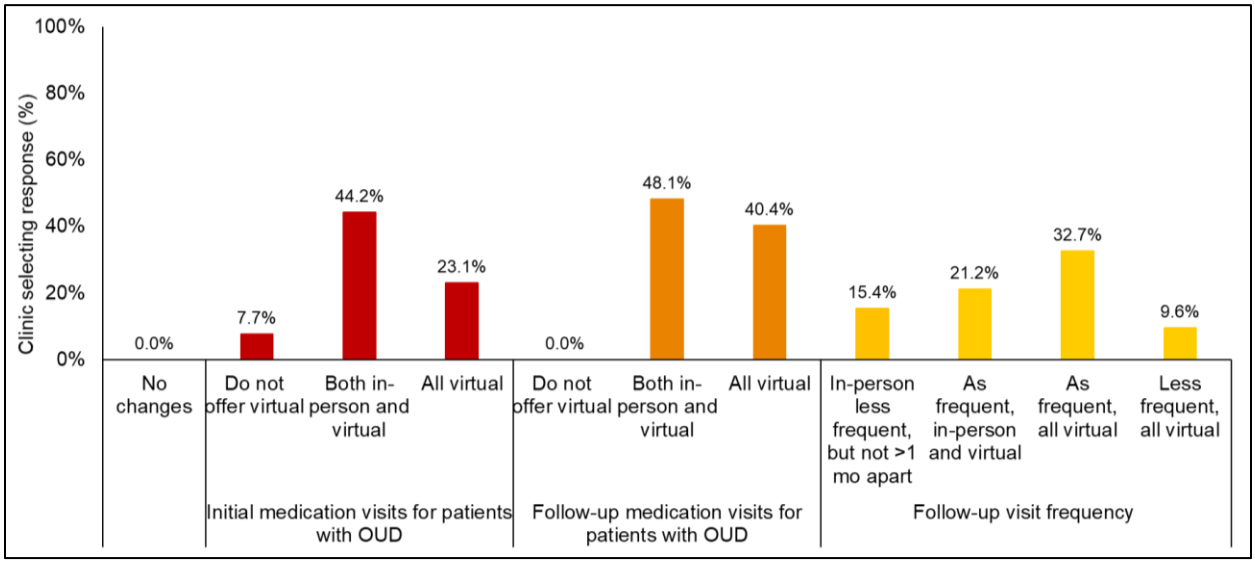
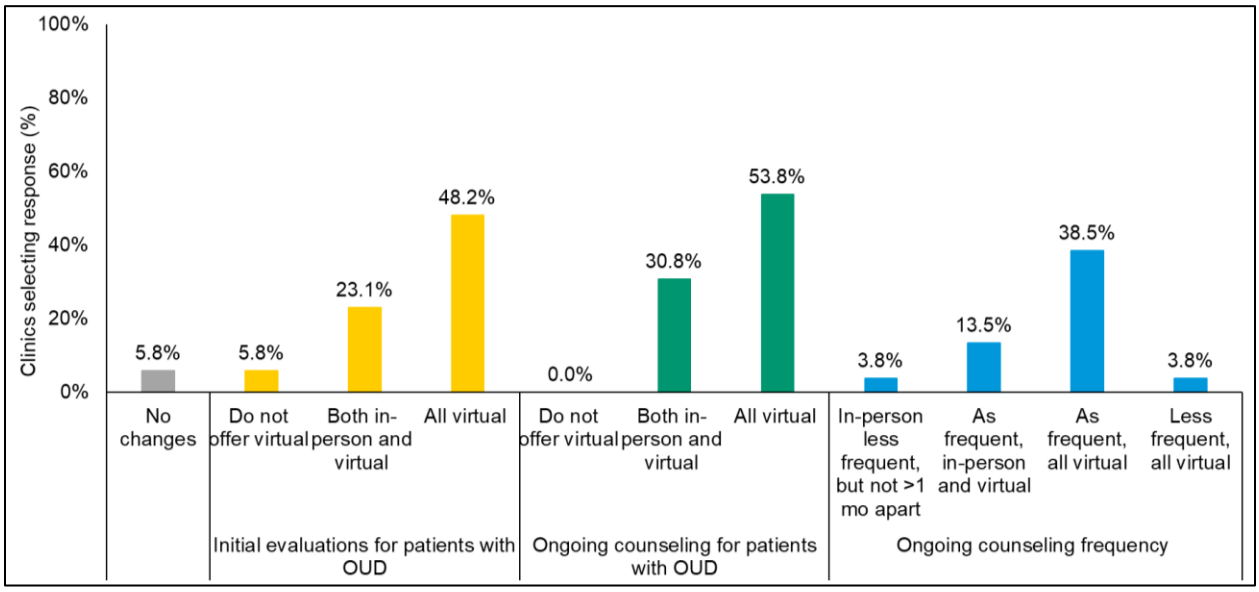


Figure 17: Reported COVID-19 adaptations for behavioral health/counseling visits (N=57)



9.3: Adaptations for Patient Retention, Preference, and Demand

Reporting of the impact on patient retention and engagement was relatively equivalent across the options (Figure 20). Clinics reported having an easier (31.6%), harder (26.3%), and unchanged (24.6%) experience engaging and retaining patients. There was a sense of an increase in demand for both medication and behavioral health visits, and perceived increase in patient preference for virtual visits.

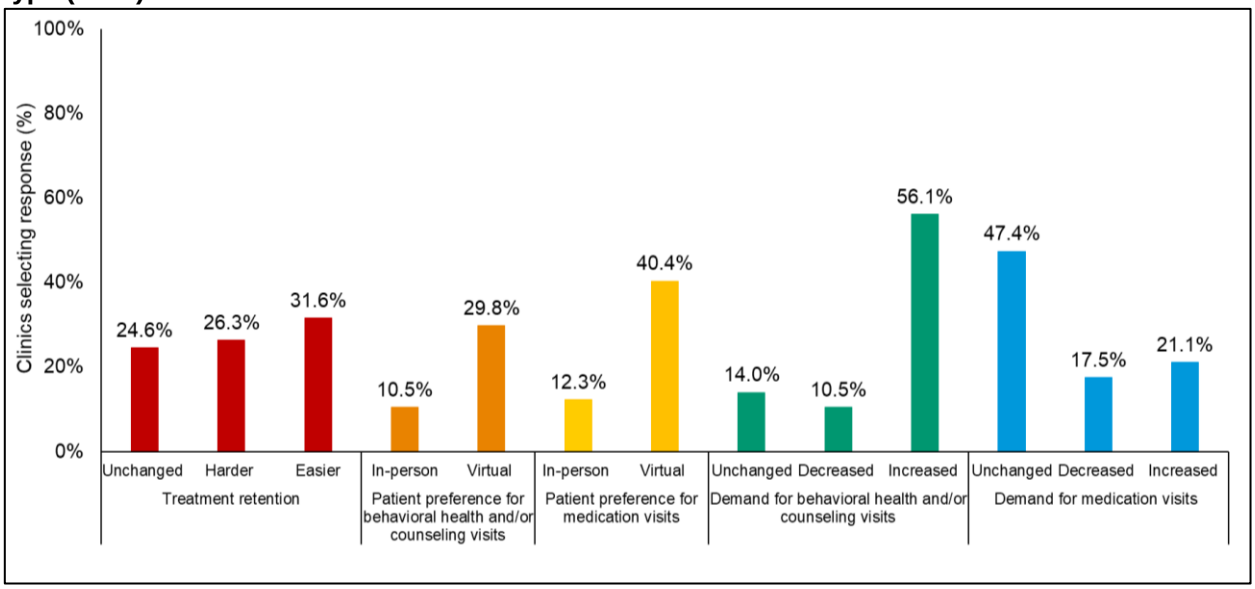
Illustrative quotes are as follows:

"We found out that we can get more patients to keep their appointments with telehealth."

"Our patients prefer the in-person visits but have adapted to virtual/phone"

"Our group participation has gone way up to the point we are thinking of keeping it on Zoom."

Figure 18: Reported COVID-19 adaptations for patient retention, preference, and demand, by visit type (n=57)



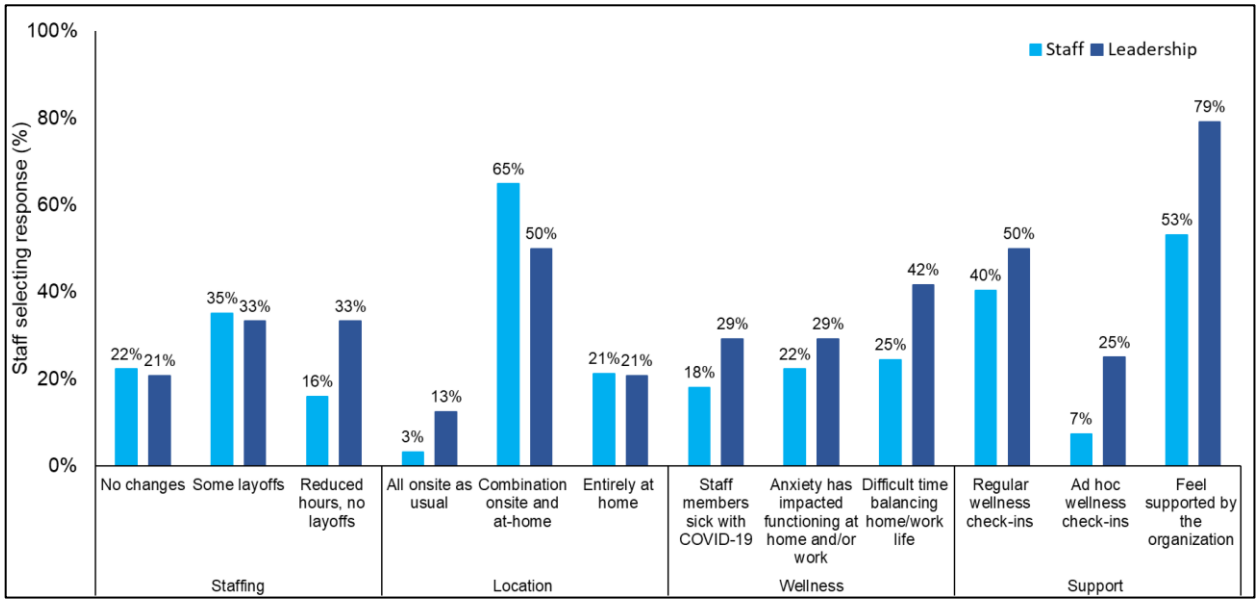
9.4: Work and Personal Life

Changes to clinic staffing, location, wellness, and support were reported at the individual level. About one-third of staff members (39/118, 33.1%) reported some layoffs at their clinic while 23% indicated that there were reduced hours but no layoffs (Figure 21). Seventy percent of staff members reported working partly onsite and partly at home with only 3.5% reporting working in the clinic as usual. Some reported that their anxiety has impacted their functioning at home and work, and that they are having a difficult time balancing home life and work. Most staff members, 64.9%, felt supported by their organization during this pandemic. Interestingly, the proportion of leadership staff reporting feelings of support is significantly higher, 79%, than non-leadership staff, 53%.

Illustrative quote is as follows:

"Although I feel supported by my organization, there has been a staff shortage and changes of work roles that impacted staffing which has precluded my working on the MAT program."

Figure 19: Reported staff and leadership experience during COVID-19 (n=118)



9.5: Staff Wellness: Building Resilience

As part of the ATSH webinar session to celebrate their successes at the end of program, staff members from participating clinics shared strategies to build employee resilience in the face of COVID-19 pandemic. Below are highlights of activities staff and clinics engaged in.

9.5.1: Storytelling

"Using poignant anecdotes/stories to illustrate program successes"

"Patient stories motivate us to provide all the services"

9.5.2: Enjoying Nature

"Group hikes"

"Incorporating nature scenes with the Calm app"

9.5.3: Self-care and Balance

"Surround yourself with whatever inspires you"

9.5.4: Meditation, Prayer, and Affirmations

"All-staff meditation to begin meetings"

"Body scan, meditation, and acknowledgment"

9.5.5: Movement, Dance, Exercise

"Salsa Lessons, Food and Sunshine"

"Integrating movements and "dance meditation"

"Breathing and stretching"

9.5.6: Socializing

"I liked the suggestion of a "buddy" system so that staff could have an opportunity to connect with someone new"

"Quick, informal huddles more often with care team"

9.6.6: Family & Community Support

"Checking in on a personal level with the team to ensure they are cared for and get an idea of family support prior to starting case review"

"Shared values and a sense of belonging seem to be a necessary foundation for most of the others to work well"

"Celebrate Victories personal, patient's, birthdays, Regular check in with team!!!"

9.6: Emergent Themes of COVID Adaptations

For the final progress report, each clinic was asked to "describe the MOUD adaptions your team made that were driven by COVID-19 that you want to keep as part of your MOUD workflow or program design, even once the pandemic has run its course." Emerging themes from their responses are described below.

The tops five adaptations that are likely to remain as part of the MOUD program include:

1) **Telehealth for MOUD program (91%; n=51/56)**
2) **Modified existing workflow to increase communications (18%; n=10/56)**
3) **Current use of/expressed interest to adopt the use of virtual groups (16%; n=9/56)**
4) **Modified toxicology requirements (9%; n=5/56)**
5) **Increased use of home induction (5%; n=3/56)**

Other emergent themes and innovative practices adopted during the pandemic are as follows:

"Being able to have a phone visit with a patient as soon as the same day of their expressing interest has allowed us to 'strike while the iron is hot' regarding readiness for change."

"We have found telehealth to be tremendously useful in care delivery. Many of our patients have limited incomes and have difficulty affording transportation costs. Furthermore, many have children and telehealth eliminates the need for childcare."

"The increasing ability to support PCPs with a virtual warm hand-off for patients to MAT clinicians and community partners. Subsequently, closing the gaps in care and ensuring linkage to recovery and treatment services."

"The use of telehealth for psychotherapy has really opened the door to building a stronger alliance with patients. Many patients have been more open to share."

"Provider access has improved with the addition of Telehealth such that we are able to more easily see patients weekly or bimonthly."

"We noticed many of our patients liked the phone, but some of them do not have a phone. We are working with other clinics in our Homeless service provider network to see if we can set up telemedicine rooms at shelters so they can have more access."

"The biggest success is the virtual relapse prevention group via Zoom that is happening 3 times a week for 2 hours covering different topics— anxiety, fear, grief etc. during the pandemic and substance abuse. It's been the favorite among patients as they are able to maintain the therapeutic relationship with our team during these difficult times."

"The SUD Navigator and MAT RN have identified individuals living outdoors who need MAT services, and through the use of laptops and Wi-Fi on the mobile unit, the patients can be linked to a provider directly at the clinic."

10.0: Positive Outliers: Based on Increase in Reach Outcome Criterion

In this section, we address ***Aim E***: To identify positive outlier practices by highest rates of change in reach outcome, search for and document distinguishing attributes, ATSH activities and/or other internal strategies that account for success across positive outlier practices. There are many other factors to consider in identifying positive outliers but we selected Reach as the "bottom line" goal of ATSH—to improve access to MOUD for patients in primary care.

This learning health systems approach to understanding differences in practices is achieved by comparing those with particularly good outcomes versus those with average or less favorable performance. The logic is that if we can understand and identify what positive outliers are doing to get to those outcomes, then perhaps this approach can be replicated with greater transparency and more efficiently. In the context of the ATSH program, we selected the positive change in number of patients receiving MOUD as metrics of success. Because meta-analysis and Cochrane reviews have established that MOUD is associated with reduced and often abstinence from opioid use, as well as improved quality of life, this metric is a reasonable one on which to infer success.

The magnitude of change in the number of patients on MOUD was calculated for each clinic by dividing the number of patients on MOUD at program endpoint (numerator) by the number of patients on MOUD at program baseline (denominator). To avoid invalid results, if the number of patients was zero at baseline, then one was used instead in the calculation. Based on this approach, we identified the top three positive outliers for each track. The remarkable growth and impactful changes that led to the increased access to MOUD are described below.

10.1: Top Three Positive Outlier Clinics Based on Reach Outcome: Start-Up Track

KCS Health Center had the highest magnitude of change in number of patients on MOUD. They started with zero patients on MOUD at the program start and ended with 286 patients on MOUD by the end of the 18-month wave 1 program (Q1: 0, Q2: 0, Q3: 3, Q4: 41, Q5: 134, Q6: 286), resulting in an impressive magnitude of change of +286. KCS attributed its success in part to its new requirement for all KCS providers to get x-waivered. The key impactful change that led to this drastic increase of patients on MOUD is the clinic's new relationship with Orange County Health Care Agency, Correctional Health Services, State Prisons for referrals. Many new patients on MOUD were referred from these justice systems. KCS also established new connections with hospitals, community rehabilitation centers, and outpatient programs for referrals.

Family Health Centers of San Diego – Downtown Connections (FHCSD-Downtown) is a scale-up clinic that started with zero patients on MOUD at program start. However, by the end of the 18-month wave 1 ATSH program, it had an impressive magnitude of change of +52 (Q1: 0, Q2: 5, Q3: 17, Q4: 30, Q5: 52, and Q6: 52). Additionally, while there was no active x-waivered prescriber at program start, two prescribers were actively prescribing by program end. The clinic

also had an impressive six-month patient retention rate of 100%. The Associate Director and Program Manager attributed their success to the launching of a MOUD refill group. This group allowed for extra support to be provided to patients by way of a psychoeducation group, facilitated by a Substance Use Disorder Counselor. Additionally, FHCSD-Downtown moved to home delivery instead of requiring the patients to pick up their medication at the pharmacy, which allowed for increased flexibility for the patient. While program operations were impacted by the COVID-19 pandemic, FHCSD-Downtown and the MOUD program were quick to mobilize by revising policies and procedures to continue service provision with limited interruption to patient care. MOUD services shifted to telehealth for medication initiation, medication refills, mental health therapy, and SUD counseling. Due to the prolonged amount of time a patient initiating Vivitrol is in the clinic, Vivitrol inductions were suspended. The MOUD Clinical Champion was the lead provider, starting all new MOUD patients on buprenorphine. All existing patients remained with their PCP or psychiatrist for medication refills. To reduce patient exposure to COVID-19, prescriptions were extended to 30 days for all patients with a home delivery option. To provide additional supports during this time, SUD counselors began contacting their patients weekly and followed a script to screen patients for ancillary service needs during the COVID-19 pandemic, including additional PCP visits, medication questions, therapy support, and general resources (e.g., food and shelter).

Hubert H. Humphrey Comprehensive Health Center (HHHCHC) had a magnitude change of +27 patients on MOUD. Similar to other start-up clinics, HHHCHC started with zero patients on OUD at the start of the program and had a gradual increase throughout the 18-month wave 1 program (Q1: 0, Q2: 12, Q3: 19, Q4: 22, Q5: 25, Q6: 27). HHHCHC attributed its success to its expansion to the chronic pain space by treating patients on high dose opioid medications. The clinic also set up consistent reminders to PCPs about available MOUD services. Most importantly, HHHCHC has very low barrier to referrals as every referral gets an appointment for an initial assessment. Since the COVID-19 pandemic, HHHCHC made access to MOUD easier by providing video and phone telehealth visits, adopting a patient-centered approach to toxicology testing (e.g., stable patients do not need frequent testing), and using phone prescribing to reach homeless patients via street outreach teams.

10.2: Top Three Positive Outlier Clinics Based on Reach Outcome: Scale-Up Track

Axis Community Health had a magnitude of change of +2.4. As a scale-up MOUD expansion clinic, it started with a substantial number of patients on MOUD and had a steady increase over the 18-month wave 1 program (Q1: 26, Q2: 34, Q3: 40, Q4: 46, Q5: 48, and Q6: 62). Since the start of the ATSH program, Axis implemented several impactful changes to its MOUD practice. In addition to training providers and staff on how to refer patients to and engage them in MOUD, the clinic started to educate patients by putting up flyers in the exam rooms. Axis has also streamlined the MOUD referral to decrease attrition. Lastly, Axis implemented a refill group to provide psychoeducation to patients on MOUD.

Plumas District Hospital - Plumas Rural Health Center had a magnitude change of +2.15. Similar to Axis, Plumas was a scale-up clinic that started with a moderate number of patients on MOUD and gradually increased over the 18-month wave 1 program (Q1: 20, Q2: 29, Q3: 39, Q4: 36, Q5: 44, Q6: 43). Plumas attributed its increase in reach to improving flexibility for scheduling MOUD patients. Call center schedulers were educated to get new patients into treatment as soon as possible and be flexible with scheduling to ensure MOUD patients were seen within the same week of needing an appointment. Furthermore, Plumas set up their MOUD clinic with more streamlined workflows and processes for nursing staff to ensure patients could get in to be seen when needed. Lastly, Plumas increased education to all staff, including emergency room nurses and physicians on the MOUD program and provided patient education materials on display throughout the facility.

Livingston Health Campus (LHC) had a magnitude change of +2.08 with a steady increase in MOUD patients between Q1 and Q3 followed by a slight drop in Q4 during the 12-month ATSH wave 2 cohort (Q1: 12, Q2: 15, Q3: 35, Q4: 25). LHC attributed its overall improvement in the reach outcome to establishing a working relationship with the local emergency department through a warm hand-off protocol. Moreover, LHC improved MOUD policy, workflow, and roles of clinic staff and providers. The addition of two new x-waivered prescribers and MOUD nurses to the team also improved reach.

10.3: Positive Outlier Clinics Based on Increase in Reach Outcome Criterion: Summary

To summarize, as a group, these six clinics feature strong and invested leadership, clinical champions at all levels, a readiness to continuously improve and adapt MOUD practice, and the capacity for bi-directional partnerships with other organizations and service providers in their communities. From a learning health systems perspective, it is advisable to have these ATSH practices more actively share their work at future MOUD expansion projects.

11.0: INNOVATIVE AND PRACTICAL MODELS

In this section, we report on ***Aim F***: To describe innovative and practical models that emerged. Throughout the ATSH program, we identified these innovative and practical models from clinics through Key Informant Interviews, through participant storytelling at the in-person learning sessions, by their coach's invitation to present at ATSH webinars, and in reviewing the narratives from Final Progress Reports. These innovative models are quantified and summarized below. We hope to identify successful models for MOUD start-up and scale-up that can be generalized to other primary care clinics outside of the ATSH program.

11.1: Final Progress Reports: MOUD Models of Care

Based on responses from the Final Progress Reports, the top five impactful changes that led to increase access to MOUD include:

1) Providing education and awareness training to providers and staff (46%; n=26/56)
2) Hiring x-waivered prescribers and SUD program staff (36%; n=20/56)
3) Offering focused community outreach such as mobile services and telehealth (32%; n=18/56)
4) Establishing working relationships with other clinics, behavioral health services, and stakeholders for referrals (32%; n=18/56)
5) Implementing shared medical appointments/group visits (30%; n=17/56)

Illustrative quotes of innovative models from the Final Progress Reports and participant storytelling at webinars are as follows:

*"**Implementation of a centering group model**. The first 30 minutes of the provider's time is carved out for individual appointments, but issues and concerns that patients have that are shared are discussed in group, rather than individually. This saves provider time and allows for peer support."*

*"**Staff Capacity Building**. Our entire team is more knowledgeable about how we approach patient care for MAT patients and we have made adjustments to the services that we provide based on what we have learned. For example, offering more individual services to MAT patients instead of services in group settings."*

*"One of the most essential components in the provision of MAT services is to **address and reduce stigma**. It is vital to patient care that patients are welcomed and feel cared for when they come to the clinic."*

*Launching a **MAT refill group**. This group allowed for extra support to be provided to the patients by way of a psychoeducation group. During the group, the patient also saw a provider and received a medication refill."*

*"**Contingency management**. When we implemented contingency management we noticed that participation in the MAT program increased."*

*"**Transportation**. Working with special populations clinic for people experiencing Homelessness is very challenging. Having the taxi program was huge help to increase engagement and participation."*

*"**Harm reduction**. We also provided Fentanyl test strips to test their substances and had a street medicine outreach team to help connect them to services."*

"We have all Homeless clients, so we have taxi transportation funds set aside and food gift cards for milestones."

11.2: Key Informant Interviews: MOUD Models of Care

From doctor-centric to team-based care: Many successful clinics reported the evolution from a physician-patient relationship to the development of a team-based approach. This includes prescriber, nurse, medical assistant, behavioral health clinician, addiction counselor, care coordinator/case manages among other staff. Effective teams developed clear roles, mutual respect, and ways of communicating in daily huddles, weekly team meetings, monthly conferences or through the electronic health record. Team members become attached to one another, value their relationships, and support one another during challenging times (e.g., through the "heartbreak of relapse").

Using a multi-disciplinary approach to manage addiction: The multi-disciplinary approach is related to team-based care and encourages each team member to operate at "top of their license." This multi-disciplinary approach is particularly important to "navigate low barrier and harm reduction with holding the patient accountable and moving them into stable recovery." The team can reconcile "too hard" and "too soft" approaches and tendencies and work towards a more standardized approach that still offers the flexibility to meet each patient's individualized needs. "You need to rely on and trust the people around you—this is not a one-person job."

Changing hearts and minds through patient stories: As noted above, a persistent barrier is staff stigma and discrimination towards individuals with addiction. ATSH clinics addressed this barrier in a variety of ways, from video presentations to in-services to one-on-one conversations with staff members in "teachable moments." An evidence-based approach to demystifying and debunking stereotypes is exposure to a person with lived experience: "We made a point of telling stories of our patients whose lives were transformed because of MAT. These were the sort of patients who were known to the clinic (this is a rural location) and who were often seen as 'drug seeking' or 'sociopathic'. So, when these patients became better moms, workers and simply looked happy and healthy, and with the patients' permission—we made sure people knew about it."

Embracing addiction as chronic disease management: Confusion between low barrier care and enabling existed in some clinics. And confusion between addiction medication and drugs of addiction existed in others. Both start-up and scale-up clinics worked diligently and transparently to promote understanding of addiction as a chronic disease. "You wouldn't threaten to discharge a patient with diabetes whose A1C was 10 but you seem inclined to give up on your MOUD

patient who relapses after a few months of stability. Instead, why wouldn't you consider what the issues are and how you might adjust the treatment plan?"

Getting it right vs. building as we fly: ATSH start-up participants used the implementation supports to develop high-quality MOUD programs: "Our numbers don't show it but I am confident that we learned what to do and now have a good quality MAT program. The patients that get treated will be getting good quality." Other ATSH participants ultimately came to accept that "we couldn't get bogged down in having all the P&Ps first, or having a plan for every hypothetical scenario… we needed to just do it—to learn as you go." Both approaches were evident in the MOUD model building process.

Stages or phases of care: Several ATSH teams were working towards a transparent and explicit process of stages of MOUD care in their program. Patients in the early stage were either new or having challenges with relapse. These patients were seen at least weekly, with more frequent urine toxicology and shorter duration of prescriptions. Patients in a middle stage would be seen and monitored less frequently, and typically a third stage was for patients with more extended periods of stability. Definitions and requirements for these stages/phases were evolving. "We were working on getting our phase of treatment protocol up and running and then COVID hit. Really at that point everyone was in the third phase because of the pandemic and telehealth visits. Some patients did great, some really struggled—mental health issues were through the roof. It occurred to us that these phases are not just about time but really about the patient. We were surprised at how well some patients did without coming in, without urine monitoring and with longer refills."

Augmenting addiction medicine beyond OUD: Innovative practices advanced toward expansion of the MOUD program to address other substance use as well as comorbid mental health issues. Mature programs, such as FHCSD and the County of Santa Cruz, have been able to develop more comprehensive services with addiction psychiatry expertise and leadership. These services include contingency management (for opioids and stimulants), medications for alcohol use disorder, and behavioral health interventions for trauma. Some clinics, with addiction medicine expertise, have adapted contingency management for stimulant use disorders and have experience with adverse childhood experiences and trauma-informed care. These augmentations represent increased levels of sophistication in addressing addiction in the primary care context. However, like other medical specialties it will be important to understand what is realistic in primary care versus referral to or coordination with addiction or psychiatric specialty care.

11.3: Summary of innovative and practical models of care

ATSH teams were distinctive in their innovations and adaptations but several key components of more successful models emerged. At the planning stage this involved: providing education and awareness training to providers and staff; hiring x-waivered prescribers and addiction

counselors; community outreach to patients; and, establishing partnerships with other health care and social service organizations. Active implementation stage models included: team-based approaches to addiction as a chronic disease; shared medical appointments and group visits; using contingency management; and, developing phases or stages of care.

12.0: LESSONS LEARNED AND SURPRISES

In this section, we pursue ***Aim G***: To explore perception of ATSH participants to compile and categorize lessons learned and surprises during their 12- to 18-month experience. These narratives were obtained from Key Informant Interviews and the Final Progress Reports.

12.1: Lessons Learned: ATSH Final Progress Reports

ATSH participants were asked to provide recommendations to clinics planning to expand MOUD. Many of them highlighted the following lessons learned: 1) multidisciplinary team is key to success; 2) value of all staff buy-in; and 3) importance of flexibility, adaptability, patience, and compassion.

12.1.1: Multidisciplinary Team Is Key to Success

"I would identify key people in your organization to be on your MAT team who have an interest in behavioral health or SUD services, who can be an advocate for your program, and who help implement changes needed organization-wide to have a successful MAT program."

"I would assess the level of stigma about SUD within the organization and staff and begin to offer stigma-reduction and empathy-increasing content to all levels of staff as needed."

"I would recommend starting a refill group if possible. Our patients have really benefited from sharing experiences and supporting one another through the process. It has been an opportunity for us to provide additional education also that may not have been able to be reviewed as in depth during a provider visit."

12.1.2: Value of Staff Buy-in

"I would get as many staff on board with your MAT project as possible. The more people who are trained and involved in the project, the sooner there will be a culture shift toward a positive, supportive treatment environment."

"It can seem like a daunting task to start or grow an MAT program, so we think it is extremely important to have buy-in from the entire clinic. We were able to offer embedded MAT within primary care by focusing on creating clinic-wide protocols and making ourselves always available for consultation so that our colleagues felt comfortable either referring their patients to us or prescribing MAT themselves."

12.1.3. Importance of Flexibility, Adaptability, Patience, and Compassion

"Be flexible!! We have created forms, written workflows and adjusted schedules time and time again as our patient panel has grown, patient population has changed, and our providers have adjusted their practices. Every time we learn something, we update our processes to make things easier and more streamlined for both staff and patients."

"Treating addiction in a primary care setting demands patience, compassion and the flexibility to make changes"

"I would prioritize saving lives and that means accepting harm reduction and having a program that is flexible in meeting patients where they are at without judgment."

12.2: Surprises: Key Informant Interviews

Several themes emerged when the ATSH teams were asked at endpoint about what surprised them in the MAT practice over the course of the project.

Stigma

"We have behavioral health staff but surprisingly our behavioral health staff and program never really dealt with addiction—this seems ironic—isn't addiction part of the DSM?"

"I was surprised about the pushback from our providers."

"In all honesty, the loss of 2 of our 3 doctors was a good thing. Neither of those 2 were really on board with treating addiction. They were both patriarchal and authoritarian. Our 2 new providers that we invited to replace them, they get it, they have empathy and skill."

Patient benefit

"Biggest surprise? Patients doing so well with just the medication alone."

Team-based approach

"We were kind of compartmentalized. Working as a team is surprisingly new. It surprises me how much joy it has added to my work."

"The cohesiveness of the team is absolutely essential to do the hard work—to hang in there."

Adaptability

"We've been resilient in dealing with COVID changes from in-person to telehealth. I had concerns we would lose patients. But the change has provided us with opportunities to reach new patients. Our panel has actually increased, especially now that we drive out to the homeless encampment."

You have to be like a girl scout—always ready, teaching people at key moments, dealing with a skeleton crew, responding to crises like COVID, learning from each other—but at the end of the day, you feel good about your work, you have a purpose."

"Would never have predicted that transitioning to virtual visits would work. But then again it might work for stable patients but for unstable patients, especially those who need mental health care, it hasn't been so pretty."

Advocacy

"I've been surprised at how I have become an advocate for people with addiction. I feel like we are the trailblazers, the outliers. We want to become more the fabric of the clinic—where everyone in the clinic has a role to play."

Joy of Practice

"The work is hard, and with sometimes painful moments. But we have a lot of fun. We are inspired to tears."

"I have been surprised at how much I enjoy treating addiction. This is not my specialty. It's super amazing how this medication can transform a person's life. Not only the substance abuse but how they look, how they look and dress, how they talk about their jobs and families. I can't think of any other thing I do where this kind of dramatic transformation occurs. You could not have told me about this. I needed to see it for myself."

"A couple of hard-core providers who I never thought would do this work are now doing it. I think they are kind of into it."

13.0: RECOMMENDATION FOR ATSH WAVE 3

In the Final Progress Report, respondents were asked in open-ended questions about their ATSH experience, to comment on it, and to share suggestions. The narratives can be grouped into the following: 1) praise for CCI staff and overall ATSH program; 2) suggestions for simplifying or providing more guidance on metrics; and 3) recommendations for specific approaches or new ATSH activities.

13.1: Praise for CCI Staff and Overall ATSH Program

"CCI has been very responsive and flexible in this project."

"We appreciated the connection to other teams."

"We found the content and frequency of trainings to be ideal."

"The structure of the CCI program was extremely helpful to keep everyone on their toes and to not lose focus. If it was not for the guidance and support of the CCI-ATSH program, our MAT program would have experienced many setbacks and would have been very challenging to implement."

"ATSH has been such a breath of fresh air in that the leaders were able to quickly pivot to the needs and demands that we are now going through to keep our clinics afloat."

"We appreciated having multiple opportunities to learn, in person, Zoom webinars, coaching calls and connecting to hear the struggles and best practices of other experienced MAT programs."

13.2: Suggestions for Simplifying or Providing More Guidance on Metrics

"It was somewhat challenging to determine how to calculate the data without help. I think this could have been a bit simpler."

"It would be great if we have more assistance with understanding with program measures during data reporting as this time it was a bit confusing and time-consuming understanding the concepts in the reporting template (quantitative piece)."

"I think that the IMAT was a bit long, though I see its value perhaps as a research tool. Having coaching focus on the IMAT and highlighting specific forms of service improvement may have been helpful to use it as a longitudinal goal-setting tool. It felt more evaluative."

13.3: Recommendations for Specific Approaches or New ATSH Activities

"The time investment from our team toward this project was a challenge. Although we highly valued the CCI team's knowledge, expertise, and support—the time requirement may need to be lowered for future projects."

"CCI could have done a better job in mentoring by pairing a new program with a more established program from the beginning."

“One difference we would have appreciated would have been connecting with other FQHCs or cohorts in our vicinity sooner (…) but leveraging the support of other local clinics and learning about their programs earlier in the grant period would have been helpful.”

“To have more discussions around financial sustainability of MAT services.”

14.0: ATSH EVALUATION SUMMARY

14.1: Methodological Caveats

Combining both qualitative and quantitative information gathered over the course of this project enables a relatively rigorous evaluation. Nevertheless, there are a few “threats” to both internal and external validity. With respect to internal validity, for the quantitative component, we used aggregate data harvested from the 59 data-reporting clinics to discern reach, adoption, and retention outcomes. It is possible that these data were not accurate, there was variation in how counts were made, denominators were difficult to obtain, and there is the possibility of differences in how patients were tracked over time to measure retention. In addition, our primary measure of implementation quality, the IMAT, was based on team generated ratings. For all of these measures, the potential for positive response bias exists. With respect to the qualitative data, we gathered impressions via key informant interviews and in open-ended queries on reports. It is possible that the information shared was influenced by any number of factors including self-report bias, anxiety about sharing negative impressions when supervisors were in the virtual room, or blind spots in perceptions of one’s own MOUD practice. These threats would be addressed with more standardized and objective data collection from clinics at the patient level, ethnographic observation, and a mix of individual and group interviews. All of these methods would have been cost-prohibitive. External validity may be mitigated because there are no comparison clinics (those that got ATSH supports versus those that did not), making causal inferences about the impact of ATSH implementation supports unwarranted.

14.2: Technical Evaluation Summary

In this report, we evaluated the ATSH program which took place in California between February 2019 and September 2020. The last seven months of the program co-occurred during the COVID-19 pandemic.

Participants

ATSH participants included 59 primary care clinics representing a mix of MOUD start-up and scale-up teams, a variety of rural and urban clinics, diverse patient populations, and ranging in organization size, geographic regions, including areas that were the hardest hit by the opioid epidemic. Clinics could be divided into two general types: start-up (track 1) and scale-up (track 2).

Goals

The overarching goal of the ATSH initiative was to increase access to MOUD for patients in ATSH participating primary care clinics. In order to achieve this goal, ATSH aimed to increase the number of x-waivered prescribers (physicians, nurse practitioners, physician assistants) and the number of x-waivered prescribers who were actively treating patients with OUD in the primary care context. These objectives correspond to implementation outcomes of reach

(patient access) and adoption (delivery of care). Because reach and adoption may not have the desired impact without considerations of quality, the ATSH initiative also incorporated measures to ensure MOUD practice was conducted within the guidelines offered by the FDA, Substance Abuse and Mental Health Services Administration, the American Society of Addiction Medicine, and expert consensus.

Implementation Supports

CCI developed and delivered four major implementation support activities, provided performance and capability measures, and hosted a website containing tools and resources. The four major implementation support activities were: coaching, learning sessions, site visits to model primary care MOUD practices, and didactic webinars.

The goal of this evaluation was to determine if the objectives of reach, adoption, and high-quality implementation were achieved as the result of the CCI support activities to the 59 participating primary care teams.

Major outcomes

At 18 months from project start, the ATSH program can be quantitatively summarized for impact as follows:

Reach: Increasing from 1,706 to 2,798 individual patients, the ATSH initiative demonstrated a positive delta of 1,092 patients prescribed MOUD. This is a 64% increase to the number of patients on MOUD at program baseline.

Effectiveness: The count of patients retained in all ATSH participating MAT programs increased by 29.0% (47) and 42.2% (19) for wave 1 and 2 respectively at the final month of the clinics' retention tracking (wave 1 from 162 to 209, wave 2 from 45 to 64). A benchmark six-month retention rate of 50% is typical, and overall, the ATSH clinics surpassed or met this mark (wave 1 at 60%, wave 2 at 49%) — however, the overall retention rate remained relatively stable over time (wave 1: 63% to 60%, wave 2: 49% to 49%).

Adoption: There was an increase of 103 x-waivered prescribers (277 to 380) or a 37.2% increase from baseline. With 80 newly active x-waivered prescribers (from 177 to 257), there was a 45.2% increase in providers treating OUD in their clinics. The actual proportion of x-waivered prescribers who were actively prescribing among all x-wavered prescribers grew from 58% at the start of the program to 65% by program end for wave 1, but decreased from 80% at the start of the program to 74% by program end for wave 2.

Implementation: As measured by a common yardstick—the IMAT Index—the overall change in ATSH clinic level capability from "Partially Integrated" at baseline to midway between "Partially Integrated" and "Fully Integrated" at program endpoint is a significant improvement in overall MOUD implementation quality. IMAT domain scores demonstrated the greatest improvement in

two domains: Staff Training & Development and Clinic Culture and Environment. Clinical practice domains, however, also revealed significant strides in guideline adherence and MOUD quality.

Across all four quantitative measures, two important facts must be considered: 1) The shorter time frame of implementation supports for wave 2 (12- versus 18-months) resulting in less significant changes for these practices relative to wave 1; and, 2) The impact of COVID-19. COVID-19 likely influenced the numbers of patients seeking MOUD treatment, the prioritization of MOUD practice expansion within the clinics, the capabilities of clinics to adapt their policies/protocols to mostly virtual care, staffing shortages, and also the shift in implementation support activities, such as in-person learning sessions and coaching, to entirely virtual formats.

Evaluation of implementation supports

All implementation support activities received Overall Experience and Overall Value rating between 4=very good and 5=excellent.

Among all ATSH implementation support activities, coaching had the highest level of participation and it was highly valued. The relationship between coach and clinic is important and individualized and can provide encouragement, support, and technical expertise. All clinics had contact with an ATSH coach. The number of contacts ranged from a minimum of two (1 clinic) and three (6 clinics) upwards to 28 (2 clinics) and 31 (1 clinic). The average number of sessions by coach ranged from 3 to 18. This wide variation may reflect aspects about the coach, the ATSH team, or relationship or fit factors. Although wide variation in coaching, expert facilitation, and mentoring dynamics is typical in multi-site projects, little is known about this issue.

Learning sessions were the next most-attended activity, averaging to 89% of clinic attendance. They were also the most valued of all implementation support activities. The dual content (clinical and quality improvement) and the variety of formats (presentations, panels, breakouts sessions, storyboards, organic interactions) were all valued. What seemed to emerge most soundly was the benefit of peer-to-peer interactions. These interactions enabled teams to learn from and affirm one another. In addition, bonds were formed around the need to reduce stigma and increase advocacy for addiction treatment in their primary care. Although there were no differences between in-person and virtual learning sessions in quality ratings, overall attendance decreased. Team attendance at the in-person learning session dropped from 100% to a range of 73 – 80% with the virtual formats.

Site visits were the third most-attended activity, with 82% clinics having visited the MOUD program at one of the exemplary clinics to learn from their workflow. Site visits were given the highest Overall Value rating (4.82 out of 5). Site visits took place prior to the pandemic restrictions.

Throughout the program, 26 expert- and ATSH practice-led webinars were offered. Even though providers and staff were juggling clinic responsibilities, these webinars had an average attendance of 45%. Percent of team attendance at webinars increased during the COVID-19 pandemic. ATSH project specific sessions (pre-work, data portal, celebration) among the most attended. Journey mapping, COVID-19 and "MAT for Everybody" were among the best attended. Although webinars and learning session had lower average ratings among all implementation support activities, the ratings were still well above four and average response rates to the surveys were only 20% and 55% respectively.

Among all implementation support activities, MI trainings were given the highest Overall Experience score (4.81 out of 5). Despite the high ratings, only 22% of clinics attended the MI trainings. The low attendance suggests that many clinicians may have already completed MI training or alternatively it was not perceived as valuable.

The Impact of COVID-19

For the final progress report, each clinic was asked to "describe the MOUD adaptions your team made that were driven by COVID-19 that you want to keep as part of your MOUD workflow or program design, even once the pandemic has run its course." The top five adaptations likely to remain as part of their MOUD program included: 1) Telehealth for MOUD program (91%); 2) Modifications to existing workflow to increase communications (18%; n=10/56); 3) Virtual groups (16%; n=9/56; 4) Reduced toxicology requirements (9%; n=5/56); and, 5) Increased use of home induction (5%; n=3/56).

A Qualtrics survey of ATSH clinics and individuals about MOUD adaptations with COVID-19 had convergent findings with the final progress report. Widespread modifications to medical and behavioral health visits, duration of refills, reduced urine drug screens, and responsiveness to patient needs were all identified. Concerns about unstable patients, especially those with mental health issues, were raised. Staff themselves noted increased anxiety and with some variation in leadership supports.

Overcoming Barriers and Challenges

Based on data from the final reports from all 59 clinics and key informant interviews with 12 representative teams at three time points over the course of the project, we identified several themes. By using the CFIR Index to code the discourse from the qualitative group interviews, the changes in prominence of the challenges and barriers can be measured. Many initial challenges were overcome through the ATSH implementation support activities. Strides were made in clinical practice and resources, connections with other community partners in addressing OUD, and in developing a standardized MAT program. Persistent challenges such as clinic culture and stigma, and new concerns related to sustainment emerged. Further, the onset of COVID and the tremendous impact on all these clinics shifted care toward the virtual, reduced monitoring of patients with urine drug screens and face-to-face visits, stressed staff at

work and home, and became an overwhelming priority. Challenges pertaining to technology capability were ongoing—perhaps indicative of the "digital divide" for patients with limited resources. Within the larger organizations the ATSH clinics were based, a de-prioritization of some MOUD services took place in some, and in others they were deemed essential.

Positive Outliers Based on Increase in Reach Outcome Criterion

Within a learning health systems approach, we identified six high performing clinics based on increases in reach. We focused on three start-up and three scale-up clinics. As a group, these six clinics featured strong and invested leadership, clinical champions at all levels, a readiness to continuously improve and adapt MOUD practice, and the capacity for bi-directional partnerships with other organizations and service providers in their communities. From a learning health systems perspective, it is advisable to have these ATSH practices more actively share their work at future MOUD expansion projects.

Innovative Models of MOUD Practice

ATSH teams were distinctive in their innovations and adaptations but several key components of more successful models emerged. At the preparation stage this involved: providing education and awareness training to providers and staff; hiring x-waivered prescribers and addiction counselors; providing community outreach to patients; and, establishing partnerships with other health care and social service organizations. Active implementation stage models included: designing team-based approaches to addiction as a chronic disease; offering shared medical appointments and group visits; using contingency management; and, developing phases or stages of care.

Recommendations for ATSH Wave 3

ATSH waves 1 and 2 represented 59 primary care clinics and teams from across the State of California, from San Diego to Plumas counties. Remarkably, despite the diversity in clinic type and MOUD implementation stage, as well as the geographic dispersion, this ATSH program fostered a sense of group cohesion and a common mission. The ability of the CCI team and the coaches, with just enough in-person contact at the project start, seemed to forge strong durable interpersonal connections. It was and is the strength of these relationships that enabled ATSH to be resilient and adapt through an unprecedented public health crisis: COVID-19. It was entirely conceivable that both ATSH participants and the CCI team would need to abort the project because of de-prioritization and health risks. Instead, clinics shifted their MOUD practice to virtual care and in parallel, CCI shifted implementation support activities to virtual. Unlike the more positive experience with tele-health and reduced requirements in MOUD practice, there was some loss in connection with the ATSH program going entirely to Zoom format. Nonetheless, this transition actually increased the number of attendees at webinars—which continued to be highly rated. Furthermore, patients with OUD continued to receive medication, lives were saved, and chances for recovery improved.

The general recommendation for ATSH Wave 3 is to maintain the same approach. The importance of face-to-face contact, especially early on, cannot be de-valued. If at all possible, as Wave 3 begins, in-person learning sessions should be re-instituted. Otherwise the same set of implementation supports: coaching, learning sessions, webinars, and site visits should be continued.

Two specific refinements for ATSH Wave 3 might be considered.

Personal contact with experts and peers at in-person learning sessions, site visits, and on webinars are high value supports. Individualized coaching was also highly valued. There was some variation in how coaching was perceived, and how much connection and contact individual coaches had with ATSH teams. Some considerations of matching coach to team, team preference for type of coach, an orientation to teams about how to optimize the coach relationship, and perhaps some mentoring of coaches might improve this already strong implementation strategy.

ATSH included quantitative measures for tracking key variables over time. These measures of reach, adoption, effectiveness, and implementation were useful for this evaluation, and embraced by many teams. In particular, the capability tool (e.g., IMAT), co-produced by CCI, ATSH coaches and the Stanford team, was perceived as innovative and impactful. The performance measures and effort required to obtain and transmit them were more mixed in perceived value. We recommend maintaining the IMAT as a baseline, mid-point and end-point measure of MOUD quality. We recommend simplifying the performance measures such that calculations of proportions is not required. Simple counts of patients and x-waivered prescribers (and those who are actively prescribing) is adequate. Although retention was challenging for the clinics to track, this is the only proxy for effectiveness that is being gathered. Simplification of data collection, more time spent introducing the teams to the purpose and methods, and ongoing troubleshooting, would improve the performance measure aspect in ATSH wave 3.

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16.0: APPENDIX

Appendix A: Integrating Medications for Addiction Treatment in Primary Care (IMAT-PC)

Appendix B: Primary Care Practice Adaptations for Patients with Opioid Use Disorder during COVID-19: A Survey

Appendix C: ATSH Reports for Individual Clinics (N=59)