

**CENTER FOR CARE INNOVATIONS
TREATING ADDICTION IN PRIMARY CARE:
EVALUATION**

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EXECUTIVE SUMMARY

This report is an evaluation of the California Health Care Foundation (CHCF) funded implementation support to the California safety net clinics that received US Health Resources and Services Administration (HRSA) Substance Abuse Services Expansion (SASE) grants. Technical assistance and implementation support were provided through a contract with the Center for Care Innovations (CCI). Activities were launched in the summer of 2016 and formally concluded in the winter of 2018. The project was called Treating Addiction in Primary Care (TAPC).

The TAPC evaluation was funded by CCI through a contract with Dr. Mark McGovern initiated in November 2017. The evaluation was conducted retrospectively for activities from the fall of 2016 through the end of 2017. The evaluation was not designed a priori or at the start or at the mid-course of the project. Data from reports submitted to HRSA by the grantees, tracking through logs and attendance software, data submitted by subcontractors, responses to CCI email requests for summary data, and post hoc telephone interviews with safety net clinic teams comprised the content for the report. The analyses were conducted, the original report prepared in March 2018, and revisions based on comment and updated information between April and October 2018.

The overarching goal of this evaluation is to contribute to the future design of implementation support and technical assistance activities for expanding access to addiction medication for persons in California with opioid use disorders. The bottom line purpose is to leverage the TAPC 1.0 experience toward a vision for a design of TAPC 2.0—capitalizing on lessons learned and on improving the next endeavor.

To achieve this goal, we defined the following specific research aims:

Aim A: To measure the change in: 1) number of patients prescribed addiction medication (buprenorphine); 2) number of addiction medication prescribers (x-waivered); and, 3) number of prescribers of all possible prescribers, for each TAPC participant and in total.

Aim B: To evaluate the engagement and continuation of TAPC participants in the overall project, and in specific implementation support activities.

Aim C: To summarize the evaluations of specific TAPC implementation support strategies: x-waiver trainings, CCI webinars, California Society of Addiction Medicine (CSAM) webinars, Project ECHO (Extension for Community Healthcare Outcomes) provided by the Weitzman Institute, in-person events, site visits and coaching.

Aim D: To categorize barriers and facilitators to addiction medication implementation and examine how participant perception of barriers changed from baseline to the conclusion of TAPC.

Aim E: To identify “bright spot” positive outlier participants by highest rates of change in ***Aim A*** quantitative analyses, search for and document distinguishing attributes, TAPC activities and/or other internal strategies that account for success across bright spot practices.

Aim F: To explore the perception of TAPC participants to compile and categorize lessons learned, plans for and likelihood of sustainability, recommendations, and surprises that can serve to guide further addiction medication implementation or sustainment support activities in California.

In response to ***Aim B***, we tracked participation in TAPC support activities through a combination of existing data including sign-in sheets, roll-ups and Salesforce software summaries, data provided by subcontractors, and also through data obtained directly from TAPC participants via key informant interviews. The following results summarize the rank ordering of the degree of participation in the full and extensive menu of TAPC implementation support activities: 1) In-person learning sessions=96.2%; 2) TAPC online resource=79.1%; 3) Expert coaching=68.0%; 4) Onsite visits (visit or host)=60.0%; 5) CSAM webinars=60.3%; 6) CCI webinars=56.0%; 7) Project ECHO=35.7%; 8) Regional convenings=50.0%; and 9) Incentive for waiver training=36.0%.

These analyses address ***Aim B***, participation in TAPC implementation support activities. Despite some variation in data collection procedures, and a complex multi-pronged set of implementation support strategies, we were able to adequately track participation. *Given the range of options, it may not have been possible for TAPC participants to make use of all options at all times. However, it is also the case that participants were offered a full range of options and activities and could decide which ones were most needed for their stage of implementation. This report is biased in using a denominator of all activities and a numerator of activities attended. Although it could not be estimated in our retrospective methodology, post hoc, a more precise denominator would be all activities identified by the participant as needed (or matched to stage of implementation) and a numerator of all activities attended by this participant.* Nonetheless, discussion for TAPC 2.0 should weigh the cost-benefit of offering a full range of strategies that could be self-selected versus a more targeted range of strategies that are efficiently matched to need, preference and stage of implementation of medication-assisted treatment (MAT).

To meet the objective of ***Aim A***, we evaluated changes in reach and adoption. Because there is no control group, we cannot determine if these changes are a direct result of or caused by TAPC implementation strategies. We explored associations in a later section. However, if we examine only changes from time 1 to time 2—from September 2016 through December 2017—there is reason to be positive about the impact of TAPC. There is a substantial increase in reach, i.e., the number of patients on addiction medication, demonstrated by ***a 2.84 to 2.96 times increase***. Depending on the data source, there are as many at ***748 to 1150 new patients*** on medication for opioid use disorder. Furthermore, there is a ***1.72 to 1.90 times increase in x-waivered prescribers*** depending on source of data. Concretely, this is an increase of ***75 to 95 x-waivered prescribers***. There are ***70 new prescribers actually writing prescriptions for patients***. Lastly, at the outset of TAPC, only 15.9% of eligible prescribers within participating clinics were x-waivered. Presently, this proportion is 23.5%. It may be that as ease of practice spreads within clinics, this proportion may continue on an upward trajectory.

In the analyses pursuant to ***Aim C***, TAPC participants were offered a comprehensive, varied, and extensive list of implementation support activities. There were nine activities that could be identified and other activities that were more challenging and confusing for participants to recall or suspect that they had utilized. Among the most challenging to isolate were regional convenings, swap meets, and incentives for waiver trainings. Terminology and identifying these as TAPC sponsored events was confusing. Of the well-specified and focused activities, the most important were TAPC in-person learning sessions, site visits, and consultation with expert coaches. The use of expert coaches varied. This variation may be due to aspects of organizational readiness and clinical lead, qualities and availability of the coach, and the interaction or fit between clinic and coach. Although practical and feasible for geographically dispersed groups, distal learning options (e.g., Project ECHO, CCI webinars, CSAM webinars, CCI swap meets, and TAPC online resource) had significantly more mixed reviews. Of these

offerings, CSAM webinars were most utilized, and based upon evaluation data provided by CSAM, very highly rated by attendees. Overall, these findings address the goals of ***Aim C*** of our evaluation plan.

Future planning for TAPC 2.0 might consider condensing, clarifying and tailoring these implementation support options and also refining them based on need and relevance.

To address ***Aim D***, we examined existing data on perceived barriers and challenges to addiction medication in primary care, gathered by CCI, HRSA quarterly reports, and TAPC Key Informant Interviews. We were able to measure and observe changes over time using a content coding scheme based upon the Consolidated Framework for Implementation Research (CFIR) and free text analysis of key informant-related content. This is consistent with our goal outlined in ***Aim D***. Initial challenges pertaining to workflow, documentation, and other practice processes diminished. Barriers related to personnel, both prescribers and behavioral health clinicians, persisted. The personnel-related barriers varied by stage of implementation of MAT. TAPC clinics that were more advanced in implementation were focused on scale-up and expansion. These clinics were encountering challenges in engaging new physicians in their practice in using addiction medications, and challenges in recruiting behavioral health clinicians with addiction counseling expertise. Other TAPC clinics, those at the early stage of implementation, had challenges finding prescribers and clinicians to start and develop the practice. Patient-related issues (e.g., adherence, retention, social risk factors) emerged for TAPC participants at both stages of implementation. For early implementers, this involved recruiting patients and keeping them. For advanced implementers, this meant improving care and outcomes.

To achieve ***Aim E***, we identified positive outlier or “bright spot” clinics based on metrics of increased growth in patients on addiction medications. There were 13 such practices, spanning small, medium and large panel sizes. The growth from 0 or 1 to a medium-size practice was remarkable for four practices. Two of these practices revealed the importance of in-person learning, expert coaching, and subtle but palpable changes in culture within their clinics. We compared bright spot clinics with clinics that experienced less or no growth on participation in TAPC implementation support activities. We could find no statistical differences between high performers and others on these variables. However, there were numerous activities—oft-described as too many to take part in, that may have as a whole contributed to the significant success of more than half of TAPC participants.

We examined narrative data to provide depth and context to the experience of the 24 clinics that participated in the TAPC Key Informant Interview process. This process was consistent with the objective specified in ***Aim F***. Among many, several key themes can be highlighted:

- Most TAPC participants made considerable progress at expanding addiction treatment in their settings despite challenges and barriers;
- Providers described enormous shifts in their perspectives about addiction and their role in its treatment;
- Creative models within organizations are evolving and are likely at the early stage of development and scale-up;
- A variety of lessons learned point to more advanced implementation issues and refinement of approaches to staff hiring, training and patient care;
- A theme of positive surprise emerged—how straightforward, effective and transformative addiction treatment can be;
- Financing must be addressed for sustainment; and,

- Although the TAPC implementation support strategies were generally perceived as positive, there is a recommendation for providing more focused activities, tailored to clinic need, and that include more in-person and measurement-based activities.

This last point maps onto the quantitative findings of variable use of each and every activity, the prioritization of in-person options (learning sessions, coaching, site visits, regional convenings) over virtual options, and finding the “sweet spot” between a seemingly unlimited smorgasbord of activities and a fixed forced set of options. With the buffet approach, no one leaves hungry, sometimes the choices are overwhelming, and there is potential for waste of food.

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1. OVERVIEW

Substance use disorders (SUDs)—related to alcohol, amphetamines, benzodiazepines, cannabis, and opioids—are among the most common and costly of health conditions. Contemporary health care has evolved to focus on whole person health, which is central to aspirational models such as the Patient-Centered Medical Home and the population health framework. A key feature of these models is the importance of addressing behavioral health, most typically mental health problems such as depression, anxiety, and traumatic stress disorders. Unfortunately, most contemporary models of integrated behavioral health omit SUD identification, triage, treatment, or care coordination. This omission is ironic given the high prevalence of substance-related issues, as well as the comorbidity with mental health disorders. Further, to the extent co-occurring substance use is not addressed, medical and mental health treatments are less effective. Substance use is also a major driver of high-cost service utilization, such as inpatient and emergency department care, and results in enormous economic burden.

Accordingly, there is recent burgeoning awareness of substance use as an equivalent component of any attempt to integrate behavioral health in medical care. Health care systems, public and private, are scrambling to develop unified models that incorporate both mental health and substance use into their integrated behavioral health programs (McGovern et al, 2018).

Catalyzed by the opioid epidemic, including addiction to prescription narcotics and heroin, health care systems, organizations, and providers recognize that substance use is prevalent, associated with negative treatment and life outcomes, and costly if untreated. Implementable and sustainable integrated models are sorely needed. The opioid epidemic has generated an unprecedented “call to arms” among medical professionals who: 1) may have unwittingly played some role in the epidemic by the widespread overuse of prescription narcotics to manage pain; and, 2) through the Drug Abuse Treatment Act (DATA) 2000, are able to prescribe two (of three) FDA-approved medications for opioid use disorders: buprenorphine and naltrexone. Methadone, also an FDA-approved medication, can only be prescribed and dispensed by licensed opioid treatment programs (OTPs). In California, these are called Narcotic Treatment Programs (NTPs). Unfortunately, despite the intention of DATA 2000, primary care providers and even specialty addiction health care providers and prescribers underutilize these effective medications for opioid addiction. Meanwhile, rates of overdose death continue to rise and unmet treatment need remains constant.

Prescient to the 21st Century Cures Act—which in 2017 provided major start-up funding through the US Department of Health & Human Services Substance Abuse and Mental Health Services Administration (SAMHSA) to states and territories to combat the opioid epidemic—the Health Resources and Services Administration (HRSA) launched the Substance Abuse Services Expansion (SASE) technical assistance program. In 2016, SASE grants were provided to community health centers. The purpose was to increase substance use services, including the availability of FDA-approved medications such as buprenorphine for persons with opioid addiction. Funds were to be used to expand substance use services, in part by hiring or expanding the roles of behavioral health clinicians working in clinics, and also increasing the number of prescribers using addiction medications. Although naltrexone does not require special training or licensure, in order to prescribe buprenorphine there is a requirement to complete a training. A completed training results in a US Drug Enforcement Agency (DEA) license number to include an “x” which signifies the capability to prescribe buprenorphine for addiction. In addition to the special x-waiver, the number of patients to whom any one physician can prescribe is limited. More recently, nurse

practitioners and physician assistants are authorized, with the training, to obtain the x-waiver by federal law. States have been slow to translate this law into state-level regulations.

The California Health Care Foundation (CHCF) is a leader in addressing the opioid issue in California. CHCF has supported multi-pronged initiatives, including providing stimulus funds to support county-level grassroots opioid safety coalitions, audit and feedback of county-level data on overdose death and treatment capacity. CHCF also provides “grease and glue” support to efforts through the California Society of Addiction Medicine (CSAM) and the State of California’s Targeted Response Hub & Spoke campaign.

In 2016, CHCF funded the Center for Care Innovations (CCI) to augment the HRSA grants to California safety net clinics for substance abuse services expansion. These funds recognized that grantees were awarded funds, but lacked implementation support, particularly to address major shifts in how substance use would be identified, addressed, treated, and managed within the context of routine care. In addition, it was evident that major changes in attitude, workflow, and practice patterns would be required.

This report is an evaluation of CHCF-funded implementation support to California safety net clinics that received SASE grants. Technical assistance and implementation support was provided through a contract with CCI. Activities were launched in the summer of 2016 and formally concluded in the winter of 2018. The project was called Treating Addiction in Primary Care (TAPC).

The TAPC evaluation was funded by CCI through a contract with Dr. Mark McGovern initiated in November 2017. The evaluation was conducted retrospectively for activities from the fall of 2016 and formally through the end of 2017, with some activities continuing in February 2018 (i.e. Project ECHO). The evaluation was not designed a priori or at the start or at the mid-course of the project. Data from reports submitted to HRSA by grantees, tracking through logs and attendance software, data submitted by subcontractors, responses to CCI email request for summary data, and post hoc telephone interviews with safety net clinic teams comprised the content for the report. We completed all analyses and the first draft report was prepared in March 2018. Revisions to the March 2018 report were made in April 2018 and in October 2018 based upon additional data made available from subcontractors.

The overarching goal of this evaluation is to contribute to the future design of implementation support and technical assistance activities for expanding access to addiction medication for persons in California with opioid use disorders. The bottom line purpose is to leverage the TAPC 1.0 experience toward a vision for a design of TAPC 2.0, capitalizing on lessons learned and on improving the next endeavor.

2. EVALUATION STRATEGY

In this section, we first outline the **Evaluation Aims**—these were derived by consensus from conversations with the CCI program lead (Tammy Fisher), CCI program coordinator (Susannah Brouwer) and CHCF funder (Kelly Pfeifer). Next, we describe the **Methods**—which include the types of data that were available via existing procedures in place and the TAPC key informant interview protocol. Third, the types of **Analyses** used are presented. We elected not to use sophisticated statistics to explore the evaluation aims, but instead address trends and tendencies using basic statistics. There are inherent limitations to gathering information retrospectively from archival reports and telephone interviews, the latter of which are based on memory of past events and experiences. We conclude by making explicit these **Limitations** of our approach.

A. EVALUATION AIMS

Aim A: *To measure the change in: 1) number of patients prescribed addiction medication (buprenorphine); 2) number of addiction medication prescribers (x-waivered); and, 3) number of prescribers of all possible prescribers, for each TAPC participant and in total.*

Aim B: *To evaluate the engagement and continuation of TAPC participants in the overall project, and in specific implementation support activities.*

Aim C: *To summarize the evaluations of specific TAPC implementation support strategies: x-waiver trainings, CCI webinars, CSAM webinars, Project ECHO, in-person events, site visits and coaching.*

Aim D: *To categorize barriers and facilitators to addiction medication implementation and examine how participant perception of barriers changed from baseline to the conclusion of TAPC.*

Aim E: *To identify “bright spot” positive outlier practices by highest rates of change in Aim A1 quantitative analyses, search for and document distinguishing attributes, TAPC activities and/or other internal strategies that account for success across bright spot practices.*

Aim F: *To explore the perception of TAPC participants in order to compile and categorize lessons learned, plans for and likelihood of sustainability, recommendations, and surprises that can serve to guide further addiction medication implementation or sustainment support activities in California.*

B. METHODS

Because this evaluation was initiated within the final operational quarter of the TAPC project, the methods combine retrospective data from existing quantitative and qualitative reports and summaries, and are concurrently based on data from the TAPC Key Informant Interviews: End-Of-Active Implementation Support Period.

The TAPC Key Informant Interview Guide is presented in the textbox on the next page.

TAPC KEY INFORMANT INTERVIEWS; END-OF-ACTIVE IMPLEMENTATION SUPPORT PERIOD

NAME OF CLINIC:

DATE OF INTERVIEW: START TIME: END TIME: NAMES AND ROLES OF PARTICIPANTS:

LET'S BRIEFLY REVIEW SOME OF THE DATA YOU PROVIDED:

PATIENTS 9/16: PATIENTS 12/17: X PROVIDERS 9/16: X PROVIDERS 12/17:

X PROVIDERS PRESCRIBING 9/16: X PROVIDERS PRESCRIBING 12/17:

TOTAL ELIGIBLE PROVIDERS 9/16: TOTAL ELIGIBLE PROVIDERS 12/17:

REVIEW OF BARRIERS/CHALLENGES NOTED AT PROJECT OUTSET"

HOW WERE THESE ADDRESSED/OVERCOME/AVOIDED OR DO THEY PERSIST?

NOW I AM INTERESTED IN YOUR THOUGHTS ON TAPC ACTIVITIES OVER THE PAST 2 YEARS--QUERED ONE AT A TIME: IN PERSON LEARNING SESSIONS, PROJECT ECHO, EXPERT COACHING, MONTHLY CSAM WEBINARS AND CCI WEBINARS (not distinguished), ONSITE VISITS (host or visit); X-WAIVER TRAINING INCENTIVE; REGIONAL CONVENINGS AND SWAP MEETS; and ONLINE TAPC RESOURCE CENTER

- DID YOU OR YOUR TEAM TAKE PART?
- RATE ON A 10-POINT SCALE FROM 1-WORTHLESS TO 10-EXTREMELY VALUABLE
- COMMENTS

ANY OTHER COMMENTS ON TAPC IMPLEMENTATION SUPPORT? RECOMMENDED TWEAKS?

EXPERIENCES WITH ADDICTION AND ITS TREATMENT

- SURPRISES?
- PLANS FOR SUSTAINMENT?
- CHALLENGES FOR SUSTAINMENT?
- ANY INSPIRATIONAL PATIENT (OR STAFF MEMBER) STORIES TO TELL?
- ANYTHING ELSE THAT WOULD BE GOOD FOR US TO KNOW?

C. ANALYSES

Quantitative data are analyzed in pursuit of *Aim A*, *Aim B* and *Aim C*.

Aim A data address the RE-AIM implementation outcomes of “reach” and “adoption” including frequency counts and proportion of change over time by quarter from 2016 through 2017, and via a report of these outcomes in the TAPC Key Informant Interview (Glasgow et al, 1999). *Aim B* data are tracked using a CONSORT diagram, including flow of participation in implementation support activities (Albrecht et al, 2013; Davidoff et al, 2008; Proctor et al, 2013). *Aim C* summarizes existing data, where available, on participant evaluations of TAPC activities collected during the course of the project and also during the TAPC Key Informant Interview.

Data to address *Aim A* were gathered from clinics’ quarterly reports to HRSA as SASE grantees and supplied to CCI. These data were not consistently reported across clinics and over time. For the HRSA quarterly report, grantees were asked for the number of patients and the number of x-waivered prescribers for the “Previous Period” and for the “Current Period.” This seemed to confuse respondents. We examined these reports and used deductive reasoning to determine the likely number of patients and prescribers for that period. Data were collected more systematically during Key Informant Interviews. These data were gathered via an email request to participants from the CCI TAPC program coordinator using the following definitions:

Patients Prescribed Buprenorphine: 1) Estimated number of patients prescribed buprenorphine in September 2016 (9/1/16 through 9/30/16)(Definition: Patients who were prescribed buprenorphine prior to September 1, 2016 who were actively taking and had no refills during the month OR patients who were newly prescribed or refilled buprenorphine prescriptions during the month; and 2) Estimated number of patients prescribed buprenorphine in December 2017 (12/1/17 through 12/31/17) (Definition: Patients who were prescribed buprenorphine prior to December 1, 2017 who were actively taking and had no refills during the month OR patients who were newly prescribed or refilled buprenorphine prescriptions during the month.

Buprenorphine Providers: 3) Estimated number of providers with DEA x-waiver to prescribe buprenorphine as of 9/30/16; 4) Estimated number of providers with DEA x-waiver to prescribe buprenorphine as of 12/31/17; 5) Estimated number of providers who have prescribed buprenorphine to a patient at least once as of 9/30/16; and 6) Estimated number of providers who have prescribed buprenorphine to a patient at least once as of 12/31/17.

Total Number of Providers: 7) Including those providers with the x-waiver, total estimated number of providers who were eligible to obtain DEA x-waiver (“bodies” not FTE) as of 9/30/16; and 8) Including those providers with the x-waiver, total estimated number of providers who were eligible to obtain DEA x-waiver (“bodies” not FTE) as of 12/31/17.

These data summaries are referred to as “TAPC Report” throughout this evaluation report. These data measure change in reach (number of patients receiving medication) and adoption (number of providers prescribing; number of providers prescribing of all eligible prescribers).

Data between the two sources (HRSA report and CCI email request) were not reconcilable. Therefore, in analyses, each are treated independently. Divergence can be interpreted by site (differences in who

reported the data and in counts or definitions). Inferences from the data were made when there was a convergence (validation) in findings.

The ***Aim B*** dataset was obtained from TAPC reports of attendance through roll-up attendance logs that were either collected by CCI or submitted by subcontractors. In addition, information about attendance and evaluation of the experience was gathered during the TAPC Key Informant Interview. *Attendance is a proxy for participation and engagement. It was generally estimated using a denominator of all possible activities or events. The numerator was the number of activities and/or events in which TAPC clinics participated. It may be that all activities or events were not selected or determined to be needed by participants. Therefore, the denominator could have been more conservatively represented as the number of events needed or planned for each participant. Because these data were not available a priori, these more precise estimates of engagement and participation could not be calculated.*

The ***Aim C*** dataset was compiled by existing evaluations from CCI and subcontractors, when available, at the end of specific implementation support activities and via the TAPC Key Informant Interview. CSAM webinars were open to organizations outside of the TAPC program and therefore the evaluations of these webinars reflect all respondents' experiences. Whereas, the Project ECHO evaluations from the Weitzman Institute were specific to TAPC participants only.

The approach to ***Aim D*** was a mixed method, quantitative-qualitative, categorization of barriers and facilitators using the Consolidated Framework for Implementation Research (CFIR) dimensions (Assefa & McGovern, 2017; Damshroder et al, 2009; Kirk et al, 2016) and Free Text categorization of themes. Each participant's individual data and in aggregate were examined using the CFIR dimensions and Free Text themes. We were interested in the major barriers to addiction medication implementation at the outset of the project, what happened to these barriers during the course of the project and with TAPC implementation support, and the persistent or newly emergent barriers at the conclusion of the project. Concluding barriers might represent more chronic challenges and also the focus of future implementation support projects (e.g., TAPC 2.0).

Aim D information was extracted from SASE grantee proposals and quarterly narrative reports. Narrative data were coded into the CFIR and the free text themes, illustrative narratives recorded, and entered into a CFIR and implementation strategy project-specific database.

Aim E involves a second mixed method approach. First, positive deviants were identified by the quantitative data from ***Aim A1***. We approached positive outliers conservatively (n=5), clinics compared with the others (n=20), and liberally, the top 13 clinics compared with the other 12. Positive outlier clinics were identified by change in number of patients on addiction medication over time. These clinics were compared with all other clinics for strategies engaged in. Once the positive outlier and average categories were formed, we analyzed them by the degree and extent of participation in implementation support activities. Causal inferences cannot be made because this is a retrospective design. However, inferences about the meaning of an association between the magnitude of positive change in the number of patients on medication, and the type and degree of participation in implementation support activities, is meaningful. Positive associations between change and specific strategies will suggest the design for TAPC 2.0 activities.

Aim E analyses include data from both ***Aim A1*** and ***Aim D***.

Aim F findings are primarily narrative extractions and thematic interpretations of information obtained via TAPC Key Informant Interviews. These are the only directly obtained perceptions gathered in this evaluation. Key informants were asked to respond to questions about their TAPC experience, as well as aspects of their organization's activities over the past 24 months. Key informants were also queried about current perceptions and future expectations for program sustainment.

D. METHODOLOGICAL LIMITATIONS

The majority of the threats to internal validity are attributable to the retrospective format of design and data collection. TAPC did not include features such as standardized measures, with consistency in reporting, and with established estimates of reliability and validity. Simple counts of patients and providers were challenging to obtain during the project using HRSA forms, and the questions were interpreted differently. Practices did not share data across sites and seemed not to use data within their site to measure change, either for progress or lack thereof, on key outcome indicators. Because we wanted to validate key outcome measures, we used two approaches to tracking patients on medication and x-waivered prescribers: “measure twice, cut once” as in the carpenter’s axiom. However, in many cases the two measures did not agree. Thus, we report both and strive to interpret trends and make meaning nevertheless. An additional liability in the retrospective design was the need to rely on key informants to remember their involvement in, and discrimination among, up to nine implementation support activities. In certain instances, such as the CCI-sponsored versus CSAM-sponsored webinars, these distinctions were especially challenging for key informants to recall.

Future TAPC efforts, such as TAPC 2.0, must engage evaluation in design a priori. This would overcome many of the challenges and limitations in the current iteration. Further, in the absence of a comparator, there is no mechanism to determine or infer causality from TAPC implementation support activities and their influence on primary outcomes.

3. FINDINGS: TAPC PARTICIPATION

In federal fiscal year 2016, HRSA awarded \$12,593,225 across 36 federally qualified health centers (FQHCs) in California in SASE grants. All 36 FQHCs were invited to participate in TAPC by CCI. Eleven agencies chose not to participate, and one clinic elected to participate in TAPC as an audit. Thus, the total number of TAPC clinics with full intent to participate was 25.

TABLE 1 lists deidentified clinics by number and depicts responses to additional requests for post-TAPC data: 1) measures of reach and adoption (patients on medication, x-waiver prescribers, x-waivered prescribers prescribing and total number of eligible prescribers within the organization); and 2) participation in the TAPC Key Informant Interview. Because of the 2017 fires, the Santa Rosa Community Health Centers were unable to participate in TAPC post-hoc evaluation activities. Existing and archival data from Santa Rosa were available. Nonetheless, response rates of 88% and 96% are excellent. Participation in these types of post hoc evaluation activities is an implicit measure of connection to the project and the project team.

FIGURE 1 is the CONSORT diagram for the TAPC project.

Except for the use of TAPC online resources, all implementation support activity participation data were obtained from CCI and subcontractor records of attendance. Santa Rosa data regarding TAPC online resource use is missing because this variable was only gathered during the post-hoc TAPC Key Informant Interview.

Overall participation was good. Learning sessions were well attended with 22 agencies attending all three in-person sessions and 25 agencies attending at least two. This is an overall participation rate of 96% (25 agencies attendance at three events = 75 opportunities with 72 having full attendance).

Of 16 Project Echo sessions, held monthly from November 2016 through February 2018, there was 35.7% attendance (25 agencies attendance at 16 events or 400 total opportunities).

Attendance at the three CCI webinars (Vermont Hub and Spoke Model Overview on 1/30/17; Benzodiazepines and buprenorphine on 11/16/17; Bridging the gap between emergency medicine and primary care on 1/24/18) was tracked. Of these three events with the total number of 25 TAPC participants (3 x 25 = 75), 42 of 75 or 56% of CCI webinars were attended. Excluded from these analyses was attendance at the TAPC informational webinar on 8/8/16 and the TAPC kick-off webinar on 9/23/16.

There were 12 CSAM sponsored webinars, open to TAPC participants and other attendees. The dates and topics for these sessions were: 1) Office-Based Buprenorphine: Patient Selection, Induction, and Management on 10/28/16; 2) Patient Confidentiality and MAT in California Primary Care Settings on 11/10/16; 3) Expanding Access to Medication-Assisted Treatment Utilizing Nurse Care Managers on 12/16/16; 4) Effective Strategies for the Noncompliant Buprenorphine Patient on 1/29/17; 5) Psychological Approaches to Pain Management for the Primary Care Provider on 2/24/17; 6) Managing Acute and Perioperative Pain in Patients on Medication Assisted Treatment on 3/24/17; 7) Tapering Patients on Long-Term Opioid Therapies on 4/25/17; 8) Naloxone Prescribing in Primary Care on 5/19/17; 9) Complex Chronic Pain, Opioid Prescribing, and Opioid Use Disorder on 6/23/17; 10) How to Build a Controlled Substance Review Committee in your Primary Care Clinic on 7/28/17; 11) Transitioning High-Dose Opioid Chronic Pain Patients to Buprenorphine on 9/22/17; and 12) Medication-

Assisted Treatment for Alcohol Use Disorder on October 27, 2017. There were 300 opportunities available to TAPC agencies (25 agencies @ 12 events = 300). Overall, the participation rate was 60.3%.

See detail on **TABLE 2: TAPC SUMMARY OF IMPLEMENTATION SUPPORT ACTIVITY PARTICIPATION—PART 1.**

Of these three distal learning opportunities, the Project ECHO sessions were least well-attended (35.7%). Both the CSAM and CCI webinars were nearly equally attended at 59.6% and 56%, respectively. *However, as described earlier, the estimates of degree of participation are conservatively based by using a denominator of all events and activities that could have been attended by all TAPC participants. A more precise estimate of participation, if determined prospectively, would be a denominator of the number of specific types of events/activities, matched a priori to the needs or stage of the organization. Nonetheless, given that these specific learning opportunities were less utilized relative to others overall, it would be helpful for planning purposes to identify in advance exactly which clinic needs these strategies.*

There were five coaches who were available to all 25 TAPC participants. Seventeen of 25 (68%) clinics elected to use an expert coach. The engagement with the coach varied and this is described in the Implementation Support Activity section.

TABLE 3: TAPC SUMMARY OF IMPLEMENTATION SUPPORT ACTIVITY PARTICIPATION—PART 2 portrays the detail of participation in the site visit program (either hosting or visiting a site), incentives for waiver training, regional convenings, and the use of TAPC online resources.

There were five sets of visits, including three host opportunities. Of these opportunities, 15 (60%) TAPC clinics participated as either a visitor or host.

There was a one-time incentive of \$1000 available for TAPC participants to support an x-waiver training opportunity. Only nine (36%) of 25 TAPC participants took advantage of this offering. This was the lowest of all strategies used.

There were 3 regional convenings, of which 12 (50%) clinics participated.

Lastly, of the use of TAPC online resources, only 24 agencies could serve as the denominator. Nineteen of 24 (79.1%) reported using the resource.

Thus, the rank order of degree of participation in the full and extensive menu of TAPC implementation support activities was:

<i>1) In-person learning sessions</i>	<i>96.2%</i>
<i>2) TAPC online resources</i>	<i>79.1%</i>
<i>3) Expert coaching</i>	<i>68.0%</i>
<i>4) CSAM webinars</i>	<i>60.3%</i>
<i>5) Site visits (visit or host)</i>	<i>60.0%</i>
<i>6) CCI webinars</i>	<i>56.0%</i>

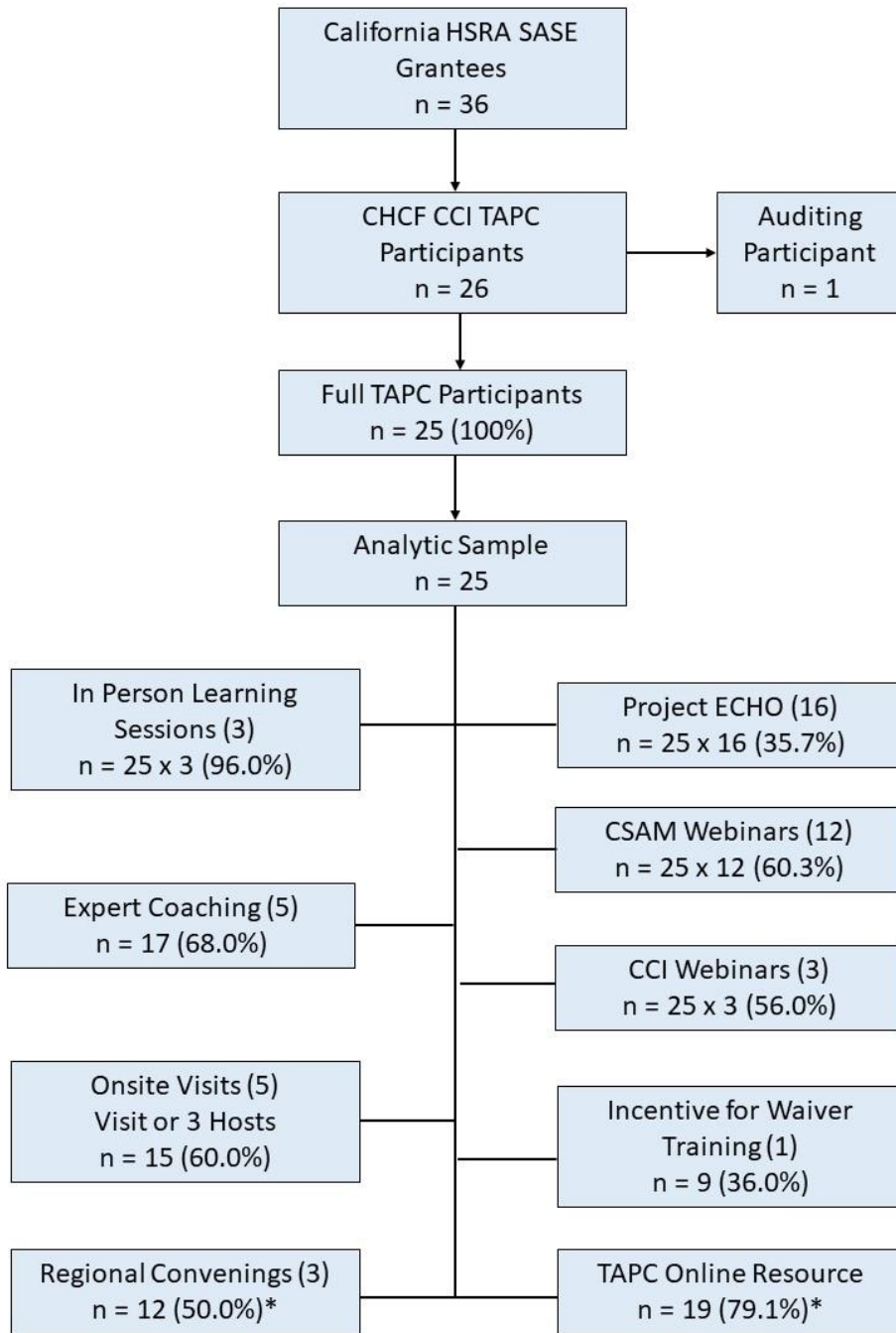
7) Regional convenings	50.0%⁸
8) Project ECHO	35.7%
9) Incentives for waiver training	36.0%

These analyses address Aim B, participation in TAPC implementation support activities. Despite some variation in data collection procedures and a complex multi-pronged set of implementation support strategies, we were able to adequately track participation. Given the range of options, it may not have been possible for TAPC participants to make use of all options at all times. Attendance is a proxy for participation and engagement and was generally estimated using a denominator of all possible activities or events. The numerator was the number of activities and/or events in which TAPC clinics participated. It may be that all activities or events were not selected or determined to be needed by participants. Therefore, the denominator could have been more conservatively represented as the number of events needed by or planned for each participant. Because these data were not available a priori, these more precise estimates of engagement and participation could not be calculated. Discussion for TAPC 2.0 might entertain the question of providing a full range of options that could be self-selected versus a more targeted range of options that are efficiently matched to need, preference and stage of implementation of MAT. By doing this prospectively, it would enable a more precise estimate of engagement and participation in matched or tailored implementation support activities.

TABLE 1: TAPC PARTICIPANTS AND POST-TAPC EVALUATION DATA OBTAINED (n=25)

ID	START/END DATA SUBMITTED	TAPC KEY INFORMANT INTERVIEW
Clinic 01	02.21.18	02.08.18
Clinic 02	01.30.18	02.05.18
Clinic 03	02.02.18	02.09.18
Clinic 04	02.02.18	02.26.18
Clinic 05	02.01.18	02.05.18
Clinic 06	02.16.18	02.08.18
Clinic 07	01.31.18	02.21.18
Clinic 08	02.02.18	02.05.18
Clinic 09	02.02.18	02.12.18
Clinic 10	02.07.18	02.12.18
Clinic 11	02.07.18	02.26.18
Clinic 12	02.05.18	02.09.18
Clinic 13	01.30.18	02.12.18
Clinic 14	02.09.18	02.26.18
Clinic 15	01.31.18	02.06.18
Clinic 16	02.28.18	03.01.18
Clinic 17	02.02.18	02.22.18
Clinic 18	(NA)	02.22.18
Clinic 19	(NA)	(NA)
Clinic 20	02.02.18	02.22.18
Clinic 21	02.07.18	02.22.18
Clinic 22	02.05.18	02.06.18
Clinic 23	(NA)	03.01.18
Clinic 24	02.07.18	03.01.18
Clinic 25	02.02.18	02.09.18
Total number of eligible clinics (n=25) providing post-TAPC data	n= 22	n= 24
Proportion of eligible TAPC participants (Response rate)	%= 88	%= 96

FIGURE 1: TAPC CONSORT DIAGRAM



*Analytic sample (n = 24)

TABLE 2: TAPC SUMMARY OF IMPLEMENTATION SUPPORT ACTIVITY PARTICIPATION—PART 1 (n=25)

CLINIC ID	IN PERSON LEARNING SESSIONS (3)		PROJECT ECHO SESSIONS (16)		EXPERT COACHING (5 COACHES)		CCI WEBINARS (3)		CSAM WEBINARS (12)	
	Y/N	RATING	Y/N	RATING*	Y/N	RATING	Y/N	RATING	Y/N	RATING**
Clinic 01	Y (3)	9	Y (13)	7	Y	8	Y (2)	7	Y (7)	
Clinic 02	Y (3)	8	Y (12)	8	Y	10	Y (2)	6	N (0)	
Clinic 03	Y (3)	9	Y (04)	10	N	NA	Y (2)	8	Y (11)	
Clinic 04	Y (3)	NA	N (00)	NA	N	NA	Y (3)	NA	Y (12)	
Clinic 05	Y (3)	9	Y (15)	7	Y	8	Y (2)	6	Y (11)	
Clinic 06	Y (2)	NA	N (00)	NA	Y	10	Y (2)	NA	Y (7)	
Clinic 07	Y (3)	7	Y (15)	8	Y	8	Y (3)	10	Y (12)	
Clinic 08	Y (3)	8	Y (13)	6	Y	10	Y (2)	10	Y (11)	
Clinic 09	Y (2)	10	N (00)	NA	N	NA	Y (1)	7	Y (9)	
Clinic 10	Y (3)	9	Y (08)	8	Y	9	Y (0)	9	Y (4)	
Clinic 11	Y (3)	6	Y (12)	3	Y	10	Y (3)	6	Y (12)	
Clinic 12	Y (2)	7	N (00)	NA	N	NA	Y (2)	8	Y (9)	
Clinic 13	Y (3)	8	Y (09)	NA	Y	10	Y (1)	8	Y (7)	
Clinic 14	Y (3)	10	N (00)	NA	Y	NA	Y (1)	6	Y (1)	
Clinic 15	Y (3)	8	Y (15)	7	Y	9	Y (0)	8	Y (5)	
Clinic 16	Y (3)	5	N (00)	NA	Y	10	Y (1)	8	Y (5)	
Clinic 17	Y (3)	6	Y (06)	NA	Y	5	Y (1)	10	Y (8)	
Clinic 18	Y (3)	9	Y (05)	6	Y	10	Y (3)	8	Y (11)	
Clinic 19	Y (3)	NA	N (00)	NA	N	NA	Y (1)	NA	Y (8)	
Clinic 20	Y (3)	9	N (00)	NA	Y	10	Y (2)	8	Y (2)	
Clinic 21	Y (3)	10	N (00)	NA	N	NA	Y (1)	10	Y (2)	
Clinic 22	Y (3)	7	N (00)	NA	N	NA	Y (2)	10	Y (5)	
Clinic 23	Y (3)	10	Y (16)	4	N	NA	Y (2)	7	Y (11)	
Clinic 24	Y (3)	8	N (00)	NA	Y	10	Y (2)	NA	Y (1)	
Clinic 25	Y (3)	10	N (00)	NA	Y	8	Y (1)	5	Y (10)	
TOTAL N (%) PARTICIPATING	72 of 75 (96.0%)		143 of 400 (35.7%)		17 of 25 (68.0%)		42 of 75 (56.0%)		181 of 300 (60.3%)	
TOTAL N WITH EVAL RATINGS		22		11		16		21		n=882**
AVERAGE RATING (RANGE)	8.3 (5-10)		6.7 (3-10)	*Additional data reported in text (n=128)	9.1 (5-10)		7.8 (5-10)		**Data provided by subcontractor and reported in text	

CLINIC ID	ONSITE VISITS (5): (VISIT OR 3 HOSTS)		INCENTIVE FOR WAIVER TRAINING		REGIONAL CONVENINGS		TAPC ONLINE RESOURCES	
	Y/N	RATING	Y/N	RATING	Y/N	RATING	Y/N	RATING
Clinic 01	Y (1)	NA	Y	7	Y	NA	Y	7
Clinic 02	N (0)	NA	N	NA	N	NA	N	NA
Clinic 03	Y (1)	NA	N	NA	N	NA	N	
Clinic 04	Y (H)	5	N	NA	Y	NA	N	NA
Clinic 05	Y (H)	8	N	NA	Y	10	Y	9
Clinic 06	Y (2)	NA	N	NA	N	NA	N	NA
Clinic 07	Y (1)	10	N	NA	N	NA	Y	10
Clinic 08	N (0)	NA	N	NA	N	NA	Y	10
Clinic 09	Y (1)	10	Y	10	N	NA	Y	6
Clinic 10	N (0)	NA	N	NA	N	NA	Y	7
Clinic 11	Y (4)	9	Y	10	N	NA	Y	5
Clinic 12	Y (2)	10	N	NA	N	NA	Y	7
Clinic 13	Y (1)	7	Y	7	Y	NA	Y	7
Clinic 14	Y (2)	10	N	NA	Y	NA	Y	7
Clinic 15	N (0)	NA	Y	5	N	NA	Y	10
Clinic 16	N (0)	NA	N	NA	N	NA	Y	9
Clinic 17	N (0)	NA	Y	10	Y	NA	N	NA
Clinic 18	N (0)	NA	N	NA	Y	10	Y	10
Clinic 19	Y (2)	NA	Y	NA	NA	NA	NA	NA
Clinic 20	Y (1)	5	Y	10	Y	7	Y	7
Clinic 21	Y (2)	7	N	NA	Y	10	Y	10
Clinic 22	Y (H,1)	8	Y	5	Y	NA	Y	N
Clinic 23	N (0)	NA	N	NA	N	NA	Y	7
Clinic 24	N (0)	NA	N	NA	Y	NA	Y	8
Clinic 25	N (0)	NA	N	NA	Y	10	Y	10
TOTAL N (%) PARTICIPATING	15 of 25 (60.0%)		9 of 25 (36.0%)		12 of 24 (50.0%)		19 of 24 (79.1%)	
TOTAL N WITH EVAL RATINGS		11		8		5		18
AVERAGE RATING (RANGE)	8.1 (5-10)		8.0 (5-10)		9.4 (7-10)		8.1 (5-10)	

4. FINDINGS: PRIMARY OUTCOMES

All four subsections in this section address **Aim A**, primary outcomes of implementation: reach and adoption. Reach involves getting addiction medication to those who need it. Adoption represents the number of providers trained to prescribe addiction medication, actually prescribing it to patients, and the proportion of those trained of all who are eligible. These data were obtained via two sources: HRSA quarterly reports and participants' response to an email request for summary data from the CCI program coordinator. We refer to the latter as "TAPC Report."

A. PATIENTS RECEIVING ADDICTION MEDICATION

The public health goal of HRSA SASE funds and the TAPC program is to increase the number of patients receiving evidence-based FDA-approved addiction medications. Data consistently show that persons who receive these medications, including buprenorphine, have significant reductions in opioid use, illegal activities, reduced HIV/HCV, and overall improved quality of life. In addition, data from France demonstrate a reduction in overdose death as public health outcome of the increased reach of addiction medication.

TABLE 4 provides a summary of all outcomes gathered via the TAPC post-hoc email data request, i.e., TAPC Report. Data on Santa Rosa were provided by the CCI Program Coordinator. Columns 3 and 4 of **TABLE 4** depict the number of patients on medication at the start and end points of TAPC. The number grew from 382 to 1,130. This is nearly a three-fold increase (2.96) in the number of patients on addiction medication (reach). **TABLE 5** depicts comparable data, by the information submitted in HRSA quarterly reports. This number accounts for growth from 626 to 1,776. This is also close to a three-fold increase (2.84) in the number of patients on addiction medication. Therefore, we estimate growth in the number of patients on addiction medication in TAPC to be 2.84 to 2.96 times. This is an estimated increase of 748 (email response) to 1150 (HRSA report) new patients on MAT.

FIGURE 2 depicts this increase in reach by data source and over time.

FIGURES 3A-3Y illustrate the change in reach by data source over time by TAPC participant.

As noted, there is variation in the change in reach by participant over time. These differences will be described further in a later section on positive outlier comparisons.

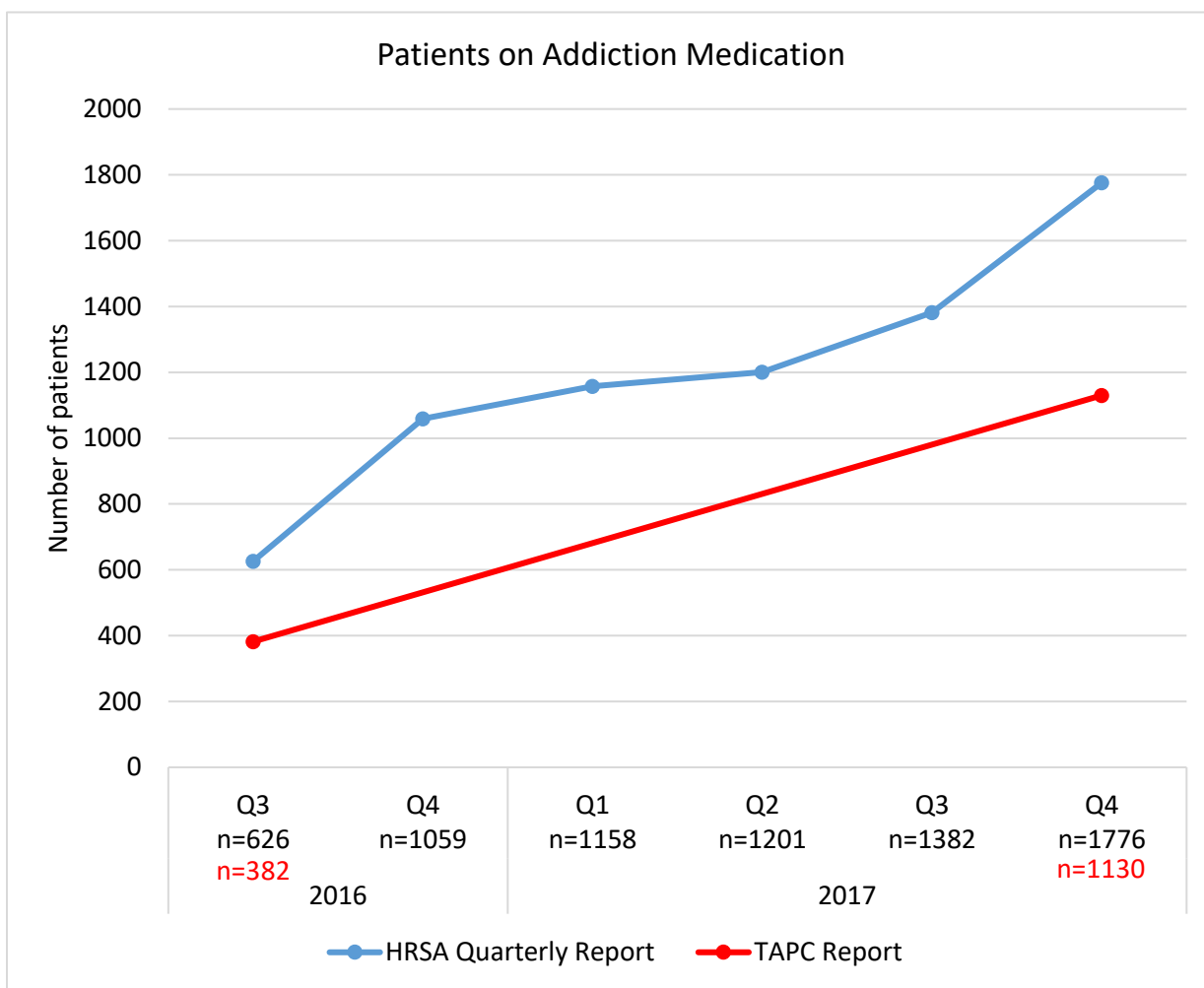
TABLE 4: TAPC SUMMARY OF PRIMARY OUTCOMES OVER TIME BY AGENCY: TAPC REPORT (n=25)

CLINIC ID	# OF PTS 09/16	# OF PTS 12/17	# OF X-W 09/16	# OF X-W 12/17	# OF ACTIVE X-W 09/16	# OF ACTIVE X-W 12/17	TOTAL # ELIGIBLE X-W 09/16	TOTAL # ELIGIBLE X-W 12/17
Clinic 01	0	23	7	15	0	5	25	31
Clinic 02	0	40	1	2	0	2	(NA)	(NA)
Clinic 03	2	3	1	1	1	1	(NA)	(NA)
Clinic 04	43	153	1	6	1	6	(NA)	(NA)
Clinic 05	64	142	4	7	4	5	17	19
Clinic 06	9	3	6	3	1	1	30	30
Clinic 07	0	26	3	9	0	5	(NA)	(NA)
Clinic 08	2	25	2	14	2	15	15	25
Clinic 09	0	46	1	4	0	4	12	12
Clinic 10	4	9	3	3	0	1	29	31
Clinic 11	25	75	16	22	6	12	28	65
Clinic 12	0	18	0	3	0	3	18	18
Clinic 13	6	20	4	8	2	5	7	12
Clinic 14	27	35	2	2	3	4	(NA)	(NA)
Clinic 15	0	22	2	5	0	5	37	62
Clinic 16	0	0	1	1	0	0	(NA)	(NA)
Clinic 17	27	77	5	7	5	7	10	13
Clinic 18	1	32	2	3	1	2	(NA)	(NA)
Clinic 19	26	55	28	30	(NA)	(NA)	(NA)	(NA)
Clinic 20	0	14	0	2	0	1	(NA)	(NA)
Clinic 21	0	3	0	5	0	2	70	70
Clinic 22	46	71	8	11	3	10	19	40
Clinic 23	0	45	0	6	(NA)	(NA)	50	50
Clinic 24	88	149	4	5	4	5	18	24
Clinic 25	12	44	2	4	2	4	17	17
TOTALS	382	1,130	103	178	35	105	64/402 15.9% n=16 clinics	122/519 23.5% n=16 clinics

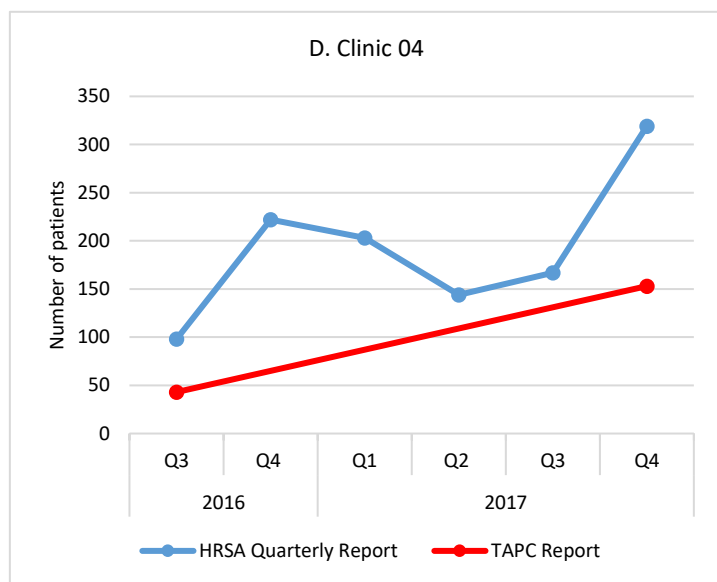
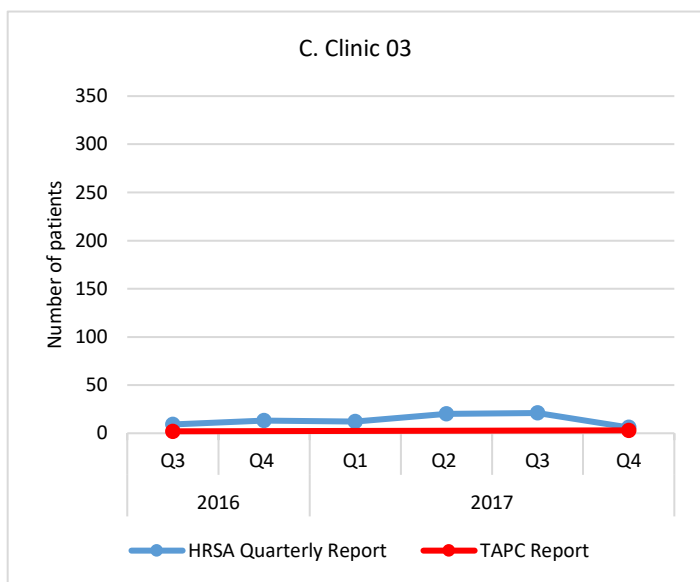
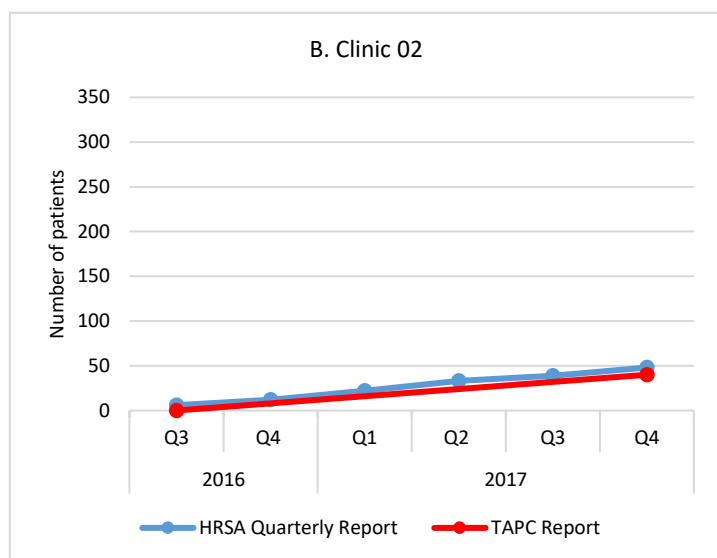
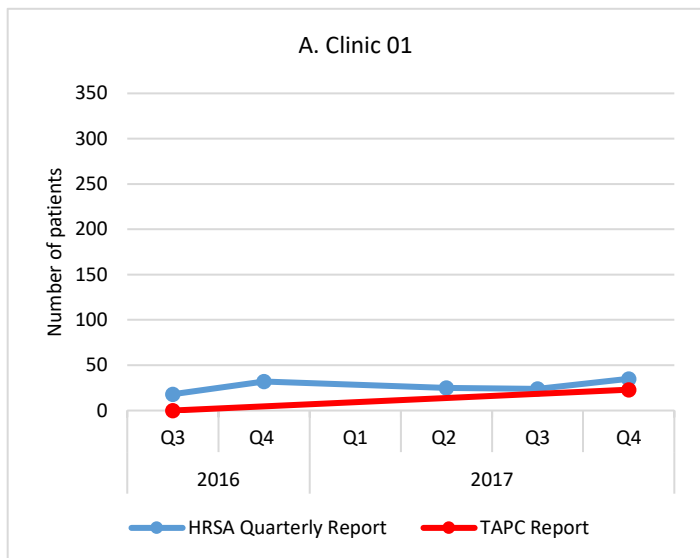
TABLE 5: NUMBER OF PATIENTS ON ADDICTION MEDICATION OVER TIME BY AGENCY: HRSA QUARTERLY REPORTS (n=25)

CLINIC ID	2016			2017		
	Q3	Q4	Q1	Q2	Q3	Q4
Clinic 01	18	32	(NA)	25	24	35
Clinic 02	6	12	22	33	39	48
Clinic 03	9	13	12	20	21	6
Clinic 04	98	222	203	144	167	319
Clinic 05	80	89	117	144	154	195
Clinic 06	3	3	3	2	2	3
Clinic 07	0	0	(NA)	34	34	52
Clinic 08	88	74	87	104	159	229
Clinic 09	0	1	3	34	53	83
Clinic 10	2	6	12	13	10	11
Clinic 11	34	31	42	44	49	78
Clinic 12	0	3	9	10	26	30
Clinic 13	14	32	21	28	33	43
Clinic 14	13	26	34	47	47	34
Clinic 15	4	7	9	9	9	23
Clinic 16	19	30	36	43	20	24
Clinic 17	44	69	93	94	108	126
Clinic 18	(NA)	3	13	35	25	22
Clinic 19	36	86	110	(NA)	50	55
Clinic 20	0	0	0	1	7	11
Clinic 21	6	8	9	20	24	27
Clinic 22	114	134	127	129	101	91
Clinic 23	0	6	9	8	27	16
Clinic 24	10	138	134	134	144	152
Clinic 25	28	34	53	46	49	63
TOTALS	626	1,059	1,158	1,201	1,382	1,776

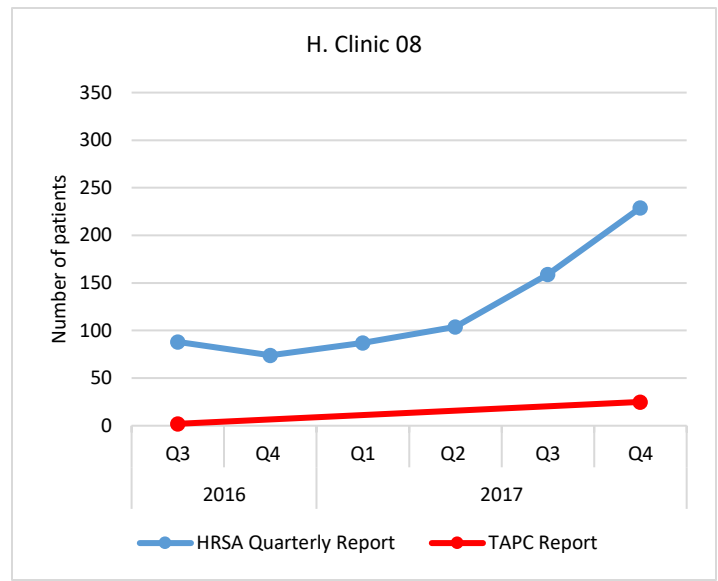
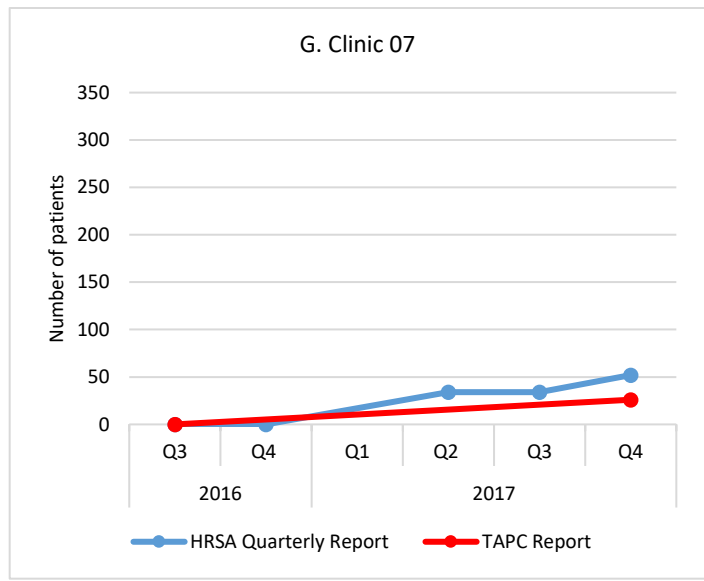
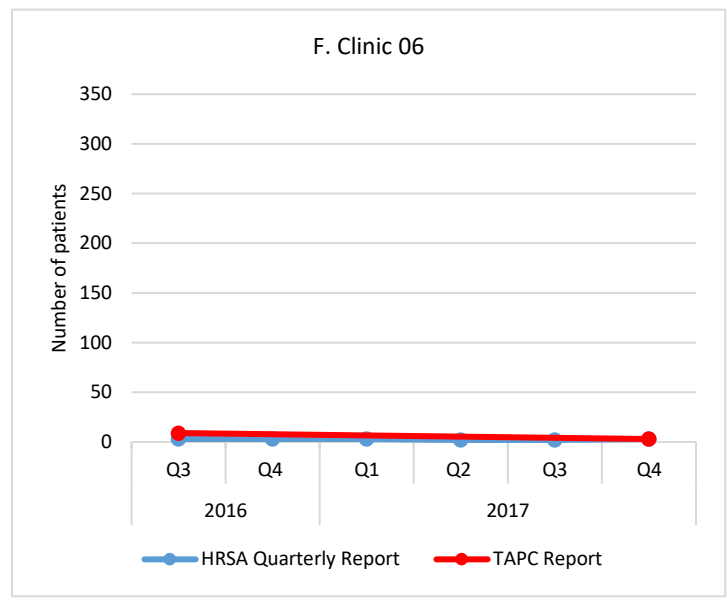
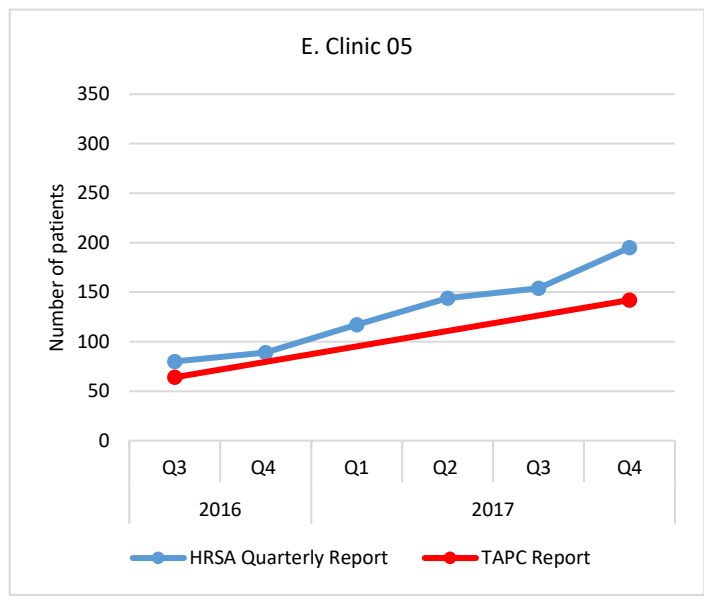
FIGURE 2: CHANGE IN NUMBER OF PATIENTS ON ADDICTION MEDICATION BY SOURCE OVER TIME (n=25)



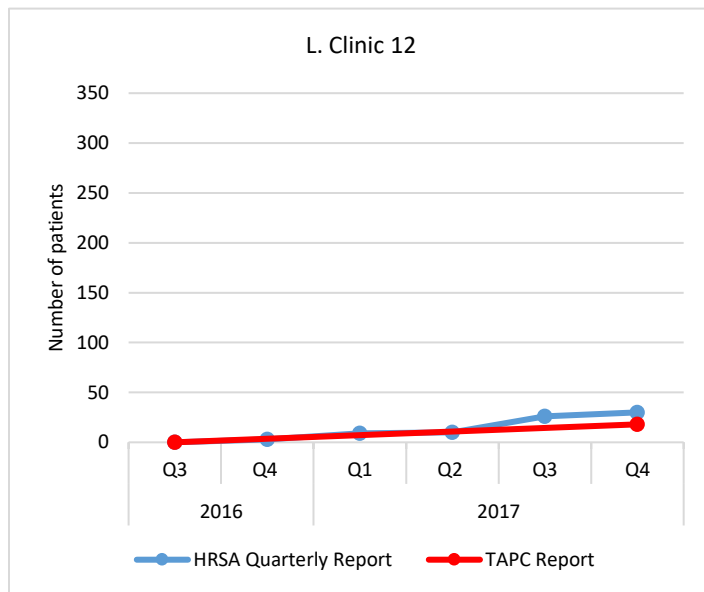
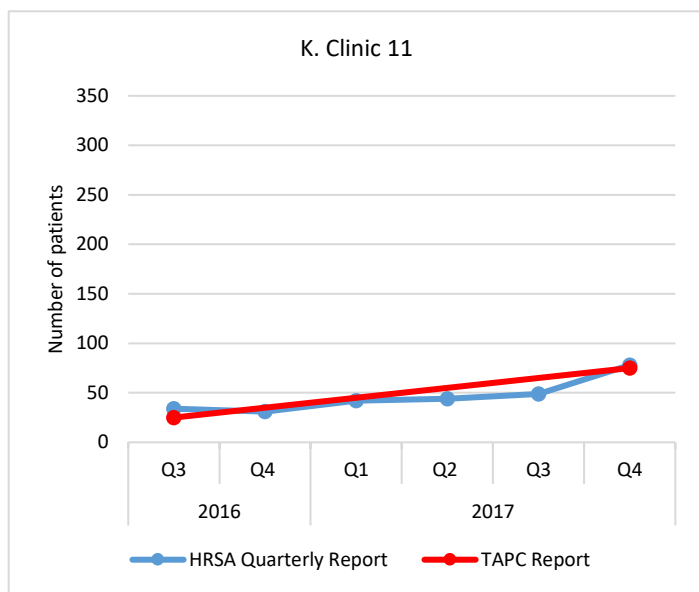
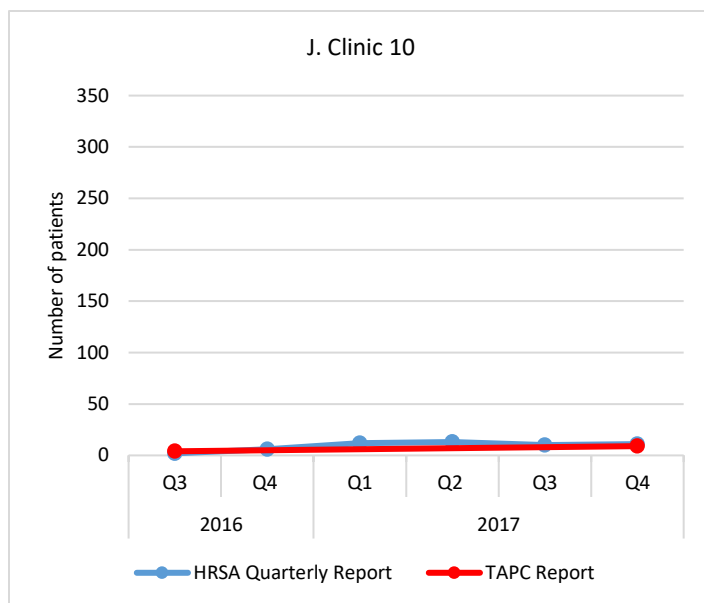
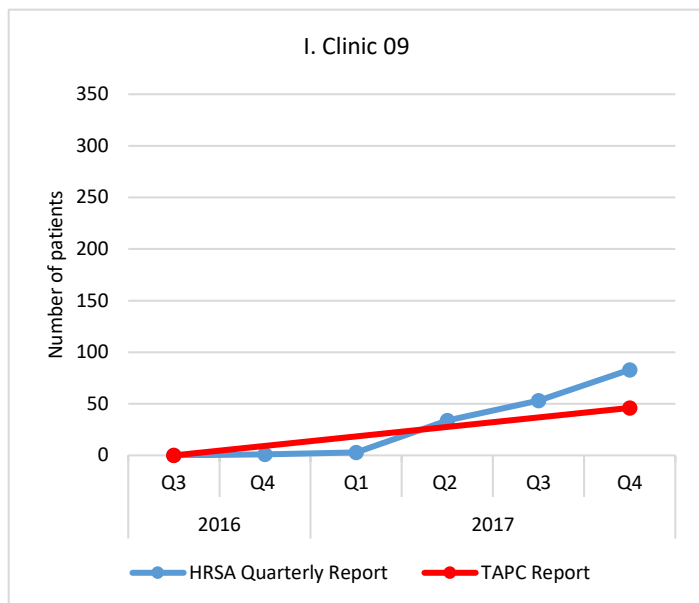
FIGURES 3A – 3D: CHANGE IN NUMBER OF PATIENTS ON ADDICTION MEDICATION BY SOURCE BY AGENCY OVER TIME



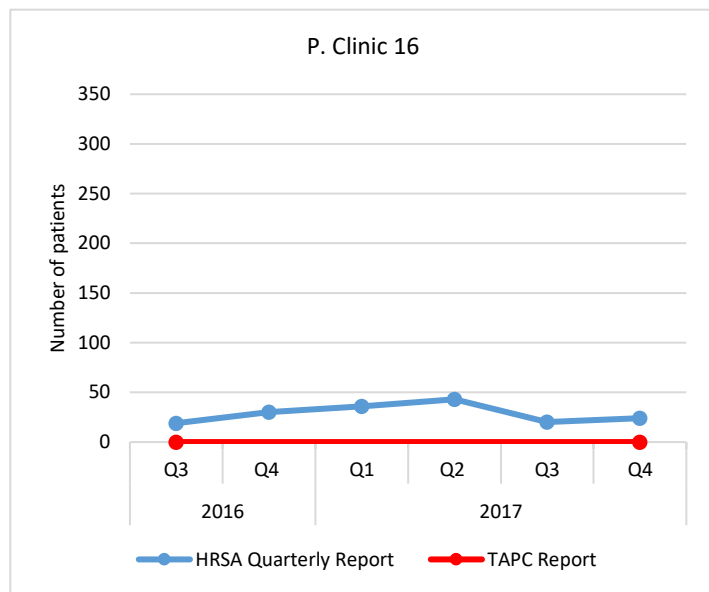
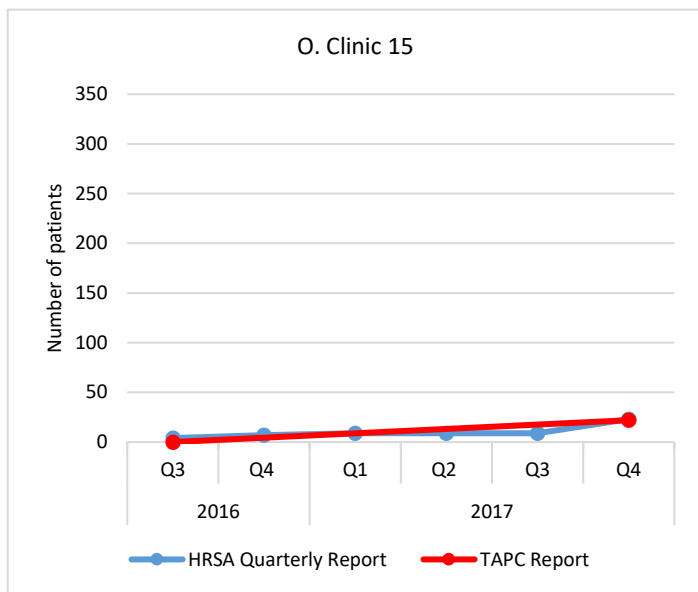
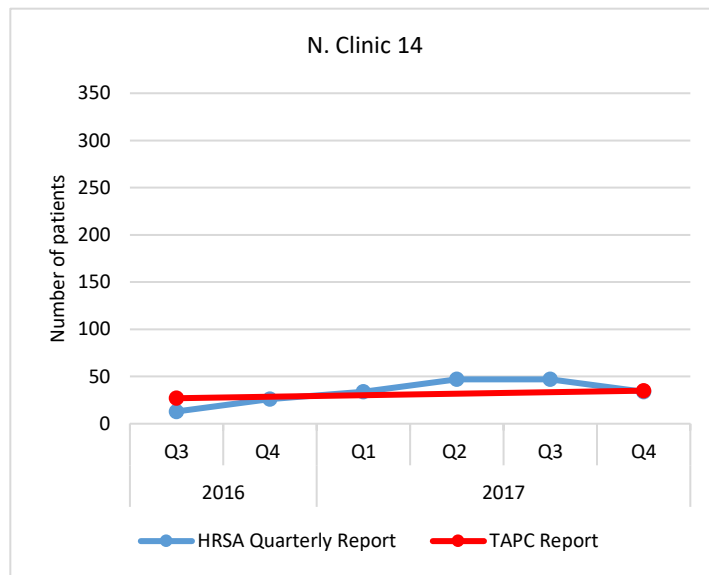
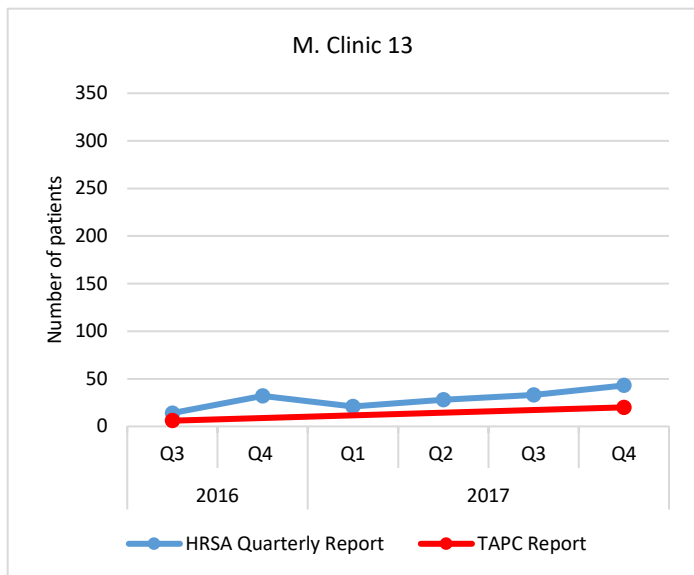
FIGURES 3E – 3H: CHANGE IN NUMBER OF PATIENTS ON ADDICTION MEDICATION BY SOURCE BY AGENCY OVER TIME



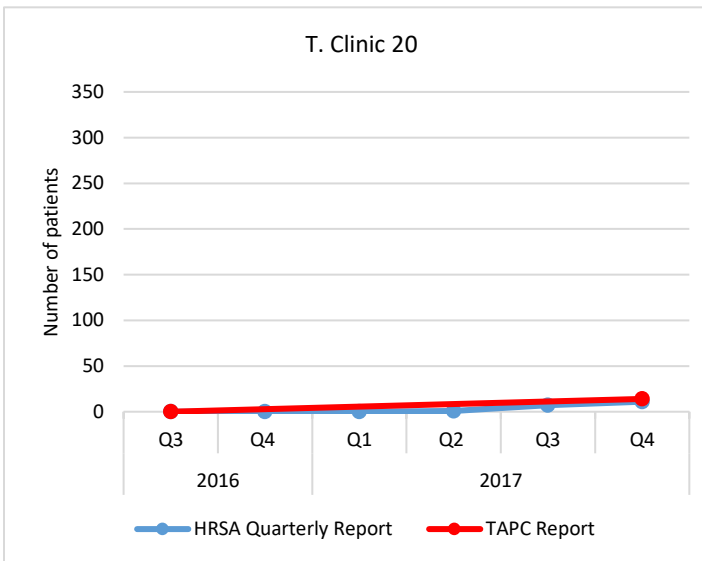
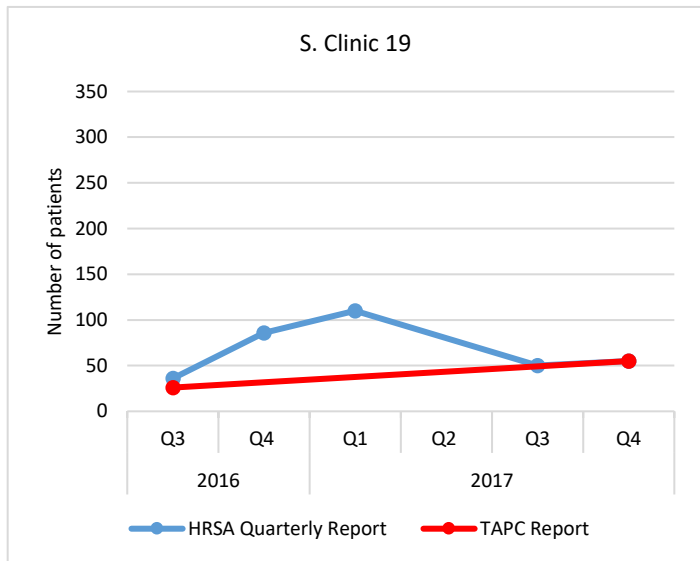
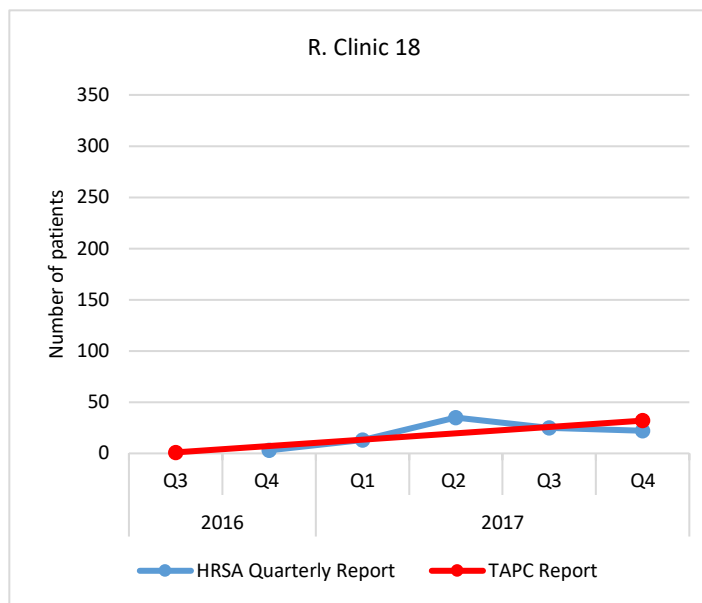
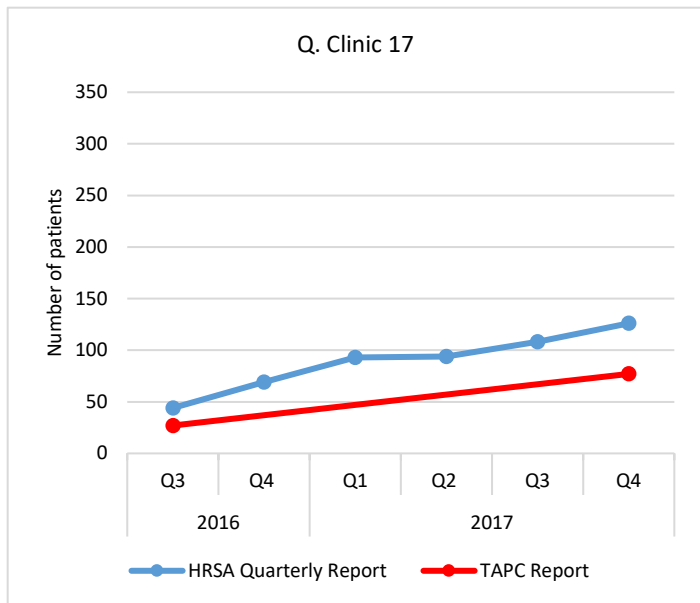
FIGURES 3I – 3L: CHANGE IN NUMBER OF PATIENTS ON ADDICTION MEDICATION BY SOURCE BY AGENCY OVER TIME



FIGURES 3M – 3P: CHANGE IN NUMBER OF PATIENTS ON ADDICTION MEDICATION BY SOURCE BY AGENCY OVER TIME



FIGURES 3Q – 3T: CHANGE IN NUMBER OF PATIENTS ON ADDICTION MEDICATION BY SOURCE BY AGENCY OVER TIME



FIGURES 3U – 3X: CHANGE IN NUMBER OF PATIENTS ON ADDICTION MEDICATION BY SOURCE BY AGENCY OVER TIME

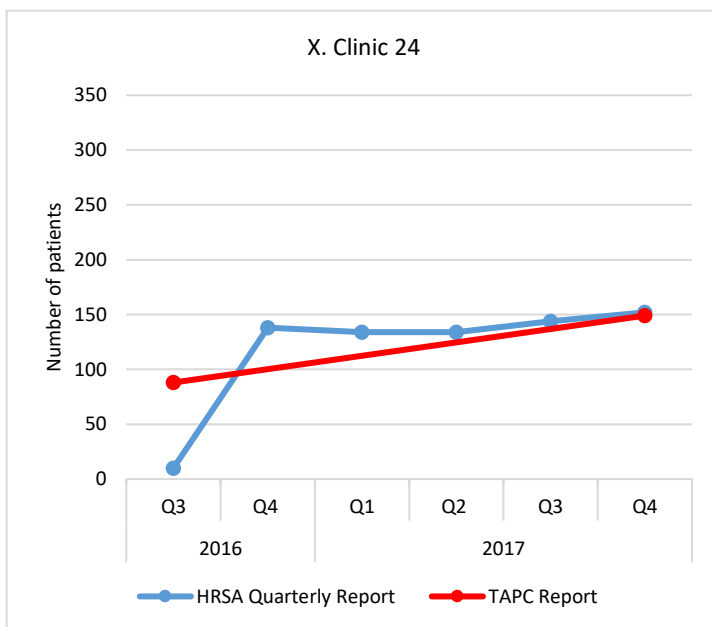
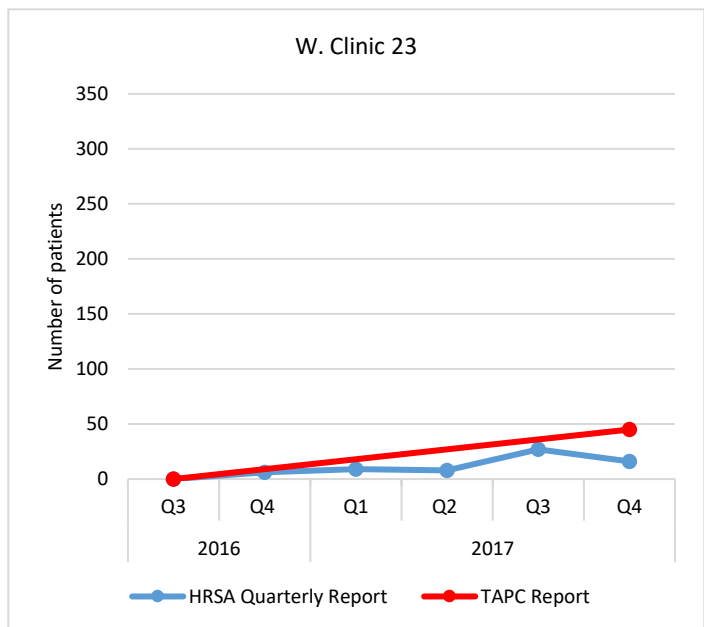
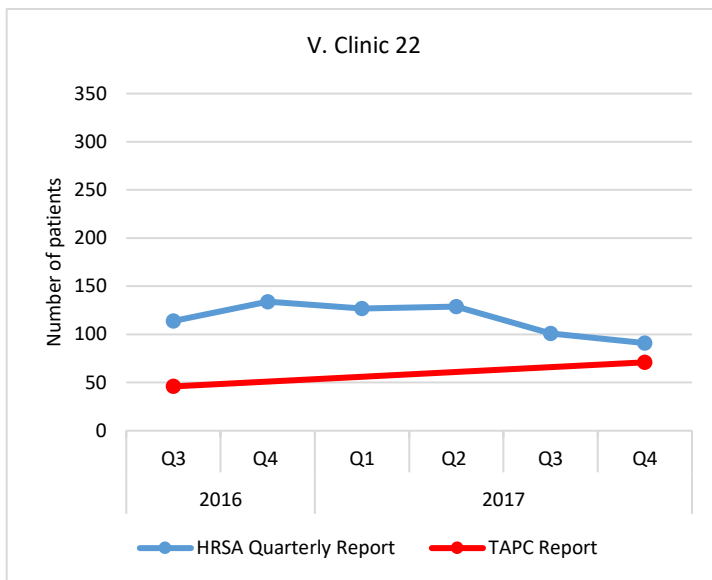
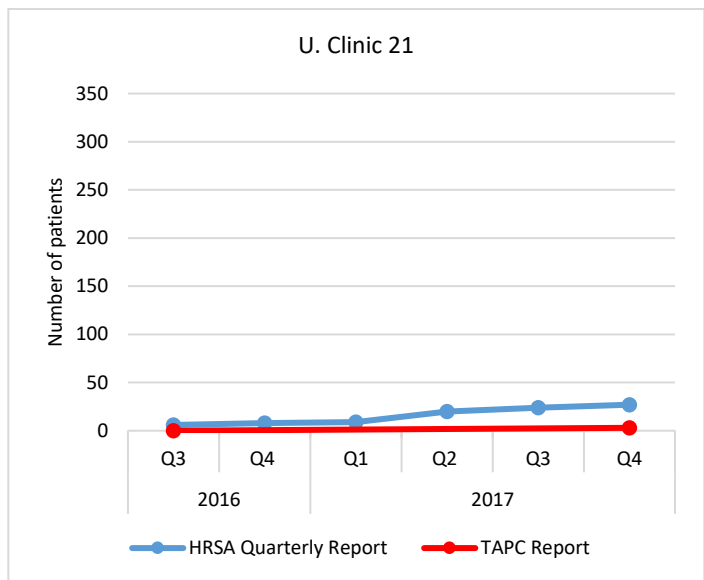
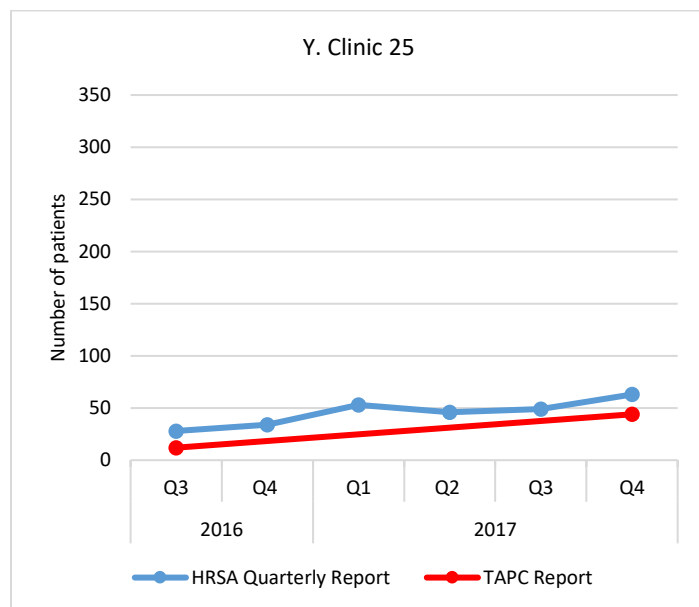
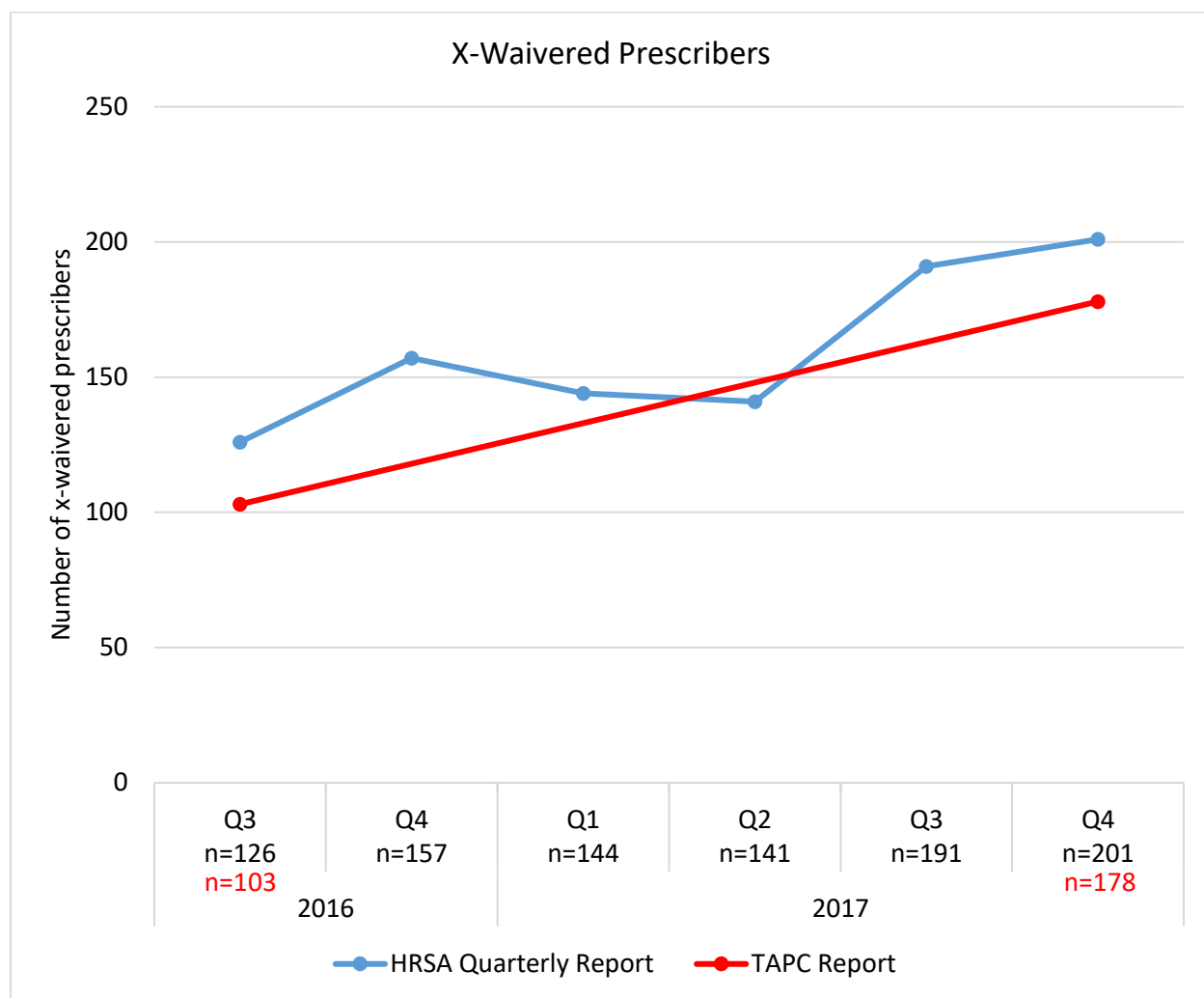


FIGURE 3Y: CHANGE IN NUMBER OF PATIENTS ON ADDICTION MEDICATION BY SOURCE BY AGENCY OVER TIME

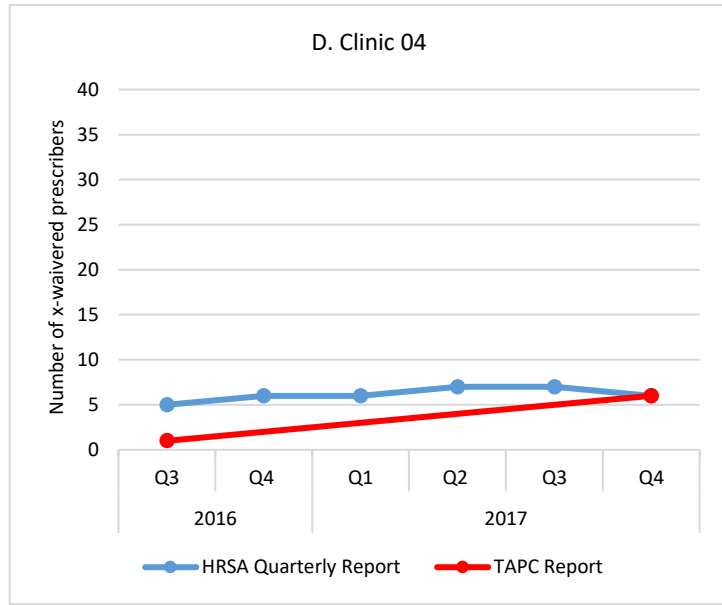
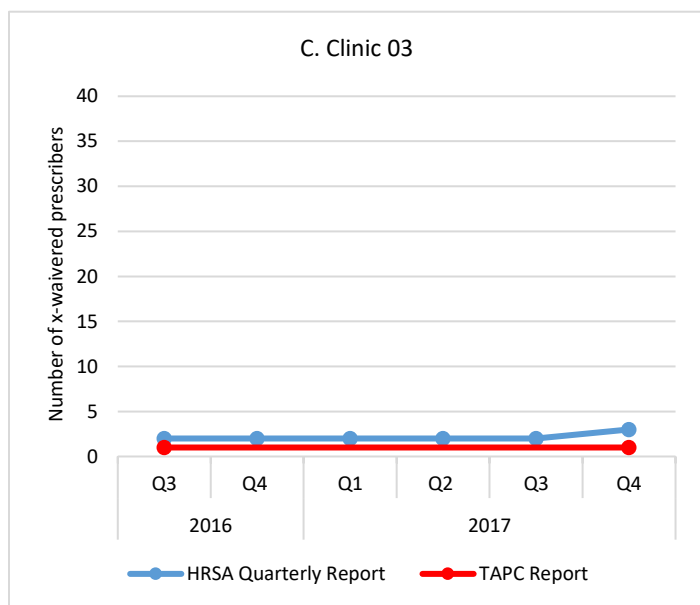
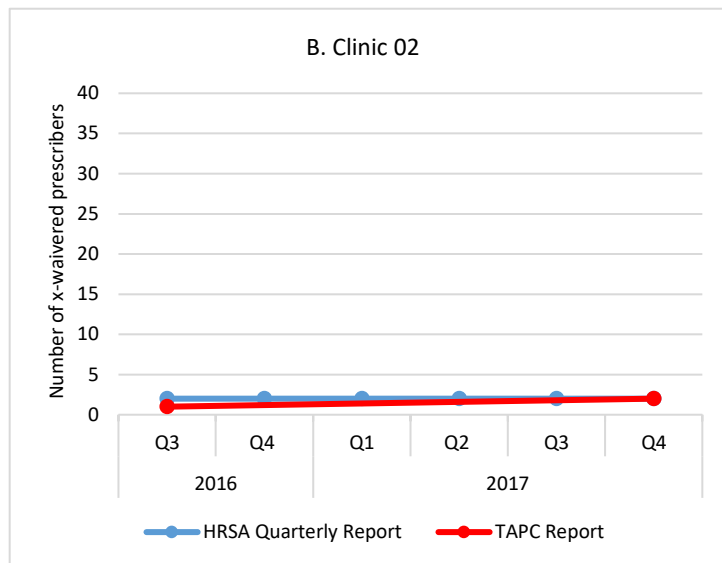
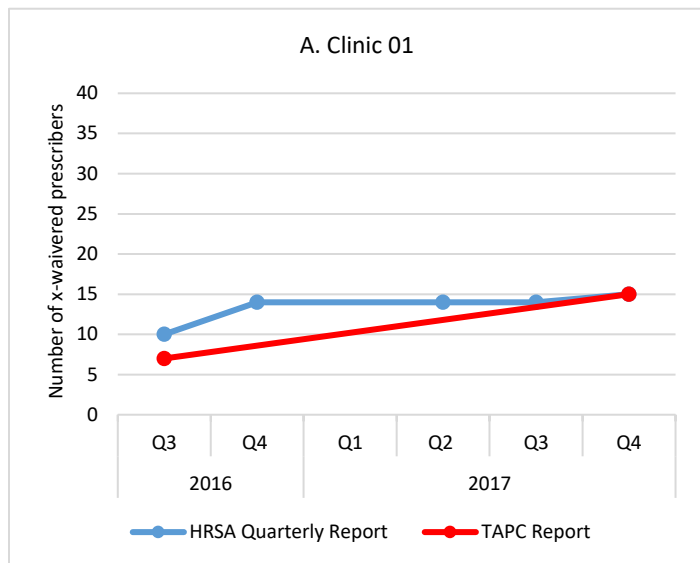
B. X-WAIVERED PRESCRIBERS

The second utmost important public health services goal is to increase the number of prescribers (physicians, nurse practitioners, physician assistants) who can prescribe buprenorphine. This is a measure of the implementation outcome of adoption. Based on the post hoc email response data collection format, this number grew from 103 to 178, or an increase of 75 prescribers. This is a 1.72 times increase. HRSA quarterly report data demonstrated an increase from 106 to 201, or an increase of 95 prescribers. This is a 1.90 times increase. Thus, the estimated increase in adoption of addiction medications is from 75 to 95 individual prescribers. **FIGURE 4** depicts the change in x-waivered prescribers by data source and over time. This is a very good overall increase, roughly three to four newly waived prescribers for each of the 25 TAPC participants. **FIGURES 5A-5Y** illustrate the change in x-waivered prescribers by source by agency and over time.

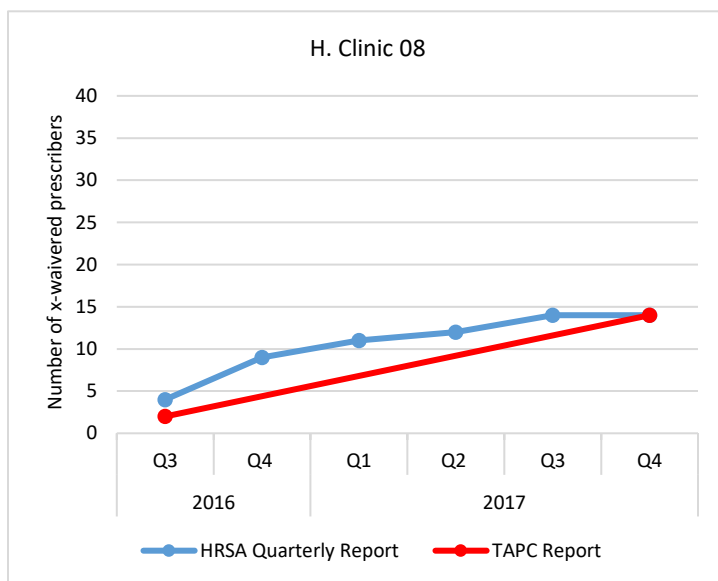
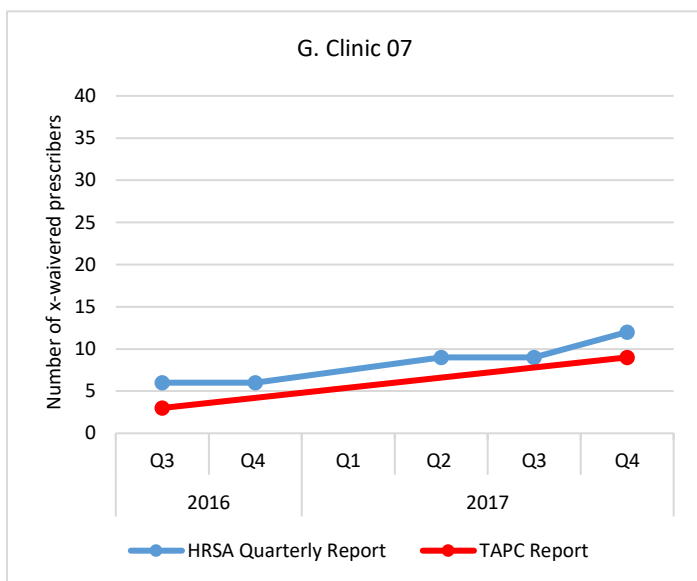
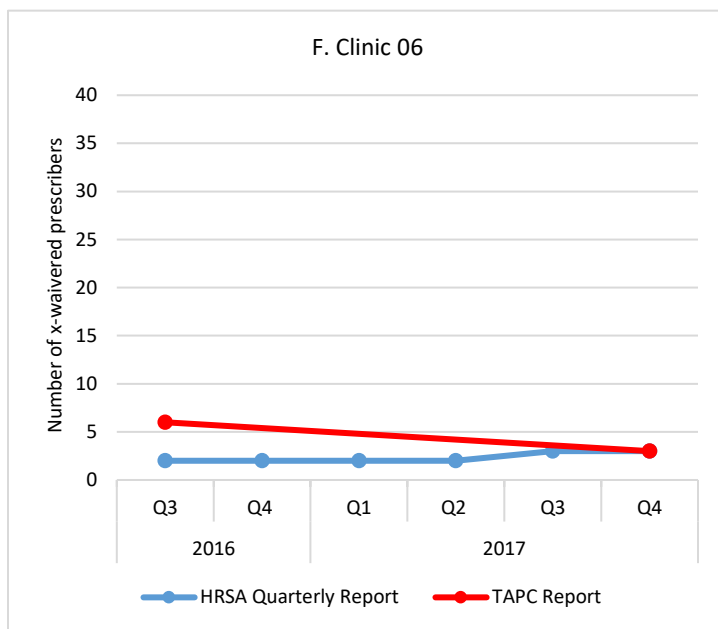
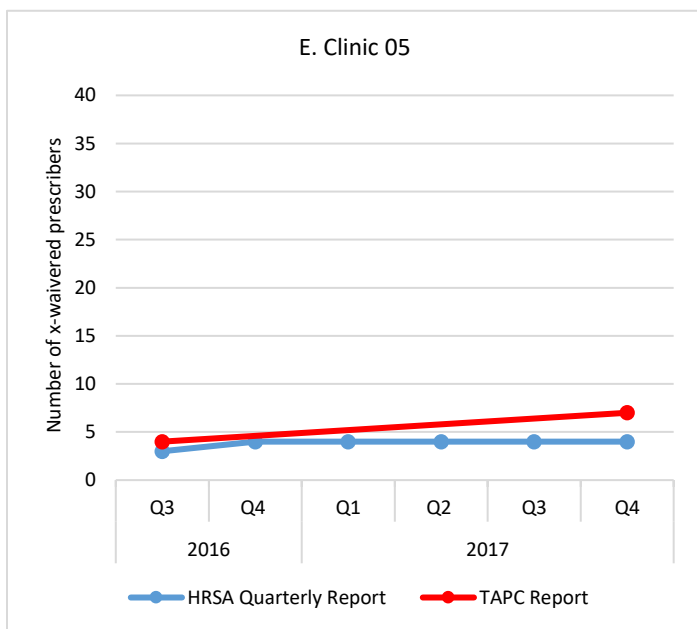
FIGURE 4: CHANGE IN NUMBER OF X-WAIVERED PRESCRIBERS BY SOURCE OVER TIME (n=25)



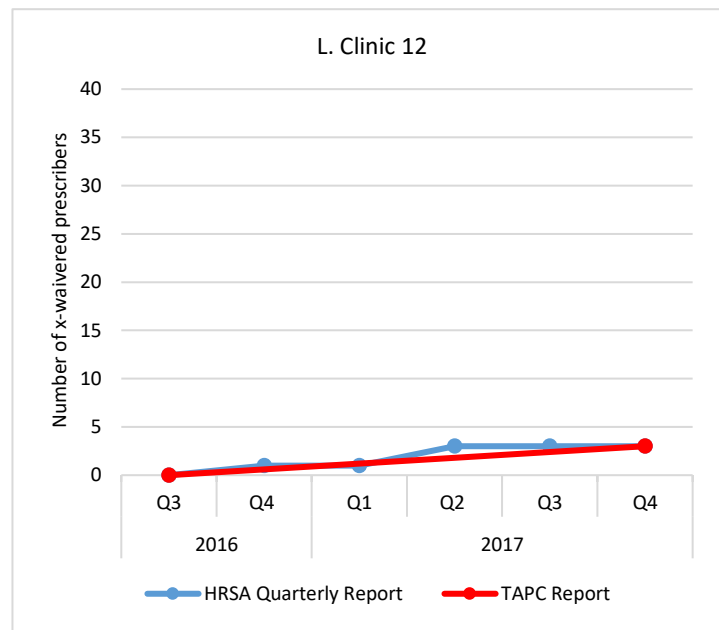
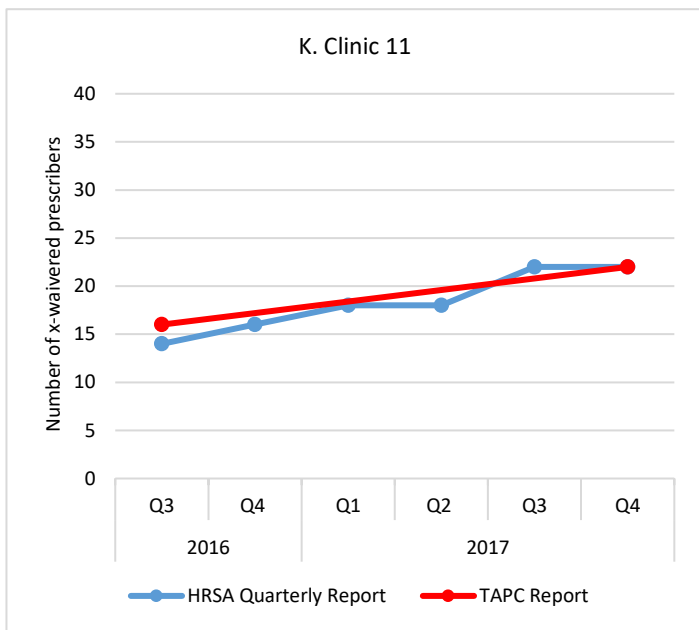
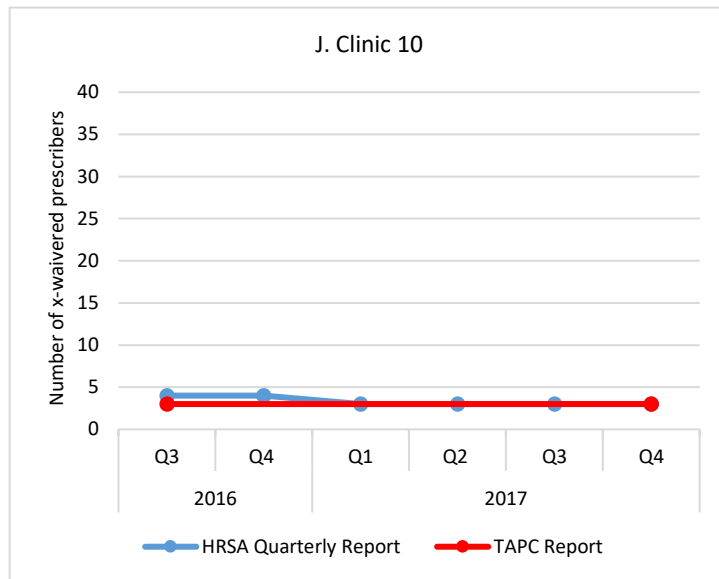
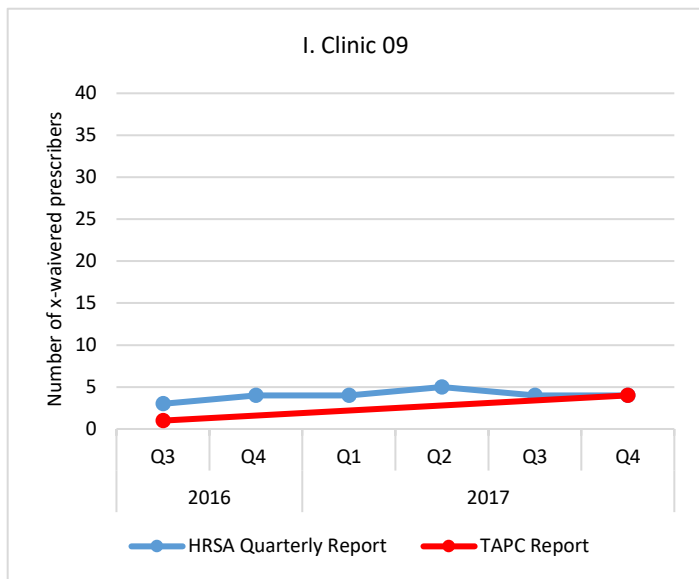
FIGURES 5A – 5D: CHANGE IN NUMBER OF X-WAIVERED PRESCRIBERS BY SOURCE BY AGENCY OVER TIME



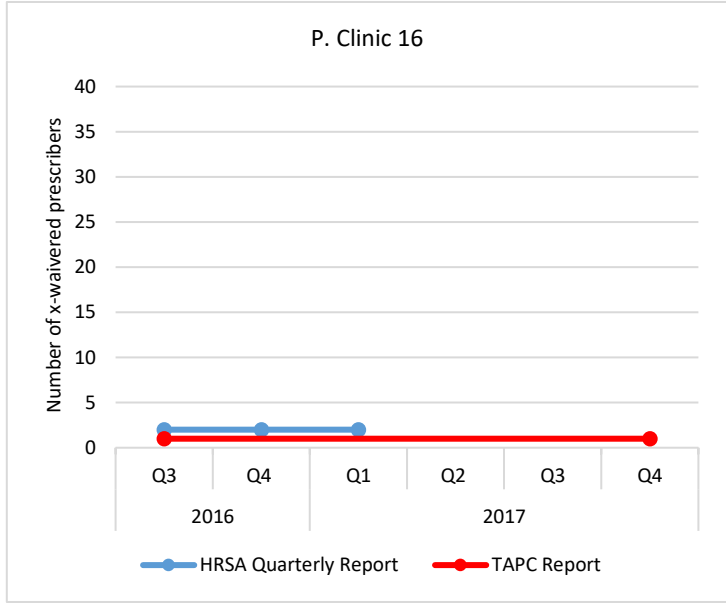
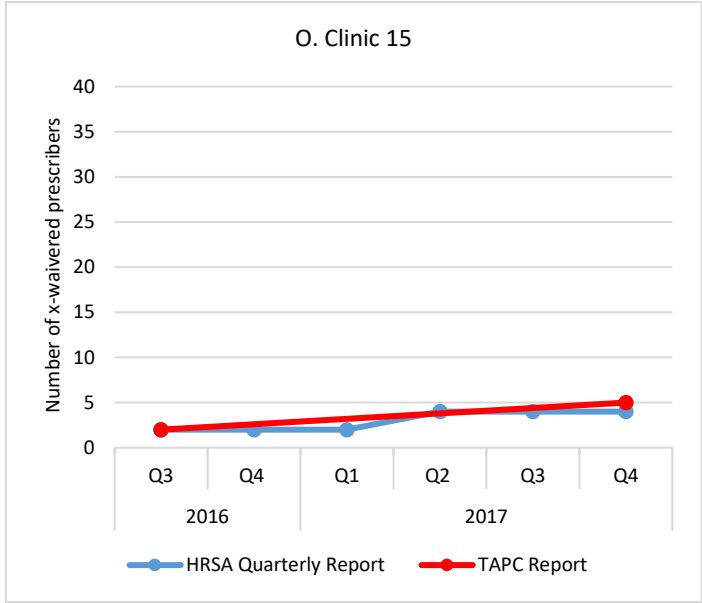
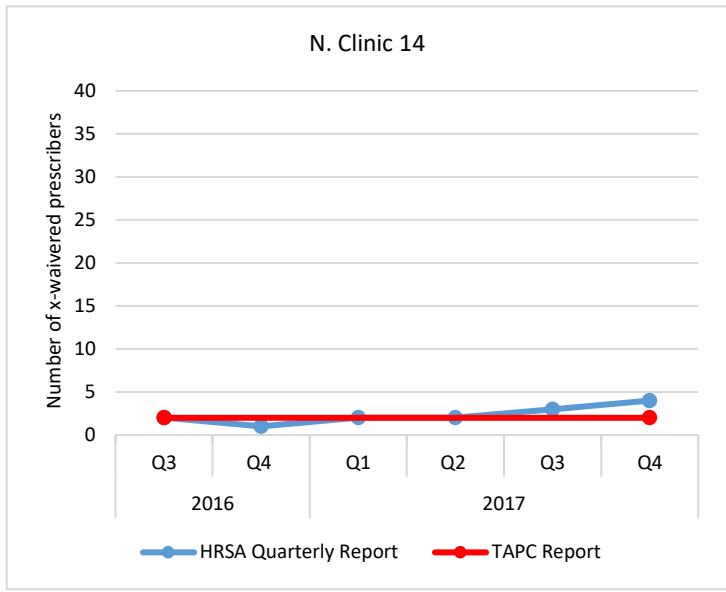
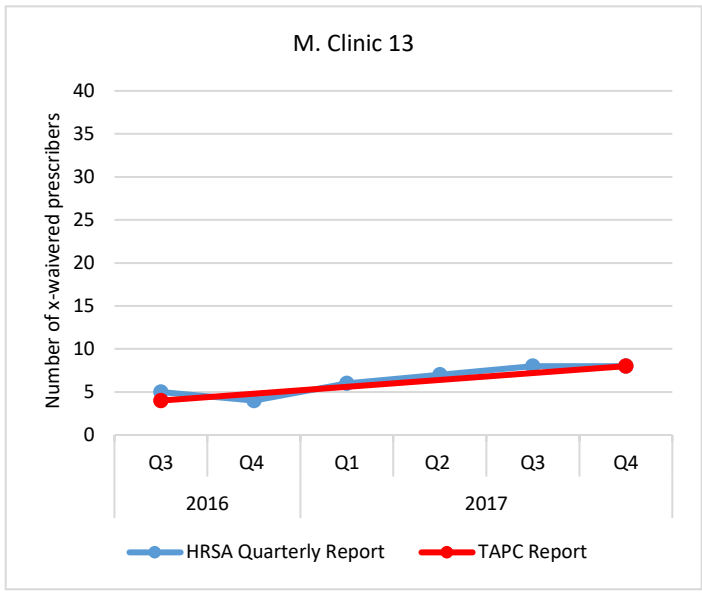
FIGURES 5E – 5H: CHANGE IN NUMBER OF X-WAIVERED PRESCRIBERS BY SOURCE BY AGENCY OVER TIME



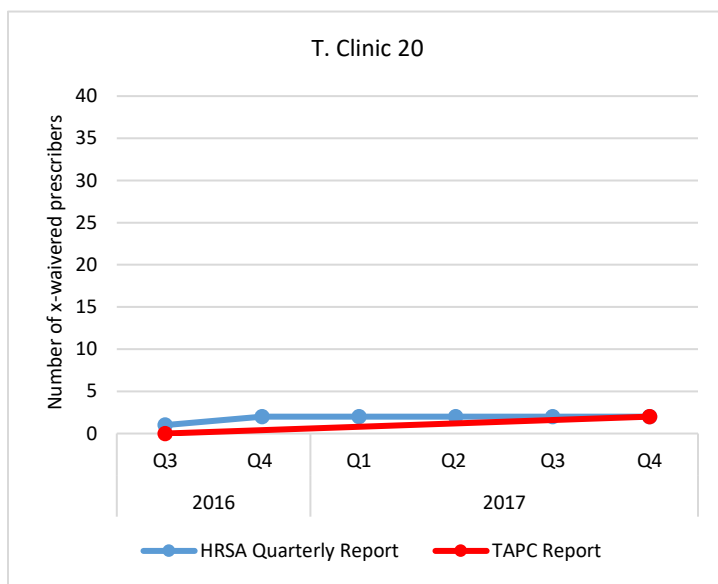
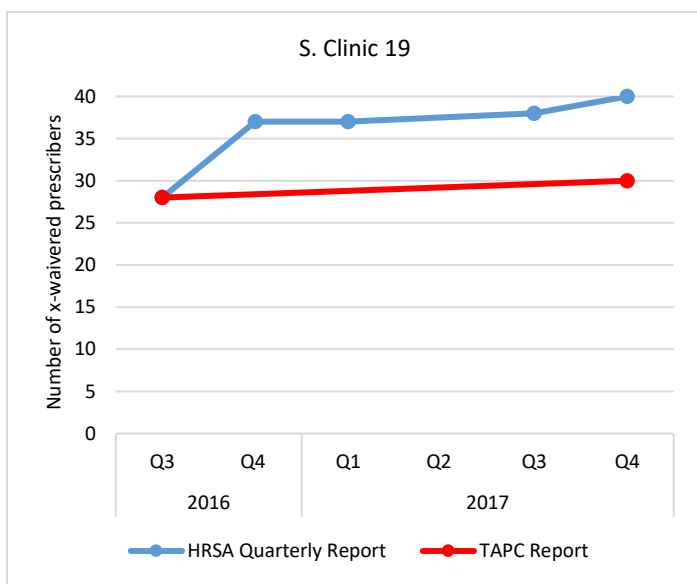
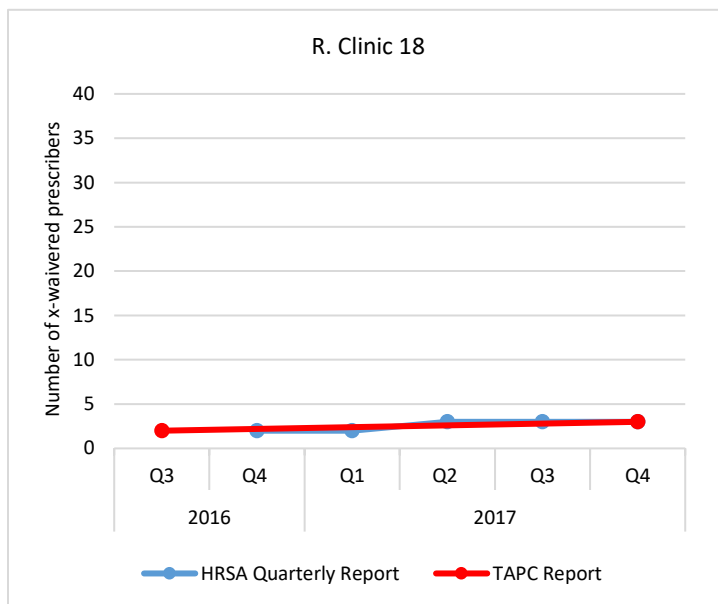
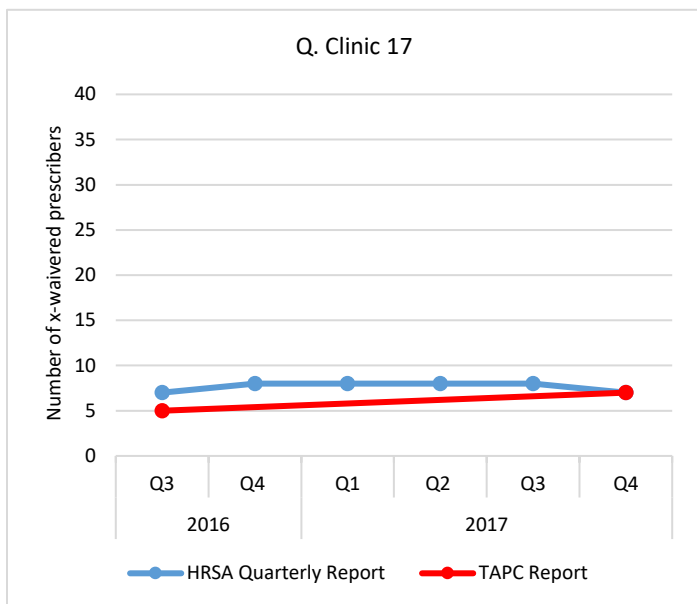
FIGURES 5I – 5L: CHANGE IN NUMBER OF X-WAIVERED PRESCRIBERS BY SOURCE BY AGENCY OVER TIME



FIGURES 5M – 5P: CHANGE IN NUMBER OF X-WAIVERED PRESCRIBERS BY SOURCE BY AGENCY OVER TIME



FIGURES 5Q – 5T: CHANGE IN NUMBER OF X-WAIVERED PRESCRIBERS BY SOURCE BY AGENCY OVER TIME



FIGURES 5U – 5X: CHANGE IN NUMBER OF X-WAIVERED PRESCRIBERS BY SOURCE BY AGENCY OVER TIME

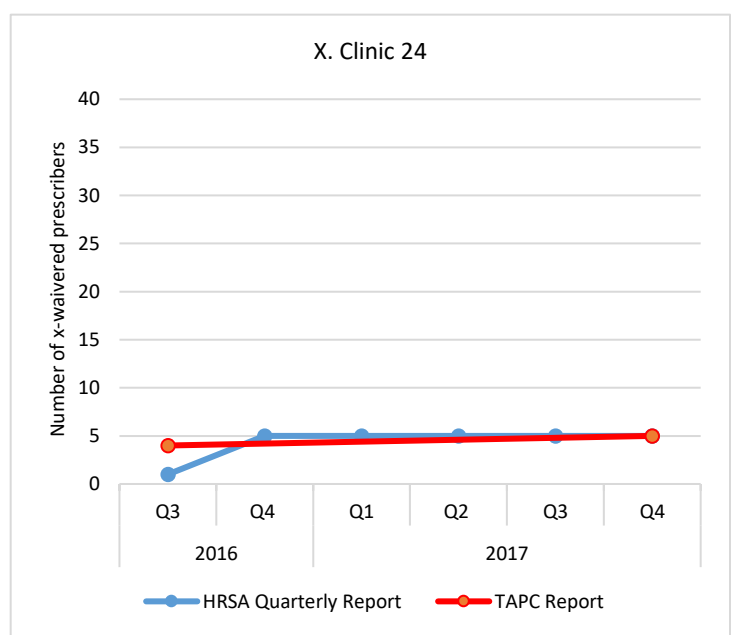
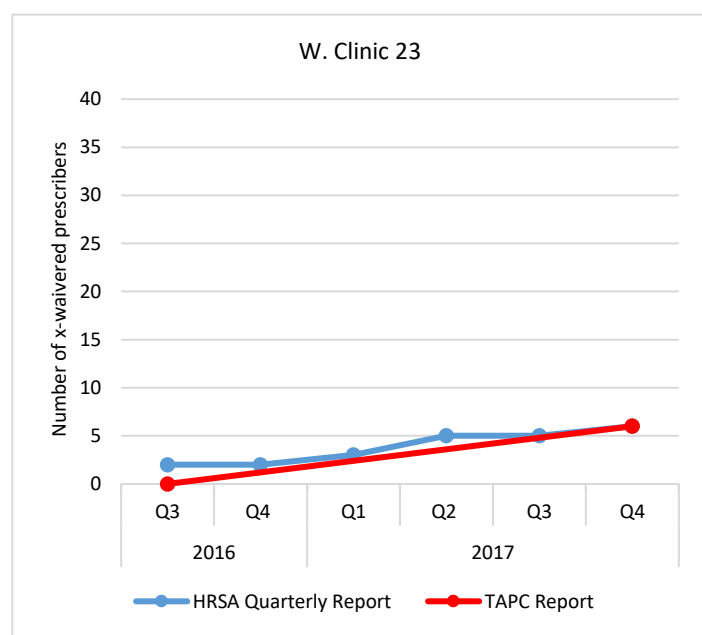
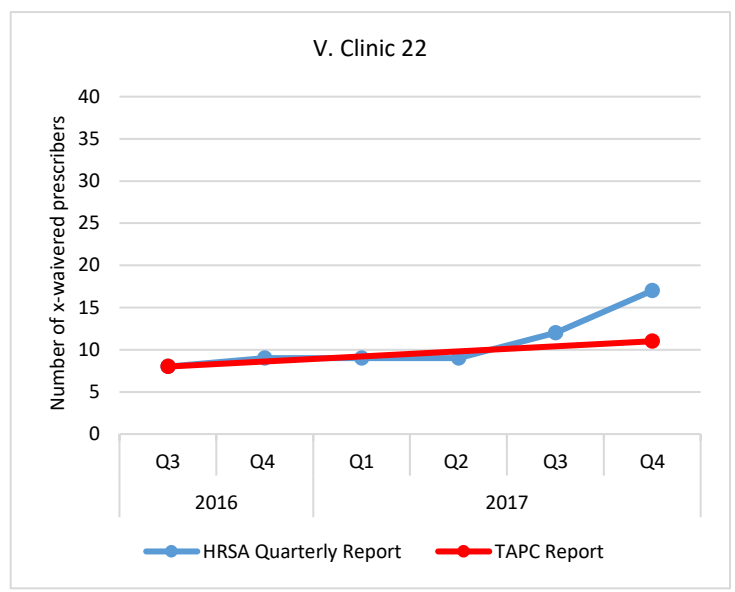
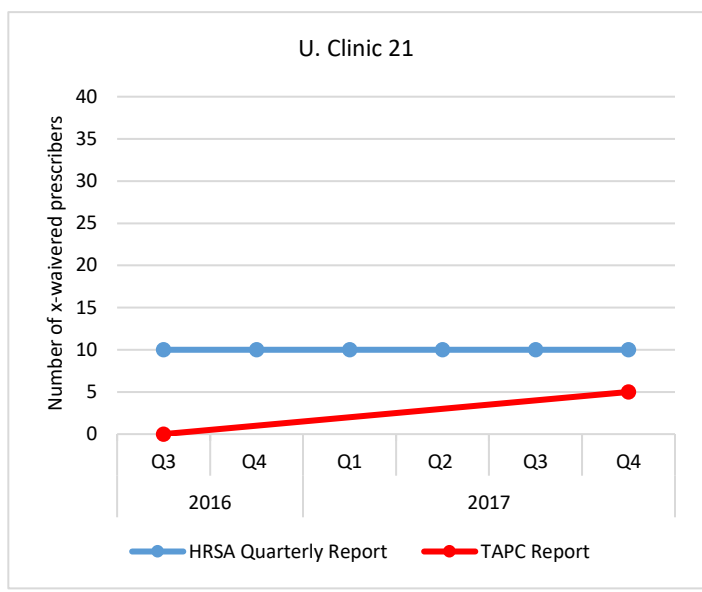
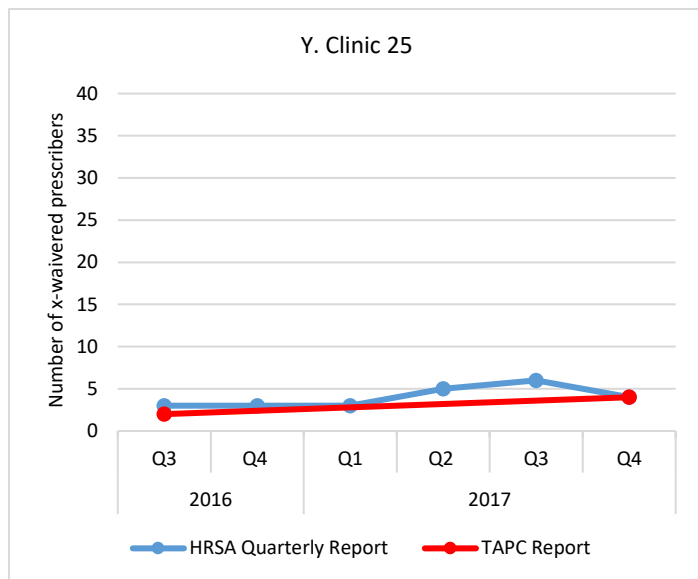
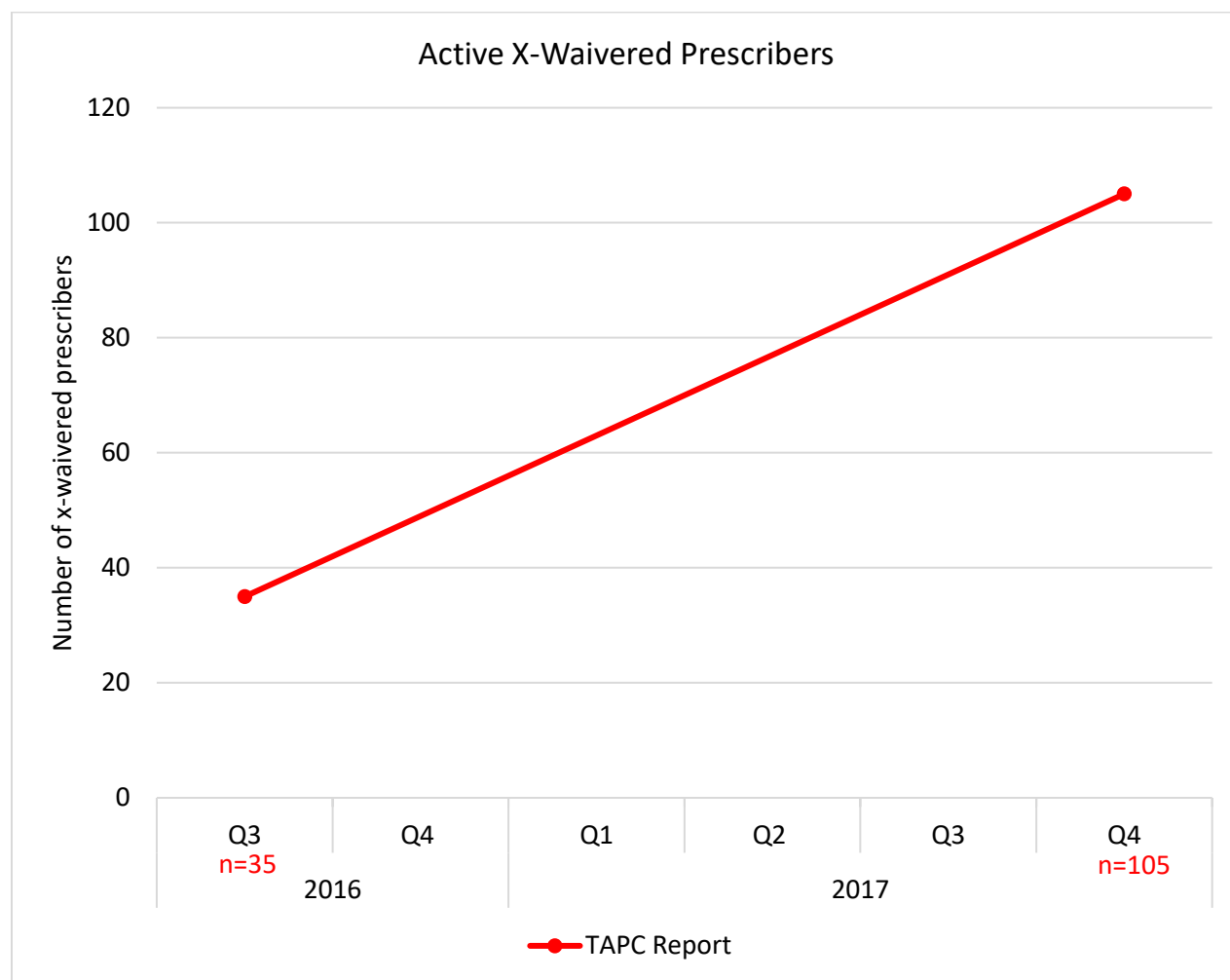


FIGURE 5Y: CHANGE IN NUMBER OF X-WAIVERED PRESCRIBERS BY SOURCE BY AGENCY OVER TIME

C. X-WAIVERED PROVIDERS PRESCRIBING TO PATIENTS

Obtaining the x-waiver may be necessary but is not sufficient to indicate adoption of a new practice. The HRSA quarterly report did not ask grantees to account for the number of x-waivered prescribers actually delivering this care to patients. In the TAPC email request to clinics (i.e., to identify the change in number of providers prescribing from September 2016 to December 2017) we found a total increase of 35 to 105. This is a three-fold increase in the number of prescribers who adopted addiction medications and used them with patients. This proportional increase is greater than the rate of improvement in the number of x-waivered prescribers and very good news as an implementation outcome. **FIGURE 6** illustrates this change over time.

FIGURE 6: CHANGE IN NUMBER OF ACTIVE X-WAIVERED PRESCRIBERS BY TAPC REPORT OVER TIME (n=25)

D. PROPORTION OF X-WAIVERED PRESCRIBERS OF ALL ELIGIBLE

Another approach to calculating adoption is the proportion of the number of individuals delivering an evidence-based treatment divided by the number of all individuals who are in position to do so. For the evaluation of this implementation outcome, using the TAPC email data request post hoc, we asked clinics to identify the number of eligible providers who were able to get the x-waiver. Of the entire number (denominator), we entered the number with an x-waiver (numerator) into the calculation.

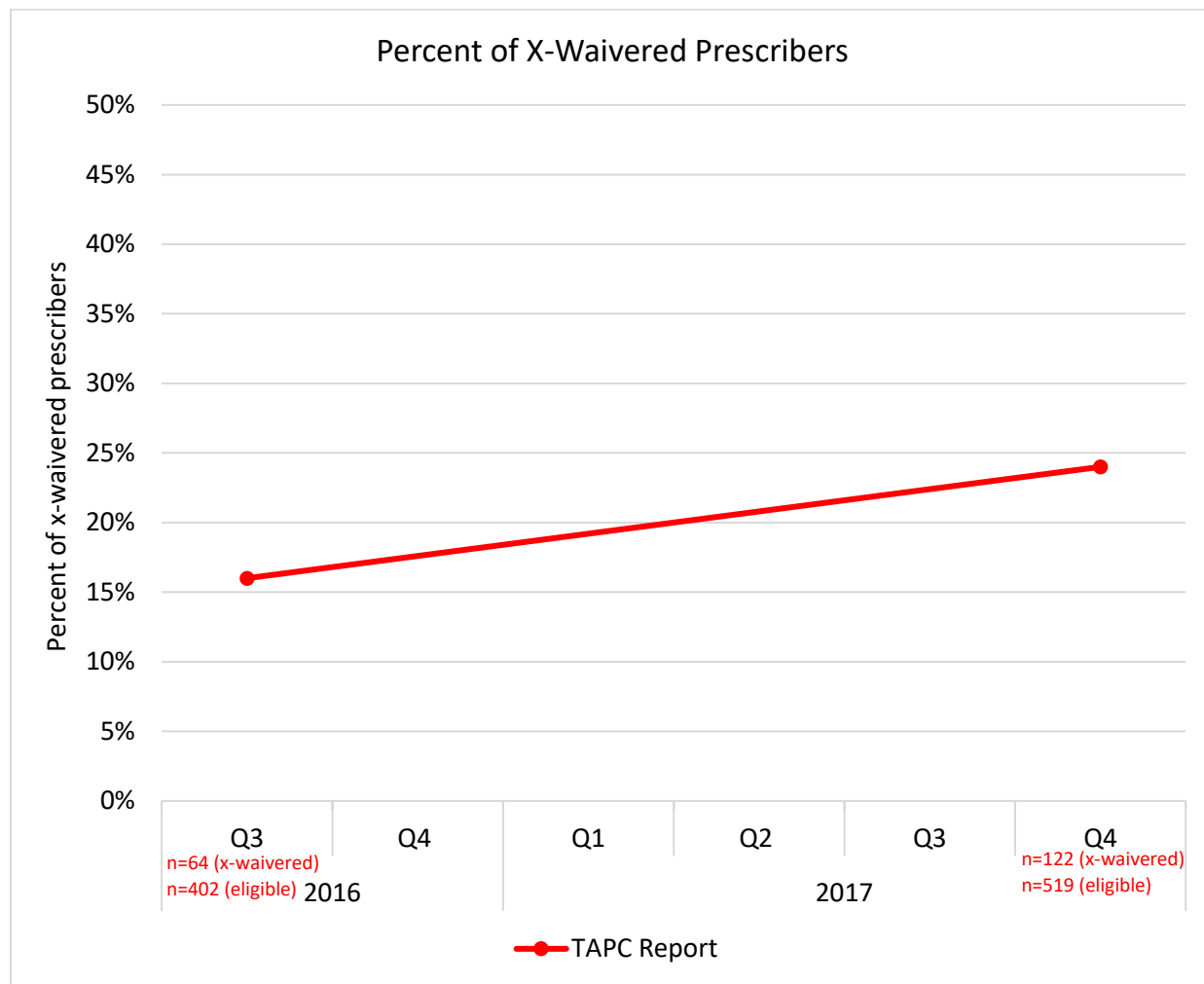
Only 16 of 24 participants responding to this request provided information toward the denominator. Using all data available from these 16 clinics, the proportion of x-waivered prescribers relative to all eligible prescribers increased from 15.9% (64 of 402) to 23.5% (122 of 519).

To the degree this proportion increases, addiction medication is becoming general practice. The post-TAPC state of 23.5 percent adoption is encouraging.

FIGURE 7 depicts this change over time.

To summarize, the objective of Aim 1 is to evaluate changes in reach and adoption. Because there is no control group, we cannot determine if these changes are a direct result of or caused by TAPC implementation strategies. We will explore associations to suggest these effects in a later section. However, if we examine only changes from time 1 to time 2, from September 2016 through December 2017, there is reason to be positive about the impact of TAPC. There is a substantial increase in reach, i.e., the number of patients on addiction medication, demonstrated by a 2.84 to 2.96 times increase. Depending on the data source, there are as many as 748 to 1150 new patients on medication for opioid use disorder. Furthermore, there is a 1.72 to 1.90 times increase in x-waivered prescribers (depending on source of data). Concretely, this is an increase of 75 to 95 x-waivered prescribers. There are 70 new prescribers actually writing prescriptions for patients. Lastly, at the outset of TAPC, only 15.9% of eligible prescribers within participating clinics were x-waivered. Presently, this proportion is 23.5%. It may be that as ease of practice spreads within clinics, this proportion will continue on an upward trajectory.

FIGURE 7: CHANGE IN PERCENTAGE OF X-WAIVERED PRESCRIBERS OF ALL ELIGIBLE PRESCRIBERS BY TAPC REPORT OVER TIME (n=16)



5. FINDINGS: IMPLEMENTATION SUPPORT STRATEGIES

Implementation support strategies or technical assistance activities are the “interventions” of this project. The intent with each strategy is to enable practices to improve primary outcomes of reach and adoption. Although not measured as such, these changes are ultimately intended to improve patient care and outcomes. This is accomplished by improved access to evidence-based treatment—at the right time, the right place, and delivered by the person the patient knows best—his or her primary care provider.

In TAPC, there were nine implementation strategy components: 1) In-person learning sessions; 2) Project ECHO; 3) Expert coaching; 4) CCI webinars; 5) CSAM webinars; 6) Site visits, either a team road trip or hosting; 7) \$1000 incentive for waiver training; 8) Regional convenings; and 9) TAPC online resources. Other implementation support activities included a “swap meet” that consisted of two teleconference sessions on urine drug screens, and TAPC CCI office emails with resources and news for TAPC participants.

The degree of participation and evaluation ratings for In-Person Learning Sessions, Project ECHO, Expert Coaching, CCI webinars and CSAM webinars can be found in **TABLE 2**.

The degree of participation and evaluation ratings for Site Visits, Incentives for Waiver Training, Regional Convenings and TAPC online resources can be found in **TABLE 3**.

The findings in this section address the evaluation goals outlined in ***Aim C***.

A. IN-PERSON LEARNING SESSIONS

There were three in-person learning sessions, two were held in northern California, the first session and the third. The second session was held in Los Angeles. The first session occurred on October 19, 2016 and was attended by 109 individuals representing all 25 clinics. Activities included clinic storyboarding, buprenorphine 101, and presentations on changing attitudes and behaviors toward addiction medication. Of 69 completed evaluations (65%), the average rating was 4.3 on a 5-point scale (from 1-Poor to 5-Excellent). The second session was attended by 120 individuals representing 24 clinics. Reports on initial successes and challenges, the use of urine drug screens, motivational interviewing skills, getting new clinicians on board, and the mechanics of prescribing were the main topics. Of 47 completed evaluations (39%), the average rating was 4.5. The third and final session was held on June 14, 2017 and included 120 individuals from 23 clinics. The focus was on networking (using the “speed-dating” technique), levels of care, the role of psychosocial therapies, culture change, harm reduction, and tapering. Of 61 (50%) evaluations submitted, the average rating was 4.5.

As noted in the participation section, TAPC clinics attended 72 of 75 possible events (96%). Given the travel distance and time commitment, this is a strong indicator of perceived value.

The TAPC Key Informant Interview results of perceptions of the In-Person Learning Sessions were equally favorable, with an average rating of 8.3 on a 10-point scale from 1-Completely Worthless to 10-Extremely Valuable (22 respondents; 92%). The range was 5 to 10. Commonly reported was the importance of connecting with others engaged in the same kind of work, hearing about others’ experiences and feeling “normal” and general networking. Worth noting is that although attendees recognized the logistical challenges and lost opportunity associated with being away from clinic, a

request for more face-to-face time was common. Also reported in several instances was the value of having multi-disciplinary representatives at the sessions and recommendations to split or parallel track at least some time between medical and behavioral topics.

B. PROJECT ECHO

Project ECHO is a case-based learning, pragmatic implementation support activity that was developed by physicians at the University of New Mexico to address complex medical problems among patients treated by providers across geographically dispersed areas. Evidence for the model exists and there is some effort to ensure fidelity. For TAPC, Project ECHO was managed by the Weitzman Institute and authorized by the University of New Mexico as an ECHO purveyor. There were 16 Project ECHO sessions offered from November 2016 through February 2018.

We relied on data provided by both the Weitzman Institute and the TAPC Key Informant Interviews to examine participation. Only 13 of 25 clinics (53%) reported attending any Project ECHO session. The usual barrier was that they were hard to commit to during the busy clinic day. However, many comments regarding the quality and relevance were also relayed.

Interestingly, 8 of the 25 TAPC practices attended at least 12 of the 16 (i.e., 75%) of the Project ECHO sessions. This would appear to indicate that at least for a core group of practices, this was an extremely valuable option for case-based implementation support.

The Weitzman Institute provided post-session evaluation data to CCI. There were 124 evaluations completed for these sessions. This represents 124 of 320 TAPC affiliated individual attendees for a response rate of 38.75%. On a scale from 1-Strongly Disagree to 5-Strongly Agree, the median rating across the 16 sessions on the most predictive item was 4.34. This item is “I would recommend this program to my colleagues.”

With respect to perceived quality garnered from the key informant interviews, 11 of 13 clinics attended an ECHO session and offered a rating (85%), on the 10-point scale (1-Completely Worthless to 10-Extremely Valuable). The average was 6.7, with a range from 3 to 10.

Overall, Project ECHO received mixed reviews. Although the quantitative data shared by the Weitzman Institute was positive overall, the key informant interviews revealed perceptions of Project ECHO sessions as a not particularly useful or valuable strategy. Further, it seemed challenging to prioritize when in the clinic with other competing demands on site. However, at least for one quarter of the clinics, this was a very important opportunity for case-based learning and expert consultation.

C. EXPERT COACHES

As with every implementation support activity, all TAPC participants were informed that they could have access to an expert coach. The role of the expert coach was hands on consultation, which ranged from the mechanics of induction, overcoming the fear of prescribing, workflow, team-based care, and managing complex cases. Coaches often made site visits and were available for regularly scheduled phone consultation or even on demand. Seventeen TAPC participants (68%) agreed to an expert coach assignment. There were five coaches who were assigned based on their location relative to the TAPC clinic site. CCI generated data of a global appraisal of the degree of engagement the clinic had with their coach. The ratings were from 1- Poor engagement; 2-Minimal engagement; to 3-Sufficient engagement.

Seven clinics were placed in the Poor engagement category, 1 in the Minimal engagement category, and 9 in the Sufficient engagement category. Interestingly, this suggests that even though practices selected a coach, the practice's motivation, the coach's availability, and/or the fit between them, are all important considerations.

Based on TAPC Key Informant Interview data, 16 of 17 possible ratings (94%), the average rating was 9.1 on the 10-point scale. Although one outlier rated this activity a "5" overall, the range was 8 to 10. Having an expert coach was seen as particularly valuable ("a life saver" one chief medical officer reported) during the early phases of implementation.

D. CCI WEBINARS

Much like Project ECHO, web-based training is perceived as a realistic option for geographically dispersed audiences. This is particularly the case for objectives that are based on knowledge transfer rather than practice change. Unlike Project ECHO, webinars are didactic and do not typically involve case presentations or interactions.

There were two CCI sponsored webinars offered that were related to TAPC project recruitment and launch. The first was an informational webinar on 8/8/16 attended by 48 individuals. The second was the TAPC project kick-off meeting on 9/23/16.

Three CCI sponsored medical content-oriented webinars were offered in the following topic areas:

- Vermont Hub and Spoke Model Overview (Brooklyn); n=30
- Benzodiazepines and buprenorphine: Safety driven medication management (Hurley); n=29
- Bridging the gap between emergency medicine and primary care in treating opioid use disorders (Herring); n=23

A final CCI webinar was offered after the evaluation had been nearly completed and is not included in this report.

- Contingency management treatments (Petry)

Across the 3 CCI webinars, of the 75 opportunities (25 agencies times 3 events), a 56% participation rate occurred. All agencies attended at least 1 event, and 15 (60% attended at least 2).

The key informant interviews were used to rate the experience of the CCI and CSAM webinars. Because the informants could not easily recall what webinar was sponsored by what organization (CSAM or CCI) the ratings of 1-Completely worthless to 10-Extremely valuable may have been condensed. Twenty-one of 25 clinics providing ratings on the 10-point TAPC Key Informant Interview scale. Of these, the average was 7.8 with a range of 5 to 10. Suggestions about offering tracks based on discipline (prescribers only; non-prescribers; entire team) and stage (early implementation; scaling up) were offered to potentially improve the audience experience.

All TAPC participants reported attending at least one CSAM or CCI webinar (15 in total combined). We were able to track attendance at the CCI webinars by TAPC participant. Of the 75 possible agency/person events (25 participants by 3 CCI content webinars), 42 or 56% of all events were attended.

The key informant interview ratings of CCI webinars were strikingly similar to those of Project ECHO. Although the option of retrieving and listening to archived sessions was perceived as a plus. But the challenge of attending web-based events during work hours or even prioritizing time after hours, was often cited as a major issue. The rationale was that lunch time is used to catch up on charting, return phone calls, or meet with other staff members.

A third type of web-based learning was offered and termed “swap meet.” These events were aimed at a specific topic that arose as a common clinical concern among practices and was designed as a targeted response. The topic was “Urine Toxicology Screening and Interpretation” in two parts, delivered on May 22 and 23, 2017. Nine practices attended the first session and 10 attended the second. Not all attendees were TAPC participants. There were four evaluations returned, all of which rated the experience between 4.5 and 5 (Very Good or Excellent). The TAPC Key Informant Interview did not obtain any specific information about the swap meets because none of those interviewed recognized these events as such.

E. CSAM WEBINARS

There were 12 CSAM-sponsored webinars offered monthly between October 2016 and October 2017. There was no webinar during the month of August 2017. The topics were as follows:

- 1) Office-Based Buprenorphine: Patient Selection, Induction and Management
- 2) Patient Confidentiality and MAT in California Primary Care Settings
- 3) Expanding Access to MAT Utilizing Nurse Care Managers
- 4) Effective Strategies for the Non-Compliant Buprenorphine Patient: Rational Monitoring and Contingency Compassion with risky or non-adherent patients
- 5) Psychological Approaches to Pain Management for the Primary Care Provider
- 6) Managing Acute and Perioperative Pain in Patients on MAT
- 7) Tapering Patients on Long Term Opioid Therapies
- 8) Naloxone Prescribing in Primary Care: Why, Who, and How
- 9) Complex Chronic Pain, Opioid Prescribing, and Opioid Use Disorder: Pitfalls, Pearls, and New Directions
- 10) How to Build a Controlled-Substance Review Committee in Your Primary Care Clinic: Why? Who? How?
- 11) Transitioning High-Dose Opioid Chronic Pain Patients to Buprenorphine
- 12) Medication-Assisted Treatment for Alcohol Use Disorder: A Guide for Primary Care Providers

Participation in the CSAM webinars was tracked by CSAM, and the data provided here are drawn from data shared by the CSAM subcontractor with CCI.

Of the 300 opportunities (25 agencies times 12 webinar events), 60.3% were attended (n=181). Twelve of the agencies had representation at 8 or more (75%) of the events. So, for close to 50% of the TAPC

participating agencies, CSAM webinars were regularly attended. One agency attended zero webinars, and four attended 2 or less.

Evaluation data were also tracked and provided by CSAM. The advantage to these data is that unlike the information gathered from the key informant interviews, the 10-point scale ratings are not combined and condensed with the CCI webinar evaluations. As previously noted, the CSAM webinars were open to registrants who were qualified professionals outside (and inside) the TAPC network. Approximately 27% of participants were TAPC affiliates.

As noted above, the key informant interviews were used to rate the experience of the CCI and CSAM webinars. Because the informants could not easily recall what webinar was sponsored by what organization (CSAM or CCI) the ratings of 1-Completely worthless to 10-Extremely valuable may have been condensed. Twenty-one of 25 clinics providing these combined webinar ratings on the 10-point TAPC Key Informant Interview scale.

From the CSAM webinar evaluation data shared by CSAM, a more definitive and positive result is evident. The total number of attendees for all 12 CSAM webinars was 1,491. Fifty-nine percent (59.2%) or 882 individuals turned in evaluations. We base our evaluation on the 5-point scale response to the question: "Overall, how would you rate this webinar?" We isolated ratings at the 4- and 5-point level—Very Good and Excellent. The average number of evaluations returned for each of the 12 webinars was 73.5, and of these 92% to 100% were rated as "Very Good" or "Excellent."

The overall good response rate (59.2%), high ratings (95+% very good to excellent) speaks to the positive content in the CSAM offerings. Furthermore, the 60.3% participation rate places it as the highest of distal learning strategies in terms of engagement/attendance.

F. SITE VISITS: AS VISITOR OR HOST

There was a total of five hosted site visits where TAPC participants attended practice settings that were perceived to be further along in the implementation of addiction medication practice in their work. The five host sites and visiting TAPC clinics were:

- Venice Family Clinic on 03/29/17 hosted five health centers.
- OBIC San Francisco Department of Health on 03/28/17 and 04/11/17 hosted two health centers.
- Contra Costa Health Services Department on 04/12/17 hosted three health centers.
- El Dorado Community Health Center on 04/19/17 hosted two health centers.
- Health Right 360 on 05/12/17 hosted six health centers.

Many clinics attended more than one site for observation. In all, 15 of 25 TAPC participants either hosted or visited another clinic(s). Eleven of these 15 (60%) rendered evaluative ratings on the TAPC Key Informant Interview. The average rating was 8.1, with a range of 5 to 10.

G. INCENTIVES FOR X-WAIVER TRAINING

To offset the perceived cost and burden of taking time for the x-waiver training in buprenorphine prescribing, CCI offered a one-time incentive of \$1000 to go toward a provider being trained. Many TAPC participants were not aware of this incentive and communicated this during the Key Informant Interview. However, nine TAPC participants applied for and received the incentive, but this accounts for only 36% of all eligible participants. The TAPC Key Informant Interview asked those obtaining the

incentive to rate the benefit on a 10-point scale. There was wide variation, from 5 to 10, with an average of 8.0.

This implementation support activity was not particularly well-announced, otherwise the uptake may have been better. In addition, as much as leaving funds on the table is undesirable by safety net clinics, some did not see the value in covering a training that was already free.

H. REGIONAL CONVENINGS

Three “regional convenings” enabled small groups of practices to assemble around addiction medicine related topics. These events were not exclusive to TAPC participants. On December 14, 2017 the Community Clinic Association of LA County (CCLAC) hosted a group which was attended by five TAPC participants. On January 25, 2018 in Nevada County, Western Sierra Medical Clinic hosted two clinics. Finally, the Redwood Community Health Coalition (Sonoma), on January 31, 2018 hosted an event attended by five TAPC clinics. Internal evaluations were only available for the Sonoma convening. Of 31 respondents, 29 rated the experience an 8 or higher on a 10-point scale (93.5%). Written feedback on the evaluations recognized the value of in-person networking, shared learning, and practice tips.

Within the TAPC Key Informant Interview process, most individuals and teams that were interviewed did not understand the term “regional convening” and were confused by the question. Only 5 of 12 clinics that were recorded as having attended a convening could remember or account for being there. Of these, the 10-point rating scale average was 9.4, with a range from 7 to 10. This relatively high rating is consistent with the other face-to-face strategies: in-person learning, coaching, and site visits.

I. CCI TAPC ONLINE RESOURCES

CCI developed a web-based resource for TAPC participants and the public:

<https://www.careinnovations.org/programs/tapc/>

This is a well-designed, user-friendly, and comprehensive resource on MAT, translation of addiction medications into primary care practice, and on practice change in health care more broadly. Information, resources, and news about events are featured on the website. Downloadable forms and tools are also available. On the TAPC Key Informant Interview, 19 of 24 teams interviewed reported accessing the site. Of the 18 that assigned it a rating on the 10-point scale, the average was 8.1 (range 5 to 10). The median rating was 7.

Although the website was perceived as well-done and valuable, at the same time it was not routinely accessed or used as a go-to resource. There appeared to be a disconnect between the overall quality of the resource and its spread to TAPC participants.

In summary, TAPC participants were offered a comprehensive, varied, and extensive list of implementation support activities. There were nine activities that could be identified and other activities that were more challenging and confusing for participants to recall or suspect that they had utilized. Among the most challenging to isolate were regional convenings, swap meets, and incentives for waiver trainings. Terminology and identifying these as TAPC events was confusing. Of the well-specified and focused activities, the most important were TAPC in-person learning sessions, site visits, and consultation with expert coaches. The use of expert coaches varied. This variation may be due to aspects of organizational readiness and clinical lead, qualities and availability of the coach, and the interaction or fit between clinic and coach. Although practical and feasible for geographically dispersed groups, distal learning options such as Project ECHO, CCI webinars, CSAM webinars, CCI swap meets, and TAPC online resources, had significantly more mixed reviews. Of these distal and technology-based platforms, the CSAM webinars were very highly evaluated. These findings address the goals of Aim C of our evaluation plan. Future planning for TAPC 2.0 might consider condensing and clarifying these options, and also refining them based on need and relevance.

6. FINDINGS: CHALLENGES AND BARRIERS OVER TIME

In systems or practice change projects, ignoring context is disastrous. Phrases such as “culture eats strategy for breakfast” or “context is king” are poignant examples of the respect and consideration context must be paid in order to advance implementation or sustainment.

In the reach and adoption of addiction medication in primary care, there are many documented contextual challenges. From the patient perspective, these might include lack of awareness of or zero readiness for an addiction diagnosis or addiction treatment, medication, or otherwise. Patients have self-stigma and shame about addiction. Patients and families may see addiction medications as simply substituting a drug for a drug. Lastly, they may not expect a primary care doctor to be able or willing to address this issue. From the provider perspective, addiction may be seen as untreatable, requiring special training or expertise, not a medical condition but a matter of poor character and weak willpower, or simply just too much trouble to deal with. From the clinic perspective, there may be prohibitive concerns ranging from a complex and unusual workflow to dealing with complex and unusual people in the waiting room. Leadership may have mixed feelings about taking on this kind of practice and these kinds of patients as if they are entirely different from already established patients in the clinic. There may also be skepticism about appropriate financing and reimbursement: Is the medication covered? How much of the providers’ time will be needed to do this? What about the behavioral counseling component—who will pay for this?

TAPC implementation support and technical assistance strategies—although focused on the bottom line of reach, adoption, and improved patient outcomes—are actually attempting to deal with contextual challenges and barriers. The support activities are designed to help clinics overcome these challenges and find novel ways of forging ahead. Further, bringing health centers together is an enormously useful way of sharing proven-to-be-effective strategies that could also work in a different setting.

TAPC participants provided information on barriers and challenges. This information was provided on the original TAPC participation applications and summarized in a table by CCI. It was also submitted to HRSA on the quarterly reports in response to an open-ended question. And finally, this information was provided in response to entry questions and probes on the TAPC Key Informant Interview. We reviewed all of these data sources and developed a coding scheme to categorize the challenges/barriers into categories.

Initially, as outlined in our evaluation proposal, in pursuit of **Aim D**, we expected to use the CFIR to categorize the challenges and barriers (Damschroeder et al, 2009). As we began to review the content in the baseline and HRSA quarterly reports, however, it was clear the CFIR would not capture many of the themes in the data. Significantly absent in the CFIR is the patient perspective, or at least perceptions about the patient by staff. The CFIR is designed to categorize perceptions, challenges, barriers, and facilitators at the provider, clinic and system levels and also beliefs about the “intervention” to be implemented. In this case, addiction medication for persons with opioid use disorder. Because of this discovery, as we approached these data we developed two coding schemes, one based on the CFIR and another based on a free text thematic analysis. The codebook developed to categorize this content is included in the **APPENDIX** of this report.

We analyzed data from the baseline information and HRSA reports in two phases. Initially, two members of the team analyzed reports together using qualitative content analysis and a combination of deductive

and inductive approaches. We used the CFIR Index as a coding framework to identify barriers to addiction medication treatment activities but were also open to new codes driven from the data. We went through and coded HSRA quarterly reports together. Discrepancies in coding were discussed and then resolved until consensus on codes were reached. Once the majority of reports were coded, a codebook containing definitions and examples of inclusion (☑) and exclusion (☒) criteria for each category were created. In the second phase, we applied the established coding scheme (i.e., the codebook) to all of the reports. Any update to the codebook was discussed and then applied to the data. Initial codes were further refined, and subcodes were created and regrouped into larger categories. For example, “stigma” and “fear of treatment” subcodes were grouped into a larger subcategory, “Negative Perceptions/Stigma.” Once coding was completed, the number of barriers to addiction medication treatment activities was calculated for each time period.

In **TABLE 6**, the categories of perceived barriers and challenges are presented by frequency and over time. This is not an extensive list, but instead common challenges emerge as consistent across TAPC clinics. From patient level concerns, issues of compliance and retention, and stigma and readiness (patient perception) were notable. Also indicated was a not-in-my-backyard (NIMBY) concern about community perception of the clinic offering services to persons with addiction. Major concerns were raised on the clinic side. Compatibility in workflow, documentation in the electronic health record (EHR), and identifying and recruiting eligible patients were observed. Resource availability in terms of personnel, staff training, and clinician knowledge and beliefs were also observed. All of these themes are consistent with the literature on implementing addiction medication in primary care.

What happens to these barriers over time? Does TAPC participation influence changes or reductions in these types of challenges?

In **FIGURE 8**, we portray the change in the top five (based on frequency count) challenges at baseline: 1) Personnel; 2) Workflow; 3) Training; 4) Documentation/EHR; and 5) Patient compliance and retention. Positive changes (reduction) in practice processes reflected in workflow and documentation are evident. This may be attributed to efforts within TAPC technical assistance that offered guidance on protocols, templates, team roles and activities. In-person learning, coaching, and site visits may be the most likely components to target and address these kinds of issues. Reduction in training as a barrier also was evident. Training through the x-waiver course, Project ECHO, CSAM and CCI webinars, and practical skills obtained via person-to-person components all may have impacted this baseline barrier. Interestingly, the initial expected challenges related to personnel (i.e., adequate number of x-waivered prescribers prescribing, behavioral health clinicians with addiction expertise) persisted. In addition, perhaps as clinics began treating patients and expanded treatment to more patients, patient-level challenges of compliance and retention would dip and elevate over time.

FIGURE 9 portrays the same content but categorized only using the CFIR. This is a validation of the findings in **FIGURE 8**. Note significant progress on processes and training, but continuing issues with personnel and re-emergence of barriers related to clinician knowledge and beliefs. This final item pertains to participant’s intentions to scale-up addiction medication in their clinics but encountering significant resistance and reluctance from their colleagues.

We examined the content of barriers using the same strategy but in reverse: What are the top five barriers at the end of the timeline and where did these concerns stand in the beginning? In other words, as health centers were engaged in full-blown practice implementation, what challenges emerged?

FIGURE 10 depicts these issues over time. Personnel and training remain as prominent challenges as described previously. However, now we see patient-level factors being raised: compliance, retention, and social supports. This shift in challenge, from providers to patients, is important and reflects an entry into routine practice issues of improving patient care.

TABLE 6: NUMBER OF BARRIERS TO ADDICTION MEDICATION TREATMENT ACTIVITIES OVER TIME: BASELINE AND HRSA QUARTERLY REPORT (n=25)

CFIR INDEX BARRIERS	2016			2017			
	BASELINE n (%)	Q3 n (%)	Q4 n (%)	Q1 n (%)	Q2 n (%)	Q3 n (%)	Q4 n (%)
Complexity Intervention	0 (0)	3 (12)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Cost Intervention	0 (0)	0 (0)	0 (0)	1 (4)	4 (16)	2 (8)	0 (0)
Patient Needs and Resources Complex High-Needs Patients	0 (0)	1 (4)	1 (4)	3 (12)	4 (16)	1 (4)	1 (4)
Enhanced Services	1 (4)	0 (0)	0 (0)	2 (8)	1 (4)	1 (4)	1 (4)
Treatment Options	0 (0)	0 (0)	1 (4)	1 (4)	1 (4)	1 (4)	1 (4)
Network Connectivity Linking External Services	3 (12)	2 (8)	1 (4)	2 (8)	2 (8)	2 (8)	0 (0)
Referral	1 (4)	1 (4)	2 (8)	1 (4)	2 (8)	3 (12)	1 (4)
Pharmacies	2 (8)	1 (4)	3 (12)	0 (0)	2 (8)	0 (0)	0 (0)
External Policy and Incentives Billing & Insurance	2 (8)	4 (16)	4 (16)	1 (4)	5 (20)	4 (16)	2 (8)
CURES Assessment	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Structural Characteristics Capacity	2 (8)	1 (4)	3 (12)	2 (8)	3 (12)	3 (12)	4 (16)
Networks and Communications Communication	1 (4)	1 (4)	2 (8)	0 (0)	2 (8)	0 (0)	0 (0)
Implementation Climate Quality Improvement	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	0 (0)	0 (0)
Compatibility Referral	0 (0)	0 (0)	1 (4)	1 (4)	2 (8)	3 (12)	1 (4)
Documentation/Electronic Health Record	4 (16)	8 (32)	5 (20)	3 (12)	5 (20)	5 (20)	4 (16)
Care Coordination	3 (12)	4 (16)	4 (16)	3 (12)	5 (20)	2 (8)	3 (12)
Workflow	10 (40)	4 (16)	5 (20)	2 (8)	2 (8)	0 (0)	2 (8)
Identification/Recruitment	5 (20)	1 (4)	2 (8)	2 (8)	3 (12)	4 (16)	2 (8)
Behavioral Health Integration	1 (4)	3 (12)	2 (8)	1 (4)	2 (8)	1 (4)	0 (0)
Organizational Incentives Provider Incentives	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)
Leadership Engagement Involvement	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)

FIGURE 8: TOP 5 BARRIERS AT BASELINE AND PROGRESSION OVER TIME (n=25)

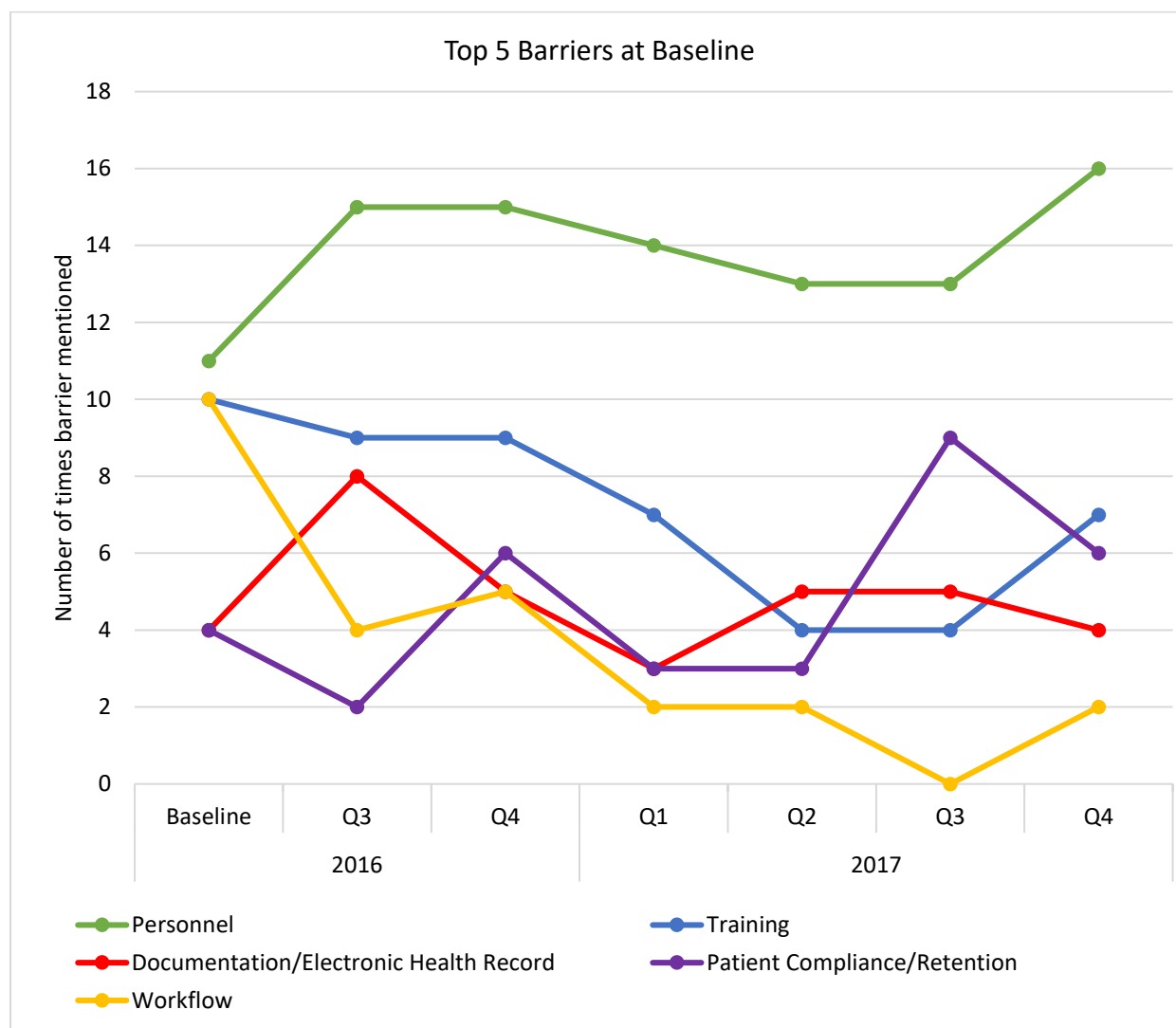


FIGURE 9: TOP 5 CONSOLIDATED FRAMEWORK FOR IMPLEMENTATION RESEARCH (CFIR) INDEX BARRIERS AT BASELINE AND PROGRESSION OVER TIME (n=25)

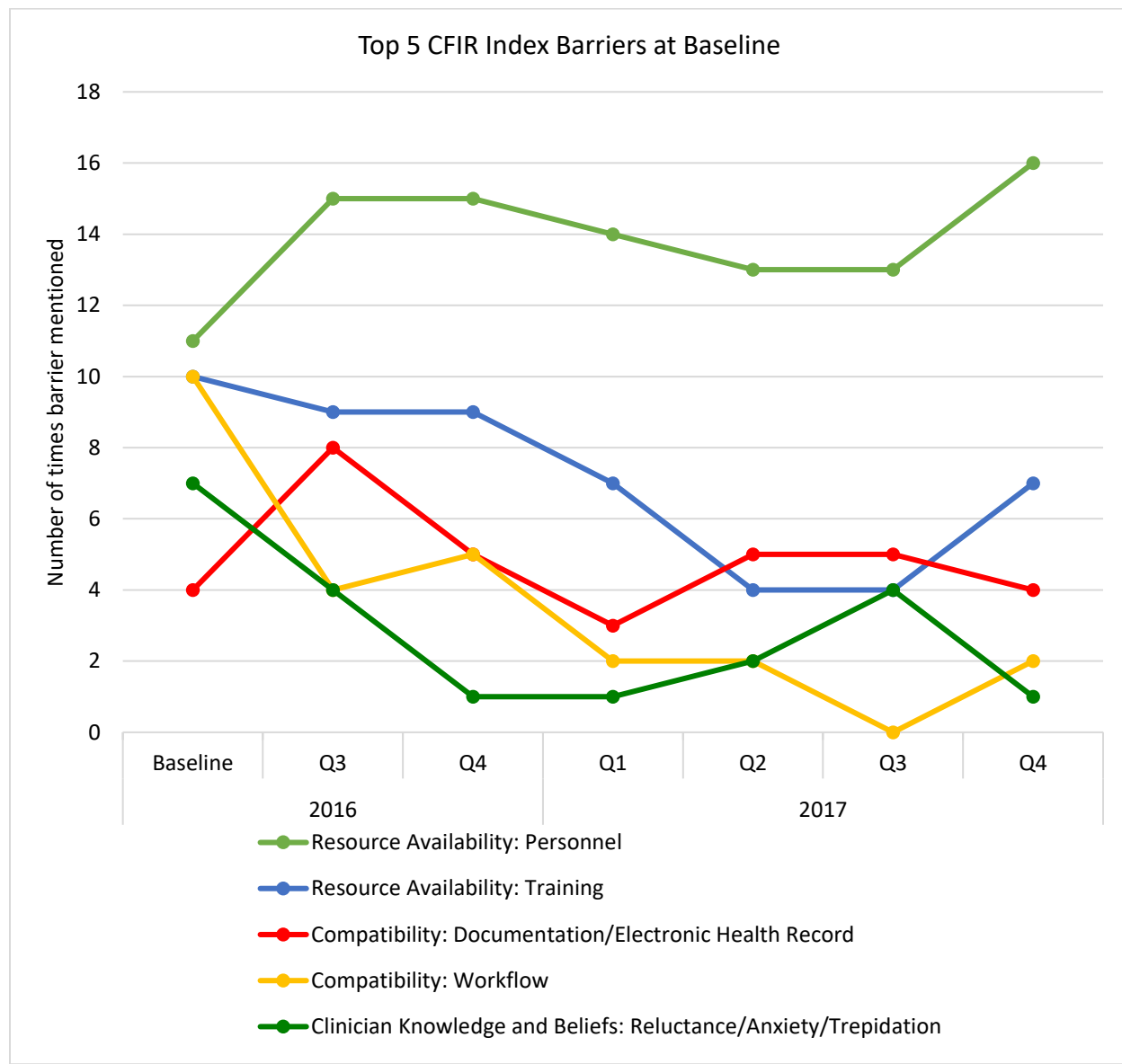
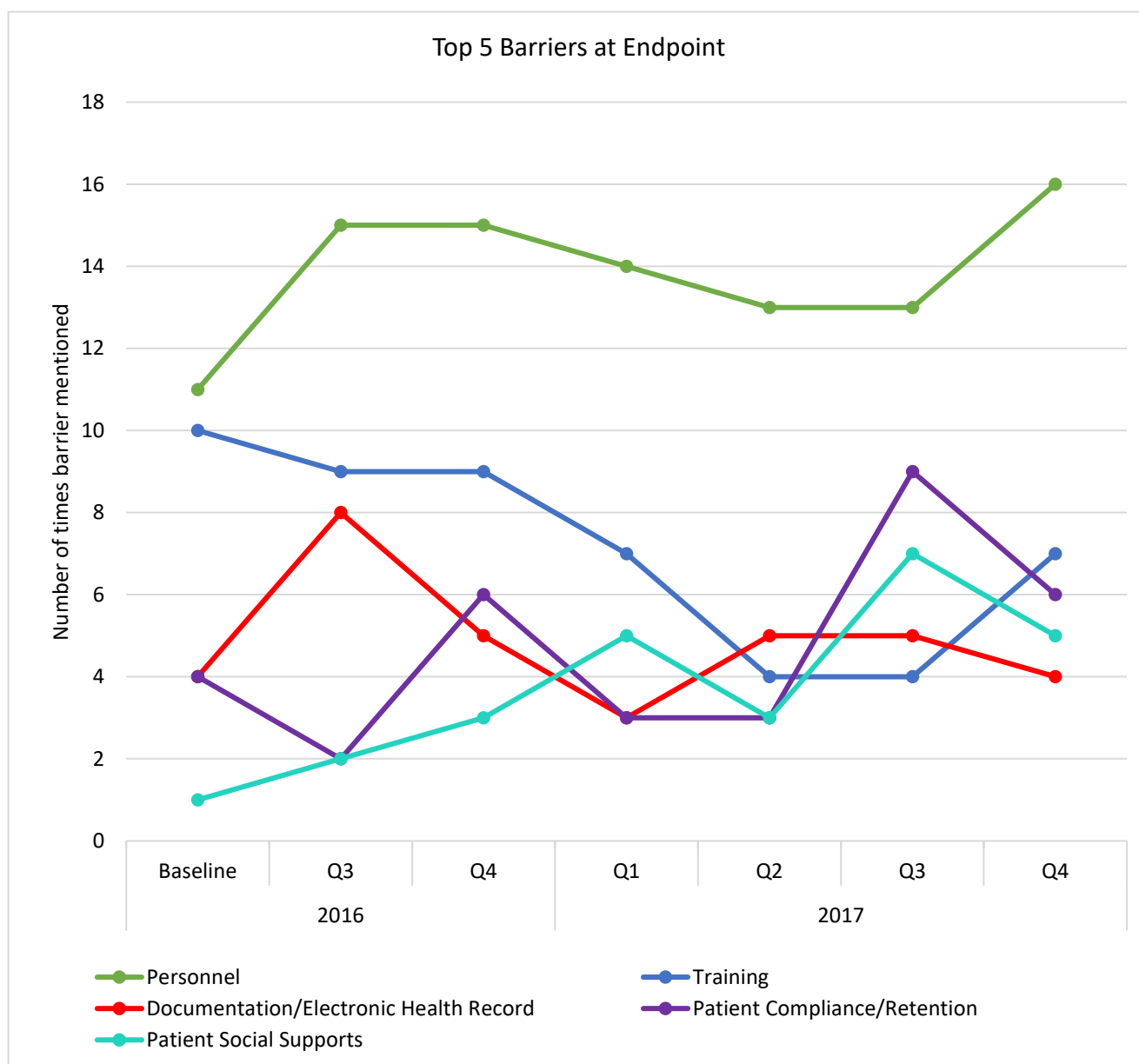


FIGURE 10: TOP 5 BARRIERS AT ENDPOINT AND PROGRESSION OVER TIME (n=25)



In summary, from the existing data on perceived barrier and challenges to addiction medication in primary care, gathered by CCI, HRSA quarterly reports, and TAPC Key Informant Interviews, we were able to measure and observe changes over time. This is consistent with our goal outlined in Aim D. Initial challenges pertaining to workflow, documentation, and other practice processes diminished. Barriers related to personnel, both prescribers and behavioral health clinicians, persisted. The personnel-related barriers varied by stage of implementation of addiction medication. TAPC clinics that were more advanced in implementation were focused on scale-up and expansion. These clinics were encountering challenges in engaging new physicians in their practice in using addiction medication, and challenges in recruiting behavioral health clinicians with addiction counseling expertise. Other TAPC clinics, those that were at the early stage of implementation, had challenges finding prescribers and clinicians to start and develop the practice. Patient-related issues, such as compliance, retention, and social risk factors, emerged for TAPC clinics at both stages of implementation. For early implementers, this involved recruiting patients and keeping them. For advanced implementers, this meant improving care and outcomes.

7. BRIGHT SPOTS: POSITIVE OUTLIERS AND POSITIVE DEVIANCE

A useful analytic approach to understanding differences in practices is to compare those with particularly good outcomes with those that have average or less favorable performance. The logic is that if we can understand and identify what positive outliers or positive deviants are doing to get to those outcomes, then perhaps this can be replicated with greater transparency and efficiency. In the present situation, in as much as data on patient outcomes (e.g., reduced or elimination of opioid use, improved quality of life) should be our outcome metrics, we do not have these data. Instead, we consider implementation outcomes—specifically positive change in the number of patients receiving addiction medication—as the metric of success. Because meta-analysis and Cochrane reviews have established that addiction medication is associated with reduced and elimination of opioid use, as well as improved quality of life, this metric is a reasonable one on which to establish success.

In meeting the objective outlined in ***Aim E***: To identify “bright spot” TAPC participants, we were able to utilize two sources of data about reach (i.e., patients on addiction medication). They included HRSA quarterly reports and TAPC participant email responses to summary data. We used a magnitude of change approach to quantify and rank the TAPC agencies by growth in numbers of patients on addiction medication. Although simple counts of raw numbers are useful, in this case where clinics often started at different stages of implementation, this strategy would penalize start-up practices. We calculated magnitude as the multiplied increase (times) from baseline to post-TAPC. For the HRSA quarterly report, we calculated the change from the 3rd Quarter of 2016 (Q3 2016) to the 4th Quarter of 2017 (Q4 2017). For the TAPC email request for summary data, we calculated the change in active patients on buprenorphine from September 2016 to December 2017. As discussed previously, there may be some differences in these metrics based on definitions and who at the clinic completed the report. Therefore, we used convergence to select bright spot positive outlier practices.

The magnitude of change in the number of patients on addiction medication from HRSA quarterly reports and the TAPC report were calculated for each agency [the number of patients on addiction medication at endpoint (Q4 2017) divided by the number of patients on addiction medication at baseline (Q3 2016)]. Note: to avoid invalid results, if the number of patients was 0 at baseline, 1 was used instead. Agencies were categorized as “high performers” (bright spots) if the magnitude of change was ≥ 3 , for both data sources (i.e., HRSA quarterly reports and TAPC report). If the magnitude of change was < 3 for at least one data source, the participant was categorized as “other agencies.” **TABLE 7** depicts the rank-ordered list of positive outliers (n=13).

TABLE 7: RANK-ORDERED LIST OF POSITIVE OUTLIERS (n=13)

AGENCY	NUMBER OF PATIENTS ON ADDICTION MEDICATION						MAGNITUDE OF CHANGE
	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	
Clinic 9							
HRSA Quarterly Report	0	1	3	34	53	83	83
TAPC Report	1					46	46
Clinic 7							
HRSA Quarterly Report	0	0	(NA)	34	34	52	52
TAPC Report	0					26	26
Clinic 12							
HRSA Quarterly Report	0	3	9	10	26	30	30
TAPC Report	0					18	18
Clinic 2							
HRSA Quarterly Report	6	12	22	33	39	48	8
TAPC Report	0					40	40
Clinic 24							
HRSA Quarterly Report	0	6	9	8	27	16	3
TAPC Report	0					45	45
Clinic 18							
HRSA Quarterly Report	(NA)	3	13	35	25	22	7
TAPC Report	1					32	32
Clinic 15							
HRSA Quarterly Report	4	7	9	9	9	23	6
TAPC Report	0					22	22
Clinic 20							
HRSA Quarterly Report	0	0	0	1	7	11	11
TAPC Report	0					14	14
Clinic 8							
HRSA Quarterly Report	88	74	87	104	159	229	3
TAPC Report	2					25	13
Clinic 21							
HRSA Quarterly Report	6	8	9	20	24	27	5
TAPC Report	0					3	3
Clinic 4							
HRSA Quarterly Report	98	222	203	144	167	319	3
TAPC Report	43					153	4
Clinic 13							
HRSA Quarterly Report	14	32	21	28	33	43	3
TAPC Report	6					20	3
Clinic 17							
HRSA Quarterly Report	44	69	93	94	108	126	3
TAPC Report	27					77	3

As seen in **TABLE 7**, the 13 bright spot clinics include both small and large practice settings.

If TAPC implementation support activities are causal, or at least associated with the change in the number of patients on addiction medication, we compared the positive outliers with all other practices. **TABLE 8** depicts these comparisons. No visually observable differences are apparent. We also conducted simple statistics for differences between groups for each strategy participation and overall (t-test; Fisher's exact; χ^2 -square; Pearson correlation coefficient). These analyses yielded no significant differences between groups.

TABLE 8: IMPLEMENTATION SUPPORT ACTIVITY PARTICIPATION BY PERFORMANCE CATEGORY (n=25)

IMPLEMENTATION ACTIVITIES	HIGH PERFORMERS (n=13) n (%)	OTHER AGENCIES (n=12) n (%)
In-Person Learning Sessions	37/39 (95)	35/36 (97)
Project ECHO	75/208 (36)	68/192 (35)
Expert Coaching	9/13 (69)	8/12 (67)
CCI Webinars	23/39 (59)	19/36 (53)
CSAM Webinars	89/156 (57)	92/144 (64)
Onsite Visits (Visit or Host)	7/13 (54)	8/12 (67)
Incentive for Waiver Training	5/13 (38)	4/12 (33)
Regional Convenings	7/13 (54)	5/11 (45)
TAPC Online Resources	10/13 (77)	9/11 (82)
Total Number of Activity Participation m (sd)	29.11 (31.86)	27.56 (31.80)

Although no causal or correlational relationships between reach and TAPC implementation strategies, the growth in numbers of patients, numbers of prescribers, numbers of active prescribers, and in the proportion of x-waivered prescribers—relative to all eligible—is impressive during less than a two-year time frame.

The four medium size practices grew from 0 patients to a mid-size addiction medication clinic within a safety net clinic. This is an impressive trajectory within a short period of time.

Two clinics in particular demonstrated remarkable growth. The first developed capacity with two prescribers: a physician and nurse practitioner. They utilized a team-based care approach. With respect to implementation support activities that affected outcomes, both providers pointed to the benefit of in-person learning sessions and time with the expert coach. Specifically, regarding in-person learning sessions, one provider commented, “they were really helpful in that we saw what other places were struggling with like us—I really wish there were more of these sessions.” In terms of coaching, the same provider said, “mentoring was the biggest thing for me—I enjoyed it, it was more personal and it was more specific to me and our clinic.” Project ECHO sessions were attended but CSAM webinars were not because of timing (Friday, lunchtime). Both providers commented that TAPC “provided a ton of resources with no time to use it all” and requested more face-to-face meetings. The clinic was initially concerned about a low number of appropriate patients and referrals, and also worried about workflow, especially with regard to induction of new patients. There was “incredible turnaround” on both fronts. Patient word of mouth increased referrals and workflow was far less complicated than had been anticipated.

The second clinic also experienced considerable growth, increasing from 0 to 46 patients in just over one year. Much like the other clinic, they encountered a very slow start with patient referrals and with staff “buy-in.” Using “simplistic marketing materials” for patients and staff, there was a gradual increase in patient referrals. Ninety-four inductions had been started to date. With respect to TAPC implementation support activities, providers reiterated the value of in-person learning sessions, saying “it was nice to sit with other people going through the same issues—talking about the work over lunch—it saved me a lot of time Googling for answers.” Neither Project ECHO or nor CSAM webinars were well-attended because of scheduling conflicts but were also not perceived as relevant. In contrast, the CCI webinars were. Although a TAPC expert coach was not utilized, a pre-existing relationship with one of the TAPC coaches was seen as invaluable. “We got to visit his clinic and also went on other clinic visits—this was really helpful to see how people handled the routine workflow but also how difficult patients were managed.”

To summarize, we were able to identify positive outlier or bright spot” safety net clinics based on a metric of increased growth in patients on addiction medications. There were 13 such practices, spanning small, medium, and large panel sizes. The growth from 0 or 1 to a medium size practice was remarkable for four clinics. Two of these clinics revealed the importance of in-person learning, expert coaching, and subtle but palpable changes in culture within their clinics. We compared bright spot clinics with clinics that experienced less or no growth in participation in TAPC implementation support activities. We could find no statistical differences between high performers and other clinics on these variables. However, there were numerous activities, reportedly too many to take part in, that as a whole may have contributed to the significant success of more than half of TAPC participants.

8. NARRATIVE EVALUATION

In this section, we pursue **Aim F**: To explore the perceptions of TAPC participants to compile and categorize lessons learned, plans for and likelihood of sustainability, recommendations, and surprises that can serve to guide further addiction medication implementation or sustainment support activities in California. These narratives were obtained during the course of TAPC Key Informant Interviews in January, February, and March 2018.

A. PERCEPTIONS OF PROVIDERS ABOUT THEIR PATIENTS AND PATIENT CARE

Encountering stigma among affected patients and within communities was described, as was overcoming it among health care professionals:

- *“We continue to have a hard time finding patients. Most if not all of our patients are Mexican or Mexican-American. There is huge stigma about addiction and even more stigma about getting help. They worry about being seen by members of the community.”*
- *“Our clinic has many Native American patients with heroin and methamphetamine problems. There’s a lot of stigma, a lot of social problems, transportation problems—we know they need us but it’s like there’s this wall between us.”*
- *“To be honest, addiction medicine, really, I ran away from these people. Now I find they are real people, in fact great people. Better people. My attitude totally changed—I am more sympathetic, more compassionate. I don’t see addiction as a matter of willpower. I enjoy taking care of these patients.”*

If the root of stigma is fear, among health care professionals there is a fear of being ineffective and helpless in treating patients with addiction. There were narratives about the transition from anxiety and doubt to competence and comfort. Key informants shared patient stories that illustrated a shift in perspective:

- *The turnaround is incredible—it’s extremely rewarding. So much easier than treating a diabetic.”*
- *“Not as hard as I imagined, even induction is kind of anti-climactic.”*
- *“My very first patient was a woman in her 30s who got started with Vicodin for a toothache. She ended up on large amounts of oxy, lost her job, her family—in fact her grandfather who came to her appointment one time said, ‘I expected she’d be dead by now.’ So she’s now on Suboxone. She’s back to work, obviously not dead, and is happy, bright, and talkative. She says that before she came to us she was always looking for the next hit. Now she is playing basketball with her kids, watching movies with the kids, just plain being there with them and not ‘out of it.’ So rewarding—I can’t think of any other medication where this stuff happens.”*
- *“We had this one guy I remember well. He was 26 years old, obese, and had 2 young kids. He was using street methadone and Xanax—addicted to both. He was a thief and a robber to support his addiction and hadn’t worked for years. He came into us desperate. Transitioning from street methadone to buprenorphine was not easy, but he got it down to where we could induce him. Today, he’s about 40 pounds lighter, he’s working, a better dad, and a bright light for all staff whenever he comes into the clinic. ‘My family says my eyes are clearer, I look great, and I am about to buy a car—a van for the kids!’ ”*

Narratives were also rich with instances of the joy of practice in the care of persons with addiction:

- *“As I’ve worked this year on the ground, I’m amazed at the outcomes. With other disease processes you just don’t see the drastic, dramatic outcomes. People’s lives change. How gratifying it is doing this kind of work. I had no idea.”*
- *“Providers perceive substance use disorders at ‘difficult patients.’ This is what drives the stigma. What’s remarkable is once they got their feet wet they realize they had a total misconception of these patients. They are actually rewarding and not difficult. In fact, this work increases provider job satisfaction. Quite frankly, it is one of the easiest patient populations.”*

B. PERCEPTIONS OF PROVIDERS ABOUT LEADERSHIP, MODELS, PROCESSES AND STAFFING ISSUES

The active engagement and commitment of leadership has been identified as crucial to an effective scale-up project. Although there were several examples, these are most illustrative:

- *“For some reason, maybe it was serendipity, I was on a flight with a person who I later discovered was our medical director. It was amazing to have him take this on as a cause—it’s made an enormous difference across the organization—and we’re big—and now we’re growing.”*
- *“Our program has really grown—we’ve quadrupled the number of patients and gone from 1 to 4 RNs and 1 to 4 behavioral health counselors. We can also say that our medical leadership has been a champion for this, encouraging other providers to do this.”*

As addiction medication practice is being integrated in primary care, several models are emerging. Although the vision for DATA 2000 was that every physician and eligible prescriber would become x-waivered and prescribe, the reality is that at least presently, innovators or early adopters are at the forefront. These individuals grapple with how to fit into a safety net clinic system and into the broader health care and social service neighborhood. Here are some examples:

- *“We’ve kind of evolved into the overall clinic’s dedicated Bup program—we get referrals from other providers, we do inductions, we manage and stabilize them, we offer individual and group counseling, and patients get better. We then try to refer them back but this has not been as easy. We sort of have our own in-house version of the hub and spoke—we’re the hub—still no spokes.”*
- *“We’re just one of many clinics in our organization. Right now, we’re the only ones doing MAT. Someday I’d like to think instead of everyone referring to us, we can be there for the hard cases but they can do their own patients.”*
- *“At first we were pretty insular in this but as we’ve gotten more comfortable we are branching out and connecting with the community more.”*
- *“Right now, we have MAT in 2 of our 13 clinics. That’s better than 0 but not as good as 13. We need to expand the practice.”*
- *“We have multiple clinic locations in our health center and instead of having one site that does MAT we are working at having one MAT provider at each clinic. I am optimistic we will be able to do this and connect the teams for case conferences and in-house in-service training.”*

- *“There is still a lot of stigma among our providers. They want to refer everything out or everything to us. So we’re becoming like a specialty care clinic.”*

As with any new implementation activity, practical aspects within clinic (e.g., workflow, protocols) must be designed, tested, and installed. Here are illustrations of these issues:

- *“We learned a lot about how to identify patients who might need addiction medication within our existing panels—our numbers have been modest but hopefully will grow—we’ve made a lot of progress in sorting out the difference between pain management and addiction medicine.”*
- *“We have doctors here who are poster children for the misuse of opioids with their patients. A thing like this has made them very uncomfortable.”*
- *“It was not as hard to develop as smooth a workflow as we thought. We have designated MAT slots, but everyone plays a role as part of the team. These are mostly our patients anyway, so it’s become like any other medical office procedure with certain requirements.”*
- *“We started out with some pretty tight and inflexible protocols that probably were designed to make us comfortable. As we saw more patients we became a lot more flexible but still kept our program integrity.”*
- *“We were not flooded or overwhelmed with patients from the outside. We identified and cared for our own patients.”*

C. LESSONS LEARNED

Responses to this open-ended question were wide ranging. They are grouped into: staffing issues, patient types, outcomes, care coordination, and the relationship between grant writers and implementers.

On staffing issues:

- *“As you bring on staff, have a clear-cut training procedure, with benchmarks and criteria and stuff like that. Goals that are measurable. We found that many doctors, nurses and even counselors had no idea about addiction or had ideas all over the map.”*
- *“It’s really important to hire the right people. We’ve learned through failures what to look for in nurses and behavioral health staff.”*
- *“We’ve had a lot of staff turnover. Mostly on the behavioral health side. We train people. They’re gung ho, then they leave. We hit the reset button.”*
- *“Fear and uncertainty as a doctor is really uncomfortable. Now I feel a level of comfort and confidence treating substance use with my patients. This way to do this is to start.”*

On patient types:

- *“It seems we have two streams of patients, those who are opioid addicted and those who are physiologically dependent with chronic pain. Both streams are on the same medications and we can’t always tell them apart—they need variation in clinical approach.”*

On negative outcomes:

- *“Death. This is a well-supported clinical intervention but patients will die.”*

- *“You don’t want to expect the worst, but you do need to be prepared for it. We learned that you have to have a plan for the worst-case scenario—we were a bit naïve, especially with intoxication and withdrawal.”*

On care coordination and partnerships:

- *“Many MAT patients are involved with other health care and social services providers around our area. We’ve just started to think about how to form partnerships and coordinate things a little better.”*

On the disconnect between two clinic’s grant applications and those charged with their implementation:

- *“We jumped the gun on this grant. The people who wrote it never talked to administrators, didn’t talk with providers. Getting doctors on board was difficult. But we did. As I see it, we are going to grow exponentially.”*
- *“We don’t have an MAT program and our organization has no real interest in having one. We’re essentially partnered with a methadone provider to whom we try to connect patients. We were not involved with the grant application and were surprised when we were told we were running it. It would be important for people who write grants for our clinics to work more closely with those who will be implementing it.”*

D. SURPRISES

In as much as we expect things to go as planned, this never happens. Key informants were asked to reflect on their experiences with this project and talk about anything that surprised them, positive or negative. Here are some examples of narratives that describe what they did not see coming:

On leadership:

- *“At first, I did not understand how leadership could not be more supportive. They sent me mixed messages, like they were proud of the program but did nothing for it. I think somehow it would be good to get leaders on board up front.”*
- *“My chief medical officer went from nothing to an addiction specialist.”*

On attitudes:

- *“When our behavioral health director rolled out the program I was shocked by the negative reaction of my fellow physicians. The negativity was palpable and overt. Private comments were even worse. This saddened me.”*
- *“It was a struggle to get providers on board but then it was like something popped—we went from two to 14 overnight.”*
- *“I didn’t expect it to be this much fun.”*
- *“How patient you need to be. Stigma is ongoing. We’ve been at it for close to two years and at case conferences still hear things like ‘better not trade one addiction for another’ or ‘the more we accept the more we’ll be flooded by those people’ and so on.”*

On knowledge:

- *“As an addiction counselor, the biggest surprise to me is the lack of knowledge in the medical field about substance use disorders—all sorts of stigma, lack of information and crazy ideas.”*
- *“As a physician, I was surprised about what behavioral health clinicians knew about addiction. Not much. We tried to train them but this was not successful so we brought in addiction counselors. Turns out the first one did not believe in medication. So, this all surprised me.”*

On the practice of addiction medication:

- *The complexity of system-wide coordination surprised me. How do you coordinate in a county between clinics? How do you fit MAT into a primary care clinic or is it a carve out? So far we’re acting as a specialty clinic—a carve out—a shop within a store.”*
- *“How well and quickly the medication works was the biggest surprise to me. Once a patient gets on it, almost immediately they start rebuilding their lives. Of course it’s not just the medicine but all the individual and group counseling, too. We’ve seen so many families in reunification since we started this.”*
- *“I can’t say enough about how we see people come in, barely able to hold their heads up, and then go on to talking about their kids and families and looking for work. It’s totally remarkable.”*
- *“It’s ironic. When we got this grant I worried about where the patients who needed MAT would come from. We’ve never had to advertise. It turns out they were already our patients and already here.”*
- *“Everyone said you had to just do it to do it. And I did and I did it. MAT is really easy.”*

E. SUSTAINMENT

With respect to questions about sustainability of treating addiction in primary care, informants noted three major factors that could enable or disable this practice in the future: leadership, financing, and barriers.

On leadership:

- *“There are several people in senior leadership, and I am not sure why, have a personal interest in this.”*

On financing:

- *“FQHCs need to figure out how to get paid for two services, MD and behavioral health counselor, on the same day.”*
- *“The big question everyone has is what is the cost-benefit to all this. We all need to figure out how to make the ROI business case.”*
- *“It seems there is a lot of different information out there about counties and Medi-Cal and who and how we can all bill and for what. I’ve heard that people are getting paid through the county drug and alcohol department but then found out that this would be impossible. I’d say if you ask me about sustainability, this is where we need to get our stories straight.”*
- *“Because these can be high-needs patients with lots of social risk factors, we need more care coordination, navigators, and are currently not reimbursed for these services or people. We hire them, pay them poorly, and then wonder why they leave. Grants cover this in the short term. Whose job is it to connect the dots of the neighborhood—we learn this from patients.”*

- *“I am a little worried about the case management function. Who will do this and who will pay for it?”*
- *“We get a lot of these grant and don’t expect much of them beyond the funding. We get the next grant. The same thing happens over and over. No one really focuses on how things can stick. There’s a big split between who gets the grant and who carries it out.”*

On systems and practice barriers:

- *“I wish that pharmacies were more consistent in the willingness to work with ‘these people.’”*
- *“Our behavioral piece needs work. We may want to acquire a clinical psychologist—just not sure about our model and I know there’s better stuff out there.”*
- *“This is one of those practices that because of stigma among the rank and file, no one would be sorry to see this go away.”*

F. RECOMMENDATIONS FOR THE NEXT ITERATION OF TAPC

In the TAPC Key Informant Interview, respondents were asked an open-ended question about their TAPC experience, to comment on it, and if they had any suggestions, to share them also.

The narratives can be grouped into the following: overall appraisal, comments on the TAPC in-person activities, TAPC online activities, suggestions for specific approaches to new activities, and overall recommendations:

Overall appraisal of TAPC experience:

- *“We liked everything. Wouldn’t change a thing.”*
- *“The TAPC gave us a variety of programs, we could take or leave what we needed”*
- *“TAPC had a little too much of a good thing. It was impossible to take part in all of it. Maybe scaling back and being more focused. Maybe paying attention to quality of care and outcome measurement.”*
- *“To be honest, we were pretty confused about all the TAPC activities and events. It was hard to keep up with them. It felt like we needed more advanced support than many of the other clinics.”*
- *“I have been in practice 30 years, been in lots of trainings and learning sessions. CHCF did well to support this. CCI was fantastic and a great resource.”*

Illustrative comments on the TAPC in-person activities:

- *We really liked the in-person stuff. We carved out dedicated time, the team got together for a long period of time, which made us closer. We liked seeing other people’s models. We really liked the networking. More networking would actually be better for us.”*
- *“The face-to-face meetings were very well-organized and run. Clearly a lot of attention to detail and planning. Also, we were well fed.”*
- *“In the first meeting, there were a lot of MDs but by the third there were hardly any. I would take a look at that. Maybe need to figure out what is needed and how to customize.”*
- *“Having a coach assigned to us was pivotal. He held our hand, he adapted things to fit our clinic, and more importantly, our people. He gave us his cell phone number to call—which we only did once—for the first induction.”*

- *“Physical, face-to-face meetings are best to hold us all accountable—plus [they are] better for relationships and network building.”*
- *“Start off with in-person stuff so everyone gets comfortable and familiar. Maybe in the AM have everyone together and in the PM split folks by roles.”*
- *“We really got a lot out of the in-person sessions, time with our coach who was invaluable, and with the visits to other clinics. This has gone really well for us. We feel like everything in the community, in our clinic, with our leadership, and with this project aligned just right.”*
- *“We have a real interest in working through the most challenging of questions, brainstorming and brain-picking at the in-person sessions, with our coach, and when we visited other clinics was a great way to do this. We’re pretty isolated with this stuff even though we’re in the city.”*

Illustrative comments on the TAPC on-line activities:

- *“As much as they tried to make the webinars relevant it was really hard to attend them and if I did I was distracted. I always meant to go back to the archived ones but never got around to it.”*
- *“ECHO—wasn’t sure of the format really, didactic sessions, case discussions, not always appropriate—not matched to audience. The concept of soliciting hard questions and getting experts to weigh in or have exchanges about how people deal with them makes sense. Maybe there is a better way to do this?”*
- *“We got everything we needed from in-person learning sessions and coaching. The rest felt like an elective that we really didn’t need.”*

Suggestions for specific approaches or new TAPC activities:

- *“It would be great to have a provider contact list or some way of communicating with people you’ve met at the events in an ongoing way if you wanted to, as things came up.”*
- *“Be clearer about holding us accountable. I think everyone pushes back but it’s really helpful when we are asked to share our numbers: numbers of patients on MAT, numbers of doctors prescribing, numbers of patients getting worse or getting better. This was all ambiguous in TAPC.”*
- *“We seemed to be struggling to get patients because of the culture of our community. I had a hard time identifying with the other practices that seemed to be doing well and expanding. Our numbers were zero, one or two, and these patients dropped out so we were back at zero.”*
- *“We thought that some of the material was mostly for MDs and other material was for everyone but MDs. The one-room schoolhouse for trainings seems like it can be improved. Maybe a part of the day for teams and then separating the group for things specific to their discipline?”*
- *“Get physicians to share their stories.”*
- *“I hate to say this but there needs to be a lot more oversight on these grants. Websites and webinars are useful but don’t hold us accountable. There needs to be more oversight, accountability, policing—to make sure that goals are being met, mid-course corrections, timelines, fiscal responsibilities, and so on.”*
- *“I am totally grateful for all the support we got. Tammy and Susannah were great. I would say it would be good to connect sub-groups better, like county people, homeless people, people who have lots of patients, people who have less than five or even no patients.”*
- *“It would be good to have a communication platform—a closed one with people you know or met at sponsored event—where you could ask questions, maybe stupid questions, and have*

people weigh in. I often ask myself, I wonder what so and so does in this situation but don't want to bug them."

- "Needing to submit data was helpful in holding us accountable, in fact we probably could have used more of this. We continue to track our own data. We see this as important on many levels."
- "Activities should focus more on the 'assisted' part of medication-assisted treatment and not the silver bullet medication."
- "We noticed that our physicians did not attend the events, only the behavioral health staff. It would be good to require this as part of a contract, or at least make things so that the doctors would want to go."

Overall programmatic recommendations:

- "Do something for TAPC alumni—'advanced TAPC'!"
- "If there is something like a TAPC 2.0 we need help learning how to work with payers. We need to design benefits to get MAT reimbursed so we can sustain it."
- "For TAPC next chapter, things may need to be a bit more nuanced. Like labs, other addictions, behavioral health practices, revenue optimization, getting other doctors in your practice on board, things like that."

In summary, these narrative data provide depth and context to the experience of the 24 safety net clinics that participated in the TAPC Key Informant Interview process. Among many, several key themes can be highlighted:

- ***Most TAPC participants made considerable progress at expanding addiction treatment in their settings despite challenges and barriers;***
- ***Providers described enormous shifts in their perspectives about addiction and their role in its treatment;***
- ***Creative models within organizations are evolving and are likely at the early stage of development and scale-up;***
- ***A variety of lessons learned point to more advanced implementation issues and refinement of approaches to staff hiring, training and patient care;***
- ***A theme of positive nature of surprise emerged—how straightforward, effective and transformative addiction treatment can be;***
- ***Financing must be addressed for sustainment; and,***
- ***Although TAPC implementation support strategies were generally perceived as positive, there is a trend toward having more focused activities, tailored to practice need, and to include more in-person and measurement-based activities.***

This last point maps onto the quantitative findings of the variable use of each and every activity, the prioritization of in-person options (learning sessions, coaching, site visits, regional convenings) over online options, and finding the "sweet spot" between a seemingly unlimited smorgasbord of activities and a fixed forced set of options. With the buffet approach, no one leaves hungry, sometimes the choices are overwhelming, and there is potential for waste of food.

9. SUMMARY AND CONCLUSIONS

This report is an evaluation of CHCF-funded implementation support to California health centers that received SASE grants. Technical assistance and implementation support was provided through a contract with CCI. Activities were launched in the summer of 2016 and formally concluded in the winter of 2018. The project was called Treating Addiction in Primary Care (TAPC).

The TAPC evaluation was funded by CCI through a contract with Dr. Mark McGovern initiated in November 2017. The evaluation was conducted retrospectively for activities from the fall of 2016 through the end of 2017. The evaluation was not designed a priori or at the start or at the mid-course of the project. Data from reports submitted to HRSA by the grantees, tracking through logs and attendance software, responses to CCI email requests for summary data, and post hoc telephone interviews with clinic teams comprised the content for the report. The analyses were conducted and report prepared in March 2018.

The overarching goal of this evaluation is to contribute to the future design of implementation support and technical assistance activities for expanding access to addiction medication for persons in California with opioid use disorders. The bottom line purpose is to leverage the TAPC 1.0 experience toward a vision for a design of TAPC 2.0, capitalizing on lessons learned and on improving the next endeavor.

To achieve this goal, we defined the following specific research aims:

Aim A: To measure the change in: 1) number of patients prescribed addiction medication (buprenorphine); 2) number of addiction medication prescribers (x-waivered); and, 3) number of prescribers of all possible prescribers, for each TAPC participant and in total.

Aim B: To evaluate the engagement and continuation of TAPC participants in the overall project and in specific implementation support activities.

Aim C: To summarize the evaluations of specific TAPC implementation support strategies: x-waiver trainings, CSAM and CCI webinars, Project ECHO, in-person events, site visits, and coaching.

Aim D: To categorize barriers and facilitators to addiction medication implementation and examine how participant perception of barriers changed from baseline to the conclusion of the TAPC project.

Aim E: To identify “bright spot” positive outlier practices by highest rates of change in ***Aim A*** quantitative analyses, search for and document distinguishing attributes, TAPC activities and/or other internal strategies that account for success across bright spot practices.

Aim F: To explore the perception of TAPC participants to compile and categorize lessons learned, plans for and likelihood of sustainability, recommendations, and surprises that can serve to guide further addiction medication implementation or sustainment support activities in California.

In response to ***Aim B***, we tracked participation in TAPC support activities through a combination of existing data including sign-in sheets, roll-ups and Salesforce software summaries, and also through data obtained directly from TAPC participants via Key Informant interviews. The following results depict the rank ordering of the degree of participation in the full and extensive menu of TAPC implementation support activities: 1) In-person learning sessions=96.2%; 2) TAPC online resources=79.1%; 3) Expert

coaching=68.0%; 4) Onsite visits (visit or host)=60.0%; 5) CCI webinars=56.0%; 6) Project ECHO=52.0%; 7) Regional convenings=50.0%; and 8) Incentives for waiver training=36.0%.

These analyses address ***Aim B***, participation in TAPC implementation support activities. Despite some variation in data collection procedures and a complex multi-pronged set of implementation support strategies, we were able to adequately track participation. Given the range of options, it may not have been possible for TAPC participants to make use of all options at all times. Discussion for TAPC 2.0 might entertain the question of providing a full range of options that could be self-selected versus a more targeted range of options that are efficiently matched to need, preference, and stage of MAT implementation.

To meet the objective of ***Aim A***, we evaluate changes in reach and adoption. Because there is no control group, we cannot determine if these changes are a direct result of or caused by TAPC implementation strategies. We will explore associations to suggest these effects in a later section. However, if we examine only changes from time 1 to time 2, from September 2016 through December 2017, there is reason to be positive about the impact of TAPC. There is a substantial increase in reach, i.e., the number of patients on addiction medication, demonstrated by a 2.84 to 2.96 times increase. Depending on the data source, there are as many as 748 to 1150 new patients on medication for opioid use disorder. Furthermore, there is a 1.72 to 1.90 times increase in x-waivered prescribers depending on source of data. Concretely, this is an increase of 75 to 95 x-waivered prescribers. There are 70 new prescribers actually writing prescriptions for patients. Lastly, at the outset of TAPC, only 15.9% of eligible prescribers within participating clinics were x-waivered. Presently, this proportion is 23.5%. It may be that as ease of practice spreads within clinics, this proportion may continue on an upward trajectory.

In the analyses pursuant of ***Aim C***, TAPC participants were offered a comprehensive, varied and extensive list of implementation support activities. There were eight activities that could be identified and other activities that were more challenging and confusing for participants to recall or suspect that they had utilized. Among the most challenging to isolate were regional convenings, swap meets, and incentives for waiver trainings. Terminology and identifying these as TAPC events was confusing. Of the well-specified and focused activities, the most important were the TAPC in-person learning sessions, site visits, and consultation with expert coaches. The use of expert coaches varied. This variation may be due to aspects of organizational readiness and clinical lead, qualities and availability of the coach, and the interaction or fit between clinic and coach. Although practical and feasible for geographically dispersed groups, the distal learning options (e.g., Project ECHO, CSAM and CCI webinars, CCI swap meets, TAPC online resource) had significantly more mixed reviews. These findings address the goals of ***Aim C*** of our evaluation plan. Future planning for TAPC 2.0 might consider condensing and clarifying these options, and also refining them based on need and relevance.

To address ***Aim D***, we examined existing data on perceived barriers and challenges to addiction medication in primary care, gathered by CCI, HRSA quarterly reports, and TAPC Key Informant Interviews. We were able to measure and observe changes over time using a content coding scheme based upon the CFIR and free text analysis of patient-related content. This is consistent with our goal outlined in ***Aim D***. Initial challenges pertaining to workflow, documentation, and other practice processes diminished. Barriers related to personnel, both prescribers and behavioral health clinicians, persisted. The personnel-related barriers varied by stage of implementation of addiction medication. TAPC clinics that were more advanced in implementation, were focused on scale-up and expansion.

These clinics were encountering challenges in engaging new physicians in their practice in using addiction medications and also in recruiting behavioral health clinicians with addiction counseling expertise. Other TAPC participants that were at the early stage of implementation had challenges finding prescribers and clinicians to start and develop the practice. Patient-related issues, such as compliance, retention and social risk factors, emerged for TAPC clinics at both stages of implementation. For early implementers, this involved recruiting patients and keeping them. For advanced implementers, this meant improving care and outcomes.

To achieve ***Aim E***, we identified positive outlier or “bright spot” safety net clinics based on metrics of increased growth in patients on addiction medications. There were 13 such practices, spanning small, medium and large panel sizes. The growth from zero or one to a medium size practice was remarkable for four practices. Two of these practices revealed the importance of in-person learning, expert coaching, and subtle but palpable changes in culture within their clinics. We compared bright spot clinics with clinics that experienced less or no growth on participation in TAPC implementation support activities. We could find no statistical differences between high performers and other clinics on these variables. However, there were numerous activities, reportedly too many to take part in, that as a whole may have contributed to the significant success of more than half of TAPC participants.

We examined narrative data to provide depth and context to the experience of the 24 participants that participated in the TAPC Key Informant Interview process. This process was consistent with the objective specified in ***Aim F***. Among many, several key themes can be highlighted:

- Most TAPC participants made considerable progress at expanding addiction treatment in their settings despite challenges and barriers;
- Providers described enormous shifts in their perspectives about addiction and their role in its treatment;
- Creative models within organizations are evolving and are likely at the early stage of development and scale-up;
- A variety of lessons learned point to more advanced implementation issues and refinement of approaches to staff hiring, training and patient care;
- A theme of positive nature of surprise emerged—how straightforward, effective and transformative addiction treatment can be;
- Financing must be addressed for sustainment; and,
- Although TAPC implementation support strategies were generally perceived as positive, there is a trend toward having more focused activities, tailored to practice need, and including more in-person and measurement-based activities.

This last point maps onto the quantitative findings of variable use of each and every activity, the prioritization of in-person options (learning sessions, coaching, site visits, regional convenings) over online options, and finding the “sweet spot” between a seemingly unlimited smorgasbord of activities and a fixed forced set of options. With the buffet approach, no one leaves hungry, sometimes the choices are overwhelming, and there is potential for waste of food.

10. RECOMMENDATIONS FOR TAPC 2.0

TAPC “1.0” offered an extensive list of strategies for 25 California safety net clinics to increase their capacity to treat opioid addiction in primary care, specifically through the use of addiction medication, buprenorphine. By simple examination of the change in the number of patients receiving medications, number of providers prescribing, and the proportion of providers engaged in this important work, the outcomes were excellent. The design of the project had no comparator, i.e., no control group, so it cannot be discerned if these positive changes were a direct result of TAPC or factors such as progress across the State of California, the HRSA SASE grant, or other factors.

Nonetheless, in the context of any revision, it must be acknowledged that TAPC worked and was widely perceived as offering high quality strategies, supports, and resources. The team was seen as impressive, organized and responsive.

How to improve on TAPC 1.0 for a TAPC 2.0 endeavor?

A consistent dilemma in our review of the quantitative and narrative information is the balance between offering a full range of options versus a more efficient or tailored list. The full range of options were indeed valued, but many reported this to create a sense of being overwhelmed and, at times, confused. If a pruning of options were to take place, the face-to-face strategies such as in-person learning sessions, expert coaching, regional convenings, site visits with peers (hosting or road trip) seem to be the most highly valued. The distal or technology platforms, such as webinars, Project ECHO and the TAPC website, were more variable in their perceived utility and uptake. The cost and lost clinic opportunities are of course the downside of in-person options; the lack of interpersonal connection and distractibility with web-based platforms are evident. How to balance these, to find the “sweet spot” is the question. One recommendation is start an implementation support project, such as TAPC 2.0, with a face-to-face experience, build off this convening with other face-to-face strategies (coaching, site visits, regional collaboratives) and clearly linked with tailored, targeted web-platform (i.e., not generic) strategies.

How to tailor implementation support strategies?

First, a clinic needs assessment and a shared decision-making approach would be a good place to start. This is consistent with contemporary implementation of scientific approaches to the selection of strategies (Powell, Beidas et al, 2015; Powell, Waltz et al, 2015).

Second, the adoption of addiction medications ranged significantly across these 25 clinics. TAPC 2.0 might aim to “stratify” new participants based on current state. There are three levels within a possible stratification scheme: 1) Pre-implementation or early implementation: Practices just on the verge of or just starting to use addiction medications; 2) Active implementation: Practices that have been engaging in the use of addiction medication and are encountering more “advanced” and complex clinical issues, such as managing comorbid substance use, pain, psychiatric illnesses; and, 3) Sustainment: Practices that have been involved in addiction medication for at least two years and are aiming to expand reach and adoption within their organization. This last group is particularly interested in matters of sustainment, including financing and reimbursement. And, most important, they are interested in how to increase the number of providers and numbers of clinics within their organization who adopt addiction medication prescribing. These clinics are effectively on the verge of having their own “hub and spoke” model internal to their organization.

Many TAPC participants also mentioned the value of shared metrics and common data collection as a way to hold themselves accountable and check their progress. Building in some simple quality measures or counts of agreed upon targets would be a valuable addition to TAPC 2.0.

Lastly, as an evaluation, it is daunting to make sense of the value of a project entirely post-hoc and retrospectively. Data collected, conversations with key informants, and other indicators likely have diminished internal and external validity. Future iterations of TAPC should consider building in the evaluation components ahead of time, including design and measurement of primary outcomes.

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12. APPENDIX

APPENDIX: CODEBOOK FOR BASELINE AND HRSA QUARTERLY REPORTS USING QUALITATIVE CONTENT ANALYSIS AND A COMBINATION OF DEDUCTIVE AND INDUCTIVE APPROACHES

A. PERCEPTIONS OF THE INTERVENTION			
CODE	SUBCODE	DEFINITION	EXAMPLES
Complexity	Intervention	Processes related to the intervention are complex, including documentation	<input checked="" type="checkbox"/> Processes related to the intervention are more complicated than anticipated. <input checked="" type="checkbox"/> Templates for documenting Screening, Brief Intervention, and Referral to Treatment (SBIRT) activities in electronic health record were inconsistent and required too many steps to complete. <input checked="" type="checkbox"/> Difficulties coordinating patient care among Medication Assisted Treatment (MAT) team.
	Intervention	Challenges in securing funds for supporting intervention	<input checked="" type="checkbox"/> Difficulty in identifying sustainable funding to cover costs of intervention, such as in house labs, MAT educational materials, and naloxone kits. <input checked="" type="checkbox"/> Patients cannot afford cost of intervention.
B. PERCEPTIONS OF THE SYSTEM & COMMUNITY			
CODE	SUBCODE	DEFINITION	EXAMPLES
Patient Needs and Resources	Complex High-Needs Patients	Difficulty meeting needs of complex high-needs patients	<input checked="" type="checkbox"/> Difficulty treating patients with polysubstance use, homelessness, and/or co-occurring disorders. <input checked="" type="checkbox"/> Patients with high-needs have difficulty complying with MAT.
	Enhanced Services	Lack of additional services for Medication Assisted Treatment (MAT) patients, such as mental health, case management, residential treatment programs, etc.	<input checked="" type="checkbox"/> Lack of dedicated in house mental health services for patients. <input checked="" type="checkbox"/> A barrier to patient participation in MAT is lack of access to recovery housing.
	Treatment Options	Limited MAT treatment options	<input checked="" type="checkbox"/> Program only offers Methadone, not Buprenorphine. <input checked="" type="checkbox"/> Program does not have mental health services.

Note: Denotes inclusion examples Denotes exclusion examples

B. PERCEPTIONS OF THE SYSTEM AND COMMUNITY, CONT.			
CODE	SUBCODE	DEFINITION	EXAMPLES
Network Connectivity	Linking External Services	Issues connecting/collaborating with community organizations, partners, and other agencies	<input checked="" type="checkbox"/> Difficulty providing comprehensive care coordination and service delivery with community organizations for MAT patients. <input checked="" type="checkbox"/> Difficulty securing psychiatry service provider. <input checked="" type="checkbox"/> Lack of care coordination between criminal justice system and clinic leading to unsafe withdrawal while in jail and high risk for relapse. <input checked="" type="checkbox"/> Issues referring to external services. <input checked="" type="checkbox"/> Issues communicating within MAT team.
	Referral	Issues referring patients between external networks and the program	<input checked="" type="checkbox"/> Communication and scheduling challenges with external partners when transitioning patients from initial detox program to MAT program. <input checked="" type="checkbox"/> Challenges with smooth communication flow back and forth between partners and program. <input checked="" type="checkbox"/> Difficulties with patient referrals from in-network primary care physicians (PCPs) to MAT program.
	Pharmacies	Issues coordinating with pharmacies with regards to medication supply and cost/billing	<input checked="" type="checkbox"/> Pharmacies struggle to meet requirement that medications are held for a patient until they are ready for induction. <input checked="" type="checkbox"/> Insurance does not cover all MAT medication.
External Policy and Incentives	Billing & Insurance	Issues with billing and insurance for the program, such as insurance not covering MAT services or requiring a referral from a primary care physician (PCP)	<input checked="" type="checkbox"/> Motivational counseling is being done by the program coordinator and thus not billable. <input checked="" type="checkbox"/> Team-based care for MAT is not fully reimbursed by insurance plans. <input checked="" type="checkbox"/> Patients must be assigned to the clinic by their insurance and have a referral from their PCP prior to being seen by MAT team. <input checked="" type="checkbox"/> Pharmacies do not understand state guidelines for billing each MAT medication.
	CURES Assessment	State policy around prescribing practices	<input checked="" type="checkbox"/> Providers wanting to provide MAT must conduct CURES assessment before each prescription of controlled substance. <input checked="" type="checkbox"/> Providers do not have clear guidelines regarding how to conduct CURES assessment.

C. PERCEPTIONS OF THE PROGRAM			
CODE	SUBCODE	DEFINITION	EXAMPLES
Structural Characteristics	Capacity	Limited capacity of program to support patient demand for services	<input checked="" type="checkbox"/> Staff unable to meet demand for the number of new patients requesting Buprenorphine. <input checked="" type="checkbox"/> Program does not have infrastructural capacity to provide necessary MAT services.
Networks and Communications	Communication	Issues around communication, including poor communication among staff within the network and program	<input checked="" type="checkbox"/> Trouble communicating to PCPs that MAT program is not for pain management. <input checked="" type="checkbox"/> Lack of communication among MAT team regarding responsibilities. <input checked="" type="checkbox"/> Challenges communicating between team members about referrals. <input checked="" type="checkbox"/> Lack of meeting time between MDs and substance abuse team. <input checked="" type="checkbox"/> Issues communicating with external partners. <input checked="" type="checkbox"/> Challenges scheduling and linking referrals between departments.
Implementation Climate	Quality Improvement	Challenges developing a set of reliable and valid outcome measures	<input checked="" type="checkbox"/> Program is refining an array of outcome measures to track progress. <input checked="" type="checkbox"/> Program has set of goals, but is not attempting to evaluate progress.
Compatibility	Referral	Difficulties around the referral process, including scheduling and linking referrals	<input checked="" type="checkbox"/> Referrals after brief intervention are delayed. Need to do better at getting patients scheduled and close referrals, otherwise risk patient loss due to delays. <input checked="" type="checkbox"/> Difficulties coordinating general aspects of patient care between departments.
	Documentation/Electronic Health Record	Difficulties with documentation of MAT activities and limitations of electronic health record system to support care coordination	<input checked="" type="checkbox"/> Refined protocols for consistent documentation of MAT activities in electronic health record to allow for ongoing process improvement. <input checked="" type="checkbox"/> Only registered visits are reported, but some services are provided that are not registered. <input checked="" type="checkbox"/> Clinicians have not been trained in documenting MAT activities in the electronic health record.
	Care Coordination	Difficulties around care coordination within and between departments in the program, including scheduling and patient flow	<input checked="" type="checkbox"/> Patient tracking and care coordination/management process. <input checked="" type="checkbox"/> Limitations in ability to coordinate care for MAT patients with inpatient and psychiatric services. <input checked="" type="checkbox"/> Difficulty scheduling patients and integrating multiple visits into a short time. <input checked="" type="checkbox"/> Issues around referring and linking patients between departments.
	Workflow	General workflow difficulties within the organization	<input checked="" type="checkbox"/> Challenges in identifying an appropriate workflow within the organization. <input checked="" type="checkbox"/> Program looking into other models and best practices, such as refill clinics, to expand access. <input checked="" type="checkbox"/> Finding balance between program flexibility and standardization to promote efficacy and patient recovery. <input checked="" type="checkbox"/> Challenges integrating MAT activities into current electronic health record.
	Identification/Recruitment	Difficulty identifying/recruiting patients in need of MAT	<input checked="" type="checkbox"/> Trouble finding patients within the clinic's primary care setting who are in need of MAT. <input checked="" type="checkbox"/> Potential patients are not interested in MAT services.
	Behavioral Health Integration	Lack of behavioral health integration in program	<input checked="" type="checkbox"/> More behavioral health integration would alleviate stigma surrounding MAT. <input checked="" type="checkbox"/> Difficulties coordinating with the psychiatric department.

C. PERCEPTIONS OF THE PROGRAM, CONT.			
CODE	SUBCODE	DEFINITION	EXAMPLES
Organizational Incentives	Provider Incentives	Lack of incentives to encourage provider participation	<input checked="" type="checkbox"/> Lack of incentives that encourage providers to participate. <input checked="" type="checkbox"/> Providers are unwilling to participate.
Leadership Engagement	Involvement	Lack of leadership involvement and engagement	<input checked="" type="checkbox"/> Challenges with getting buy-in from new management. <input checked="" type="checkbox"/> Leadership meetings need to take place regularly in order to coordinate and integrate services. <input checked="" type="checkbox"/> Communication issues between leadership and MAT team.
Resource Availability	Training	Providers have not had any training, had insufficient training, or training is unavailable	<input checked="" type="checkbox"/> Need DATA 2000 waiver training. <input checked="" type="checkbox"/> Staff have not been trained in MAT and program has scheduled MAT trainings. <input checked="" type="checkbox"/> Providers do not understand how to document MAT services in the electronic health record.
	Personnel	Lack of providers/staff in program	<input checked="" type="checkbox"/> Staff members on sick leave, not enough providers. <input checked="" type="checkbox"/> Providers do not want to participate in MAT program.
	Space	Lack of physical space/conveniently located space for program operations	<input checked="" type="checkbox"/> Need clinic space. <input checked="" type="checkbox"/> Program not centrally located to accommodate patients. <input checked="" type="checkbox"/> Patients do not have reliable transportation, which is a barrier to participation in MAT.
	Time	Insufficient time to implement intervention tasks or not enough clinic hours	<input checked="" type="checkbox"/> Intervention is time-consuming. <input checked="" type="checkbox"/> Need for more evening clinic hours. <input checked="" type="checkbox"/> Not enough time to onboard new providers. <input checked="" type="checkbox"/> Patients are not making appointments on time.
	Addiction Medication	Lack of addiction medications available to program	<input checked="" type="checkbox"/> Issues getting addiction medication at the program. <input checked="" type="checkbox"/> Pharmacies are not keeping a stable supply of addiction medications.
Access to Knowledge and Information	Guidelines/Protocols	Lack of access to knowledge and info on guidelines and protocols for MAT services and documentation	<input checked="" type="checkbox"/> Not always having clear guidelines/protocols on how to deal with complex polysubstance using patients. <input checked="" type="checkbox"/> Program is unsure how to procure and store addiction medications. <input checked="" type="checkbox"/> Program uncertainty about how to document, but also maintain privacy using 42 CFR. <input checked="" type="checkbox"/> Staff needs training on how to document MAT services in electronic health record.

D. PERCEPTIONS OF CLINICIANS WHO WILL USE THE INTERVENTION			
CODE	SUBCODE	DEFINITION	EXAMPLES
Clinician Knowledge and Beliefs	Knowledge & Awareness	Lack of knowledge on substance use disorders and MAT for Opioid Use Disorder (OUD). Lack of awareness of MAT program services, including: lack of understanding about how to use electronic health record system, and how to conduct and document processes related to MAT	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> New staff members do not have a strong understanding of how to use electronic health record. <input checked="" type="checkbox"/> PCPs refer patients without completing required documentation for referral in electronic health record. <input checked="" type="checkbox"/> Low screening and documentation percentages of DAST among providers. <input checked="" type="checkbox"/> Providers have lack of knowledge on Buprenorphine and treatment for addiction. <input checked="" type="checkbox"/> Existing providers are not aware of existence and purpose of new services in the program. <input checked="" type="checkbox"/> Providers are not motivated to become x-waivered due to competing work demands.
	Reluctance/Anxiety/Trepidation	Provider reluctance/unwillingness to participate in MAT program, including: concerns around type of work and workload, and stigma/fear	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Providers are reluctant to take on responsibility of MAT. <input checked="" type="checkbox"/> Clinicians do not want to do this type of intensive case management work. <input checked="" type="checkbox"/> Eligible providers have fears about working with this population. <input checked="" type="checkbox"/> Providers in the MAT program are not confident in their ability to provide MAT services.
Clinician Self-Efficacy	Confidence	Lack of confidence in providing MAT services and related tasks	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Program goal to establish a clinical champion in order to foster a growing sense of comfort and confidence in providing MAT services. <input checked="" type="checkbox"/> Lack of confidence with scheduling and check-in tasks. <input checked="" type="checkbox"/> Providers have not been trained how to document MAT services in electronic health record.
Clinician Stage of Motivation	Readiness	Lack of motivation/readiness among providers to get waived or to begin providing MAT services	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Challenge to motivate waived providers who lack experience and engage them in providing MAT. <input checked="" type="checkbox"/> Providers are not ready to complete training due to competing demands. <input checked="" type="checkbox"/> Providers do not want to participate in MAT due to stigma of population.

E. OTHER			
CODE	SUBCODE	DEFINITION	EXAMPLES
Patient Barrier	Compliance/Retention	Lack of compliance/retention among patients either due to: continued exposure to and use of illicit substances, and/or missed appointments, not making appointments on time, not scheduling follow-ups, or not following through with referrals	<input checked="" type="checkbox"/> Patients are uninterested in making an appointment. <input checked="" type="checkbox"/> Patient's continued exposure to substances in the community/ use of other illicit substances while enrolled in MAT. <input checked="" type="checkbox"/> Patients are not ready to begin MAT.
	Financial	Patients are unable to afford the intervention due to financial hardships	<input checked="" type="checkbox"/> Uninsured patients have to pay out of pocket and this is too expensive for many patients. <input checked="" type="checkbox"/> Team-based care for MAT is not fully reimbursed by insurance plans.
	Stage of Motivation	Patient's level of readiness and willingness for change with regards to MAT, including denial of their OUD	<input checked="" type="checkbox"/> Many patients are not ready for the therapy necessary for successful abstinence and relapse prevention. <input checked="" type="checkbox"/> Patient's denial of their OUD can result in no-shows. <input checked="" type="checkbox"/> Patients actively resist MAT services.
	Negative Perceptions/Stigma	Patient negative perceptions of MAT, including: active resistance, reluctance, fear of treatment, stigma, lack of confidence in program, and difficulty adjusting to MAT services	<input checked="" type="checkbox"/> Challenges adjusting to using Suboxone and cutting down on pain meds. <input checked="" type="checkbox"/> Patient fear of getting treatment. <input checked="" type="checkbox"/> Existing MAT patients have difficulty adjusting to expanded MAT services. <input checked="" type="checkbox"/> Community stigma deters patients from seeking help. <input checked="" type="checkbox"/> Program had to set aside time to reassure patients that new counselor will be just as dedicated. <input checked="" type="checkbox"/> Client community does not trust program to provide care. <input checked="" type="checkbox"/> Patients have trouble complying with MAT program due to continued use of illicit substances.
	Knowledge & Awareness	Patients lack knowledge and/or have misconceptions about what MAT is and entails, and lack of awareness of the existence of MAT program	<input checked="" type="checkbox"/> Patients thinking that Suboxone is the same thing as Methadone. <input checked="" type="checkbox"/> Lack of education on Suboxone. <input checked="" type="checkbox"/> Program needs to increase visibility and awareness among patient population. <input checked="" type="checkbox"/> Patients fear of getting treatment due to community stigma.
	Social Supports	Lack of community support services and family support (social supports) that make it difficult to participate in MAT. Community support services include: employment, housing, child care, education, and transportation	<input checked="" type="checkbox"/> Barriers to patient participation in MAT include lack of community support services such as employment, stable housing, food, reliable transportation, and education. <input checked="" type="checkbox"/> Patients with lack of family support have difficulty succeeding in MAT program. <input checked="" type="checkbox"/> Patient's continued exposure to substances in the community while enrolled in MAT results in lack of compliance.

E. OTHER, CONT.			
CODE	SUBCODE	DEFINITION	EXAMPLES
Patient Barrier, cont.	Other	Other patient-level barriers that can interfere with MAT participation, including: form length, sober requirement of community support services, patient health problems, and difficulties with communication	<input checked="" type="checkbox"/> Intake forms too long. <input checked="" type="checkbox"/> Homeless patients may not have a cell phone and providers do not have contact info. <input checked="" type="checkbox"/> Recovery housing not accepting of patients on MAT because not 100% sober. <input checked="" type="checkbox"/> Patients with certain medical conditions may not be good candidates for MAT. <input checked="" type="checkbox"/> Patients who suffer from mental illness may not be able to complete psychosocial component of MAT. <input checked="" type="checkbox"/> Homeless patients lack stable housing, which makes it difficult to participate successfully in MAT.
Community Barrier	Attitudes/Beliefs	Lack of community support for MAT program	<input checked="" type="checkbox"/> Business and residents nearby have a "not in my backyard" attitude. <input checked="" type="checkbox"/> Community stigma deters patients from seeking help.