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Telehealth-Enhanced Multisystemic Therapy Pilot Final Report

An Evaluation Conducted Through the Family First Evidence-Building Hub

REPORT HIGHLIGHTS:

- The pilot program **served 30 families** using a telehealth enhancement to the Multisystemic Therapy (MST) model. This has the potential to expand service delivery reach if implemented at scale.
- The pilot teams maintained **high fidelity,** indicating that integration of telehealth-based service delivery did not alter the core service delivery components.
- Therapists and supervisors indicated a **high level of satisfaction** with the model modification and overall reported it is **feasible to implement**.
- Initial findings from this pilot are encouraging and further research is recommended to ensure telehealth-enhanced MST meets evidence standards for broader dissemination.

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Executive Summary

This report presents findings from a study aimed at assessing the feasibility and acceptability of a telehealth-enhanced service delivery model of Multisystemic Therapy. In collaboration with the Colorado Department of Human Services and the Colorado Evaluation and Action Lab, the Rocky Mountain MST Network launched a two-year pilot program to evaluate the implementation of Telehealth-Enhanced Multisystemic Therapy (TE-MST). This MST modification blends the traditional MST in-person treatment with telehealth delivery options. Given the intensive service requirements of standard delivery MST and the limitations imposed by geographic barriers and the related costs, exploring telehealth-enhanced delivery of MST is imperative to ensure equitable access to services.

This pilot study employed a pre-post mixed methods approach, combining quantitative surveys that assess both clinical and implementation outcomes with qualitative feedback from MST administrators, supervisors, and therapists. Quantitative analyses demonstrated that TE-MST is feasible, acceptable and delivered with fidelity comparable to traditional MST delivery, yielding both clinical and implementation outcomes commensurate with standard delivery of the model. Qualitative feedback underscored its convenience, flexibility, and overall positive impact on building engagement and rapport, particularly with youth and families residing in rural communities.

Challenges such as the ability to address specific MST practice components via telehealth sessions (e.g., managing parent-child interactions and urinalysis screenings while delivering TE-MST remain as areas for further research and consideration. However, pilot teams have proposed strategies for optimizing TE-MST delivery such as implementing additional training or vetting processes for newer therapists to address such barriers and maximize the benefits of TE-MST.

These results highlight the need to pursue future funding opportunities to confirm comparative effectiveness with MST standard delivery, to communicate results aimed at informing decisions about the need for continued support of allowing Medicaid billing for telehealth services, and to consider additional workforce identification and retention efforts to enable continued service delivery.

Telehealth-Enhanced Multisystemic Therapy Pilot Key Findings

FINDING #1

TE-MST was both feasible and acceptable. No evidence of iatrogenic effects or other risks of harm were observed or reported.

FINDING #2

TE-MST was delivered with fidelity to the MST Model. The overall average adherence score was above the target (>0.61) at 0.83.

FINDING #3

All clinical outcomes for MST-TE including youth living at home, youth in school or working, and youth with no arrests, were commensurate with MST as typically delivered.

FINDING #4

TE-MST implementation outcomes are about equal to standard MST delivery. 100% of youth completed MST treatment during this pilot study and no youth were discharged due to lack of engagement.

FINDING #5

Preliminary findings suggest that implementation of TE-MST has potential to serve as a valuable alternative to standard delivery of MST, particularly for youth and families who reside in rural communities.

Table 1. Implementation Domains

Domain	Summary
Feasibility	Respondents reported that the **TE-MST model is feasible to implement**. While unexpected barriers were identified, they were few in number and no barriers interfered substantially with treatment delivery.
Fidelity	Throughout the pilot, teams maintained **high fidelity** (above the threshold of 0.61 on Therapist Adherence Measure-Revised [TAM-R]) during this pilot study with an **overall average adherence score of 0.83.**
Acceptability	Generally, respondents reported **high levels of acceptability** in monthly surveys.
Sustainability	The results indicated **few perceived barriers to ongoing sustainability**. The MST organizational culture remained the same and policies and procedures did not create a significant shift. The evaluation team noted that one potential future barrier could be a retraction of allowing for telehealth visits to be billed through Medicaid at the MST rate, though this is not anticipated to happen in the future based on early conversations, but we will continue to monitor over time.
Uptake	The TE-MST Pilot team **was able to train therapists and supervisors** and to begin enrolling families within two months. All participants completed the intervention with 30 clients in 14 months.
Costs	Participants noted that the additional costs of implementing TE-MST were within a reasonable budget. The costs for implementation of TE-MST were **lower than anticipated** due to most families already having access to technology and internet/Wi-Fi.

Table 2. Outcomes for TE-MST Pilot vs. Rocky Mountain MST Network Cases in Colorado

MST Dashboard Report	TE-MST Pilot (Research Group = R) Sep 2022–Jan 2024	Rocky Mountain MST Outcomes in Colorado Mar 2022–Dec 2023
Total cases discharged	32	424
Total cases with opportunity for full course treatment	30	378
Ultimate Outcomes Review		
Percent of Youth Living at Home (Target: 90%)	100%	97%
Percent of Youth in School/Working (Target: 90%)	97%	91%
Percent of Youth with No New Arrests (Target: 90%)	87%	93%
Case Closure Data		
Average length of stay in days for youth receiving MST (Target: 120)	122	126
Percent of youth completing treatment (Target: 85%)	100%	93%
Percent of youth discharged due to lack of engagement (Target: <5%)	0%	4%
Percent of youth placed (Target: <10%)	0%	2%

MST Dashboard Report	TE-MST Pilot (Research Group = R) Sep 2022–Jan 2024	Rocky Mountain MST Outcomes in Colorado Mar 2022–Dec 2023
Adherence Data		
Overall Average Adherence Score (Target: 0.61)	0.83	0.73
Percent of youth with average adherence above threshold (Target: 80%)	91%	72%
Percent of youth with at least one Therapist Adherence Measure-Revised (TAM-R) interview (Target: 100%)	94%	91%
Percent TAM-R due that are completed (Target: 70%)	90%	73%

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Note on Gender-Inclusive Language

The Colorado Evaluation and Action Lab affirms our commitment to the use of gender-inclusive language. We are committed to honoring the unique gender identity of each study participant. Throughout this report, we follow the guidance of the Associated Press Stylebook and the Chicago Manual of Style and use the gender-neutral, singular "they" when appropriate.

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Introduction

Study Description

Introduction

The Colorado Lab serves as the Family First Evidence-Building Hub to coordinate rigorous evaluation efforts on behalf of the Colorado Department of Human Services (CDHS). In this role, the Colorado Lab coordinates the pipeline of evidence building for Family First programs/services positioned to meet the needs of children, youth, and families in Colorado. Together with cross-system prevention partners, we co-create a strategic vision for evidence building, communicated annually in our annual strategy report. We then partner with local and national researchers to build evidence for select programs/services aligned with that strategy. In doing so, the Colorado Lab helps the state align evidence-building investments, reduce evaluation burden and duplication, effectively translate findings into policy and practice actions, and more efficiently inform Colorado's evidence-based prevention continuum.

The Family First Evidence-Building Hub subcontracted with The Kempe Center for the Prevention and Treatment of Child Abuse and Neglect at the University of Colorado Anschutz Medical Campus (Kempe Center) to build evidence for Telehealth-Enhanced Multisystemic Therapy (TE-MST) Pilot. The Rocky Mountain MST Network is the licensed network provider organization that provides direct quality assurance and continuous quality support for most Multisystemic Therapy programs in the state of Colorado.

Multisystemic Therapy (MST) is designated as a "well-supported" practice by the Title IV-E Prevention Services Clearinghouse (Clearinghouse). TE-MST is considered an adaptation by the Clearinghouse and, thus, requires separate evidence building to have the adaptation rated by the Clearinghouse. The evaluation of the TE-MST pilot is associated with a Transition Fund Act-resourced contract. The study measures reach and implementation effectiveness and assesses the impact of TE-MST on child well-being and child safety outcomes (arrests/re-arrests during treatment, out-of-home placements, if the youth is in school or working, and improvements in mental health symptoms and reductions in substance use where applicable). This study is intended to lay the foundation for a quasi-experimental design or a randomized controlled trial (RCT) that would meet Clearinghouse design standards.

In Colorado, thousands of youths each year are arrested, and hundreds are placed in residential placements due to their behaviors. MST, a *well-supported* intervention for the Family First Prevention Services Act, directly targets risk for out-of-home placement and juvenile recidivism. While there have been recent efforts to expand MST availability in Colorado, it remains the case that not every youth has access to this supportive intervention. The MST Telehealth Pilot built upon the successful Pay for Success MST expansion initiative to further increase the capacity for MST service delivery in Colorado in hard-to-reach areas, thus ensuring more youth have access to the intervention before they are placed out of home.

Each year, MST therapists in Colorado serve approximately 400-500 youth and families. Currently, small teams of two to four therapists, who carry caseloads of four to six clients at a time, deliver MST. MST is an intensive intervention appropriate for those at highest risk of out-of-home placement. However, due to the intensive service requirements such as multiple in-home visits per week and costs associated with service delivery, it is very difficult to sustain MST teams in rural and frontier areas of the state. The project attended to issues of geographic equity and strived to support the unique needs of agencies serving more rural areas.

The purpose of the MST Telehealth Pilot was to evaluate the feasibility, acceptability, and establish preliminary clinical outcomes of this hybrid approach, with the aim of determining if TE-MST is a viable delivery method for serving Colorado families.

Study Description

Overview

This was a feasibility and acceptability study. The specific focus was on key implementation outcomes, including treatment fidelity, therapist and supervisor satisfaction, and perceptions of facilitators and barriers. Briefly, the TE-MST delivery entailed providing a minimum of once-weekly in-person therapeutic support with additional telehealth service delivery as needed. A flowchart was developed to help therapists determine when a telehealth session was indicated (Appendix A). No changes were made to the overall treatment model, just the service delivery location.

Over 24 months, the project pilot tested the implementation approach using existing MST teams. Teams eligible to pilot the telehealth-enhanced adaptation were identified in collaboration with CDHS's needs assessment results and the Rocky Mountain MST Network's standardized readiness assessment protocols. Priority was placed on existing MST teams that were demonstrating adherence to the model and who had an interest in the telehealth-enhanced model. Once teams were identified, Rocky Mountain MST Network staff worked closely with supervisors to identify a more senior therapist to participate. We required that the therapists have maintained adherent Therapist Adherence Measure (TAM) scores (the measure MST uses to assess treatment fidelity) for at least the past six months.

Five existing Colorado MST teams across four agencies dedicated one therapist per team for this role. Each therapist was expected to use the approach with six families over 15 months (average treatment length is four months per family). The therapists maintained a lower caseload during the pilot period to ensure sufficient time to participate in additional support activities and the research. Therapists and supervisors engaged in all required quality assurance activities associated with standard MST delivery, including weekly supervision and consultation, use of a database (MST Institute [MSTi]) to document case enrollment and treatment outcomes, and fidelity monitoring. In addition to these standard supports, a learning community for therapists across the state functioned as key support to understand how the model was working and to make any needed course corrections to ensure high-quality service provision.

Rocky Mountain MST Network Experts, Dana Garofalini and Cory Robbins, conducted telehealth-enhanced training in Colorado Springs on August 30 and August 31, 2022. Following the training, participating therapists engaged in frequent contact with their MST Expert to discuss progress and troubleshoot any barriers. Data were collected monthly.

Evaluation Design

This was a pre-post mixed methods feasibility and acceptability trial. Quantitative data were collected from therapists, supervisors, and agency administrators. They completed a comprehensive survey at baseline, at six months, and at the conclusion of the project. Therapists and supervisors completed brief monthly surveys to engage in near real-time assessments of feasibility and to identify any barriers. Qualitative data were collected during monthly Learning Community meetings and during a "Ripple Effects Mapping" (REM) meeting at the conclusion of the project. The study was reviewed and approved by the Colorado Multiple Institutional Review Board.

Research Questions

We had several primary research questions.

> **Research Question 1: Is TE-MST feasible and acceptable to implement?**

To answer this question, we conducted a repeated measures survey at baseline, at six months, and at the end of the project, as well as briefer, monthly surveys. These surveys measured demographics of respondents; training time; clinical consultation support; policies and procedures; likelihood of model adoption and acceptability; barriers and unanticipated challenges; the impact of TE-MST on fidelity; comparisons of TE-MST and standard MST delivery (e.g., attendance, cultural considerations, work-life balance, skill development, overall satisfaction, etc.), unexpected benefits; and additional implementation factors (e.g., appropriateness, costs, relevant, compatible, ease of implementation etc.).

> **Research Question 2: When implemented, are therapists able to achieve fidelity to the MST model?**

To answer this question, we used standard protocols to collect fidelity data. This protocol is called the Therapist Adherence Measure-Revised (or the TAM-R). The youth's caregiver responds to a monthly survey during the period of time they are in treatment. Scores are averaged across items and can range from 0 to 1. Scores above 0.61 are considered meeting the adherence threshold. We examined the TAM-R scores for families participating in TE-MST to determine if they were receiving adherent MST.

> **Research Question 3: Are clinical outcomes commensurate with MST as typically delivered?**

To answer this question, we examined therapist responses characterizing outcomes at the point of discharge. Therapists routinely enter this information into a standardized database. It is then validated by their supervisor and MST Expert. Therapists report on whether the youth is living at home, has no new arrests (since the beginning of treatment) and if they are in school or working. Because these data points are collected for all youth who receive MST, we compare the percentages of youth meeting these treatment goals who received TE-MST and those who received MST standard delivery.

> **Research Question 4: Are implementation outcomes commensurate with MST as typically delivered?**

As with Research Question 3, to answer Research Question 4, therapists enter information into MSTi that describes features of treatment implementation, including length of treatment, if youth dropped out of treatment early due to lack of engagement, if youth successfully completed treatment, and if they were placed outside of the home during treatment. There are standard benchmarks established for MST teams, and we were able to compare the outcomes for youth receiving TE-MST compared with those who received MST standard delivery.

Study Participants

In total, we enrolled five therapists, four supervisors, and four administrators in the study. The four agencies were from different geographic areas of Colorado, including Weld County, Colorado Springs (also serving Park and Teller Counties), Pueblo County (also serving Huerfano County), and the Durango/Pagosa Springs areas.

5 MST Therapists

4 MST Supervisors

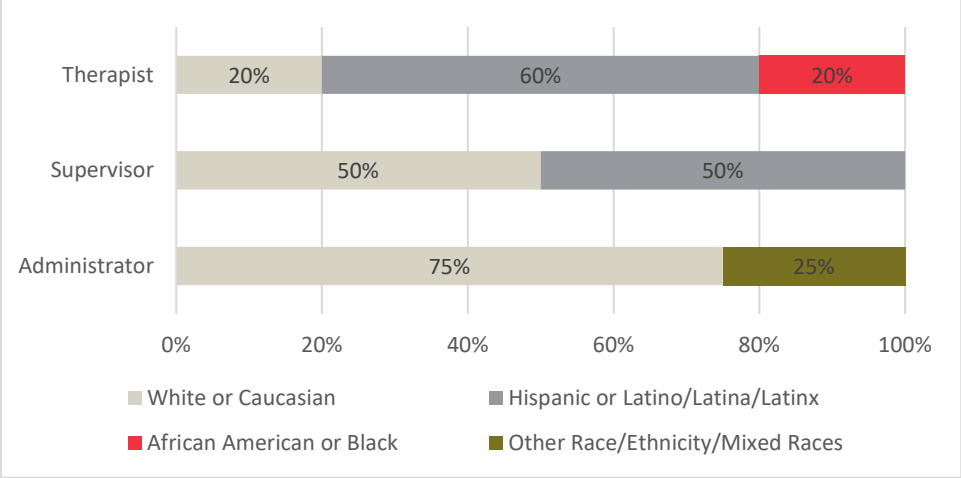
4 MST Provider Agencies & Administrators

30 Youth & Families Served

Therapist, Supervisor, and Administrator Demographics

Participating therapists and supervisors responded to questions about their personal demographic characteristics. Three of the four (75%) TE-MST administrators participating in this pilot study were female and one was male. One (25%) administrator held a PhD degree and three (75%) held a master's degree. Their average age was 55 (range from 52 to 60). All four of the TE-MST supervisors participating in this pilot study were female and held a master's degree. Their average age was 34 (range from 31 to 38). Similarly, all five of the TE-MST therapists participating in this pilot study were female and held a master's degree. Their average age was 29 (range from 25 to 34).

Figure 1. Race/Ethnicity of TE-MST Administrators, Therapists, and Supervisors

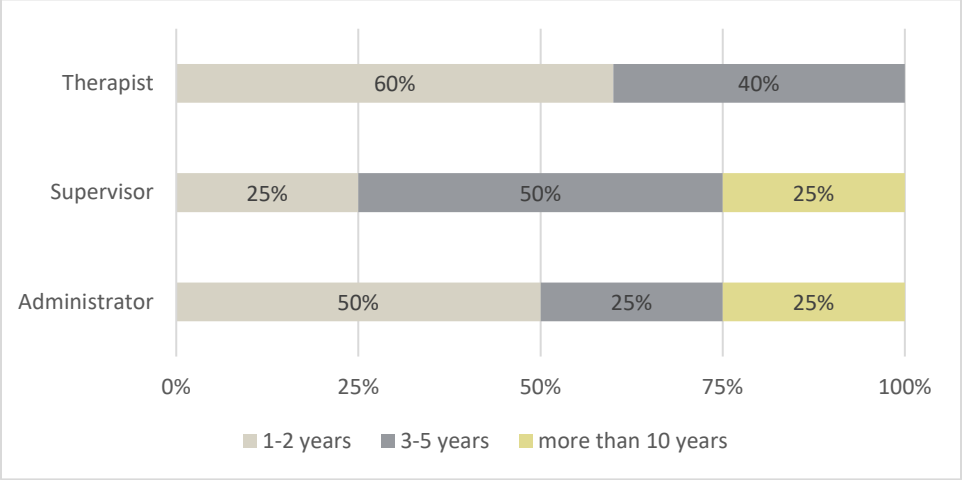


Overall, therapists demonstrated more ethno-racial diversity compared to supervisors and administrators. As Figure 1 indicates, three (75%) administrators identified as White or Caucasian and one (25%) administrator identified as Other Race/Ethnicity/Mixed Races. Two (50%) supervisors identified as White or Caucasian and two (50%) supervisors identified as Hispanic or Latino/Latina/Latinx. Three (60%) therapists identified as Hispanic or Latino/Latina/Latinx, one (20%) as White or Caucasian, and another (20%) as African American or Black.

Therapist, Supervisor, and Administrator Years of Experience

As expected, as seniority increased, so did position tenure. At the start of the pilot (Figure 2), two (50%) of the administrators had been an MST administrator for one to two years, one (25%) for three to five years, and the remaining individual (25%) had been in their role for more than 10 years. One (25%) of the supervisors had been an MST administrator for one to two years, two (50%) for three to five years, and the remaining individual (25%) had been in their role for more than 10 years. Three (60%) of the therapists had been an MST therapist for one to two years and the remaining two (40%) for three to five years.

Figure 2. Experience in Role for MST-TE Therapists, Supervisors, and Administrators



Characteristics of Youth Served by TE-MST and Rocky Mountain MST Network

We did not have a formal comparison group as part of this project. However, using records from the MSTi database, we were able to compare characteristics and outcomes for youth who received TE-MST and those who received standard MST. Our analytic sample omitted siblings and any youth discharged for reasons other than completion, lack of engagement, or placement. We conducted case-level analyses of 323 cases (29 TE-MST and 294 standard treatment MST youth). Two TE-MST youth were omitted due to administrative discharge reasons and a third youth was omitted since they were a sibling of another member of the treatment group.[i] We used descriptive statistics, chi-square analyses, and t-tests to examine characteristics and outcomes for the two groups.

[i] Note that our exclusion of sibling records and youth with discharge outcomes other than completion, lack of engagement, or placement resulted in a smaller sample than that used in the MSTi reports, thus there may be small inconsistencies in data from the two sources regarding outcome statistics. Outcomes from our case-level analyses are thus presented in text boxes and those from the MSTi reports are in tables to differentiate findings from the different samples.

The average age of TE-MST youth and standard treatment youth were similar (13.7 and 14.0 years old, respectively). Fifty-nine percent of TE-MST youth were male, compared to 57% of standard treatment youth. Two percent of standard treatment youth identified as intersex, not listed, or prefer not to respond, while 0% of TE-MST youth identified with these categories. TE-MST youth were most likely to be referred by child welfare (35%) while standard treatment youth were most likely to be referred by mental health sources (35%). Generally, we found TE-MST youth were more likely than standard treatment youth to be Hispanic/Latinx (41.4% vs. 28.6%, respectively) or referred by child welfare agencies (34.5% vs 17.0%) and were less likely to be non-Hispanic White (46.4% vs 56.8%). However, t-tests and chi-square analyses examining age, ethnoracial identity, gender, and referral sources determined that the only difference that was statistically significant was the percentage of referrals that were received from child welfare sources (X^2 (1, N = 263) = 5.33, p = 0.021).

MST Provider Sites

Four organizations in Colorado participated in the TE-MST Pilot. Inclusionary criteria included that they were part of the Rocky Mountain MST Network, that they were interested in participating, and they had at least one supervisor and one therapist who were interested in participating. Overall, we had high interest in participating in the project, and four of the five agencies approached to participate agreed. Selected agencies serve families in urban, suburban, and rural areas in Colorado.

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Methods

Data Sources

Methods

This evaluation of the feasibility, acceptability, and preliminary effectiveness of a telehealth enhanced service delivery of MST used survey and administrative data as well as learning community sessions to inform the development and an assessment of the delivery of the model. Feasibility and acceptability were evaluated using a within-subject repeated measures design, tracking change over time for participating therapists.

Sample Selection

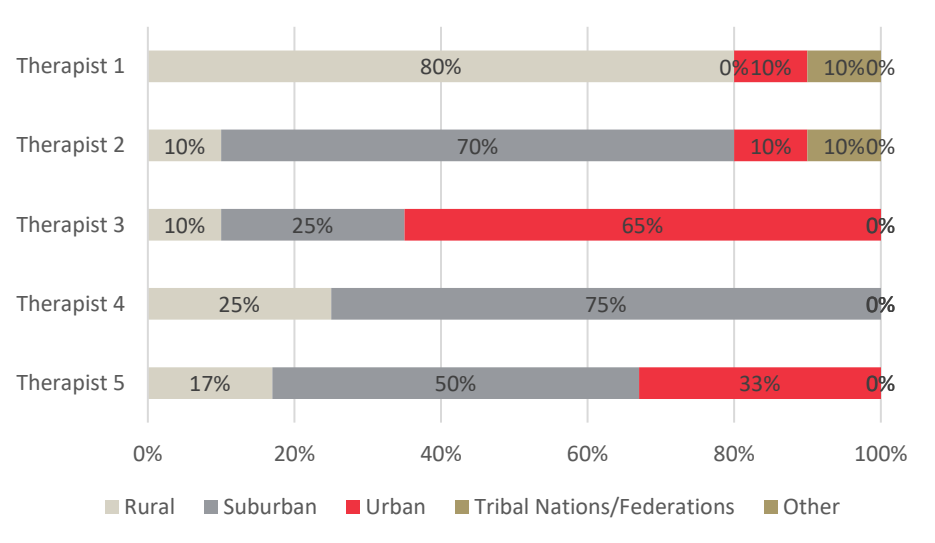
As mentioned above, research participants included therapists, supervisors, and administrators associated with agencies delivering MST. All participants were approached by research staff to review consent and explain study procedures. Once consent was obtained, participants engaged in research activities.

Families were not considered research subjects in this study. They engaged in standard treatment consent procedures in alignment with agency policy. They were explained that some of their treatment may be delivered via telehealth as appropriate and they were given an opportunity to decline and receive fully in-person MST if desired. Families did not engage in any research activities.

Sample Description

Therapists served cases across different settings and their caseloads varied substantially by geographic service delivery area. Figure 3 presents the therapists' estimates of caseload composition dynamics. By the end of the pilot period, all five therapists reported having some portion of their caseload serving rural families and estimated the percentage of cases ranged from 10% to 80%. Four therapists reported having some portion of their caseload serving suburban families and estimated the percentage of cases ranged from 25% to 75%. Similarly, four therapists reported serving families in urban areas, but their estimated percentage of cases in this category ranged from 10% to 65%. Two therapists served families living in Tribal Nations/Federations where both respondents indicated 10% of their caseloads were comprised of families living in Tribal Nations/Federations by the end of the pilot period.

Figure 3. Therapists' Caseload Characteristics



Data Sources

The study used data from four sources:

1. MSTi provided clinical outcomes and quality assurance data to programs involved in this pilot study and are implementing MST services.
2. Qualtrics, a web-based software, was utilized to host, generate, and distribute brief monthly and longer questionnaires.
3. The Learning Community provided a valuable source of qualitative data through in-depth discussions and exploration of topics related to TE-MST implementation.
4. REM provided a visual collection of participant stories, anecdotes and/or narratives about their experiences with the delivery of TE-MST.

The findings do not necessarily reflect the opinions of the Colorado Evaluation and Action Lab or the organizations contributing data.

MST Institute (MSTi) Data

The MSTi Data website is a secure, web-based data reporting system that supports licensed MST programs in all aspects of quality assurance monitoring. Data is collected on case outcomes and adherence to the MST practice guidelines for therapists, supervisors, experts, and provider organizations.

Survey Administration

Across the pilot period, therapists and supervisors responded to brief monthly surveys inquiring about strengths and challenges with service delivery. The monthly surveys allowed for quick identification of any clinical risks or challenges that arose with this service delivery model and enabled course correction or additional training support as needed. The brief monthly survey had an estimated time for completion of about five to 10 minutes while the longer surveys had an estimated time for completion of up to 30 minutes. Supervisors completed 13 monthly surveys from October 2022 through October 2023 while therapists completed 15 monthly surveys from October 2022 through December 2023. There was a 100% survey completion rate.

Clinical fidelity was monitored using the standard MST approach (TAM-R) and through additional questions in the monthly surveys. Therapists reported clinical outcomes on each case in alignment with typical practice.

Therapist Adherence Measure-Revised (TAM-R)

TAM-R is a parent self-report phone or internet-based response system conducted monthly throughout therapy.

Therapists and supervisors responded to longer surveys at the start of the pilot, at six months, and after seeing the final TE-MST clients, to document perceptions regarding various components of the model any needed accommodations throughout the course of the project. The baseline questionnaires were

distributed to therapists and supervisors on August 23, 2022. Administrators responded to surveys six months into the project and at the close of the project period to document agency-level impacts of the telehealth enhanced service delivery model for MST.

- All four supervisors and all five therapists completed the baseline survey. These same participants also completed the six-month survey with the addition of the administrators (n = 4). For the final survey, all administrators and therapists completed the questionnaires. Only three supervisors completed the final survey as the remaining supervisor resigned from their agency earlier within that year.
- The participation rate for the overall sample for this pilot was 92%, indicating strong engagement and willingness among participants to contribute to research efforts. Out of the initial 13 participants, 12 completed all aspects of the data collection process.

We also encountered turnover and promotions within our participant pool during this pilot period. We observed a turnover event that resulted in the loss of one supervisor from our initial sample size.

- We monitored attrition rates across three groups: administrators, supervisors, and therapists. We found that administrators and therapists exhibited no attrition, maintaining a 0% attrition rate throughout the duration of the pilot. Supervisors experienced a modest attrition rate of 7.7%.

Additionally, promotions across agencies from the therapist-to-supervisor role presented slight challenges. Nonetheless, we were successful in largely completing this work as intended by requesting participating therapists who had received promotions to complete surveys from the perspective of their original therapist role to prevent dramatic shifts on the interpretation of our findings. Promotions happened near the end of our study; all therapists that were promoted either already completed their cases at the time of promotion or continued to serve families as a therapist while transitioning to the supervisor role.

Qualitative Data

Learning Community

The Learning Community began meeting in September 2022 after the initial training and continued to meet monthly for a total of 19 meetings throughout the course of the program. The Learning Community, an excellent source of qualitative information that also played a significant role in our continuous quality improvement processes, was led by the Kempe Center's Rocky Mountain MST Network Co-Director and MST Experts and included all participating therapists and supervisors along with one administrator (administrator participation was voluntary). These meetings provided us with rich insights where we had an in-depth exploration of participants' thoughts, opinions, and experiences of delivering TE-MST that may not have emerged through quantitative data collection (i.e., surveys). Unlike surveys where responses were collected and analyzed after a period of time, the Learning Community sessions offered near real-time feedback that brought immediate clarification and/or further exploration of topics.

Ripple Effects Mapping

The TE-MST program staff alongside participating therapists and supervisors participated in REM, an appreciative inquiry-based storytelling session with a participatory approach that aims to surface both direct and indirect impacts of an initiative. Researchers at the University of Denver's Butler Institute for Families (Butler Institute) hosted the REM session.

Measuring Outcomes

Several metrics were used to assess success:

- Client enrollment (demonstrates reach).
- Treatment fidelity (demonstrates implementation effectiveness).
- Therapist, supervisor, and administrator acceptability and feasibility (demonstrates implementation effectiveness).
- Client outcomes (demonstrates preliminary evidence for clinical effectiveness). Client outcomes were examined at the end of treatment and included: arrests/re-arrests during treatment, out-of-home placements, and if the youth is in school or working.

All TE-MST cases received a designated research code in the MST Institute database for tracking. Because this was a preliminary pilot test, the evaluation team examined case-level data to ensure clinical outcomes were generally commensurate with typical service delivery. Due to the relatively small sample size and the risk for provider confounds, the client-level data that was entered into the MSTi through standard MST procedures was characterized as pilot data to inform a larger study.

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Results

Key Findings
Implications

Results

Key Findings

Key Finding #1

> **TE-MST was both feasible and acceptable. No evidence of iatrogenic effects or other risks of harm were observed or reported.**

(Research Question 1: Is TE-MST feasible and acceptable to implement?) Therapists and supervisors completed TE-MST training and began seeing clients within two months of the start of the pilot. MST therapists participating in the pilot closed 30 TE-MST cases within 14 months. Participating therapists and supervisors reported high positivity across multiple topics in the brief monthly surveys. Still, between the six-month and final surveys, therapists reported lower confidence in areas that require more supervision (e.g., the ability to conduct urinalysis screens and managing parent-child interactions). Based on these findings, we note that repetitive exposure to conducting telehealth sessions may have allowed for therapists to gradually overcome those barriers.

Key Finding #2

> **TE-MST was delivered with fidelity to the MST model. The overall average adherence score was above the target (> 0.61) at 0.83.**

(Research Question 2: When implemented, are therapists able to achieve fidelity to the MST model?) Therapists, supervisors, and administrators reported that the impact of telehealth on MST fidelity was positive. Therapists regularly determined what goals would be achieved via telehealth sessions as compared to in-person sessions, which allowed for improved preparedness and structuring of sessions that further influenced family buy-in into the model. When delivering a telehealth session, therapists still maintained clinical engagement and rapport with the family.

Key Finding #3

> **All clinical outcomes for TE-MST including youth living at home, youth in school or working, and youth with no new arrests, were commensurate with MST as typically delivered.**

(Research Question 3: Are clinical outcomes commensurate with MST as typically delivered?)
In January 2024, 100% of youth were living at home, 97% were in school or working, and 87% of youth did not have new arrests. In the brief monthly surveys, therapists indicated strong agreement that they were able to make adequate progress on families' clinical outcomes while using the TE-MST model. Therapists were able to improve outcomes such as parenting skills, improved family relations, improved network of support, success at school, as well as relationships with prosocial peers. However, we note that it is still essential to consider the specific needs and circumstances of each family who utilizes the TE-MST model moving forward.

Key Finding #4

> **Overall, TE-MST implementation outcomes are about equal to standard MST delivery. 100% of youth completed MST treatment during this pilot study and no youth were discharged due to lack of engagement.**

(Research Question 4: Are implementation outcomes commensurate with MST as typically delivered?) The average length of stay in days for youth receiving MST (target: 120) was 122 days. Therapists and supervisors developed strategies to maintain engagement with families using the TE-MST model. For example, during one Learning Community meeting, therapists generated the idea of setting expectations with families at the beginning of sessions (e.g., taking breaks, muting/unmuting, covering screens, etc.) to collaborate with families on the structure of the virtual session moving forward.

Key Finding #5

> **Preliminary findings suggest that implementation of TE-MST has potential to serve as a valuable alternative to standard delivery of MST, particularly for youth and families who reside in rural communities.**

Supervisors and therapists indicated that TE-MST has been effective for families, including those living in rural areas, as another option to obtain services. While the model has expanded reach, MST teams have found that it also lowers mileage costs over time. Additionally, using the decision-making tree, therapists have acquired the skills to make informed decisions on whether a session should be in-person as compared to telehealth ensuring that TE-MST is appropriate for families and making it easier to implement within their agency.

Research Question 1: Is TE-MST feasible and acceptable to implement?

In order to determine the feasibility and acceptability of TE-MST, the evaluation team used data from the brief monthly surveys as well as the baseline survey, six-month survey, and final survey.

Baseline Survey: Supervisors and Therapists

In August 2022, all supervisors (n = 4, 100%) and therapists (n = 5, 100%) completed the baseline survey prior to receiving any TE-MST training. Administrators did not complete the baseline survey; however, we included their corresponding questions regarding barriers and unanticipated challenges, impact of TE-MST on fidelity, and various implementation outcomes beginning at the six-month mark.

High-level findings:

- Supervisors were initially optimistic about the benefits, impact, and potential for TE-MST, yet identified potential areas of concern such as challenges with technology use, supporting the therapists' ability to navigate relationship dynamics remotely, and addressing practice components such as ability to conduct urinalysis screens, crisis management, and managing parent-child interactions.
- Therapists were also generally positive about the benefits, impact and potential for TE-MST. Still, they identified areas of concerns around addressing practice components such as

tracking and monitoring safety plans as well as engagement in addition to supervisors' concerns.

- Both supervisors and therapists recognized that the model could facilitate serving hard to reach families in rural communities and could provide opportunities that promote a stronger work-life balance for therapists.

Six-Month and Final Surveys: Administrators, Supervisors, and Therapists

Except for one supervisor who did not complete the final survey (due to departing from their agency), all administrators (n = 4, 100%), supervisors (n = 4, 100%), and therapists (n = 5, 100%) completed the six-month and final 12-month surveys in March 2023 and December 2023, respectively. The six-month and final extended surveys were used to assess perceptions of the feasibility and acceptability of TE-MST after having received TE-MST training.

High-level findings:

- On average across both surveys, supervisors reported training time and clinical consultation support for the TE-MST model to be just right. Still, the Learning Community has provided our evaluation team with valuable insights and future considerations when developing the TE-MST decision-making flowchart/decision tree (Appendix A) and initial trainings for newer therapists.
- Administrators, supervisors, and therapists generally agreed or strongly agreed that TE-MST was a good fit, relevant, compatible, had reasonable costs, and had been easy to implement the model into their agency over the course of the last year.
- Generally, administrators, supervisors and therapists either strongly disagreed or disagreed that they encountered notable barriers to implementing the TE-MST model. They also did not report encountering unanticipated challenges associated with the ability to use telehealth to enhance MST delivery and have continued to report that the impact on fidelity of using telehealth as part of MST has been overall positive.

Challenges

- Although enrolled families were able to use their own technology for their TE-MST sessions rather than agency resources throughout the duration of this pilot, one agency momentarily encountered challenges with internet/Wi-Fi hotspot providers turning off hotspots due to lack of use. This issue was resolved, and hotspots were turned back on, however, if there is not consistent use of internet/Wi-Fi while delivering TE-MST, it may become a challenge for families.

Training Time, Clinical Consultation Support, Policies and Procedures

Using a 3-point Likert scale where 1=Not Enough, 2=Just Right, and 3=Too Much, Figure 4 and Figure 5 shows administrator, supervisor, and therapist responses regarding their perceptions on whether there was enough training time and clinical consultation support for the TE-MST model for their agencies prior to taking the six-month and final surveys. By the end of the pilot, all administrators and supervisors found that the training time for the TE-MST model was adequate, while therapists reported that it was nearly adequate. Still, all respondents agreed on the adequacy of clinical consultation support while delivering TE-MST.

> *"I would recommend having a telehealth specific mini booster to offer MST therapists providing the TE model a refresher […] to review and reinforce some of the more advanced core competencies reviewed in the initial training. It's a lot to absorb in the first training and a TE-specific booster a few months after initial training might offer additional value for the therapist and/or supervisor."*
>
> **- MST Supervisor**

Figure 4. Training Time for TE-MST

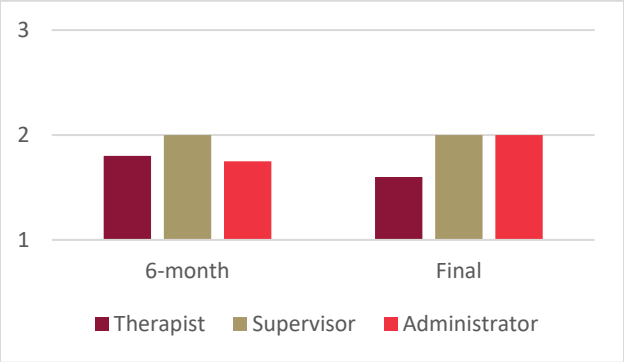
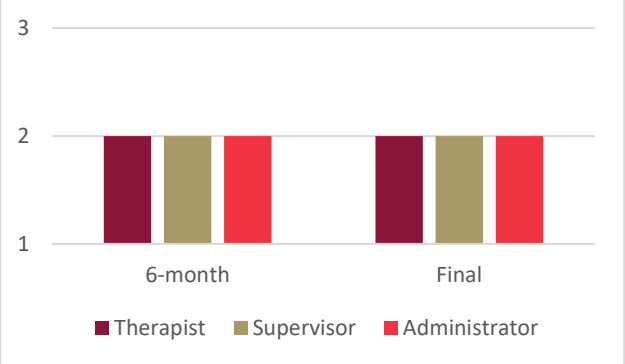
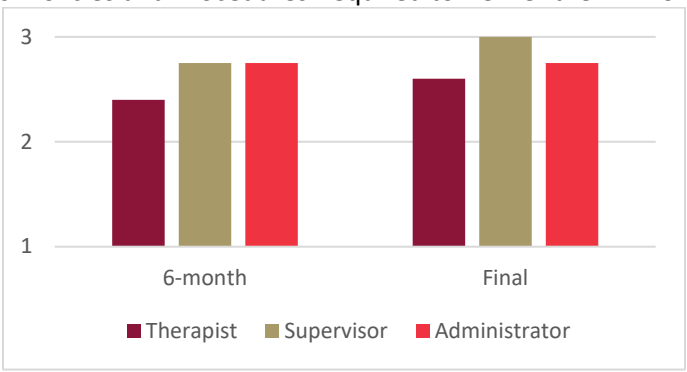


Figure 5. Clinical Consultation Support for the TE-MST Model



Using a 3-point Likert scale where 1=Not Acceptable, 2=Somewhat Acceptable, and 3=Fully Acceptable, Figure 6 shows administrator, supervisor, and therapist responses regarding perceptions on whether the policies and procedures (Appendix B) required to deliver TE-MST model were acceptable for their agencies prior to taking the six-month and final surveys. All respondents indicated that the policies and procedures necessary to deliver the telehealth model were fully acceptable.

Figure 6. Policies and Procedures Required to Deliver the TE-MST Model



Therapists and supervisors reported whether or not (1=Yes, 2=No) families served by their agency experienced concerns specific to the TE-MST model (Figure 7). Additionally, participants were also asked whether they encountered any unexpected or unanticipated benefits associated with using TE-MST (Figure 8). All supervisors and therapists reported no concerns specific to the TE-MST model among the families served. While over half of the administrators did not find unexpected benefits from using TE-MST by the end of the pilot, they indicated observing expected benefits such as cost savings for their agency in both the six-month and final surveys.

Figure 7. Have the families you have served with the TE-MST model expressed any concerns specific to the model?

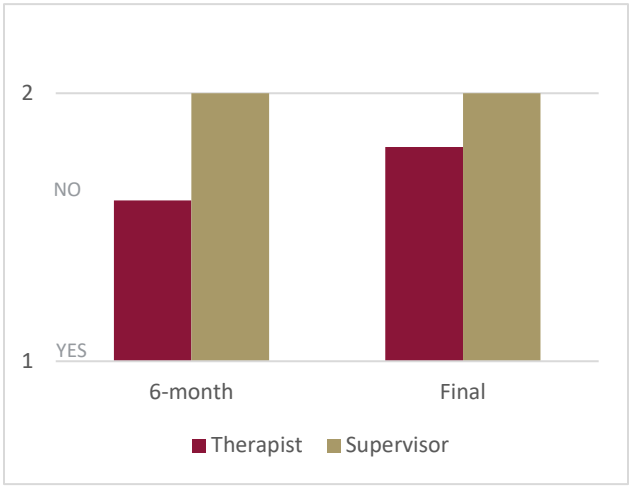
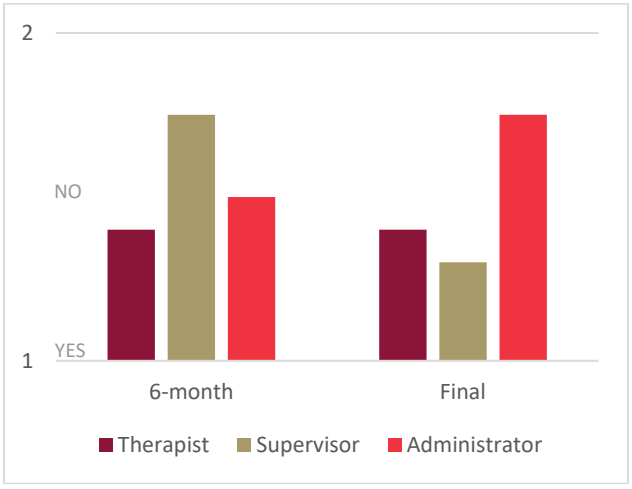


Figure 8. Have you encountered any unexpected or unanticipated benefits associated with the ability to use TE-MST to enhance MST delivery?



Reflections on TE-MST for Therapists, Supervisors, and Administrators

In Figures 9-14, anchors were based on a 6-point Likert scale where 1=Strongly Disagree and 6=Strongly Agree and included midpoint options of neutral and unsure. Respondents were asked to rate the following statements including whether TE-MST was a good fit, if referral sources and stakeholders held positive views, whether it was relevant and compatible if costs were reasonable and the extent to which it has been easy to implement the model into their agency prior to taking the six-month and final surveys. Respondents generally agreed or strongly agreed with the statements provided. However, administrators reported that they were still unsure about the relevance of TE-MST and whether or not referral sources and other community members have positive views, potentially reflecting the need for further evidence about TE-MST.

> *"Our experience has been that less families than initially anticipated would need our agency to provide internet or computer/tablet access to effectively engage in the TE model. Most families have had access and preferred to use their own technology. The reduction in mileage reimbursement costs has helped offset costs to the agency."*
>
> **- MST Supervisor**

Figure 9. The TE-MST model is a <u>good fit</u> with our agency

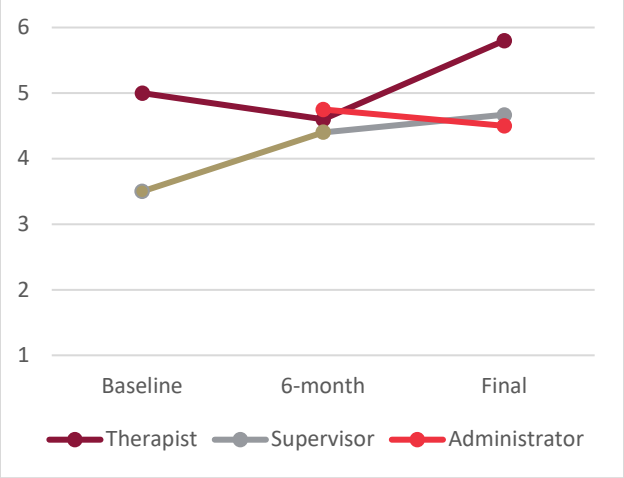


Figure 10. <u>Our referral sources</u> and other community members have a positive view of TE-MST

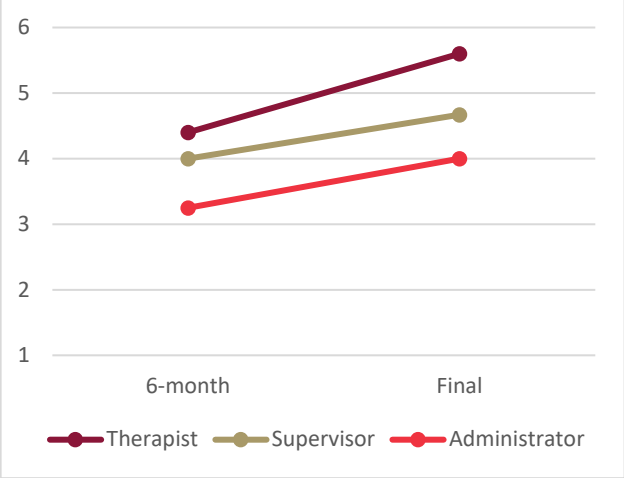


Figure 11. TE-MST is relevant for our overall agency service goals

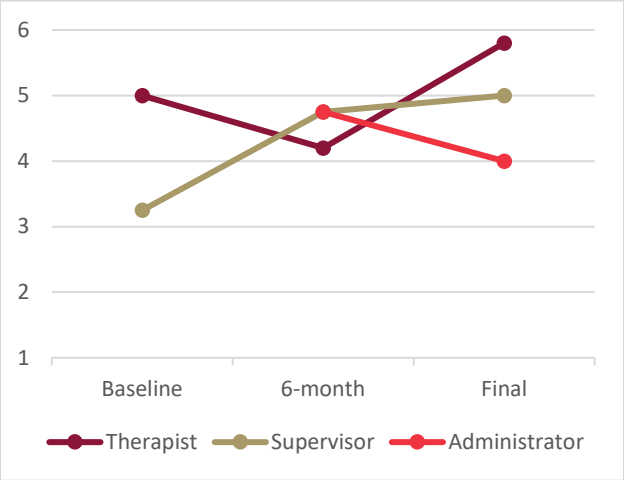


Figure 12. TE-MST is compatible with our overall agency way of doing business

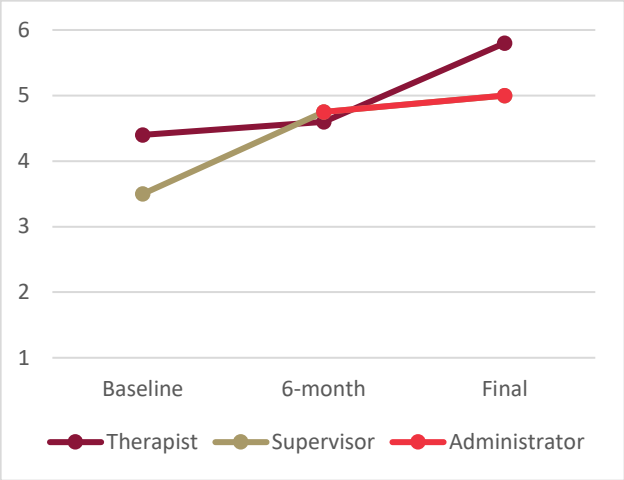


Figure 13. The costs (e.g. mileage and equipment) associated with TE-MST delivery are reasonable

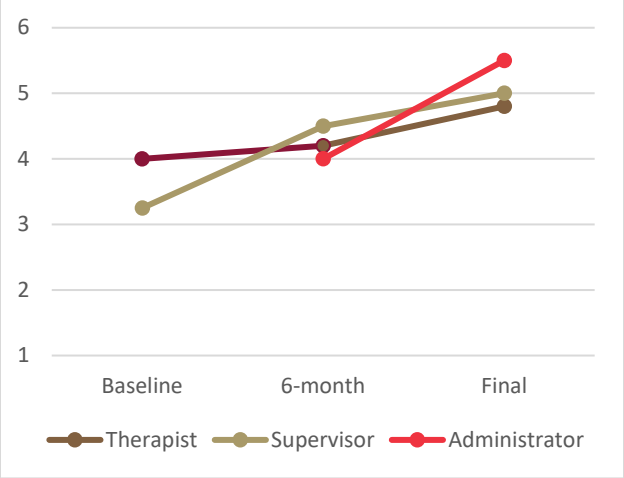
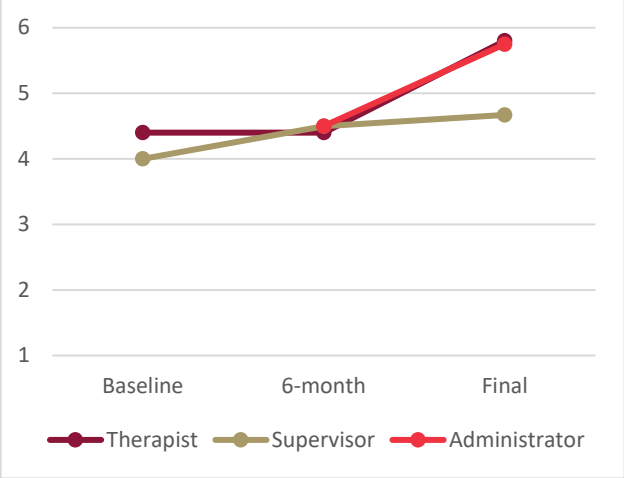


Figure 14. TE-MST is easy to implement within our agency



Barriers and Unanticipated Challenges

In Figure 15, anchors were based on a 6-point Likert scale where 1=Strongly Disagree, 6=Strongly Agree, and included midpoint options of neutral and unsure. MST respondents indicated that they either strongly disagreed or disagreed that their agency encountered barriers to implementing the TE-MST model prior to taking the six-month and final surveys. In Figure 16, respondents also indicated either 1=Yes or 2=No when asked whether they encountered unexpected or unanticipated challenges associated with the ability to use telehealth to enhance MST delivery prior to taking the six-month and final surveys. While we previously noted barriers within the six-month survey

> *"Manipulation of technology. For example, one father choosing to unmute his wife during a private conversation they were having during the session."*
>
> **- MST Therapist**

results (e.g., lack of access to internet when engaging with clients), administrators, supervisors and therapists generally disagreed that they encountered notable barriers or unanticipated challenges to implementing the TE-MST model by the end of the pilot.

Figure 15. Barriers to Providing TE-MST

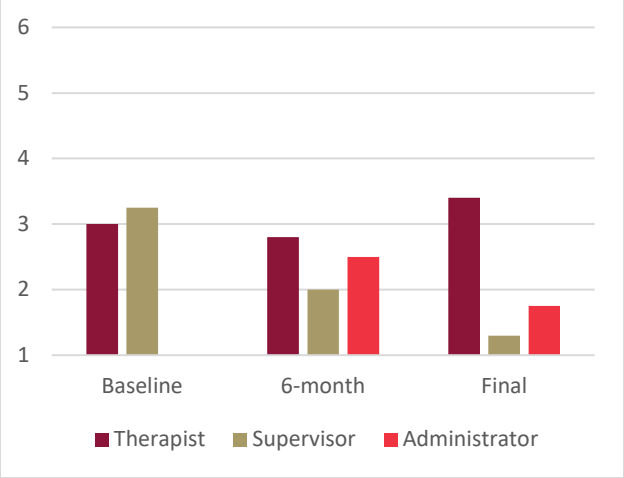
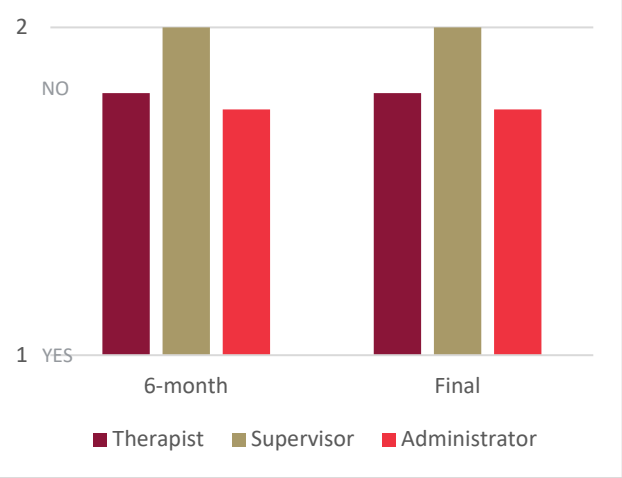


Figure 16. Unanticipated Challenges



Ease of Format and Ease on Call

In Figure 17 and Figure 18, using a Likert scale from 1=Very Difficult, 2=Somewhat Difficult, 3=Easy, and 4=Very Easy, supervisors and therapists were also asked the degree to which it was easy to deliver MST using face to face sessions compared to telehealth session and the degree to which it was easy to follow on-call procedures. Supervisors and therapists agreed that it was easy to determine the format of sessions and follow on-call procedures when delivering TE-MST.

> *""I think it takes a bit more thinking and strategy during the initial phase of services to determine what mode to deliver services through, but once the therapist and family establish rapport and get in the swing of things, it becomes rather intuitive for both parties."*
>
> **- MST Supervisor**

Figure 17. Ease of Determining Session Format

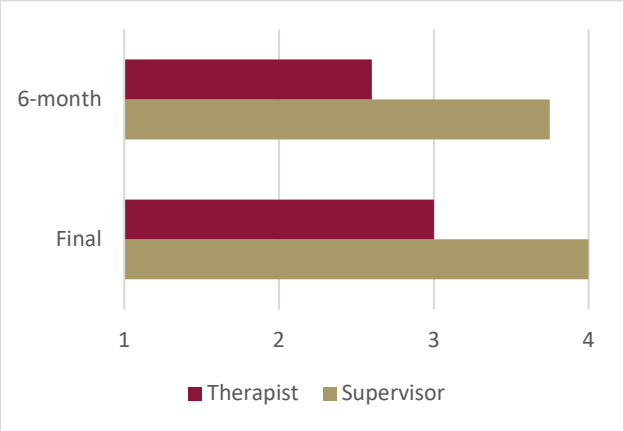
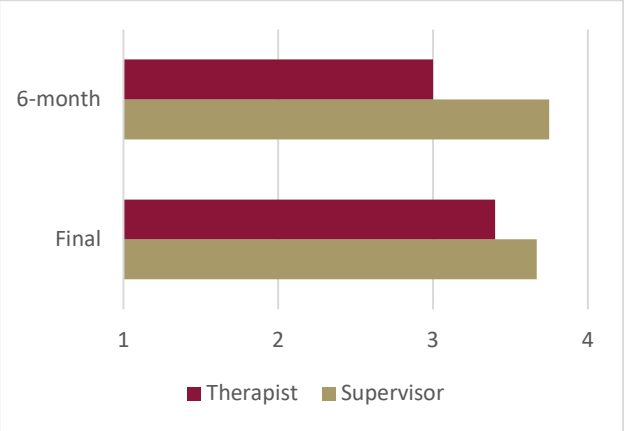


Figure 18. Ease of On-Call Procedures



Reflections on TE-MST vs Standard MST Outcomes

In Figures 19-22, using a 5-point Likert scale from 1=Substantially Less, 3=About Equal, and 5=Substantially More, therapists, supervisors and administrators were asked to reflect the extent to which TE-MST was more or less associated with various implementation outcomes including appropriateness (i.e., as it relates to fit, relevance and compatibility), engagement, continuity, job satisfaction, work-life balance, attendance and cultural considerations (e.g. linguistic, access, ecological).

Figure 19. TE-MST is ____ appropriate for families when compared to standard MST delivery

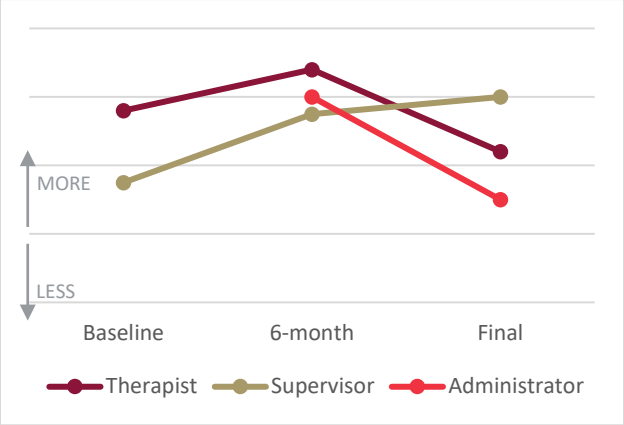
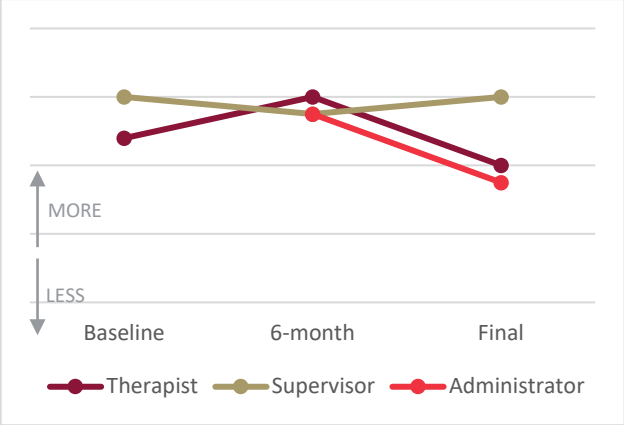


Figure 20. TE-MST produces ____ engagement of other family members and/or supports when compared to standard MST delivery



All administrators, supervisors and therapists perceived TE-MST as offering either similar or more job satisfaction and work-life balance as compared to standard MST delivery. For example, one therapist noted "*[…] I really enjoyed being able to work from home and do so without feeling like I was compromising on quality of work/services provided to families or my own personal boundaries*" (Table 4).

Figure 21. TE-MST is associated with___ job satisfaction for my role when compared to standard MST delivery

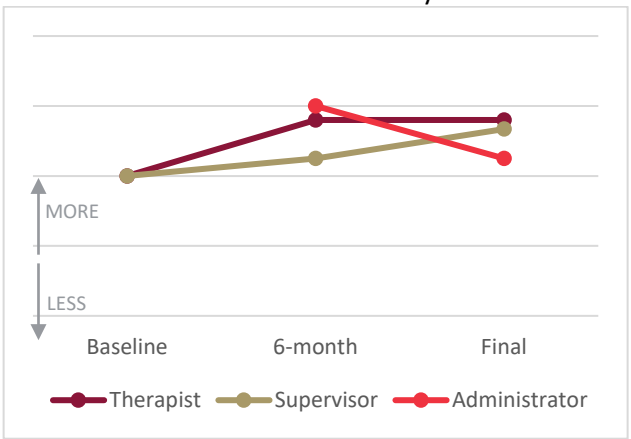
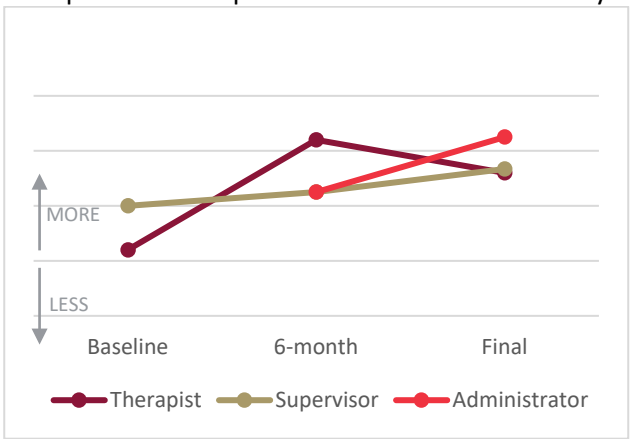


Figure 22. TE-MST is associated with___ overall work-life balance for the therapists and supervisors compared to standard MST delivery



Using a 5-point Likert scale from 1=Substantially Fewer, 3=About the Same # Of, and 5=Substantially More, therapists, supervisors and administrators were asked to reflect the extent to which TE-MST was more or less associated with treatment session attendance (e.g., cancellations and no shows). A lower score, such as "substantially fewer," indicated a favorable outcome when assessing factors like attendance, where lower scores reflect higher attendance during sessions. Overall, all respondents reported TE-MST enabled fewer cancellations and no-shows while it also provided roughly equal continuity of sessions (e.g., treatment progress and flow) with families as compared to traditional delivery of the model (Figure 23 and Figure 24).

Figure 23. TE-MST produces __ continuity of sessions with my families compared to standard MST delivery

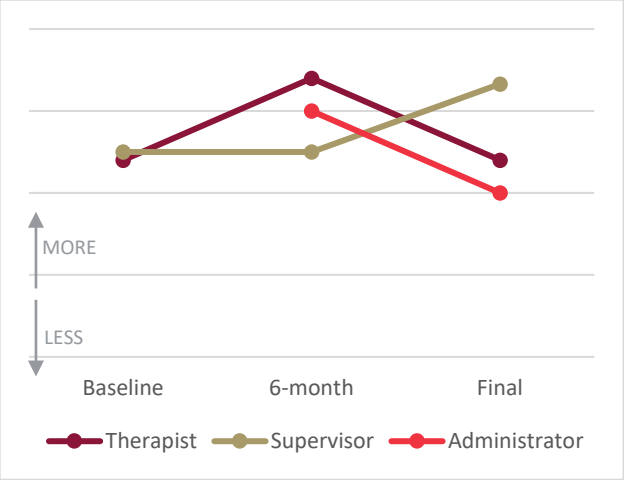
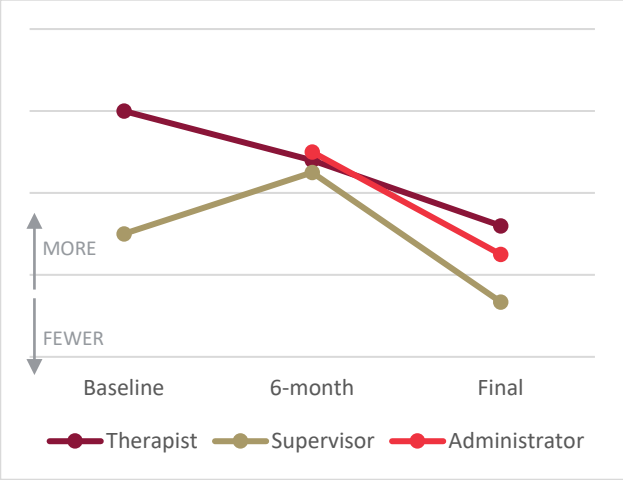


Figure 24. TE-MST enables __ treatment session cancellations and no shows with my families compared to standard MST delivery



In Figure 25, using a 5-point Likert scale from 1=Substantially Less Able, 3=About Equally Able, and 5=Substantially More Able, therapists, supervisors, and administrators were asked to reflect the extent to which TE-MST was more or less associated with the ability to address cultural considerations. In general, therapists, supervisors, and administrators reported that TE-MST was as acceptable or more acceptable than standard MST as it relates to addressing cultural considerations for families.

Additionally, in Figure 26, using a Likert scale from 1=No Impact, 3=Marginal Impact, and 5=Very Significant Impact, therapists and supervisors also reported the extent to which TE-MST had an impact on their overall skill development while serving in their role. While respondents initially indicated varied perceptions regarding TE-MST at six months, supervisors and therapists generally reported that TE-MST had between marginal and significant impact on skill development and growth by the end of the pilot.

Figure 25. TE-MST is ___to address cultural considerations for families when compared to standard MST delivery

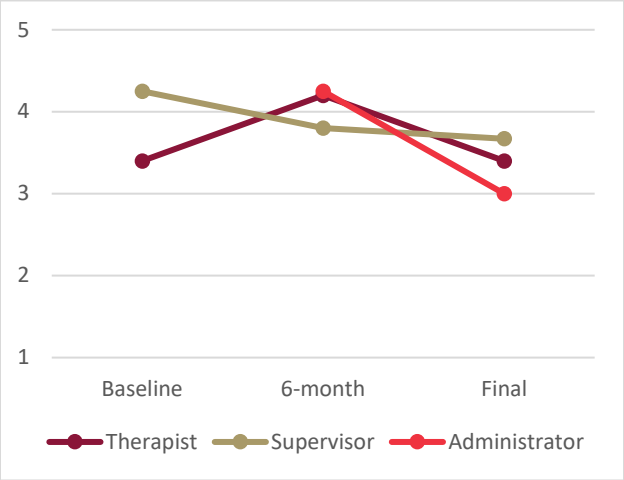
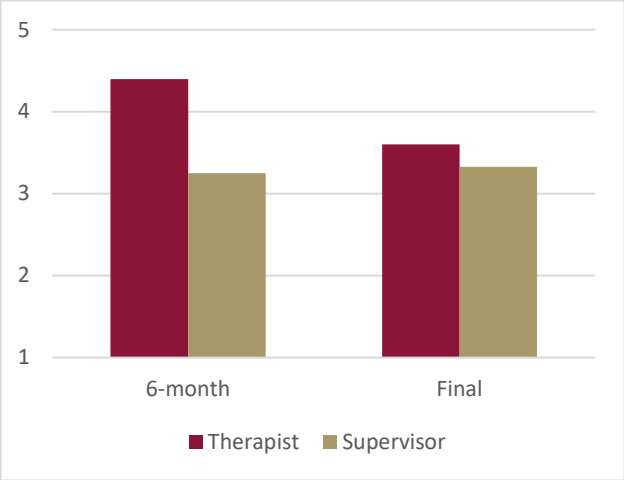


Figure 26. Impact on skill development/growth



Overall Model Acceptability

In Figure 27, based on a Likert scale from 1=Extremely Dissatisfied, 3=Neutral, and 5=Extremely Satisfied, therapists, supervisors, and administrators reported having high satisfaction with the model overall. Additionally, Figure 28 shows that all respondents in each group indicated strong agreement that the TE-MST model could be fully integrated in their program.

Figure 27. Overall satisfaction with the TE-MST model design

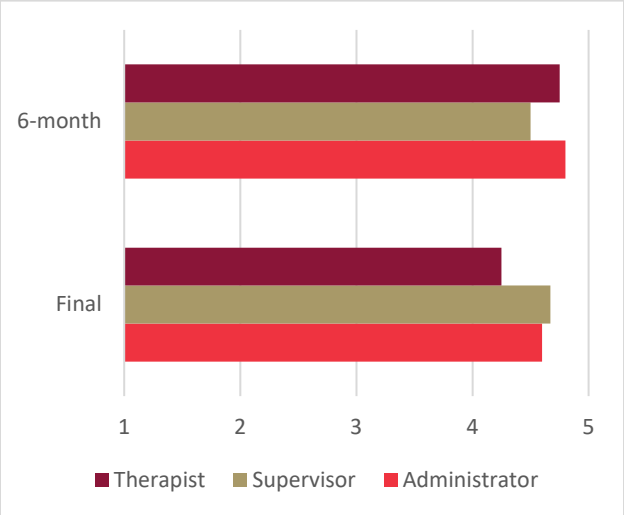
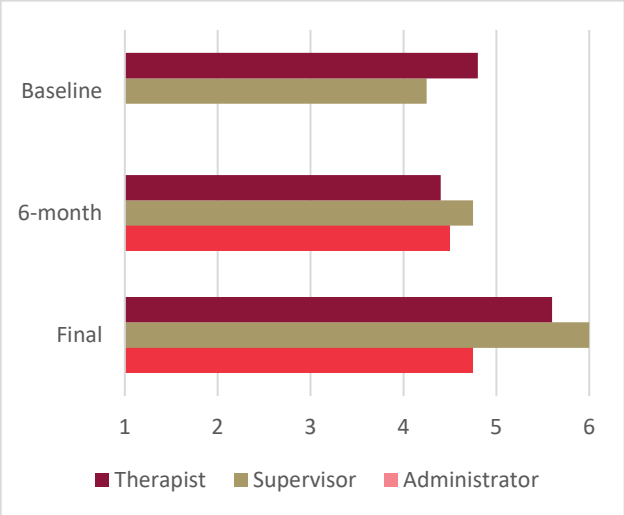


Figure 28. The TE-MST model can be fully integrated into our program



Brief Monthly Survey Results

The TE-MST evaluation team distributed brief monthly surveys between October 2022 and December 2023 to therapists and supervisors to assess their perceptions of the feasibility and acceptability of TE-MST. All supervisors completed their final round of brief surveys by October 2023 and all therapists completed their final round of brief surveys by December 2023. See Appendix C for the Monthly Survey Results Charts.

High-level findings:

- Overall, supervisors and therapists reported very positive scores across multiple topics including the extent to which telehealth worked well for families, the ability to make adequate progress on the families' overarching goals, as well as the ability to make adequate progress on instrumental outcomes (e.g., improved parenting skills, improved family relations, improved network of supports, success at school, prosocial peers, etc.).
- We observed similar patterns with confidence levels and comfort levels in using telehealth approaches in MST work with families for both supervisors and therapists throughout the pilot period.

Challenges

- Therapists noted how the initial decision-making flowchart did not adequately capture and define what to do during times of high crisis. This offered an opportunity for both therapists and supervisors to review high crisis examples alongside caregivers to distinguish whether or not a telehealth session was sufficient to address concerns.

MST Components

Table 3 presents the percentage of surveys in which participants agreed or strongly agreed with whether specific MST components were easy to implement while providing/supervising services by telehealth. Average percentages of 90% or higher are indicated in blue, those between 80-89% are indicated in beige, and percentages 80% or lower are indicated in gray.

From these averages, only therapists indicated scores below 80% for the ability to conduct urinalysis screens within the final 12-month survey. However, when compared to the six-month survey results, therapists increased scores for assisting families with implementing run retrieval plans while delivering the TE-MST sessions. While supervisors indicated higher scores for collaborating with key stakeholders when using TE-MST between six months and final, therapists may still need continued support from their supervisors in maintaining engagement with school and community partners.

Table 3. Ease of Implementing MST Components with TE-MST

	Supervisor			Therapist		
	Baseline	Six-month	Final	Baseline	Six-month	Final
Engagement	78%	67%	83%	83%	92%	93%
Explaining a therapeutic approach to a client	79%	96%	100%	87%	96%	93%
Working with a family to develop overarching goals	100%	96%	100%	90%	96%	93%
Creating Fit Circles	78%	92%	100%	83%	92%	93%
Identifying sequences of behavior	75%	75%	100%	87%	96%	93%
Working with a family to develop intermediate goals	79%	96%	100%	88%	96%	93%
Managing parent-child interactions	67%	46%	89%	81%	79%	80%
Ability to conduct urinalysis screens	67%	71%	83%	83%	42%	77%
Tracking safety plans	67%	83%	100%	92%	96%	90%
Tracking supervision and monitoring plans	67%	92%	100%	92%	96%	93%
Assisting families with implementing run retrieval plans	67%	88%	94%	88%	71%	96%
Crisis management	67%	88%	89%	83%	83%	87%
Use of tracing or behavior diaries	67%	92%	100%	80%	92%	90%
Empowering parents	79%	96%	100%	97%	96%	97%
Ability to role play and practice new skills with families	71%	N/A	100%	80%	N/A	93%
Evaluating the effectiveness of a strategy	75%	96%	100%	79%	96%	93%
Ability to “trust and verify”	67%	88%	89%	79%	92%	90%
Supporting caregivers to generalize treatment strategies	72%	96%	100%	87%	96%	96%
Supporting families to identify and use supports	71%	96%	100%	87%	96%	96%
Collaborating with stakeholders (e.g., schools and community partners)	72%	96%	100%	93%	96%	86%
Case closure tasks	79%	96%	100%	93%	88%	90%

[1] N/A - Skipped item on six-month survey on “ability to role play and practice new skills” component.
[2] All four supervisors completed the baseline and six-month surveys. Only n = 3 supervisors completed the final survey.

Table 4. Administrator, Supervisor, and Therapist Reflections on TE-MST vs Standard MST Outcomes

Outcome	Administrators (n = 4)	Supervisors (n = 4)	Therapists (n = 5)
Appropriate	*"Telehealth as a clinical delivery model has its limitations in regard to quality of services. The **MST telehealth program needs to be an add-on to our standard delivery of MST**. Face-to-face contact needs to be priority until initial high intensity referral behaviors and engagement are addressed."*	*"The **flexibility** meets families where they're at more and **increases engagement** and overall outcomes."*	*"I think **for some families it is more appropriate** and they feel very comfortable with the model and the needs with it, but there are **some families that this is not appropriate** and will make things unproductive and lead to problems that get in the way of treatment."*
Engagement	*"I think the way our therapists have focused on engagement, **the model is about equal**."*	*"Caregivers/supports who don't live in the primary home are **more inclined to actively participate** when they can do it remotely."*	*"From my experience, I think **engagement remained the same between TE-MST families in comparison to standard MST**. Out of my six TE-MST families, only one was flagged for engagement concerns and that had to do less with the pilot and more to do with other circumstances."*
Continuity		*"When offered to families effectively screened in as appropriate for the enhancement, I think it provides more flexibility which in turn **positively impacts clinical engagement and rapport and sustainable outcomes**."*	*"I think the [telehealth]-enhanced sessions help flow because **it removes barriers when it comes to availability and access**."*
Job Satisfaction			*"**Taking out the drive time stress did make it less stressful** and with having the computer open and ready, I found it was easier to document or do things rather than having to wait until I go somewhere and that adding extra time to the job."*

Outcome	Administrators (n = 4)	Supervisors (n = 4)	Therapists (n = 5)
Attendance		*"**Exposure to illness/COVID is no longer a barrier to engaging in a session.** Physical location/practical barriers to meeting at a family's home are mitigated. Caregivers don't have to worry about 'the home being clean' or may feel more comfortable in general."*	*"**It is more convenient in some ways** and [the caregiver/family] can attend through the phone or in the car."*
Work-Life Balance	*"[Work-life balance] is there due to **the flexibility to meet the caregivers where the participants are**, versus having to incur travel time to have a session."*		*"[…] **I really enjoyed being able to work from home** and do so **without feeling like I was compromising on quality of work/services** provided to families or my own personal boundaries."*
Cultural Considerations	*"Focus on cultural considerations **are the same regardless of delivery model**."*		*"**The TE model made it easier to meet with families that lived farther away or had busy schedules**, but also families that had medical concerns that impacted their ability to meet in person."*

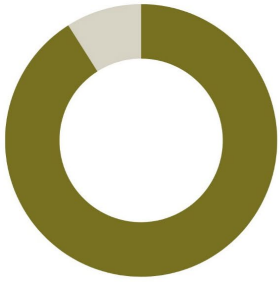
Research Question 2: When implemented, are therapists able to achieve fidelity to the MST model?

The primary measure for fidelity to the MST model includes adherence data from the TAM-R. The TAM-R is a tool used to help evaluate the work that therapists are doing in the home. The TAM-R is collected once a month while families are in therapy and consists of 28 questions for caregivers of youth who are receiving MST. The goal of TAM-R interviews is to determine if therapists are adhering to the MST principles and model. Some examples of TAM-R questions include:

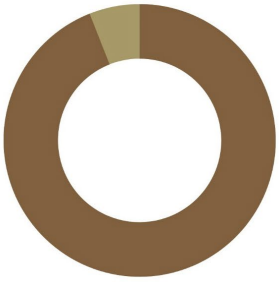
- The therapist tried to change some ways that family members interact with each other.
- Family members and the therapist agreed upon the goals of the sessions.
- The therapist's recommendations made good use of our family's strengths.

The scoring for the items goes from 1 to 5, and target adherence means about 60% of the scores are a five. For the TE-MST Pilot, the Overall Average Adherence Score was 0.83 (target: 0.61). Therapists were able to achieve fidelity using the telehealth-enhanced model.

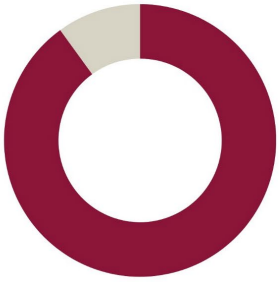
OVERALL AVERAGE ADHERENCE SCORE: **0.83**



91% of youth with average adherence above threshold



94% of youth with at least one TAM-R interview



90% of TAM-R due that are completed

Table 5: TE-MST Adherence Data

Adherence Data	TE-MST Pilot (Research Group = R) Sep 2022–Jan 2024	Rocky Mountain MST Outcomes in Colorado Mar 2022–Dec 2023
Overall Average Adherence Score (Target: 0.61)	0.83	0.73
Percent of youth with average adherence above threshold (Target: 80%)	91%	72%
Percent of youth with at least one TAM-R interview (Target: 100%)	94%	91%
Percent TAM-R due that are completed (Target: 70%)	90%	73%
Total cases with a valid TAM-R	30	421

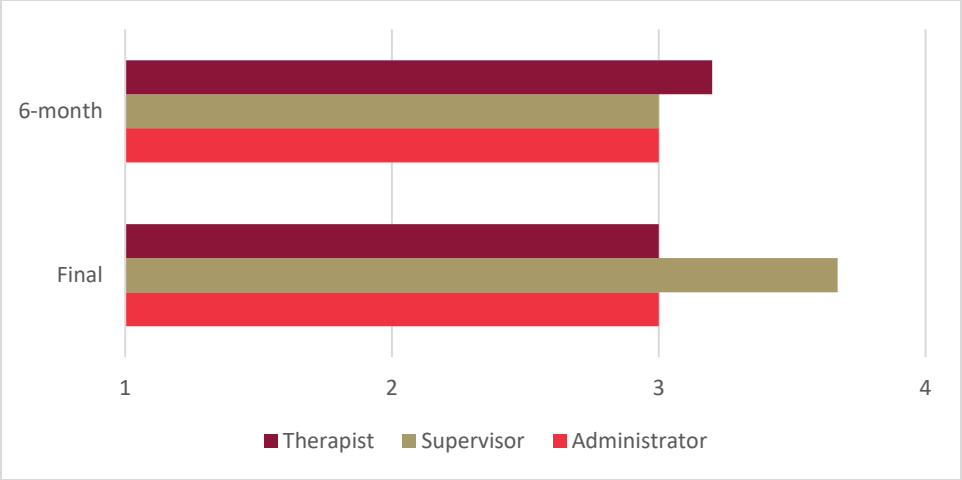
Our case-level analysis found that the average TAM-R scores for the TE-MST participants (M = 0.84, SD = 0.30) were better than for those of the comparison group participants (M = 0.75, SD = 0.32), though independent samples t-tests indicated that the differences were not statistically significant ($t(289) = -1.4$, $p = 0.162$). Moreover, differences in average TAM-R scores for the TE-MST therapists' TE-MST (n = 27) and standard treatment MST cases (n = 44) were not statistically significant ($X^2(1, N = 71) = 0.624$, $p = 0.430$). **This means that there was no negative impact on MST fidelity when telehealth supports were used.**

Impact of TE-MST on Fidelity

Based on responses from 1=very negative (reduced fidelity scores) to 4=very positive (improved fidelity scores), respondents provided their reflections regarding the impact on fidelity of using telehealth as part of MST. Between both the 6-month and final surveys, administrators, supervisors, and therapists felt there was a positive impact on fidelity after using TE-MST.

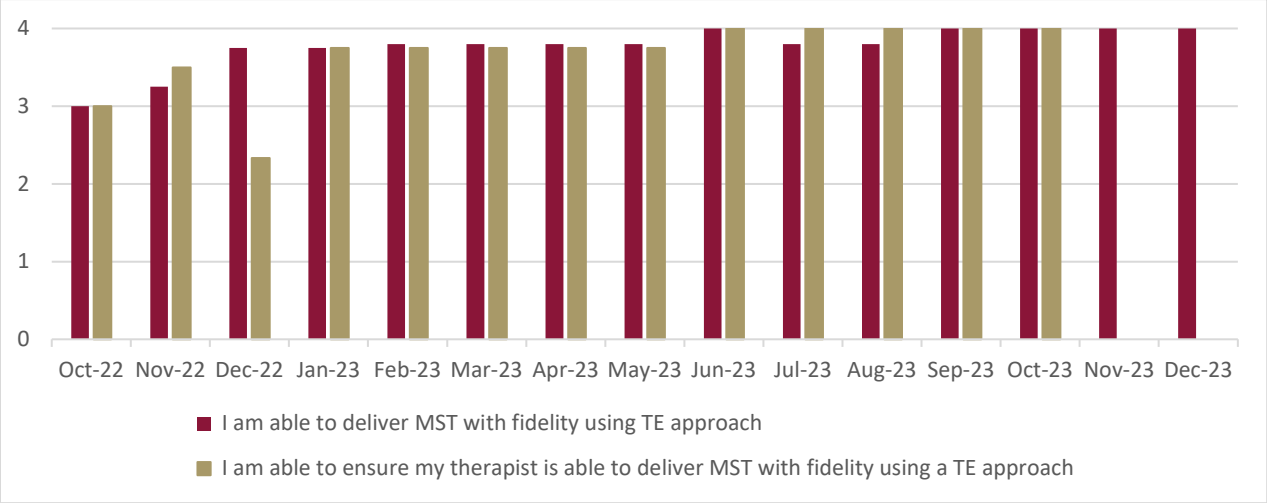
> *"Because we had to put more time and effort into the process of determining what intermediate goals would be in person versus what was telehealth, sessions tended to be more structured, increasing families buy-in into the model and the success of the interventions."*
>
> **- MST Therapist**

Figure 29. TE-MST Impact on Fidelity



The brief monthly surveys, among other topic areas, also examined perceptions regarding the ability to deliver MST with fidelity using a telehealth-enhanced approach. Generally, respondents indicated that they either mostly agreed or strongly agreed with the statement provided below.

Figure 30. Delivering MST with Fidelity Using TE-MST



Therapists and supervisors also did not indicate that they had to make substantial changes to the MST model when using telehealth-based approaches throughout the pilot period (see Figure C8).

Research Question 3: Are clinical outcomes commensurate with MST as typically delivered?

There are three main target areas that teams track called "ultimate outcomes." These clinical outcomes include youth living at home, in school or working, and no new arrests. The outcomes from the pilot show that there was no evidence of compromised clinical outcomes when using the TE-MST model (Table 6).

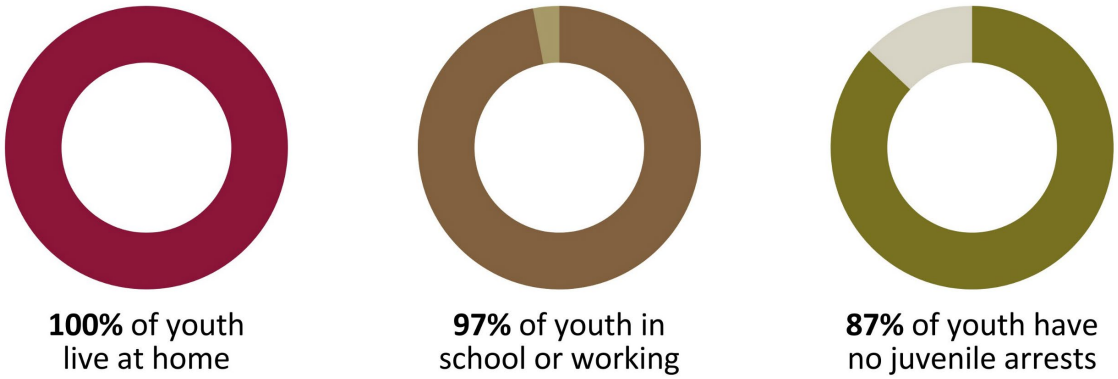


Table 6: TE-MST Ultimate Outcomes

Ultimate Outcomes Review	TE-MST Pilot (Research Group = R) Sep 2022–Jan 2024	Rocky Mountain MST Outcomes in Colorado Mar 2022–Dec 2023
Total cases discharged	32	424
Total cases with opportunity for full course treatment	30*	378
Percent of Youth Living at Home (Target: 90%)	100%	97%
Percent of Youth in School/Working (Target: 90%)	97%	91%
Percent of Youth with No New Arrests (Target: 90%)	87%	93%

Note. *There were two cases that were not completed as they were withdrawn from treatment for administrative reasons.

Research Question 4: Are implementation outcomes commensurate with MST as typically delivered?

No youth discharged due to lack of engagement

All youth completed treatment

No youth placed outside of the home during treatment

Table 7: TE-MST Case Closure Data

Case Closure Data	TE-MST Pilot (Research Group = R) Sep 2022–Jan 2024	Rocky Mountain MST Outcomes in Colorado Mar 2022–Dec 2023
Average length of stay in days for youth receiving MST (Target: 120)	124	126
Percent of youth completing treatment (Target: 85%)	100%	93%
Percent of youth discharged due to lack of engagement (Target: <5%)	0%	4%
Percent of youth placed (Target: <10%)	0%	2%

While the sample size in the pilot was small, the implementation outcomes met all targets and were notably positive.

Our case-level analysis of the 323 cases described in the *Characteristics of Youth Served by TE-MST and Rocky Mountain MST Network* section affirmed that TE-MST youth demonstrated favorable discharge outcomes compared to standard treatment youth. However, chi-square analyses indicate that the differences were not statistically significant. One hundred percent (n = 29) of youth served by TE-MST completed treatment, compared to 92% (n = 271) of youth served by standard MST (X^2 (1, N = 323) = 2.44, p = 0.118). No TE-MST served youth (0%) were discharged due to lack of engagement or placement. In the standard treatment group, 15 youth (5%) were discharged due to lack of engagement (X^2 (1, N = 323) = 1.55, p = 0.213), and eight (3%) were placed (X^2 (1, N = 323) = 0.81, p = 0.368). **This means that there was no negative impact on MST implementation outcomes when telehealth supports were used.**

Ripple Effects Mapping

On February 1, 2024, the TE-MST Pilot team had a closing meeting for final reflections and celebration of the program. The TE-MST program staff alongside participating therapists and supervisors participated in REM, a storytelling session with a participatory approach that aims to surface both direct and indirect impacts of an initiative. Researchers at the University of Denver's Butler Institute hosted the REM session.

During the final reflection activity (Appendix D), therapists and supervisors expressed excitement about the innovative application of MST in the TE-MST Pilot. One MST therapist noted that "*It felt good to evolve with the times.*" An MST supervisor stated, "*Technology is the way of the world right now*."

Overall, there were discussions on how delivering TE-MST felt the same as standard MST and continued to capture the spirit of the model. An agency administrator commented that the pilot was a "perfect example of 'Whatever It Takes'."

"Whatever It Takes"

This phrase captures the commitment of MST therapists to go above and beyond to address the complex needs of the youth and their family. It involves providing support such as interventions across multiple systems including the family, school, peer groups, and community.

See Appendix E for the REM Map and report prepared by the Butler Institute.

Implications

Future Study Implications

The initial pilot, which was a within-subjects repeated measures design with outcomes across MST roles (therapist, supervisor, and administrator), indicated that the proposed intervention modification is both feasible and acceptable. Preliminary fidelity metrics suggested that implementing this modification could potentially enhance treatment fidelity. However, comprehensive assessments, including family-level acceptability and administrative outcome measures, were not conducted. Further, it remains unknown how many clinical outcomes with this modified intervention compare to those of traditionally delivered MST.

In the future, we propose a randomized controlled, multi-level (youth, parents, therapists, supervisors, administrative data) mixed methods study to determine the comparative effectiveness and implementation outcomes of TE-MST via a non-inferiority, type II hybrid effectiveness trial. The purpose of a future three- to five-year study would be to evaluate the comparative effectiveness of a telehealth-enhanced service delivery adaptation for MST and collect data about additional clinical and implementation outcomes. Our proposed research design would emphasize causality through randomization and inclusion of data from administrative sources to capture real-world behaviors.

Other Research Questions

1. Investigate whether TE-MST achieves the same or superior treatment results for youth at high risk for justice and child welfare system involvement due to behaviors and/or substance use.
2. Investigate whether there is equity in treatment effectiveness based on the youth and their family's living location (rural, suburban, urban), race/ethnicity, and socioeconomic status.
3. Investigate the implementation outcomes of TE-MST compared with MST when delivered in the standard format.

Workforce

An unanticipated finding from our study was that therapists reported several positive impacts of using the telehealth modification on their personal work-life balance and job satisfaction. They noted examples such as how telehealth helped them to be better prepared and organized for the session with the family. Within the surveys, monthly Learning Community, and concluding REM session, therapists shared how they had to consider the type of language and communication skills needed to effectively present TE-MST to families. Additionally, TE-MST offered regular opportunities for them to evaluate whether the telehealth option would be appropriate and to reflect on whether they personally would contribute to any drivers in the family's decision around the structuring of the session further enhancing their job satisfaction overall. Therapists also noticed how there were a few ways in which TE-MST brought convenience within their work by allowing them to conduct sessions with the family in their own car or while at other remote locations. These instances may have also contributed to their general sense of personal work-life balance while delivering TE-MST.

Colorado Evaluation & Action Lab
UNIVERSITY OF DENVER

Making Data Actionable

Recommendations
Lessons Learned
Conclusion

Making the Data Actionable

The Hub model advances Colorado's five-year vision for evidence-based decision making (EBDM). EBDM recognizes that research evidence is not the only contributing factor to policy and budget decisions. It is the intersection of the best available research evidence, community needs and implementation context, and decision-makers' expertise. Recommendations and lessons learned below capture actionable insights primarily based on the best available research evidence. Consider pairing this report with community needs and implementation context as well as decision-makers' expertise to make these findings more actionable for Colorado's children, youth, and families.

Recommendations

This study shows the TE-MST model is a feasible and acceptable treatment for meeting outcomes for youth in Colorado.

The results of the TE-MST Pilot highlight the need to:

1. Pursue future funding opportunities to confirm comparative effectiveness with MST standard delivery.
2. Communicate results aimed at informing decisions about the need for continued support of allowing Medicaid billing for telehealth services.
3. Consider additional workforce identification and retention efforts to enable continued service delivery.

> *"It's just been great overall! The training hit all the right marks, the support along the way from our expert and monthly meetings has been fantastic. It's helped us better help families!"*
>
> **- MST Supervisor**

Lessons Learned

Learning Community Highlights

Much of the focus of the Learning Community meetings centered around discussing additional training support needs and applying the decision tree to determine whether to have in-person or telehealth sessions. Therapists and supervisors used the Learning Community as a space to discuss how to best engage families and gain their interest in participating in the pilot, best practices in preparing for telehealth sessions, the behavioral impacts on clients and families during telehealth sessions, and as an opportunity to share from lessons learned collectively. There were several discussions related to setting clear expectations with families to promote collaboration of session structure. The meetings also provided space and time to track case enrollment numbers, TAM-R collection, and any other quality assessment/quality improvement and administrative advances and barriers related to the project.

A key outcome of the Learning Community was gaining valuable feedback on areas to target for the revision of both therapist and supervisor training modules. During the Learning Community meetings, pilot participants were able to identify what supports may be needed for newer therapists using the TE-MST model in the future. While the therapists and supervisors that participated in this initial pilot were experienced in MST, they were able to recognize areas for skill development that would be needed in future applications of the model. This included an enhanced evaluation of clinical skills during therapist recruiting to help identify potential skill gaps such as effectively assessing environmental cues, managing

conflict, and addressing nonverbals through telehealth. These insights will be incorporated into future iterations of the training modules to support clinician skill development.

Overall, supervisors and therapists reported that the Learning Community provided them the opportunity to discuss experiences, questions, and concerns in an open forum that was supportive and solution focused. Participants indicated that the Learning Community fostered an environment that was collaborative and beneficial to their learning and clinical growth throughout the project. Participants strongly recommended that the Learning Community continue to be a part of future pilots related to the implementation of MST via telehealth.

Decision Tree for Determining Telehealth versus In-person Sessions

The decision tree to determine telehealth versus in-person sessions was a main resource that therapists and supervisors often referred to after the initial TE-MST training. The pilot program team partnered with MST Services to create this initial decision tree to help therapists and supervisors logically think through and apply decisions around conducting telehealth versus in-person sessions. The Learning Community provided valuable insights on ways to update the decision tree based on their experiences with the TE-MST model.

The MST Experts noted initially that therapists referencing and applying the decision tree frequently did so with unexpected rigidity. The experts found that therapists expressed feeling that they had to strictly adhere to the decision tree as a rule rather than a resource. This thinking led to many discussions, especially during the Learning Communities, that led to a recognition of additional training required to better support and empower supervisors and therapists to make judgment calls based on case specific scenarios and context. For therapists that are newer to the model, there may be a need for skill development on how to adjust plans for sessions based on family needs.

The team has identified that there are often nuances that may come up that cannot be written down into a decision tree, but rather should be framed and practiced during the training. Additional training could include role plays, discussion of if-then scenarios, and helping guide therapists to use their own best judgment. Once therapists had greater understanding of model flexibility, they were able to apply the decision tree with more ease and efficiency.

Please see Appendix A for the original decision tree and for an updated version of the decision tree with changes incorporated based on recommendations made during the pilot period.

Therapist and Supervisor Recommendations for Future TE-MST Training

During the Learning Community meetings, there were several lessons learned for the application of future training for the TE-MST model. One of the greatest takeaways is the need for continued reinforcement throughout the training material that TE-MST is still MST. Therapists indicated that they would often lose sight of this fact when overthinking the decision tree and clinical implementation of weekly interventions.

Learning Community participants agreed that there was a need for clarity and guidance related to crisis versus safety. Initially therapists identified any crisis as a safety concern and followed the process reflected in the decision-making flowchart/decision tree. Upon further discussion in the Learning Community, participants recognized that every crisis did not warrant a safety concern and recommended

that each crisis be assessed on a case-by-case basis to determine if organization crisis protocols should be followed or if the therapist should continue following the decision tree to determine next steps.

For this project, we chose experienced therapists that displayed high adherence and a proficient understanding of the MST model. The Learning Community offered valuable insights related to enhancing the core clinical skills section in the training to better help develop new therapists or those that may present with skill gaps. Specific recommendations included skills specifically related to implementing MST via telehealth such as: engaging families over telehealth, managing families together on one camera vs. multiple cameras, assessing safety needs, managing unexpected conflict, helping families do safety searches for drugs and weapons, reading non-verbal cues, and assisting with technical issues.

Participants recommended that supervisors and experts pay special attention to therapist's flexibility when referencing the decision tree and ability to pivot during sessions when required. Participants requested that a section be added to the training material that focuses on how/when therapists should use their judgement (and knowledge of the families) to best determine clinical need for in-person or telehealth session.

Participants requested that future training take time to discuss best practices for writing their weekly case summaries when implementing the TE-MST model. Participants requested further conversation to set clear expectations for how to document when telehealth versus in-person sessions occur, how best to document advances and barriers that occur in telehealth versus in-person sessions, and how to document whether their new intermediary goals for the week would be conducting with the family in person or via telehealth. Practice using the decision tree to help make these decisions for live cases and scenarios was requested.

A general takeaway at the end of the project was to include a comprehensive evaluation at conclusion of the training to determine clinical skill set and gaps.

Please see Appendix B for TE-MST Specific Policies and Procedures. For an overview of the original TE-MST training module objectives and agenda from August 2022, view Appendix F.

Conclusion

This was an initial pilot study of a telehealth-enhanced service delivery of MST. For widespread dissemination, further trials will be warranted. Since the pilot proved to meet preliminary benchmarks of effectiveness, we propose to examine this approach on a larger scale within Colorado. Our analysis within this final evaluation report provides an in-depth assessment of the effectiveness and implications of TE-MST as a viable means of delivering the standard MST model. Over the past year, our TE-MST evaluation team has conducted a careful analysis into the utilization and outcomes of using TE-MST and ensured that our preliminary findings were gradually translated into actionable steps for TE-MST participants.

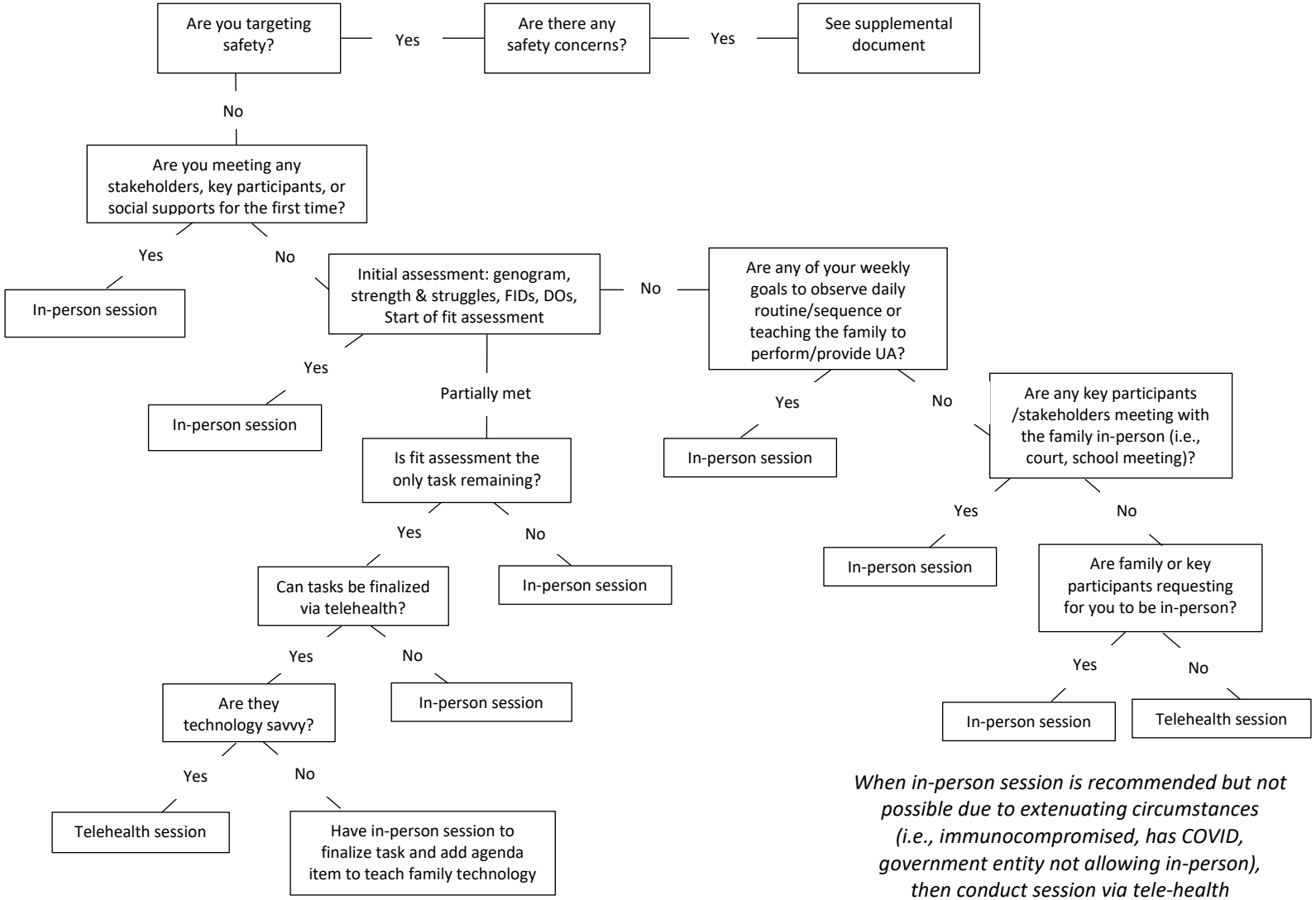
We investigated how the delivery of TE-MST expanded access to services, particularly among rural communities. Therapists maintained high fidelity while conducting telehealth sessions with youth and families. Within the surveys and Learning Community meetings, feedback from both supervisors and therapists indicated how applying telehealth approaches to the model has potential to eliminate geographical barriers as compared to traditional MST. Results also revealed that TE-MST supports in the structuring of sessions as teams indicated that the telehealth model reduced multiple logistical challenges associated with scheduling in-person sessions with families. We also note that there were no major differences between service delivery methods in key MST indicators. Additionally, pilot teams did not alter the application of MST practice components and reported that TE-MST was overall feasible to implement.

Overall, the findings shown in this report underscore future opportunities in enhancing MST service delivery reach to families.

Appendix A: Decision Making Flowchart

Original Decision Tree

Determine When Sessions Should Be in Person or Telehealth



When in-person session is recommended but not possible due to extenuating circumstances (i.e., immunocompromised, has COVID, government entity not allowing in-person), then conduct session via tele-health

Supplemental Document for the Flowchart

DECISION POINTS FOR COMMON SITUATIONS
(Supplemental document for the flowchart)

Engagement isn't well established

- Sessions are canceled or occur irregularly despite efforts to engage the caregivers and family system OR the family is new to treatment and isn't sure that MST is the right service.
    - In-person sessions should be held until meetings are consistent and a positive fit for the engagement intervention can be done.

Family cancels an in-person session

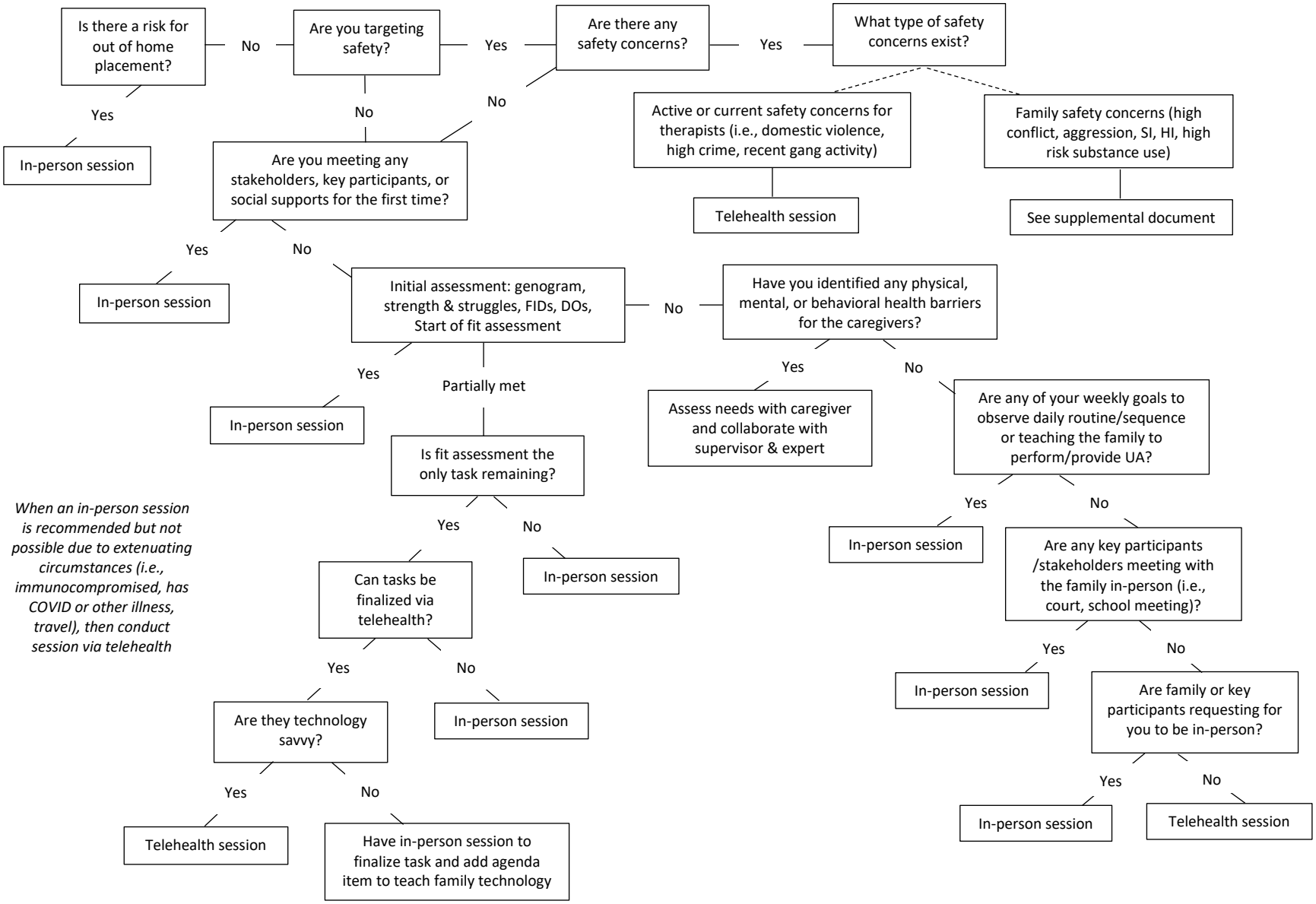
- Is this an ongoing problem (more than two weeks with cancellations?)
    - If yes, complete a Fit Circle and immediately seek guidance from your supervisor. Include your Fit Circle within your weekly case summary or have it ready for supervision/consultation if the cancellation occurs after the case summary for the week has been written.
    - If there is not an ongoing barrier and the family does not or is unwilling to reschedule, then create a Fit Circle for the potential dip in engagement/alignment and review with your supervisor to ensure you have proactive next steps to address the barrier.

Family was willing to reschedule the session after cancelling but asked for a telehealth session in place of an in-person session.

- If there are safety concerns or high-risk behaviors that were a focus of the cancelled session?
    - If yes, assess with the supervisor whether the family has the skills and ability to engage in a virtual session to adequately address the concerns or if it is more appropriate to schedule an in-person appointment as soon as the family is willing.
    - If no, a telehealth session would be appropriate as long as the family is engaged and aligned in treatment.
- If the family re-scheduled with an in-person session, then reschedule for as quickly as possible (1-2 business days) and proceed with the session as planned on that day.
    - If no, try to get the family to schedule an in-person session as soon as possible.
    - If unable to get an in-person session for the week, request a telehealth session within one business day to assess the fit for inability to schedule an in-person session for the week and develop an intervention based on the top driver.

Updated Decision Tree

Determine When Sessions Should Be In-Person or Telehealth



Appendix B: Policies and Procedures Specific to TE-MST

POLICIES AND PROCEDURES SPECIFIC TO TE-MST

Policy: Out of Office Coverage Policy for TE specific cases

- Note: All organizations will make TE families aware of coverage procedures and will include supervisor at some point in intake or initial assessment process.
- Therapists will follow agency procedures for requesting and taking PTO (Paid Time Off).
- Supervisor will cover all TE cases for the entire time the therapist is out on PTO or sick leave. This should not exceed two cases at any given time.
- Expert, supervisor, and therapists will staff cases at least one week prior to the therapist's PTO to determine treatment needs and schedule for in-person and telehealth sessions. MST supervisor will maintain all scheduled sessions and adjust conflicting obligations or responsibilities accordingly for unexpected time off/leave for therapists, MST supervisor will outreach to TE families to ensure they are aware of main therapist's absence, and plans developed for MST supervisor to cover during that time.

Policy: On-Call

- MST therapists utilizing the TE enhancement are required to participate in on-call rotation with other MST therapists and expected to follow organizations current policy for on-call coverage.
- On-call rotation will depend on the total number of MST therapists.
- MST therapists will respond to on-call crisis intervention within 30 minutes and not to exceed 60 minutes of receiving notification.
- MST therapists will initially attempt to resolve concerns either via phone or Zoom.
- MST therapists may need to respond in person if the situation cannot be resolved via phone or video. In-person response situations may include suicidal attempt, gesture, or ideation, property destruction, physical aggression, law enforcement involvement, etc.
- If an MST therapist is not certain whether an in-person response is warranted, they should contact their supervisor to consult.
- If an MST therapist determines that an in-person response is needed, they should notify their supervisor via text, email, or voicemail.
- Prior to travel, the MST therapist and caregiver will determine whether the family can safely wait for the MST therapist to arrive (given the drive-time delay), or if the family and MST therapist should contact 9-1-1 or Colorado Crisis Services (1-844-493-8255). The MST therapist will instruct the family to contact emergency services if the situation escalates during the drive-time delay.
- MST supervisor will cover ALL TE clients when MST therapist utilizing TE is planning for PTO and will assign non-TE case to other therapists on the team.
- MST supervisor covering the case will treat the family as their own case, e.g., call to check in, hold in-person and telehealth sessions, complete required documentation/case summaries, and

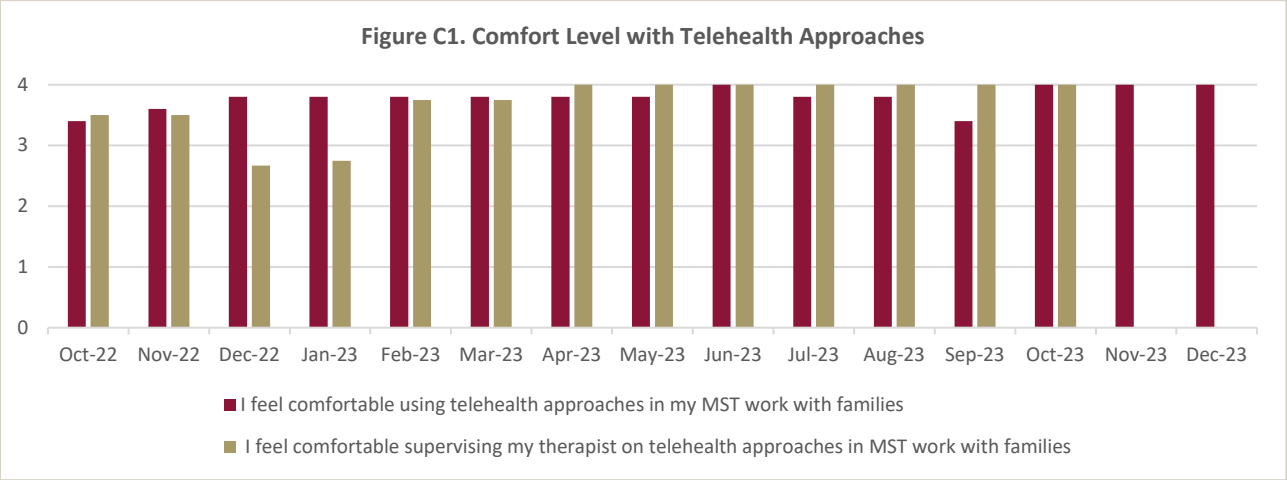
maintain communication with stakeholders as appropriate and depending on the needs of each family.

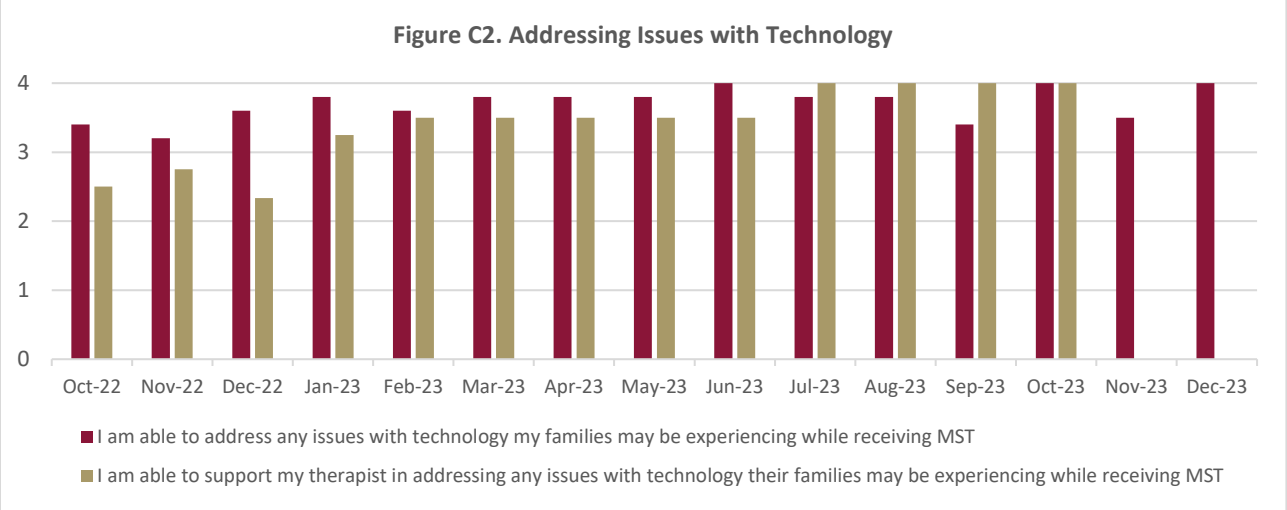
- If possible, the MST supervisor and covering therapists will shadow the therapist to meet the family prior to case coverage.
- MST therapist will notify MST supervisor if he/she/they are sick as soon as possible, but no later than 9:00 am on the day requesting sick leave, so the MST supervisor can develop a plan to cover all TE cases.

Policy: Cell Phone

- MST therapists are required to have a cell phone provided by the agency (or one will be provided for the project).
- MST requires an MST therapist to be available to clients 24/7, rotation for on-call including TE therapist.
- MST therapists will respond to on-call crisis intervention within 30 minutes and not to exceed 60 minutes of receiving notification.
- If MST therapist utilizing TE is en route or in an area that does not have service, the family will be advised to call the MST supervisor to assist with the crisis until therapist is back in the service area.
- If MST supervisor receives a call from a family due to therapist being out of cell service area, MST supervisor will text MST therapist letting them know which family is in crisis, pertinent information regarding the crisis, and will request the therapist call the supervisor when their phone is back in range.
- MST therapists may offer a Google number that redirects to their personal cell phone number in the event that carrier has better service coverage.

Appendix C: Brief Monthly Survey Results Charts





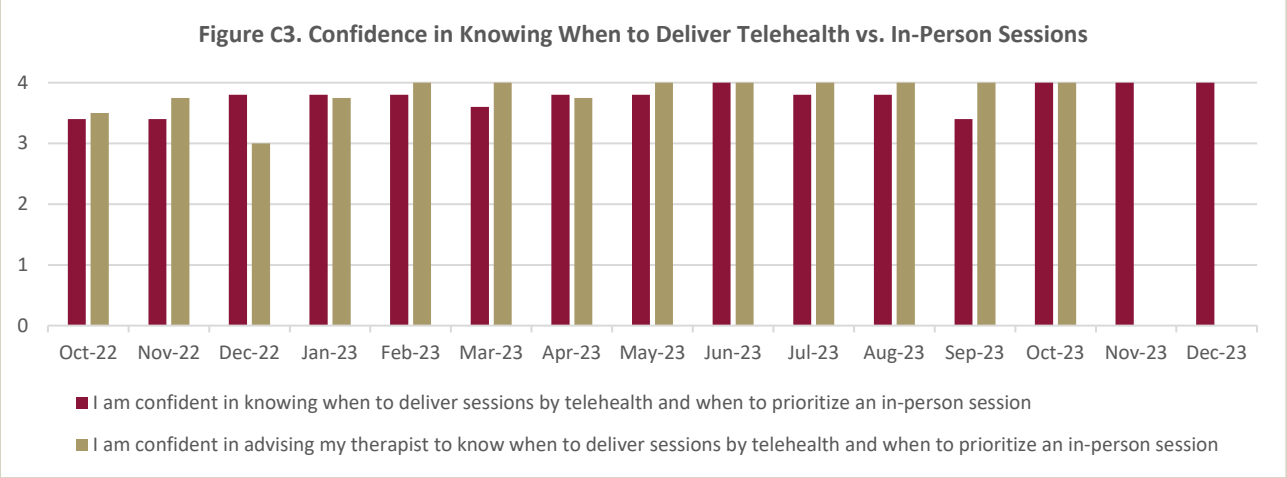


Figure C4. Overall Positivity About Using Telehealth

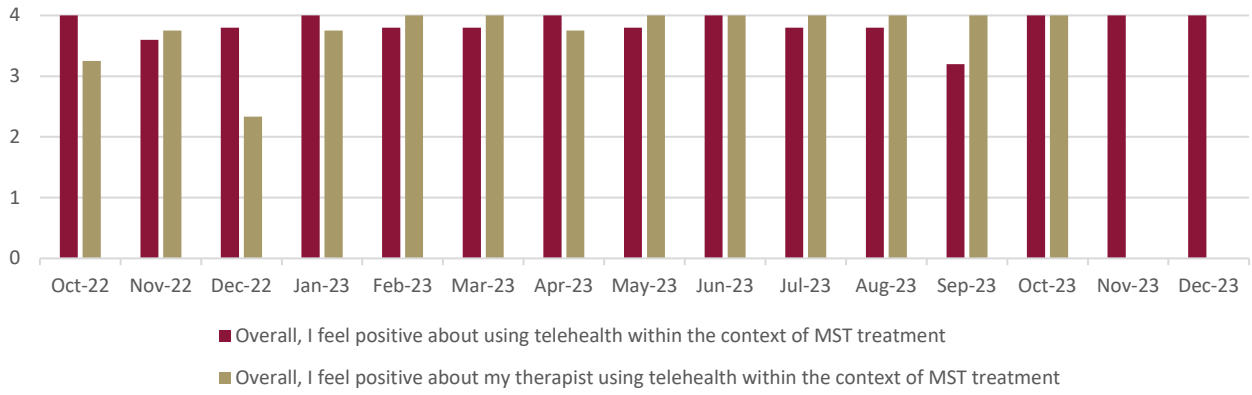


Figure C5. Adequate Progress on Overarching Goals

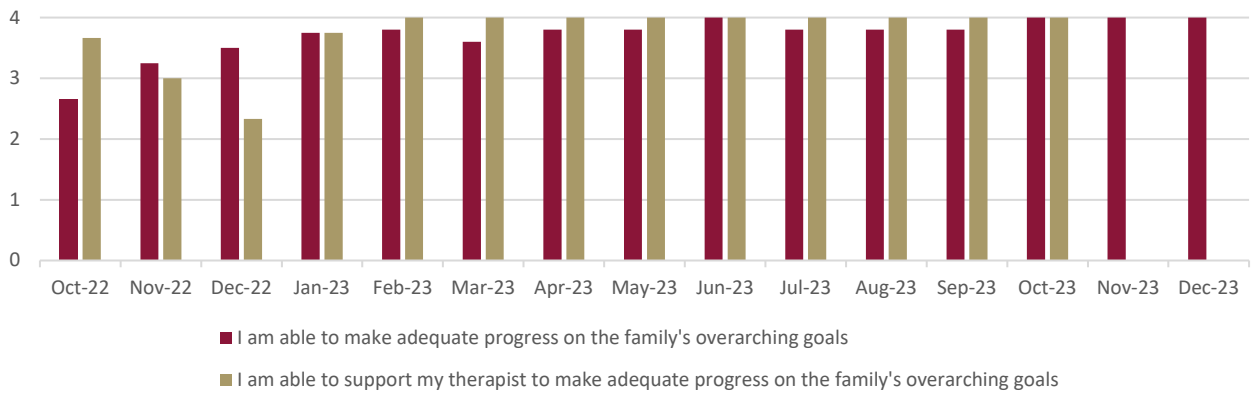


Figure C6. Approach Working Well With Families

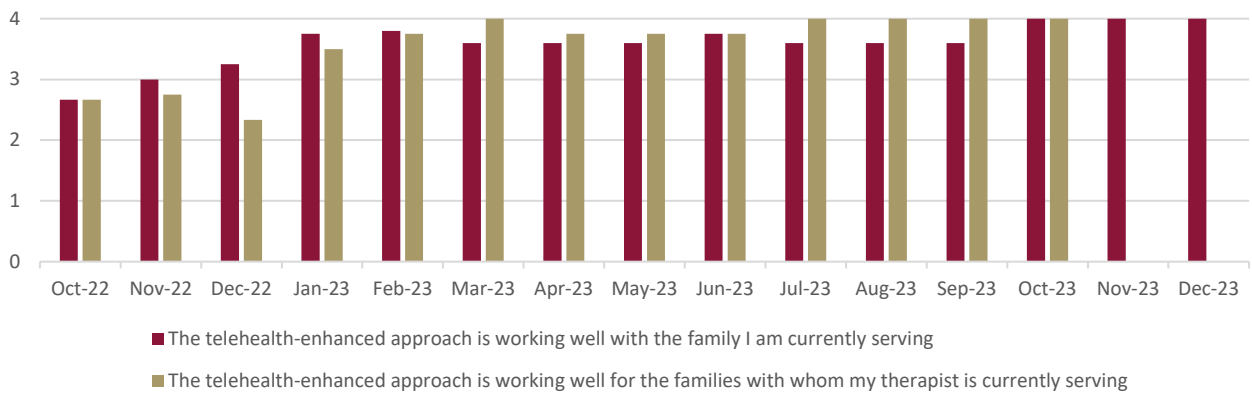


Figure C7. Making Progress on Instrumental Outcomes

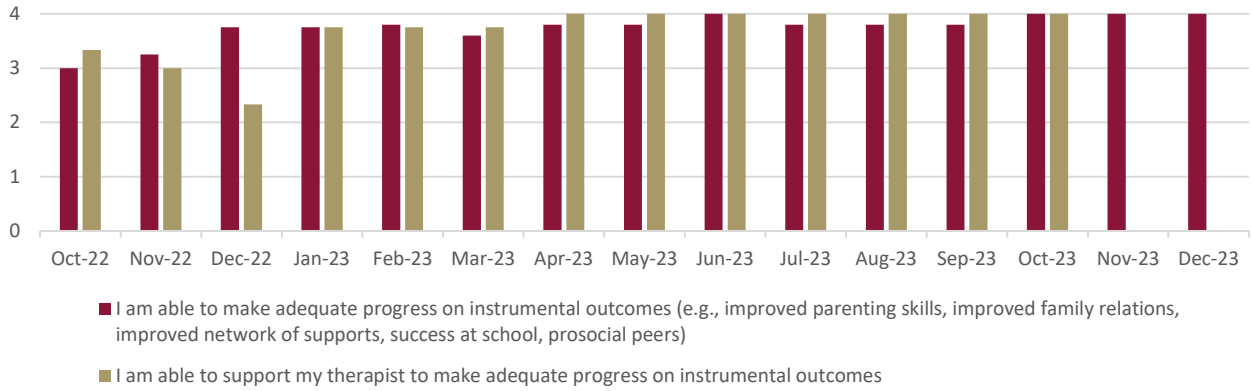
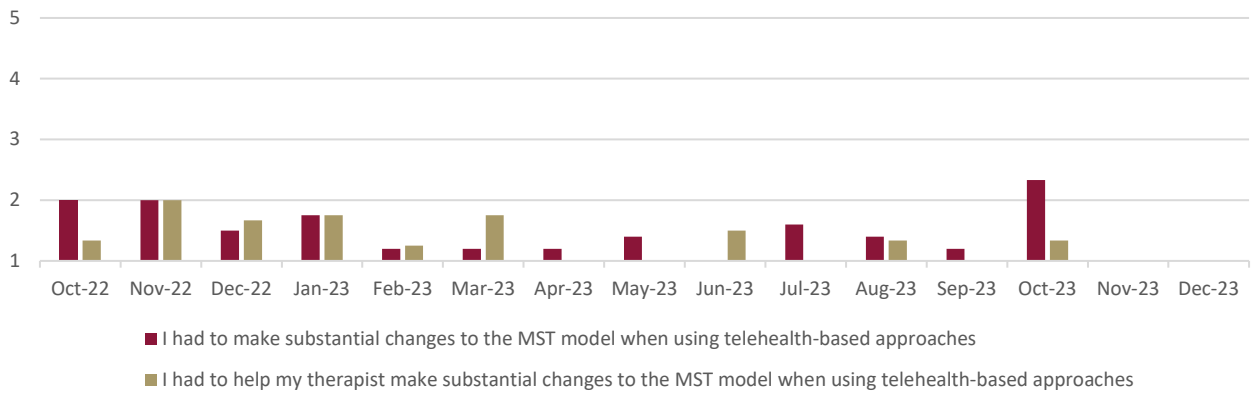


Figure C8. Substantial Changes When Using MST-TE Approaches



Appendix D: Final Reflections

Reflecting on the TE-MST Pilot, what word(s) describe your experience?

Appendix E: TE-MST Ripple Effects Mapping

Prepared by: Butler Institute
Amy S. He, PhD & Vania Buck, MSW
March 22, 2024

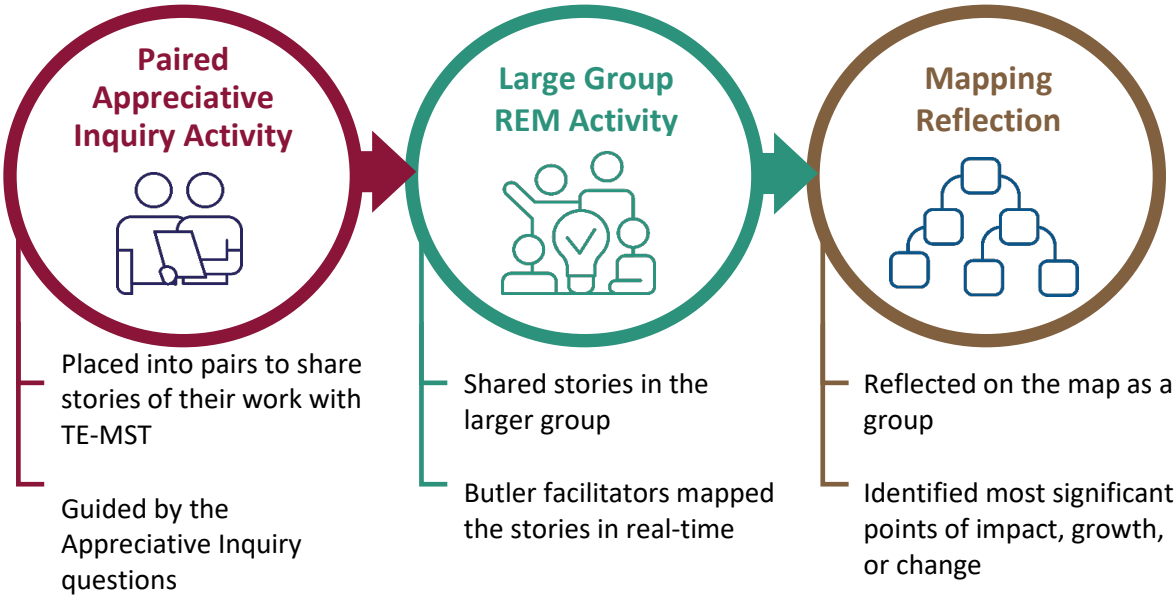
Butler Institute for Families
UNIVERSITY OF DENVER

TE-MST Ripple Effects Mapping (REM) Capturing Impact

Approach

On February 1, 2024, facilitators conducted a virtual Ripple Effects Mapping (REM) session with TE-MST therapists and supervisors (approximately 90-minute). REM is a participatory and strengths-based interactive approach that aims to illuminate diverse perspectives and reveal both anticipated and unanticipated outcomes of an initiative. REM celebrates accomplishments and uses an approach called appreciative inquiry to gather stories and impact from participants. Participants' stories and reflections are mapped in real-time using a visual mind map to demonstrate connections and relationships.[1] The REM session consists of three components (see Figure E1):

Figure E1. REM Session Process Steps



The following are the appreciative inquiry questions used during the REM session:

- What are you most proud of in your work with TE-MST? What have been some highlights?
- What does TE-MST do exceptionally well?
- What are outcomes of using the TE-MST model that stand out to you?

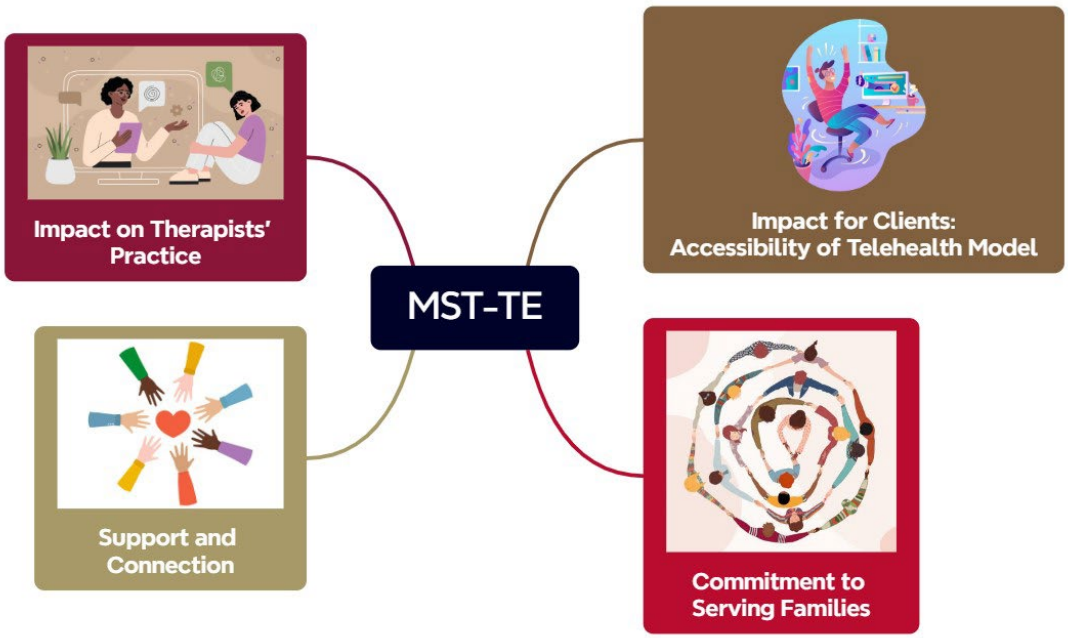
Analysis

Following the REM sessions, the Butler team used the sessions' audio recordings and transcripts to clean and refine the Xmind ripple map created during the session, ensuring that all content was captured and important quotes were included. The Butler team then sent the updated Xmind map to the REM participants so they could review and confirm that the map accurately reflected their group's conversation and to make any necessary revisions. The Xmind map is in Figure E3.

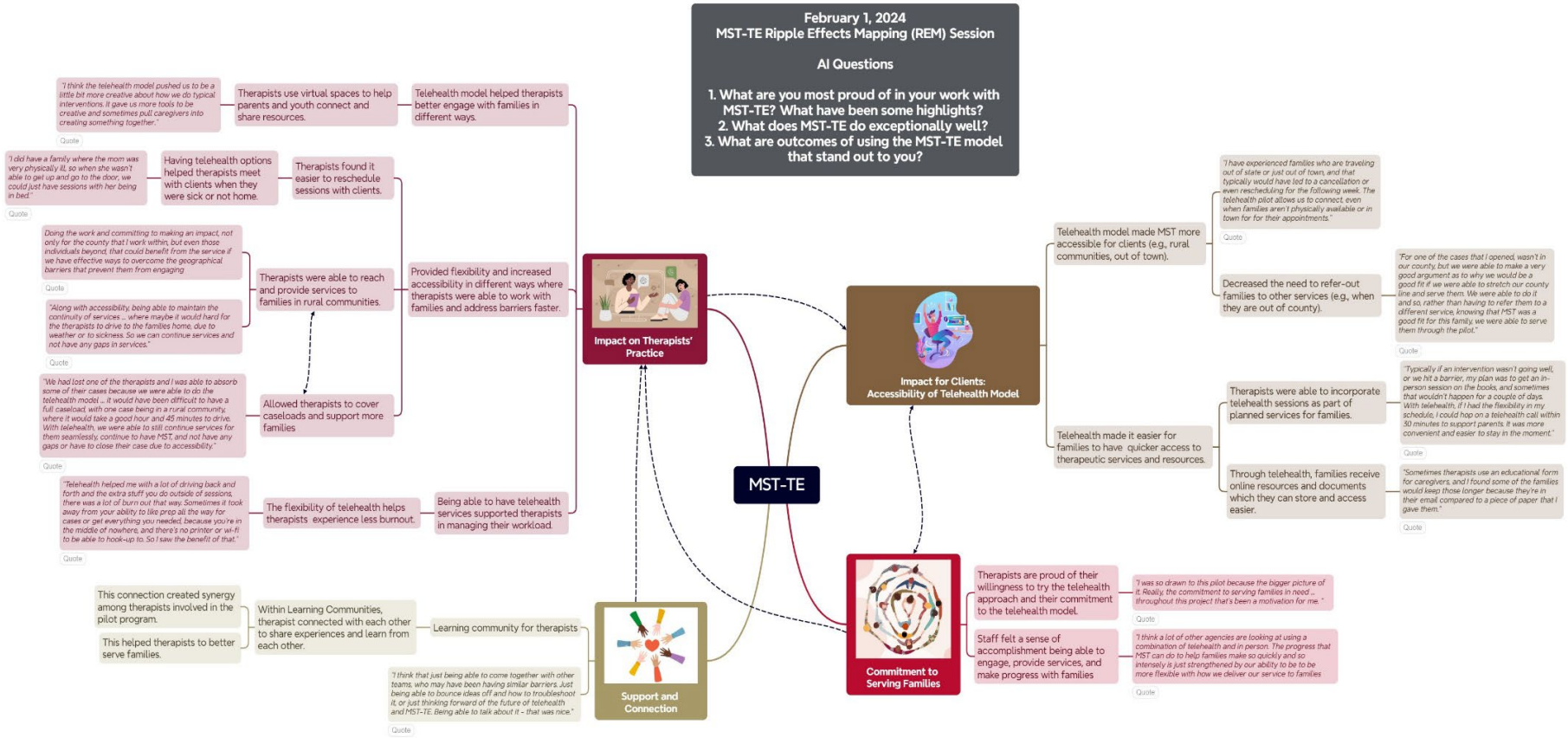
Themes

The Butler team then identified themes from the Xmind map by grouping the impacts/ripples and stories participants identified into broad, meaningful categories. The key themes are presented in Figure E2.

Figure E2. Key Themes from TE-MST REM Session



The full thematic map and individual themed branches from the TE-MST REM session are provided below.


February 1, 2024
MST-TE Ripple Effects Mapping (REM) Session
AI Questions
1. What are you most proud of in your work with MST-TE? What have been some highlights?
2. What does MST-TE do exceptionally well?
3. What are outcomes of using the MST-TE model that stand out to you?
MST-TE
Impact on Therapists' Practice
Telehealth model helped therapists better engage with families in different ways.
Therapists use virtual spaces to help parents and youth connect and share resources.
"I think the telehealth model pushed us to be a little bit more creative about how we do typical interventions. It gave us more tools to be creative and sometimes pull caregivers into creating something together."
Quote
Provided flexibility and increased accessibility in different ways where therapists were able to work with families and address barriers faster.
Therapists found it easier to reschedule sessions with clients.
Having telehealth options helped therapists meet with clients when they were sick or not home.
"I did have a family where the mom was very physically ill, so when she wasn't able to get up and go to the door, we could just have sessions with her being in bed."
Quote
Therapists were able to reach and provide services to families in rural communities.
Doing the work and committing to making an impact, not only for the county that I work within, but even those individuals beyond, that could benefit from the service if we have effective ways to overcome the geographical barriers that prevent them from engaging
Quote
"Along with accessibility, being able to maintain the continuity of services ... where maybe it would hard for the therapists to drive to the families home, due to weather or to sickness. So we can continue services and not have any gaps in services."
Quote
Allowed therapists to cover caseloads and support more families
"We had lost one of the therapists and I was able to absorb some of their cases because we were able to do the telehealth model ... It would have been difficult to have a full caseload, with one case being in a rural community, where it would take a good hour and 45 minutes to drive. With telehealth, we were able to still continue services for them seamlessly, continue to have MST, and not have any gaps or have to close their case due to accessibility."
Quote
Being able to have telehealth services supported therapists in managing their workload.
The flexibility of telehealth helps therapists experience less burnout.
"Telehealth helped me with a lot of driving back and forth and the extra stuff you do outside of sessions, there was a lot of burn out that way. Sometimes it took away from your ability to like prep all the way for cases or get everything you needed, because you're in the middle of nowhere, and there's no printer or wi-fi to be able to hook-up to. So I saw the benefit of that."
Quote
Support and Connection
Learning community for therapists
Within Learning Communities, therapist connected with each other to share experiences and learn from each other.
This connection created synergy among therapists involved in the pilot program.
This helped therapists to better serve families.
"I think that just being able to come together with other teams, who may have been having similar barriers. Just being able to bounce ideas off and how to troubleshoot it, or just thinking forward of the future of telehealth and MST-TE. Being able to talk about it - that was nice."
Quote
Impact for Clients: Accessibility of Telehealth Model
Telehealth model made MST more accessible for clients (e.g., rural communities, out of town).
"I have experienced families who are traveling out of state or just out of town, and that typically would have led to a cancellation or even rescheduling for the following week. The telehealth pilot allows us to connect, even when families aren't physically available or in town for for their appointments."
Quote
Decreased the need to refer-out families to other services (e.g., when they are out of county).
"For one of the cases that I opened, wasn't in our county, but we were able to make a very good argument as to why we would be a good fit if we were able to stretch our county line and serve them. We were able to do it and so, rather than having to refer them to a different service, knowing that MST was a good fit for this family, we were able to serve them through the pilot."
Quote
Telehealth made it easier for families to have quicker access to therapeutic services and resources.
Therapists were able to incorporate telehealth sessions as part of planned services for families.
"Typically if an intervention wasn't going well, or we hit a barrier, my plan was to get an in-person session on the books, and sometimes that wouldn't happen for a couple of days. With telehealth, if I had the flexibility in my schedule, I could hop on a telehealth call within 30 minutes to support parents. It was more convenient and easier to stay in the moment."
Quote
Through telehealth, families receive online resources and documents which they can store and access easier.
"Sometimes therapists use an educational form for caregivers, and I found some of the families would keep those longer because they're in their email compared to a piece of paper that I gave them."
Quote
Commitment to Serving Families
Therapists are proud of their willingness to try the telehealth approach and their commitment to the telehealth model.
"I was so drawn to this pilot because the bigger picture of it. Really, the commitment to serving families in need ... throughout this project that's been a motivation for me."
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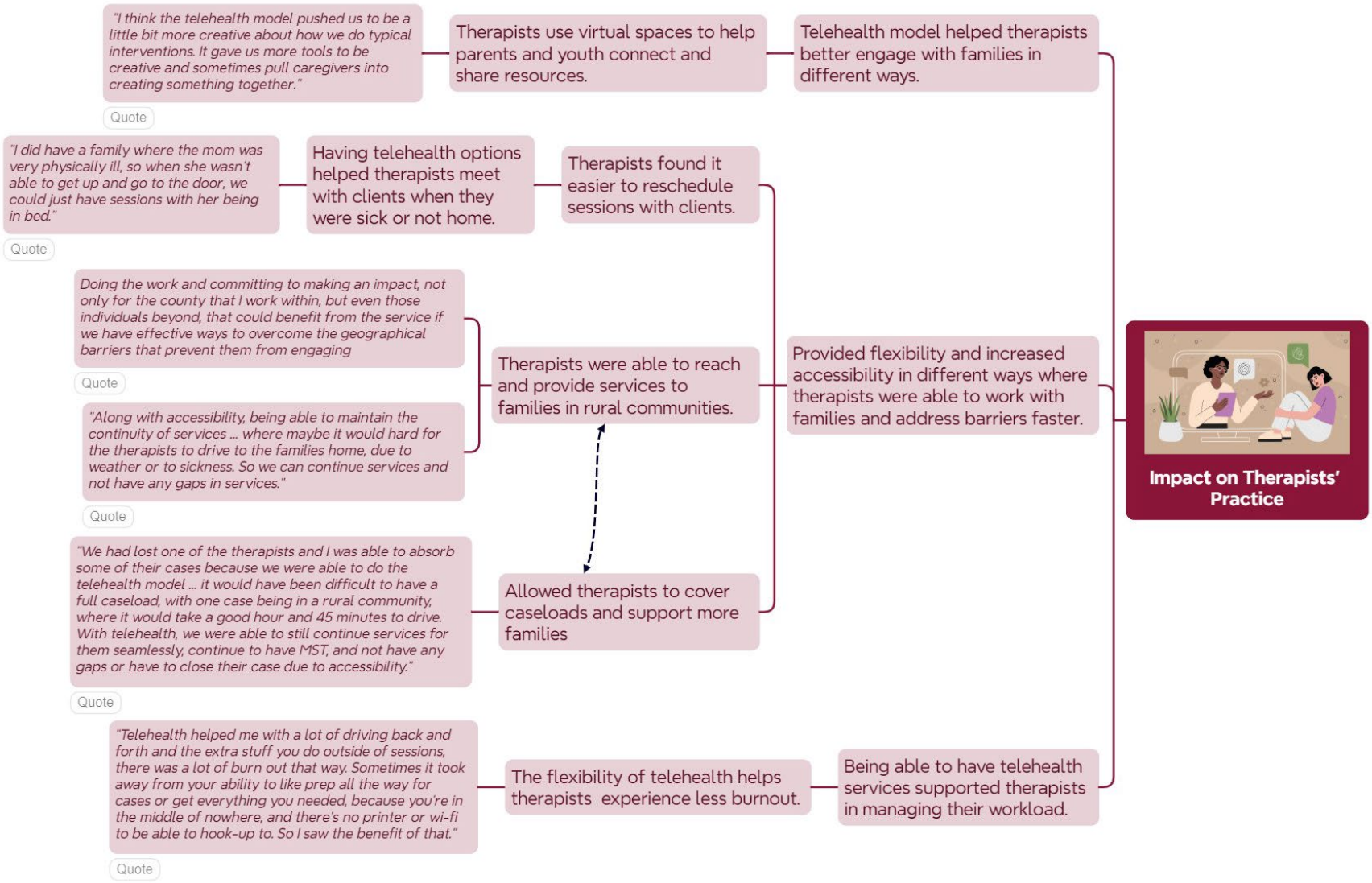
Quote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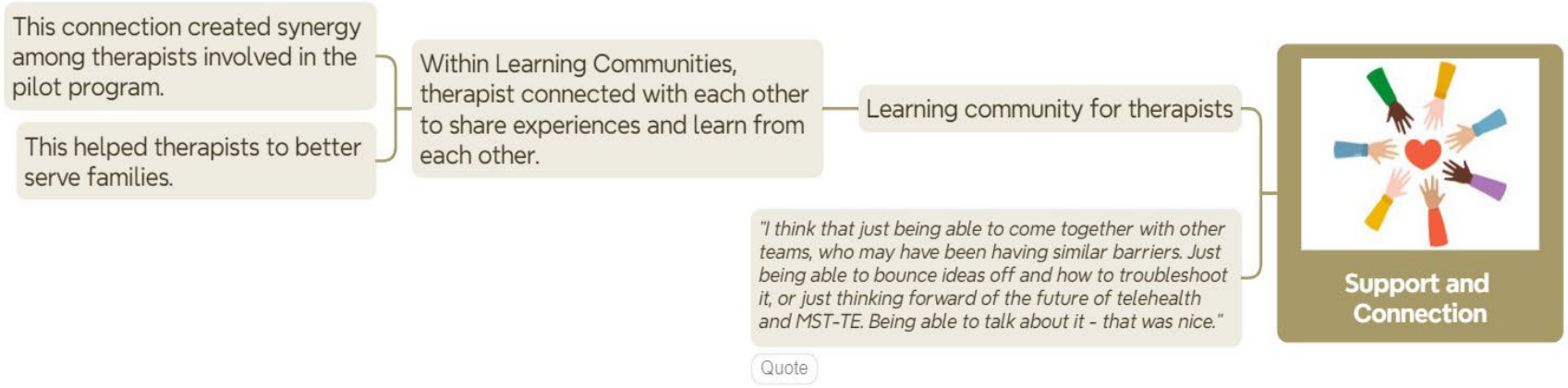
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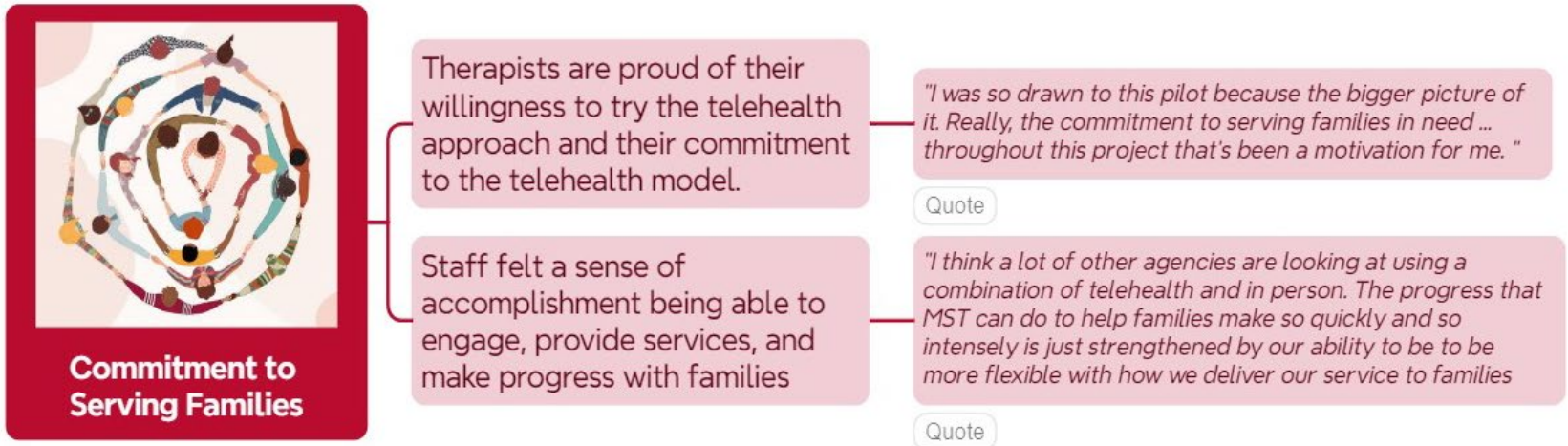
Support and Connection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Quote

Figure E3. Original Xmind REM Map

Appendix F: Training Modules Overview

Telehealth-Enhanced Multisystemic Therapy Training Module

TE-MST Training Goals and Objectives

At the end of this training module, participants will be able to:

1. Describe overview and guidelines for the Telehealth-Enhanced (TE) MST Pilot Project.
2. Be familiar with the most common challenges faced by MST therapists when delivering telehealth and strategies to overcome them.
3. Understand the clear roles and expectations of the TE-MST therapist participating in this project (participating in additional meetings for the project, being very intentional about sessions, writing weekly cases summaries to clearly identify whether the goals are best suited for an in-person or telehealth session).
4. Learn to apply the decision-making process for in-person vs telehealth sessions, and when to seek the support and guidance of your supervisor.
5. Assess and monitor clinical strengths and struggles as they apply to telehealth sessions.

TE-MST Therapist Training Module Agenda

Duration	Time	Task
10 m	9:00-9:10	Goals and Objectives
20 m	9:10-9:30	Overview of the TE Pilot Project
10 m	9:30-9:40	Review of the research finding to date for MST and telehealth
20 m	9:40-10:00	Whatever it takes as it applies to telehealth and this project
30 m	10:00-10:30	Tailoring Your Approach to a Mixed Telehealth and In-Person Delivery of MST
15 m	10:30-10:45	Break
30 m	10:45-11:15	Tailoring Your Approach to a Mixed Telehealth and In-Person Delivery of MST (continued)
45 m	11:15-12:00	Review of flowchart/decision making process for in-person or telehealth sessions
60 m	12-1:00	Lunch
30 m	1:00-1:30	Review of flowchart/decision making process for in-person or telehealth sessions continued
30 m	1:30-2:00	Large group exercise “if then” scenarios to work through for in-person vs telehealth
20 m	2:00-2:20	Exercise: Evaluating Intermediary Goals (IGs) to ensure they follow the flowchart
15 m	2:20-2:35	Break
40 m	2:35-3:15	Small group exercise: Review advanced prep (therapists assessment table, strengths/struggles, feedback from telehealth tape review) and training material to develop 1-2 goals to be tracked weekly
20 m	3:15-3:35	Large group: Takeaways from small group exercise
10 m	3:35-3:45	Wrap up and evaluations
	The end	Thank you for your participation!

Telehealth-Enhanced Multisystemic Therapy Supervisor Training Module

Helping Supervisors Assess and Monitor MST Therapist Skills and Adherence Using Telehealth Enhancement

TE-MST Supervisor Training Objectives

1. Participants will utilize a structured framework of clinician development strategies, to build and assess clinicians' acquisition of necessary knowledge base and skills.
2. Participants will attend to and address common clinician gaps in delivering MST with a mixed session format (telehealth and in-person).
3. Participants will develop strategies to monitor and track skill development to determine if there are differences within skills via in-person or via telehealth.

TE-MST Supervisor Training Module Agenda

Duration	Time	Task
10 mins	12:00-12:10	Goals and Objectives
20 mins	12:10-12:30	Evaluate supervisors' perspective on telehealth and concerns
20 mins	12:30-12:50	Review *Framework for Assessment and Development of Clinician Knowledge Base and Skill*
30 mins	12:50-1:10	Review *Clinical Skill Assessment and Strategies* and ways it will be used and applied to telehealth specific skills
15 mins	1:10-1:25	Break
40 mins	1:25-2:05	Apply the *Clinician Skill Development Framework*
30 mins	2:05-2:35	Small group exercise: applying clinical development framework
10 mins	2:35-2:45	Share outcome from small group exercise in large group
5 mins	2:45-2:50	Large group review of the therapist assessment document
5 mins	2:50-2:55	Large group review of the supervisor prep sheet
5 mins	2:55-3:00	Wrap up and evaluations
	The end	Thank you for your participation!

Endnotes

[1] Chazdon, S., Emery, M., Hansen, D., Higgins, L., & Sero, R. (2017). *A field guide to Ripple Effects Mapping.* Minnesota Evaluation Studies Institute, University of Minnesota Libraries Publishing. https://ucanr.edu/sites/CEprogramevaluation/files/317076.pdf