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# Colorado START Pilot Final Report

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## The Colorado START Demonstration Pilot

### Background

The *Diagnostic and Statistical Manual of Mental Disorders (DSM5)* defines Intellectual Developmental Disorder (IDD) as a disability that involves impairments of general mental abilities that impact adaptive functioning in three areas which determine how well a person copes with everyday tasks (American Psychiatric Association, 2013). Intellectual Disability (ID) is a developmental disability characterized by significant limitations in intellectual functioning (e.g. learning, reasoning, problem solving) and adaptive skills (e.g. language, time management, daily activities, social skills) that persist throughout an individual's life. ID is one of the most common developmental disabilities, with prevalence estimates ranging from 1% to 3% of the U.S. population (King, Toth, Hodapp, & Dykens, 2009). Studies have documented that individuals with ID experience high rates of psychiatric disorders (King et al., 2009; La Malfa, Lassi, Bertelli, Salvini, & Placidi, 2004; Kats, Payne, Parlier & Piven, 2013; McCarthy, Hemmings, Kravariti, Dworzynski, Holt, Bouras, & Tsakanikos, 2010) with roughly 40% meeting diagnostic criteria (Kats et al., 2013). Compared to other vulnerable populations, individuals with ID experience higher rates of both externalizing and internalizing symptoms (King et al., 2009; La Malfa et al., 2004; Kats et al., 2013; McCarthy et al., 2010; Davies, Heyman, & Goodman, 2013; Scott, Bruffaerts, Simon, Alonso, Angermeyer, de Girolamo, & Kessler, 2008). Addressing the mental health needs of individuals with ID is critical because psychiatric symptoms are severely impairing, resulting in poorer long-term outcomes and functioning for the individual (Salomon & Trollor, 2017).

Despite the prevalence of mental health needs, access to treatment for individuals with IDD is limited. Even when services are available, the Mental Health (MH) and IDD service systems are described as “siloeed”, unresponsive, and insufficient (Krahn, Hammond & Turner, 2006; Krauss, Gulley, & Sciegaj, 2003). With limited outpatient options, untrained and unsupported caregivers may rely on use of local hospital emergency departments for chronic and crisis-related psychiatric care. Patients with IDD and co-occurring MH conditions are more likely than others to have extended stays in emergency rooms and inpatient units (Cheng, Chan, Gula & Parker, 2017). Unfortunately, there are few hospitalists trained to treat those with IDD and as a result, they are not equipped to meet the needs of the population overall (Lunsky, Paquette-Smith, Weiss, & Lee, 2014). Barriers between IDD support services and MH treatment providers in the ability to collaborate has undermined the quality of care and access to services in both systems. This longstanding problem has reached crisis proportions in many states struggling to improve care and treatment (Loch, 2014).

### The START Model

START (Systemic, Therapeutic, Assessment, Resources, and Treatment) is a tertiary care, research-based model of services and supports. While providing training, assessment and crisis intervention services, START services are implemented in the context of a comprehensive, systems linkage approach, to improve capacity in the system as a whole. First established in 1988, START is designed as a lifespan service for individuals ages six and older diagnosed with IDD/MH. The goal is to improve diagnosis and treatment, support effective services, create service linkages, promote health and wellness for both the individual with IDD and the caregiver, and decrease the need for emergency services.

The Center for START Services (CSS), which was developed in 2009, is a national initiative based at the University of New Hampshire, Institute on Disability/UCED. The CSS provides educational and capacity building services, promotes and evaluates evidence-informed practices and approaches, and facilitates START model program implementation across the United States, with the aim of improving the lives of individuals with IDD/MH needs. At the direction of the founder of the START model, Joan B. Beasley, PhD, the CSS has facilitated the implementation and monitoring of the START model in 25 regional START programs, located across 15 states.

To assess fidelity, improve the overall community of practice, provide measurement-based care, and monitor individual outcomes, all START programs are linked and evaluated through ongoing data collection via the START Information Reporting System (SIRS). SIRS is a national START database housed at the CSS. All data entry into SIRS is closely monitored for quality and frequency by the database manager. The SIRS data also facilitates a key mission of the CSS: to investigate service experiences and outcomes among START recipients. Data from SIRS was used in this analysis to assess outcomes associated with START service delivery in Colorado.

### **Research on the START Model**

To date, four peer reviewed studies have examined outcomes associated with START. Two of these studies occurred during the early stages of START development (1999 and 2007). They provided evidence that the model could lead to a reduction in healthcare costs, including emergency psychiatric service use, as well as an improvement in service experiences (Beasley, Kroll, 1999); (Beasley, Klein, & Weigle, 2016); Fahs, Weigle, Smith, & Benson, 2007). Two more recent studies supported earlier findings by demonstrating improvements in caregiver service experiences, reduction in mental health symptoms, and reduced emergency department and psychiatric inpatient hospital usage (Kalb, Beasley, Caoili, & Klein, 2019); (Kalb, Beasley, Klein, 2018).

### **The Colorado START Pilot**

In 2014, the University of Colorado School of Medicine, Center for Excellence in Developmental Disability, known as JFK Partners, completed a Colorado statewide study that identified gaps in services for individuals with an intellectual or developmental disability (I/DD) who experience behavioral health issues (Rosenberg, Meredith, & Rymer, 2014). In response to the gap analysis report, House Bill (HB) 15-1368 was passed into law, per section of the Colorado Revised Statutes (C.R.S.) 25.5-6-412, which established the Cross-System Response for Behavioral Health Crises Pilot Program (CSCR Pilot). The Center for START Services (CSS) was contracted to provide training on Mental Health Aspects of IDD and a Professional Learning Community was provided. As a result of participation in the Professional Learning Community, two IDD providers, Strive and Foothills/Gateway, made the decision to contract directly with CSS to train staff on the evidence-based practices and tools utilized by START. In collaboration with the Rocky Mountain MCO, Strive in Grand Junction and Foothills/Gateway in Fort Collins partnered to combine their sites into one team for this pilot.

Colorado START (CoSTART) is a demonstration life-span pilot (serves individuals ages 6 and older) operated by Strive and Foothills Gateway in Colorado. When program operations began in October 2017, Strive was operating a crisis respite facility that they also wanted to become a START resource center. In 2018, after just a few months, funds for the crisis respite/resource center pilot were no longer available, however, the clinical team pilot continued.

The CoSTART Pilot Team is comprised of 1 full-time and 1 part-time coordinator. Additional consultation and oversight is provided by part-time (one day per week) program directors at Strive and Foothills, clinical director, and support personnel. Psychiatric support is provided through a contract with the area Behavioral Health Organization and linkages through START coordination with enrollees' prescribers.

The CoSTART Clinical Team provides cross-systems crisis prevention and intervention planning and 24-hour crisis response, outreach, training and consultation services. CoSTART team members facilitate ongoing linkage meetings to include each person's system of care. A START Cross Systems Crisis Prevention and Intervention Plan (CSCPIP) is developed with the support system of each person enrolled in the pilot. In addition to linkage meetings, crisis planning and response, outreach occurs in all settings including the individual's home, school, job, day program, and/or medical/psychiatric appointments. Lastly, clinical and medical consultation services delivered by the CoSTART Clinical Director and facilitated by the START Coordinator, are available to all individuals enrolled in CoSTART. Services often include comprehensive reviews of service history (Comprehensive Service Evaluations), diagnostic assessment, follow-up, and consultation.

### **The Colorado START Pilot Demonstration Analysis**

The goal of this project was to demonstrate the impact of START through a modest pilot. While the CoSTART pilot is not a fully implemented program, the staff participated in and completed the START coordinator training program, consisting of rigorous training on IDD/MH as well as the practices and tools of START. Training occurred in groups facilitated by Center for START Services staff and the groups consisted of trainees from START programs across the country. Additionally, ongoing expert support and technical assistance by the Center for START Services in implementing START practices and tools was provided.

There were unique aspects of the CoSTART Pilot, including the division of the team into two vastly separated geographical regions. Most of the team was located on the western slope of the Rocky Mountains (Strive in Grand Junction) while one full-time coordinator operated within the partnering agency on the eastern side of the state (Foothills Gateway in Fort Collins). The distance between the two sites produced challenges in functioning as a cohesive team; however, strategies utilized by all START programs including daily triage, sharing clinical resources and consultation, were put in place to promote support and connection among team members.

Another unique aspect of this pilot is the rural nature of areas covered, particularly in Grand Junction. Enrollees and their systems of support reported a dearth of resources and access to trained providers in their communities. Because START is a systems linkage and capacity building model, this provides the

opportunity to evaluate strategies used to promote improved access to services and renewed hope for improved quality of life for service users.

## **Methods**

This study employed a prospective design using a variety of metrics. First, the sample is described using data gathered at time of service enrollment. Second, quantitative data are presented on pre- and post-CoSTART intervention changes in: 1) use of emergency psychiatric services, including both inpatient hospitalization and emergency department visits; and 2) reports of challenging behavior, as measured by the community version of the Aberrant Behavior Checklist and 3) Medicaid Claims data for a sample of those served by the CoSTART pilot was also used to validate measures of emergency service use and to examine any changes in costs for supporting those individuals. Lastly, a case study of an individual receiving START services is detailed to demonstrate CoSTART services and how they are implemented.

## **Sample**

Forty-six (46) individuals were enrolled in the CoSTART demonstration project during the pilot period and 35 enrollees received at least one year of service between October 2017 and April 2019 (one individual was 23 days short of one year). The analysis focuses on the 35 CoSTART enrollees who were enrolled for a full year. While the size and scope of the pilot was modest, the team was able to provide a full array of START clinical services.

Participants were enrolled for an average of 483 days (min = 342, max = 544, SD = 53). The average age of the participants was 29 years (mode = 20, min = 14, max = 71, SD= 13). Five individuals were less than 18 years of age at enrollment. Thirty-four percent (34%) of the subjects were female (n=12); 63% had mild ID, 15% moderate ID, and 7% severe/profound ID. The majority (91%) of the subjects were white and non-Hispanic (97%). All children enrolled in the Colorado pilot (n=5) and 30% of adults (n=9) resided in family homes. Adult enrollees were more likely to reside in alternative family living arrangements, also called host homes, or in supervised group living settings.

**Table 1: Demographic Characteristics of People Served (n=35)**

<b>Variable</b>	<b>Children</b>	<b>Adults</b>
N	5	30
<i>Mean Age (Range)</i>	15 (14-16)	31 (18-71)
<i>Gender (n=male)</i>	4	19
<i>Race</i>		
White/Caucasian	5	27
African American	-	1
Asian	-	2
<i>Ethnicity (n=Hispanic)</i>	-	1
<i>Level of Intellectual Disability</i>		
No ID/Borderline	-	4
Mild	-	10
Moderate	4	9
Severe-Profound	1	7
<i>Living Situation</i>		
Family	5	9
Alternative family/host home	-	12
Group Home and Community ICF/DD	-	6
Independent/Supervised	-	3

Mental health diagnoses were abstracted from information gathered during the intake assessment process. The intake includes face-to-face interviews, clinical observation, and review of historical records, including psychiatric/psychological evaluations and reports. Mood-related disorders were the most prevalent comorbid psychiatric diagnoses (depression, n =26; disruptive disorders, n=15, anxiety, n = 13; psychotic disorders, n =8).

Most participants also had chronic health conditions. Medical conditions are important to address as research suggests that they are often underdiagnosed and/or underreported. Research also suggests that signs/symptoms of medical conditions are often misinterpreted as challenging behavior and/or mental health conditions (Kalb, Beasley, Klein, Hinton & Charlot, 2016). Medical conditions were identified in over 89% of the individuals enrolled in CoSTART. Neurological (seizure) disorders occurred most frequently, 80% for enrolled children and 54% for enrolled adults, followed by gastrointestinal concerns in adults (35%).

Most individuals enrolled to the CoSTART pilot were referred by case managers (66% of referrals), which is similar to national START trends. Mental health symptoms (89%) and aggression (80%) were the primary reasons for referral for both children and adults, followed by family needs assistance for children (100%) and self-injurious behavior (57%) for adults. Nationally, most referral sources identify multiple concerns at time of enrollment (3.5 concerns noted). The pilot in Colorado had similar results, but a significantly higher number of identified needs, with a reported average of 4.3 challenges at enrollment.

## Measures

**Pre and post emergency service use:** One common indicator used to assess START intervention effectiveness is emergency service utilization once enrolled. As part of the initial information gathering for all newly enrolled participants, the CoSTART pilot staff recorded in-patient hospitalization and emergency department utilization for behavioral health reasons for one year prior to START services as a baseline measure. Once enrolled in START, crisis occurrence and disposition as well as emergency service use was recorded. We have compared frequency of emergency service use one year prior to enrollment to frequency of use of these services following one year of enrollment in the CoSTART pilot program.

**Challenging Behavior:** The community version of the Aberrant Behavior Checklist (ABC) (Aman, Singh, Stewart, & Field, 1985) was employed as the measure of challenging behavior. The ABC is a 58-item informant report, psychopathology rating tool designed specifically for use with individuals with IDD (Aman, Burrow, & Wolford, 1995). The ABC is administered to START service recipients at intake and at 6-month intervals. The ABC has been reported in literature as an outcome measure, having demonstrated sensitivity to detecting changes in psychopathology ratings over time (Kalb, et al., 2016). The ABC is used to determine if the provision of START services is associated with reduced psychopathology ratings over a 6-month or greater period of time. When using the ABC, the authors suggest use of the subscales, and not a total score. Subscales were identified via a factor analytic process and three of these have been reported in the literature as sensitive to treatment effects, including the Irritability, Hyperactivity and Lethargy scales and thus are used in this study (Kalb et. al, 2016).

**Level of Case Intensity:** The START Action Plan is a tool used to assist in identifying primary strengths and challenges of the individual and their system of support. The START Plan is completed at intake and every 3 months of case activity. It provides a road map or outline of strategies and services offered to promote stability and reduce stress. It is also used to project the level of involvement from the START team necessary for each enrolled individual and system to gain stability.

Involvement intensity describes how involved a START team will need to be to render START services based on a scale from 1-4. The ratings are defined as: 1 = Stable: team reports that individual is stable and needs periodic (quarterly) outreach and crisis plan review; 2 = Low: monthly outreach and crisis plan review is needed; 3 = Moderate: team needs multiple outreach contacts per month with active work on cross systems crisis planning, consultations, linkages to other resources; 4- High: team needs weekly or more outreach and active crisis planning and may need acute stabilization support, hospital discharge/transition planning, psychological/psychiatric consultation and follow-up.

It is expected that case involvement and intensity is a 3 or higher when an individual is enrolled in services and decreases over time as crisis planning and outreach occurs. For the purposes of this study, initial and follow up START Plan intensity and involvement ratings were analyzed as well as the amount of time the CoSTART team spent on planned START interventions designed to increase stability.

**Cost Savings:** In addition to other outcome measures, Medicaid Claims data were provided for twenty-three (23) of the 35 participants served by CoSTART during the reporting period. These data were provided by Strive and Foothills Gateway. They were de-identified and linked to SIRS data through a unique identifier. Seven months of pre and post data were analyzed for this subgroup. From this analysis, emergency department visits and psychiatric hospitalizations were examined, along with associated costs.

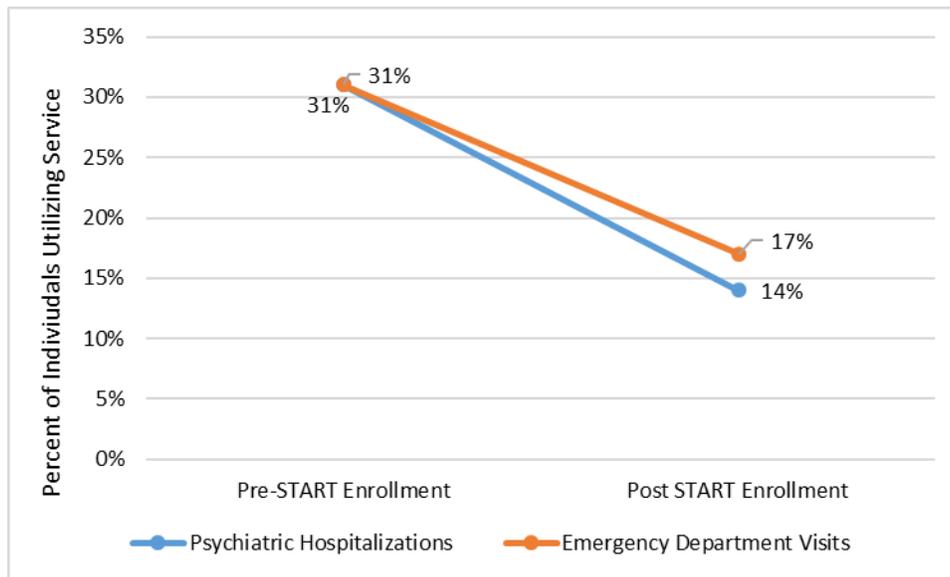
## Results

**Emergency Service Use Pre and Post CoSTART Enrollment:** A goal of the CoSTART demonstration pilot was to evaluate the use of costly emergency services for individuals enrolled in services. For all participants pre- and post-inpatient hospitalization and emergency department utilization was analyzed.

At intake, all START enrollees are assessed for prior utilization of emergency services, mental health hospital, and emergency department visits. The chart below compares the percentage of individuals who experienced a psychiatric hospitalization or ED visit in the 12 months prior to Colorado START pilot enrollment to the percentage of those individuals who experienced emergency service use post Colorado START pilot enrollment (average 16 months). The mean and range reflect the frequency of admissions/visits experienced by individuals utilizing those services.

As seen in Figure 1, psychiatric hospitalization and emergency service utilization decreased one-year post CoSTART enrollment.

**Figure 1: Emergency Service Utilization One-Year Pre and Post CoSTART Enrollment**



**ABC:** For this analysis, only those enrolled in START services for at least 6 months two ABC scores were included: (n=35). The ABC was completed at the time of intake into CoSTART services (T1) and at least 6 months follow-up (T2). In some instances, the duration between T1 and T2 was greater than 6 months

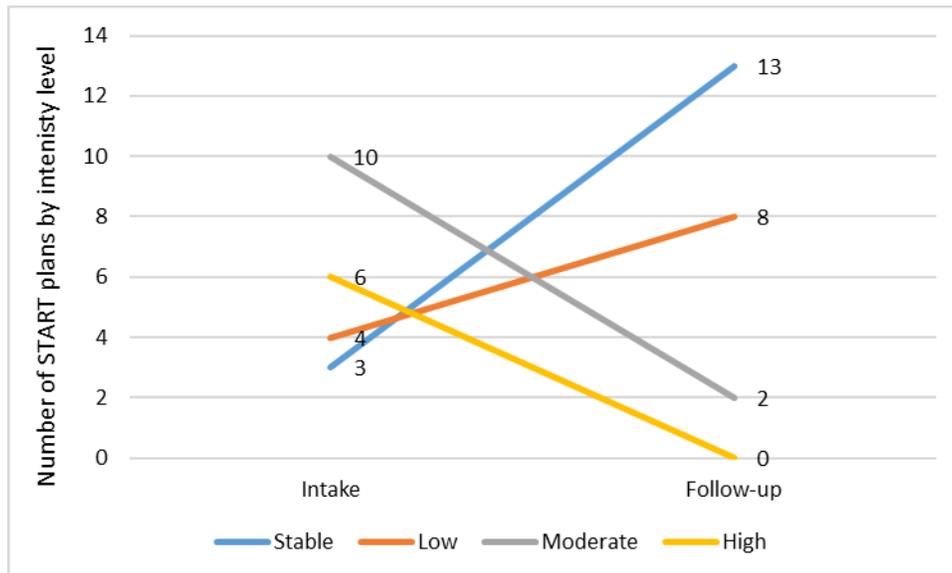
due to caregiver availability and scheduling. The average time between the two administrations used in this analysis was 8 months. Results show that average scores decreased in the three subscales that are correlated with mental health service use, demonstrating statistically significant improvements in functioning for enrollees.

**Table 2: Aberrant Behavior Checklist Scores at Intake and 6-month Follow-up**

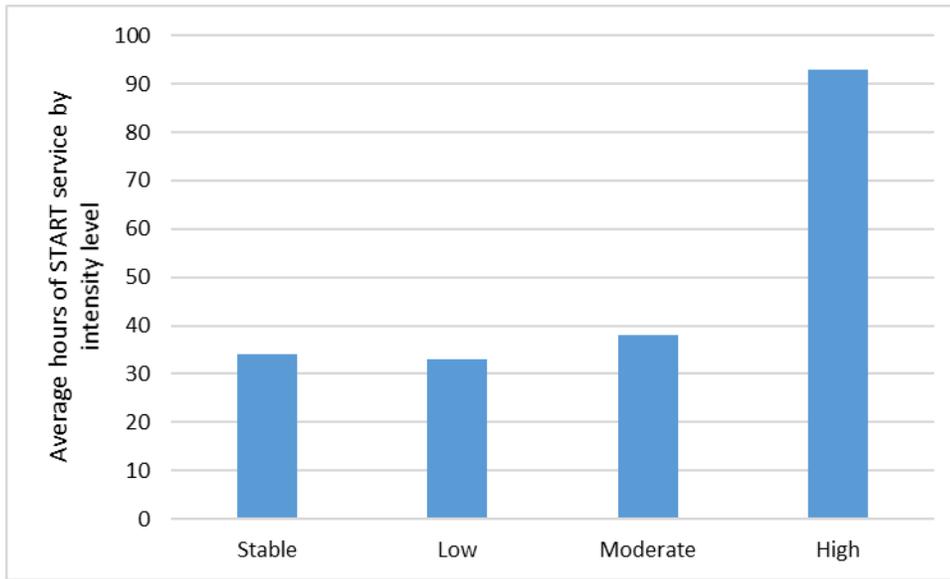
Subscale	Mean T1	Mean T2	t Stat	P(T<=t) one-tail
<i>Irritability/Agitation</i>	17.87	13.22	3.27	0.00
<i>Lethargy/Social Withdrawal</i>	9.57	6.13	1.64	0.06
<i>Hyperactivity/Noncompliance</i>	17.57	12.00	3.32	0.00

**START Plan Intensity Ratings:** As seen in Figures 2 and 3, intensity ratings from START Plans at intake to 6-month follow up decreased dramatically, with 91% of individuals (n=21) in the stable/low intensity range and none receiving a rating of 4 at follow-up. The average number of hours of START services increased for individuals as their intensity level increased and decreased over time as intensity levels decreased. It is clear that all participants shifted to greater levels of stability and that the actual time spent working with participants and their systems decreased, demonstrating improvements for enrollees. The average time spent with those whose ratings were 3 at follow-up reflected the need for ongoing support and involvement of CoSTART.

**Figure 2: START Plan Intensity Level at Intake and 6-Month Follow-up**



**Figure 3: Average Time Spent (in hours) Based on START Plan Intensity Level**



**Cost Savings:** Shown in Table 3 are claims data from Medicaid. The claims were separated by hospital and/or emergency department use 7-months before and after START enrollment. The services (hospital and ED) were combined since it was not possible to identify these services separately within the dataset. Psychiatric events were identified when the 1<sup>st</sup> listed diagnosis, which reflects the reason for visit, was a mental health or IDD diagnosis. Medical events were (both hospital and ED) were also examined. The data presented below are total unique claims, which may reflect one or more ED visit/hospitalization per person. Unfortunately, it was not possible to identify unique events.

As shown below, there was a substantial reduction for hospitalizations/ED visits during START enrollment. In total, there was a \$65,228 in total savings for psychiatric hospitalizations/ED visits, which validates the START data shown in Figure 4. There was also a \$7,740 cost savings in medical hospitalizations/ER visits.

**Table 3: Pre-post Medicaid Claims for Hospitalization/Emergency Department Use By Reason for Service (N=23)**

		Medical		IDD/Psychiatric	
Unique Claims		78	87	63	46
Total Dollars Billed		\$112,315	\$104,575	\$99,420	\$34,192

## Case Study

*The following case study provides an in-depth description of the services provided by the CoSTART Demonstration Pilot. Information about “Sam” has been modified to protect the identity of the individual.*

Sam is a young adult who was referred to the CoSTART Demonstration Pilot due to a high frequency of verbal aggression, mental health holds, emergency department visits, suicidal ideation/attempts, and disturbances resulting in police involvement.

Sam is diagnosed with, Tuberous Sclerosis (TS), a rare medical condition. TS results in developmental and mental health issues and seizures, which Sam has had since age 3. As a child, Sam was described as anxious as evidenced by throwing “temper tantrums” during transitions and other environmental stressors. This anxiety resulted in Sam screaming, crying and banging his head consistently. He did best with a consistent routine with as few changes as possible; however, he continued to struggle with behavioral and emotional regulation that often led to aggression toward himself and others. In time, Sam learned a style of “venting” that sometimes helped him avoid physical aggression and calmed him.

At age 18, Sam was unemployed after several attempts and also experienced major depression, which coincided with a medication overdose. This was followed by multiple mental health hospitalizations. Sam subsequently moved from his family home into a group home and shortly thereafter was referred to CoSTART. At the time of referral, Sam and his support system were in crisis. Sam’s residential program staff were overwhelmed and struggled to know how to adequately support him, especially during times of verbal aggression. There was frequent police involvement, ED visits and mental health holds. This created tension between Sam, his parents and support team that exacerbated his instability and sometimes lead to physical aggression, suicide attempts, or property destruction. Incidents included Sam holding a knife to his own throat, leaving the home and going to stores requesting guns to shoot himself. These incidents were frightening for all involved and demonstrated Sam’s overall instability and desperation.

### *Colorado START Demonstration Pilot Services*

The CoSTART pilot team worked with Sam’s providers and family to better understand why Sam was distraught, to stabilize the situation, and to help him achieve a better quality of life. The CoSTART Coordinator provided outreach visits to Sam multiple times a week to get to know him, his strengths and abilities. To gain a better understanding of Sam’s complicated medical and psychiatric history, a Clinical Education Team Meeting was held, and Comprehensive Service Evaluation was completed. This led to a better understanding of Sam’s health condition (TS) and its impact on his physical and mental health.

The CoSTART pilot team educated Sam’s system of support about TS and its impact. They facilitated better communication between Sam’s specialists and ensured his medical needs were being met. CoSTART helped the team develop a more positive, person-centered approach and helped dispel his previous bad reputation, providing a new way of understanding Sam. Further, CoSTART encouraged Sam to understand that he is a critical part of his team and that he has many strengths, which his team began to

recognize as well. His system of support began to help Sam identify more interests and goals and shifted the focus from his problems to his strengths.

Through the development of a Cross-Systems Crisis Prevention and Intervention Plan and 24-hour mobile crisis response, the coordinator helped Sam's support team identify precursors to his emotional escalation and how to help him calm and voice his needs. The coordinator helped shift the focus on behavioral challenges presented by Sam to the importance of helping him feel less anxious. They worked with Sam's support team to help Sam's voice be heard and his choices be respected. In this process, the CoSTART team developed a collaborative plan with the local mental health center. When Sam and his team needed crisis supports, they would contact the START team to reduce needing the emergency department, police and mental health emergency crisis response team. The treatment of depression requires a whole person approach, and with the help of the CoSTART Coordinator this was achieved.

As the support team began to see Sam's strengths, skills and interests, and what he needed for improved well-being, they felt less fearful of him and were able to begin reducing their sense of responsibility to "control" and keep him safe. This allowed Sam to be more independent which immediately led to improved mood, emotional regulation, and sense of responsibility. As others learned to trust Sam again and to take his desires and needs into account, he was more willing to meet expectations. His team also learned that Sam feels less anxious if he has a consistent routine and knows what to expect.

#### *Outcomes for Sam*

After 13 months of CoSTART support, there has been positive outcomes. Prior to CoSTART, Sam was hospitalized an average of at least once a month and had police or mobile crisis response an average of 4-6 times a week. Sam would also go to the hospital emergency department a couple times a month to request health evaluations. It was often found that this was related to anxiety about his condition and not knowing how to express his emotions and needs. Since being enrolled in CoSTART, he has had a dramatic decrease in emergency department visits and he has been hospitalized once (for 7 days) for a medical condition.

Sam has shifted from going to the mental health center in crisis and needing hospitalization to now proactively reaching out to the mental health crisis team to discuss his feelings and calm down. Sam will call or visit the CoSTART Coordinator to "vent" but will also state that has no intentions of acting. After Sam vents for about 30 seconds, he calms and can return to his routine.

Sam's team continues to work toward helping him identify new goals and achieve them. This active interest in his success has gained Sam's trust in his team. Sam has been working consistently for almost a year doing maintenance checks in homes and has a goal of learning how to fix maintenance problems without supervision. Sam's house staff and support team have all reported feeling better able to support Sam and others with similar needs, and his family recognizes Sam's growth and success.

## **Discussion**

Like previous studies of the START model there were demonstrated improvements in the cohort engaged in the CoSTART demonstration pilot. Improvements in mental health as demonstrated through ABC scores found significant decreases for two of the three predictive measures (irritability/agitation and hyperactivity/noncompliance). Following enrollment, in CoSTART, in-patient and emergency department service use decreased significantly. START Plan intensity and involvement ratings as well as time spent to promote clinical and systemic stability also decreased over time.

These outcomes suggest that START practices and interventions can be successful in regions with limited resources and geographic barriers. Trends appear to be moving in a positive direction as demonstrated by the analysis, suggesting that with additional resources to promote full implementation of START services in the regions, additional gains could be made.

The CoSTART demonstration pilot provided an opportunity to look more closely at costs associated with crisis services prior to and after the initiation of START services. The decrease in Medicaid spending once individuals were enrolled in CoSTART services is interesting. It supports earlier, less sophisticated cost studies (e.g., Fahs, Weigle, Smith, & Benson, 2007) and provides an alternative to emergency service utilization, which often results in traumatic experiences for service users and their caregivers, and sometimes service providers. Finally, the case study provides a picture of the potential impact of CoSTART if fully implemented.

## **Limitations**

As with all research in human service application, there are limitations that must be acknowledged in the present study. This CoSTART demonstration pilot evaluation was small in scope and therefore a larger sample size followed over a longer period would improve study power and allow for more statistical comparisons across outcome measures. While Medicaid claims savings was identified for 23 people, a larger sample would afford opportunity to control for any outliers. Additionally, the inability to compare individuals enrolled in CoSTART with individuals receiving services as usual is limiting. Further research is required to assess statistical significance across all outcome measures.

## **Implications for Future Application of the Model**

This demonstration pilot evaluation suggests the need for more investigation into actual claims data around costs for supporting persons with IDD and MH needs. It has shown with this small sample that cross-systems crisis intervention planning with a focus on linkages and capacity building may decrease emergency service costs. It will be important to replicate these findings with a larger sample of START enrollees and a control group to determine if interventions result in statistically significant findings.

This study also demonstrates the ability for a small team to use components of the START model to make significant improvements in stability in the lives of those with IDD/MH and their caregivers. It suggests that by providing targeted resources to support and expand these services, stakeholders would

not only improve the lives of many more citizens of Colorado, but also the potential for more significant cost savings for individuals utilizing CoSTART.

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