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Learning Collaboratives: A Strategy for Quality Improvement & Implementation in Behavioral Health

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Introduction

The last several decades have been marked by growing concerns about the quality of healthcare. A seminal report at the turn of the century by the Institute of Medicine (2000) highlighted that as many as 98,000 people were dying annually from medical errors. This caught public attention and stimulated a national agenda for improving patient safety. What followed were efforts throughout healthcare to further develop and disseminate evidence-based practices to enhance the quality and effectiveness of care. This focus on increasing safety, quality, and effectiveness also has dominated the fields of mental health and addictions, which comprise the healthcare sector known as behavioral health (Institute of Medicine, 2006).

Developing an evidence-base on safe and effective practices is an essential first step. However, translating science to practice and improving the quality of care delivered in “real world” settings has proved to be a daunting challenge (Amaya-Jackson et al., 2018). Around the turn of the century, the concept took hold of promoting quality improvement by bringing together teams from different organizations, using experts to educate them in practices supported by evidence, and guiding them in adopting and measuring the effects of these practices within their organizations. Sharing of strategies, data, successes, and obstacles among participating teams was central to the approach, which became commonly referred to as a learning collaborative. These became enormously popular in healthcare with thousands of collaboratives implemented in the U.S. and internationally and adopted, at times, by governments for nationwide improvement efforts.

Learning collaboratives have been the subject of a large number of publications and a more modest number of research studies. Confusion has arisen about a number of issues, which this review addresses, using a mixed-method approach: what are learning collaboratives; what is the evidence for their effectiveness; what are their key elements; how have they been applied in behavioral health; and what are best practices for use in behavioral health. The review concludes with a succinct summary of key findings and a series of recommendations designed for technical assistance providers regarding quality improvement initiatives and the use of learning collaboratives.

This work was commissioned by the Network Coordinating Office of the Mental Health Technology Transfer Center (MHTTC) Network (www.mhttcnetwork.org), which is funded by the Substance Abuse and Mental Health Services Administration (SAMHSA). The Network, comprised of 10 Regional Centers, a National American Indian and Alaska Native Center, a National Hispanic and Latino Center, and the Network Coordinating Office, accelerates the adoption and implementation of mental health related evidence-based practices; heightens the awareness, knowledge, and skills of the workforce that addresses the needs of individuals living with mental illness; fosters regional and national alliances among culturally diverse practitioners, researchers, policy makers, family members, and consumers of mental health services; and ensures the availability and delivery of publicly available, free, training and technical assistance to the mental health field. This work was led by the Annapolis Coalition on the Behavioral Health Workforce (www.annapoliscoalition.org), a non-profit technical assistance and advocacy organization that has worked for two decades to strengthen the mental health and addiction workforce in order to improve the nation’s health and healthcare.

Method

Mixed-Method Review

The mixed method approach used to address the questions articulated above included the identification, review and integration of findings on learning collaboratives from the following sources: systematic reviews, research trials, published descriptions, recommendations, and reports issued by organizations that conduct collaboratives, and findings from interviews of 17 experts who served as key informants.

The robust sources on learning collaboratives in general healthcare were examined first, providing a context for the subsequent review of the more limited resources on learning collaboratives in behavioral health. Similarly, semi-structured interview questions were designed, and interviews were conducted after the review of other sources clarified the central issues to be explored with the key informants.

One of the authors (MP) conducted the literature search, the senior author (MH) summarized the literature and drafted interview questions, which the other authors revised. The senior author conducted, transcribed, highlighted key content from the interviews, and integrated interview content with findings from the literature review.

To promote future use of learning collaboratives in behavioral health, two additional steps were taken. Publications and other reports of learning collaboratives conducted in the specialties of mental health and addiction, primarily during the past decade, were referenced in Appendix B. Resources identified during this project that might prove useful in implementing learning collaboratives in behavioral health have been assembled in a supplement that is available on the MHTTC website <https://mhttcnetwork.org/centers/mhttc-network-coordinating-office/training>.

Literature Search Methodology

A literature search was conducted using Ovid MEDLINE, PsycINFO, AMED, PsycARTICLES, PsycEXTRA, Embase, CINAHL, Google Scholar, and Google with filters set to identify publications in English from 2010 to the present. The search included the following terms: learning collaborative(s), quality improvement collaborative(s), quality improvement learning collaborative(s), quality collaborative(s), mental health service collaborative care, mental health service quality, behavioral health learning collaborative(s), behavioral health quality improvement collaborative(s), quality improvement collaborative(s) in behavioral health, evidence-based engagement strategy(ies), multidisciplinary quality improvement team(s), community based quality improvement, learning laboratory(ies), breakthrough series, and Network for the Improvement of Addiction Treatment (NIATx). The reference lists of documents discovered through the search were reviewed to identify other pertinent resources.

The search yielded a total of 640 published articles and other documents in the gray literature. The majority were produced in the United States with a minority from international sources. All articles were screened for relevance to questions being examined. This yielded 151 documents that were subjected to more detailed review.

Key Informants

Fifteen interviews were conducted involving 17 individuals with substantial knowledge of learning collaboratives. They are identified in Appendix A. The experience represented by this

group included involvement in: founding the learning collaborative movement; designing and implementing learning collaboratives in general healthcare and behavioral health; leading the development of collaboratives within the Institute for Healthcare Improvement (IHI); conducting collaboratives based on the IHI Breakthrough Series model; providing technical assistance to healthcare providers; managing technical assistance and quality improvement networks; funding and shaping federal policy regarding technical assistance; developing evidence-based practices; conducting research on learning collaboratives, quality improvement and implementation; and editing behavioral health journals that publish on learning collaboratives and related topics. The group was comprised of individuals with expertise in mental health and substance use disorder prevention, intervention, and recovery. They brought a breadth of experience in serving individuals across the lifespan and addressing the needs of highly diverse populations. For simplicity, information and opinions in this report attributed to a key informant is noted with the individual's last name followed by the letters "PC" for personal communication, and the year.

Findings

Defining Learning Collaboratives

Early Beginnings

In 1995, IHI launched its Breakthrough Series (BTS) collaboratives to improve healthcare (Institute for Healthcare Improvement, 2003), which is the *origin story* for this approach (Schoenwald, PC, 2020). These are often referred to as quality improvement collaboratives (QICs) or learning collaboratives. In this review, the term learning collaborative has been adopted because it appears to be the most commonly used term to refer to this type of collaborative in general healthcare and in behavioral health.

Key elements of these traditional BTS learning collaboratives, as identified by IHI in its early publications, included: selection of a specific improvement topic, recruiting expert faculty, enrolling organizations and teams, face-to-face learning sessions, Plan-Do-Study-Act cycles of change, technical assistance to teams, inter-agency sharing and learning, and summation of results and lessons learned (Institute for Healthcare Improvement, 2003).

The IHI model was disseminated and adopted quite quickly, both nationally and internationally, and has been enormously popular (Hulscher et al., 2013). Northern European countries, like the United Kingdom and the Netherlands, used it for nationwide quality improvement in their healthcare systems (Schouten et al., 2008). The majority of studies in the most recent systematic review of collaboratives in healthcare used the IHI BTS learning collaborative model (Wells et al., 2018). IHI offers an extensive range of information and educational programs about learning collaboratives. As of 2020, just shy of 1 million individuals have participated in these programs (www.ihio.org).

Variations and Confusion

Unfortunately, there are at least five sources of variability and confusion surrounding the learning collaborative concept and terminology.

1. There are many forms of learning that are collaborative, as well as many collaborations that involve learning. These words have been used in a myriad of ways without precise

definition, often making it difficult to understand the nature of initiatives operating under the rubric of a learning collaborative.

2. Most published studies or other written descriptions of learning collaboratives provide insufficient detail for others to fully understand the elements of the initiative that was conducted.
3. Even the most ardent and sophisticated advocates of learning collaboratives are experimenting with versions that are shorter, less intensive and more virtual than the classic BTS model in order to reduce overall cost for the organizer, as well as the cost and burden on participating providers.
4. IHI and other technical assistance organizations, such as the National Child Traumatic Stress Network (<https://www.nctsn.org>) and the National Council for Behavioral Health (www.thenationalcouncil.org), intentionally depart from the classic learning collaborative model to address healthcare challenges for which (a) the evidence-base is not strong (e.g., health equity), (b) the funding is inadequate, (c) the organizational capacity of targeted providers to participate is insufficient, or (d) the project goal is limited to building the skills of individual providers and does not focus on organization-wide quality improvement. These departures from the traditional learning collaborative model are often called learning networks, learning communities, or communities of practice.
5. Learning collaboratives are frequently described as a form of quality improvement and distinguished from efforts at evidence-based practice (EBP) implementation. However, professionals have explicitly used learning collaboratives as a platform for EBP implementation with clinician training as one of many elements of the quality improvement approach (Amaya-Jackson et al., 2018).

The information below will build on the notion that the original IHI BTS model appears to be the most clearly defined, widely disseminated, replicated, and studied form of a learning collaborative. However, there remains considerable variability, even among learning collaboratives that are attributed to the BTS model. There are many other collaborative learning efforts that incorporate elements of a traditional learning collaborative, while departing substantially from the original IHI model that drew so much attention to this form of quality improvement and implementation.

Evidence for Effectiveness

Effectiveness in General Healthcare

Learning collaboratives became popular worldwide long before there was much evidence regarding their effectiveness. They also were criticized by scholars for being popular despite the lack of evidence. While randomized controlled trials are the gold standard for evaluating any intervention, it has been argued that using that methodology to evaluate quality improvement initiatives may be impossible since unique interventions evolve in each initiative to address the characteristics and challenges of participating healthcare organizations and their communities (Laderman, PC, 2020).

The effectiveness of collaboratives can be assessed by examining systematic reviews that encompass studies from all areas of healthcare. In an early review, Schouten et al. (2008) could find only twelve reports representing nine studies with a controlled design from among 1104 articles on this topic. Seven of the nine studies reported using the IHI BTS learning collaborative model.

With respect to the results, seven of the nine studies reported positive effects on “some” of their outcome measures, while the other two studies had no significant findings. As a general finding, the authors concluded that evidence for the effectiveness of these collaboratives was “positive but limited” (Schouten et al., 2008, p. 1491). They noted, however, that flawed methodologies and the heterogeneity of interventions compromised the certainty with which it could be concluded that the collaboratives produced the observed effects.

In a review that focused largely on understanding the elements of collaboratives, Nadeem et al. (2013) noted greater impact among collaboratives on provider-level versus patient-level outcomes. A few key informants interviewed for this project questioned whether such a finding was an artifact of assessing these comparative effects and drawing this conclusion too early, before sufficient time had elapsed for patient-level outcomes to take effect (Laderman, PC, 2020; Venkatesh, PC, 2020).

The most recent systematic review examined research of quality improvement collaboratives published from 1995 through 2014 (Wells et al., 2018). Of the 220 studies identified, 64 met inclusion criteria as a collaborative, using criteria that closely matched the IHI BTS definition, and minimum design characteristics specified by Cochrane EPOC (<https://epoc.cochrane.org>). A third of these studies measured process variables only; a third outcome variables only; and a third both process and outcome.

Eighty-three percent of the studies reported a statistically significant improvement in at least one of their primary effect measures, while 73% found positive effects in half or more of their primary effect measures. When reported, the magnitude of changes on measures ranged from 4-61% with a median of 12%. Eight studies examined sustainability, and all of these reported positive effects at six or more months after the end of the intervention. Four studies examined cost-effectiveness, and all reported positive findings on that variable.

The more successful collaboratives in this review were described as addressing straightforward aspects of treatment that had a strong evidence-base and a large gap between the evidence-based practice and typical practice. The authors concluded that, among the studies selected for this review, the collaboratives were “...largely effective in improving some of the processes and outcomes they addressed” (Wells et al., 2018, p. 235). They were encouraged but cautious, noting inadequacies in the way in which many of these studies had been reported.

The U.S. Agency for International Development (USAID) supported 54 government-run collaboratives on diverse improvements in healthcare in 14 low and middle-income countries during the decade ending in 2008 (Franco & Marquez, 2011). The evaluation data of 27 of those collaboratives assessed the compliance of groups of teams with specific evidence-based standards and found that 87% achieved standards compliance of 80% or greater after an average of 9.2 months. After this level of compliance was reached, there was also evidence that a substantive amount of change was sustained during the following 18 months of observation. The authors drew two major conclusions that have potential relevance in the U.S. and abroad. First, learning collaboratives can have substantial impact on quality if the baseline levels of quality are low; and second, this approach can be quite successful in centralized, government-run healthcare systems staffed by government employees (Franco & Marquez, 2011).

Effectiveness in Behavioral Health

The most comprehensive review of learning collaboratives in behavioral health was conducted by Nadeem et al. (2014). The focus was on studies published between 1995 and 2013 that had

pre-post data examining changes in provider practice and/or patient outcomes. The authors found 20 articles representing 16 studies that met criteria for review. Of these, 10 explicitly employed the IHI BTS model and four combined NIATx process improvement (www.niatx.net) with BTS elements.

The authors found that the descriptions of the elements of learning collaboratives across these studies were highly variable and often lacking in adequate detail. Among the studies, there were numerous positive reported trends with respect to provider and patient outcomes, sustainability of changes, and acceptability of learning collaboratives to providers. However, the review concluded that the absence of comparison data made it impossible to draw any broad conclusions on the effects of learning collaboratives in behavioral health. The authors lamented the absence of controlled studies, and called for better research and more detailed descriptions of collaborative elements and interventions.

One of the most well-designed, elegant, and informative studies of collaboratives in behavioral health was conducted by Gustafson et al. (2013). In an effort to determine which elements of collaboratives were most important, this research employed an unblinded cluster-randomized method that placed teams from outpatient addiction clinics for 18 months into one of four conditions: (a) interest circle calls, which were essentially group teleconferences; (b) a series of four in-person learning sessions conducted in large groups; (c) clinic level coaching involving an initial site visit with subsequent monthly phone calls with the coach; and (d) all three of these interventions combined. The latter condition most closely parallels a classic learning collaborative. Based on the findings, the authors concluded that two conditions, coaching and the combination of all interventions, were similar in effectiveness in reducing wait times and increasing the number of new patients seen in clinics; coaching was more cost effective than the combination involving the three interventions (\$2,878 versus \$7,930 per clinic); and interest circles and in-person learning sessions did not appear to add further value. They noted the comparatively sparse literature on coaching and called for further research on this intervention.

Making Sense of the Evidence

As noted above, technical assistance providers and provider agencies embraced the learning collaborative model long before there was evidence of its effectiveness. They are likely to take heart from the evidence of effectiveness in the general healthcare literature and attribute the absence of evidence in behavioral health to the lack of federal funding for such research. They are likely to argue that the evidence base for learning collaboratives is more robust than it is for alternative approaches to improvement, such as written guidelines, lectures, webinars, consultants, coaching, learning communities, and communities of practice.

Those who are highly trained and active researchers, including some of the key informants interviewed as part of this project, approach the evidence with more skepticism, noting the flaws in study design, the lack of fidelity to a specific learning collaborative model, the sparse descriptions of interventions, and limited evidence regarding patient outcomes and sustainability of changes once achieved (Dixon, PC, 2020; Gustafson, PC, 2020; Schoenwald, PC, 2020). Some noted that the research and resulting evidence seems to be growing (Schoenwald, PC, 2020).

Perhaps the perspective of technical assistance providers and service providers highlights the practical and immediate need to choose among the best available options. Undoubtedly, the perspective of researchers highlights the imperative for more clarity and fidelity to learning collaborative models and more sophisticated evaluations of their effects.

A Framework for Selecting an Improvement Strategy

A recurrent and legitimate question raised by the key informants when asked about the effectiveness of learning collaboratives was “effective to do what?” They emphasized the importance of identifying the ultimate goal of any effort to improve services and then selecting a strategy that could achieve that goal.

IHI has adopted and adapted the Kirkpatrick Model (<https://www.kirkpatrickpartners.com>) to assist in internal planning (Laderman, PC, 2020). Developed in the 1950s as an aid to evaluating the impact of training, it identifies four possible goals:

1. Reaction: The degree to which participants find the training favorable, engaging, and relevant to their jobs;
2. Learning: The degree to which participants acquire the intended knowledge, skills, attitudes, confidence, and commitment;
3. Behavior: The degree to which participants apply what they learned during training when they are back on the job; and
4. Results: The degree to which targeted outcomes occur as a result of the training.

Some key informants argued for transparency in linking goals to strategies (Laderman, PC, 2020; Lang, PC, 2020; Reid, PC, 2020). They acknowledged, for example, the potential benefit of lectures and webinars in imparting knowledge, shaping attitudes, or building interest in further training or quality improvement. However, they noted the limitation of these strategies in changing provider behaviors or improving health outcomes and identified learning collaboratives as a strategy focused on achieving those latter goals.

Key Elements

There has been recurrent interest among technical assistance providers and researchers in identifying the essential elements of learning collaboratives, as well as the elements that have the most positive impact. There have been both theoretical and empirical approaches to this task.

Schouten et al. (2008) conducted a detailed analysis of the theoretical literature on learning collaboratives and identified what are described as five essential features:

1. *A specific healthcare topic* within which there is large variation in practice or significant gaps between best and current practices;
2. *Experts on the healthcare topic and quality improvement* who can summarize and share knowledge with collaborative participants;
3. *Multi-professional teams from multiple sites* interested in improving care and sharing information;
4. *An improvement model* that includes setting targets, collecting data, testing changes, and learning by doing; and
5. *A collaborative process of structured activities* including meetings, electronic communications, exchange of ideas, and sharing of experiences.

Wells et al. (2018) later elaborated on this analysis, adding the concept of a *change package* or *toolkit* of evidence developed by the experts to guide the work of the teams. These authors also emphasized the use of the Plan-Do-Study-Act (PDSA) improvement method in which teams

conduct rapid cycles and tests of change, learning from the tests, and adjusting their practices based on the findings.

In contrast to these theoretical approaches to identifying key elements of learning collaboratives, a systematic review of articles published from 2001 to 2010 used an empirical approach (Nadeem et al., 2013). The authors identified 20 studies that involved randomized controlled trials or quasi-experimental designs with comparison groups. The majority were based on the IHI BTS model. The analysis of these studies yielded 14 process and structural elements. They are listed below, along with the frequency with which these elements appeared among the 20 studies.

1. In person learning sessions (20 of 20)
2. PDSAs (15 of 20)
3. Site collection of new data for QI (15 of 20)
4. Multidisciplinary quality improvement (QI) teams (14 of 20)
5. QI team calls involving multiple teams (14 of 20)
6. Email or Web support (12 of 20)
7. Leadership involvement/outreach (9 of 20)
8. External support with data synthesis and feedback (9 of 20)
9. Site review of data and use of feedback (8 of 20)
10. Training for non-QI team staff by the QI team (6)
11. Pre-work: Convening an expert panel (5 of 20)
12. Pre-work: Organizations demonstrate commitment (3 of 20)
13. Training of non-QI team staff by experts (2 of 20)
14. Length of the collaboratives (an element that applies to all)

The 20 collaboratives that were reviewed had, on average, six or seven of these elements. Among these studies, 17 reported positive or mixed findings regarding impact on provider-level variables and 9 reported positive or mixed findings on patient-level variables. However, the authors concluded that it was impossible to determine which elements of the collaboratives were predictive of outcomes because of inconsistency in reporting of how and with what intensity each element was used (Nadeem et al., 2013).

Hulscher et al. (2013) used what they described as a pragmatic approach to identifying the key elements by counting how often each element had been examined in the literature and had shown a significant relationship with a desired outcome. The 23 publications reviewed tended to be methodologically weak and the findings on a large number of elements examined were mixed. It is difficult to glean specific meaningful guidance from this study. The authors concluded that strong teams and teamwork, as well as participation in collaborative activities, may have influenced short-term success, while teams remaining together and continuing to collect data may have led to greater long-term outcomes (Hulscher et al., 2013).

Wells et al. (2018) offered a hypothesis that the individual elements of collaboratives may be less important than how, overall, the elements influence participating teams and organizations. Taken as a whole, the elements create a cooperative environment centered on a specific aim that taps into participant intrinsic motivation to improve patient care. Perhaps this is somewhat equivalent to the concept of non-specific or common factors in psychotherapy (Cuijpers et al., 2019).

All authors that have addressed the topic of key elements have called for future research (Nadeem et al., 2013; Wells et al., 2018). They uniformly suggest that program descriptions

regarding collaboratives be much more precise about the elements included, how they were used, and their intensity (length, duration, etc.). Nadeem et al. (2014) suggested that the template they developed of 14 categories could serve as one format for such documentation. Another option is to use the Standards for Quality Improvement Reporting Excellence, known as SQUIRE 2.0. These are recommended guidelines for reporting the key features of healthcare improvement efforts (Ogrinc et al., 2016). The instrument, instructions, and related resources are publicly available at: <http://www.squire-statement.org/index.cfm?fuseaction=Page.ViewPage&pageId=504>.

Applications in Behavioral Health

Learning collaboratives have been widely used in behavioral health. Over 60 publications describing such collaboratives are listed in Appendix B. These were principally published during the decade ending in 2019. It is safe to assume many more were implemented without being documented in the literature. What follows is a description of some of the more prominent efforts to utilize learning collaboratives in this field.

Child Traumatic Stress

One of the largest and most sustained efforts of this nature in the U.S. occurs under the umbrella of the SAMHSA-administered National Child Traumatic Stress Network (NCTSN), which was created by Congress in 2000 as part of the Children's Health Act. Its mission is to improve care and access to services for traumatized children, their families, and communities (www.nctsn.org). The NCTSN has 116 currently funded centers and 170 formerly funded affiliates across 43 states and the District of Columbia. These offer trauma-focused clinical care, education, resource dissemination, data collection, and advocacy from their base in hospitals, community-based programs, and universities.

The network is currently managed by the UCLA-Duke based National Center for Child Traumatic Stress (NCCTS), which provides an organizational structure, leadership, and coordination for grantees (<https://www.nctsn.org/about-us/structure-and-governance/national-center>). Since 2004, the NCCTS has used the IHI BTS model to promote systems change. For example, a current initiative with schools is designed to increase the time children are in the classroom by decreasing the effect of trauma on these students (Amaya-Jackson, PC, 2020). At a second level, the NCCTS has implemented a large number of what it refers to as learning collaboratives that blend IHI quality improvement practices with adult learning principles to train providers in Trauma Focused Cognitive Behavioral Therapy (TF-CBT) and other trauma-informed practices (Amaya-Jackson et al., 2018). The NCCTS also sponsors a third type of learning initiative that does not involve metrics and is referred to as communities of practice.

Over 50 collaboratives have been implemented by the NCCTS, with a primary focus on TF-CBT (Amaya-Jackson et al., 2018) in addition to other topics such as trauma-informed child welfare practice (Conradi et al., 2011). The publication on its use statewide in North Carolina to disseminate TF-CBT reported decreases in parent distress and child externalizing, internalizing, and post-traumatic stress symptoms after completion of the collaboratives (Amaya-Jackson et al., 2018). The longevity of the network has meant that there is a mechanism for ongoing support to foster sustainability. Earlier research has demonstrated that participating agencies in these collaboratives and the network were highly likely to continue providing TF-CBT, increase its delivery, sustain model-specific supervision, and support diffusion of the practice in the surrounding community (Ebert et al., 2012). It is noteworthy that this mechanism for supporting long-term sustainability is something that is missing in most learning collaboratives.

Also developed were two online resources: the *TOOLCIT Curriculum for Learning Collaborative Facilitators* (<https://www.nctsn.org/resources/toolcit-curriculum-learning-collaborative-facilitators>) and *A Guide for Senior Leadership in Implementation Collaboratives* (<https://www.nctsn.org/resources/guide-senior-leadership-implementation-collaboratives>). These resources were key in the NCTSN effort to train some of its members to develop and implement their own collaboratives. The learning curve for members in this process proved to be much steeper than anticipated, but over time, some success was achieved (Amaya-Jackson, PC, 2020).

Community-Based Learning Collaboratives (CBLC)

This is a variant of the TF-CBT learning collaborative model that adds strategies to promote and maintain inter-organizational relationships and interprofessional collaboration in communities with children who have experienced trauma (Hanson et al., 2016). The approach is to strengthen the linkage between mental health and child welfare professionals, the latter of whom often broker or arrange access to trauma services. The ultimate goal is to increase access to TF-CBT among children in the community.

The developers of this model have reported on its statewide implementation in South Carolina. Findings from the first three project phases suggested high participant completion rates, significant increases in the use of trauma-informed practices, and positive ratings among participants of the utility of the CBLC model. The developers were disappointed, however, that clinicians rated the value of interprofessional collaboration less favorably than did brokers or senior leaders (Hanson et al., 2019). Clinician surveys conducted two years after the CBLC found medium sustained increases in self-reported use of TF-CBT and medium to large sustained increases in perceived organizational support for these practices (Helseth et al., 2020).

Subsequent research on this model highlighted that providers being trained in TF-CBT as part of a learning collaborative had decreasing rates of compliance with activities as these became more individualized and intensive: 80.0% compliance with learning sessions, 76.0% with consultation calls, 48.4% with completing two cases using TF-CBT, and 50.2% compliance overall (Jensen-Doss et al., 2020). Note that this is compliance by clinicians with training activities associated with a collaborative; not attendance by agency teams in core collaborative quality improvement processes.

Children's Mental Health EBPs

The Child Health and Development Institute (CHDI) is a non-profit organization dedicated to ensuring healthy outcomes for children in Connecticut by advancing effective policies, stronger systems, and innovative practices (www.chdi.org). The dissemination and maintenance of evidence-based children's mental health treatments has been one of its main areas of focus. In this work, it has relied heavily on the IHI BTS model in the approximately 15 learning collaboratives that it has offered (Lang, PC, 2020). These have included mental health providers and school counselors, with a focus on EBPs that include TF-CBT, Cognitive Behavioral Intervention for Trauma in Schools (CBITS), Bounce Back, and MATCH-ADTC.

Like the NCTSN, the State of Connecticut has combined learning collaboratives with a statewide coordinating center operated by CHDI. For 14 years, CHDI has supported the network of EBP adopters through continued technical assistance, training of new staff in EBPs, data collection, benchmarking, and peer learning. Twenty-nine of 30 agencies (97%) that implemented TF-CBT through this structure have continued to provide this EBP in the post-collaborative period, which has ranged from two to eight years (Lang et al., 2017). The data generated through this structure have demonstrated over time that children are receiving

evidence-based treatment. From the CHDI perspective, this has been instrumental in ensuring the continued flow of state support for these services. As Connecticut agencies have gained experience with learning collaboratives, quality improvement processes and EBPs, CHDI has also found it possible to reduce the intensity of subsequent learning collaboratives for new initiatives since the learning curve for agencies has decreased (Lang, PC, 2020).

School-Based Mental Health

The National Center for School Mental Health (NCSMH) recently published the findings from the first two national learning collaboratives designed to improve the quality of school mental health systems (Connors et al., 2020). Funded by the Maternal Child Health Bureau within the Health Resources and Services Administration, 24 school districts from 14 states participated in these 15-month collaboratives, which were modeled on and adapted from the IHI BTS model. Active participant engagement and the feasibility of this approach were supported by collaborative call attendance (M=73%), virtual learning session attendance (M=78%), and monthly data submission (M=65 to 98%).

Teams produced an average of 14.7 PDSAs during the collaboratives. Domains in which teams reported the highest improvement were screening (75% with improvement), needs assessment and resource mapping (84%), teaming (80%), and data-driven decision-making (76%) (Connors et al., 2020).

In terms of qualitative results, the teams found data collection to be challenging, but benefitted from use of a standardized quality improvement performance measure and an online reporting system. Teams reported valuing the resources and methods provided to conduct PDSA cycles and benefitted from being encouraged to “start small.” The authors concluded that the learning collaborative was a particularly valuable model for bringing together education and mental health specialists to meet the comprehensive needs of students. They also viewed the level of engagement in the collaboratives as notable given the fast pace, workload levels, and inadequate data systems in schools, as well as the unfunded participation of districts in this quality improvement process (Connors et al., 2020).

Participants in the collaboratives have benefitted from the use of NCSMH’s *School Health Assessment and Performance Evaluation (SHAPE) System*. This is a publicly available, web-based platform offering schools, districts, and states various planning tools, screening and assessment documents, customized reports, and data dashboards (www.theshapesystem.com).

Behavioral Health & Primary Care Integration

Since primary care is such a prominent site of behavioral health service delivery, learning collaboratives have been used frequently to improve behavioral health and primary care integration. Methods have varied widely in their level of sophistication and the resulting confidence that can be placed in the findings about these collaboratives.

IHI conducted an early BTS collaborative focused on improving the quality of depression treatment in 17 primary care organizations (Meredith et al., 2006). All sites demonstrated positive change in delivery system redesign, self-management strategies, and information systems. Facilitators of change reportedly included the organizational structure of the collaborative and leadership support, while noted barriers included staff resistance, time constraints, and limits on information technology.

In a recent pair of studies (Baum et al., 2018; Baum et al., 2019) a variation of the BTS collaborative was used statewide with primary care practices and their individual providers (PCPs) to improve mental health care. Findings suggested increased frequency of assessment and management of mental health conditions, improved prescribing practices, better documentation of mental health screening and promotion, and increased confidence among PCPs in addressing mental health issues.

The National Council for Behavioral Health (National Council), a major behavioral health provider association, sponsored learning collaboratives on integration that involved 16 pairs of community mental health center (CMHC) and community health center (CHC) teams (Vannoy et al., 2011). This was an observational study, so the validity of the findings is uncertain. The authors concluded that all teams increased performance on one or more patient health indicators, participant satisfaction with the collaboratives was high, and CHCs performed better in chronic disease management than CMHCs. Challenges to improvement included workforce turnover, maintaining communication between organizations, tracking patient outcomes, competing change initiatives, and “change fatigue.”

The National Council is one of the dominant providers in behavioral health training, technical assistance, quality improvement, and implementation. While the organization still utilizes many IHI BTS fundamentals (e.g., structured learning, use of data and benchmarking, peer learning), its offerings depart from the classic IHI model in that they tend to be significantly shorter, have less individual coaching, and place more emphasis on raising awareness of resources and planning future interventions (Venkatesh, PC, 2020). The organization is more likely to refer to these as learning networks or communities of practice. This shift in direction is designed to address the perception that many agencies do not have the interest or capacity to participate successfully in full-scale learning collaboratives.

Integrating Behavioral Health in the Emergency Department

From 2018 to 2019, IHI conducted an effort to improve quality of care for individuals who were presenting to hospital emergency departments with behavioral health conditions (Schall et al., 2020). Because of the absence of a strong evidence base, this was labeled a learning community. However, it contained many elements of a BTS, including an 18-month improvement process with quality improvement teams from eight U.S. hospitals. The objective was not only to improve care in these hospitals and their surrounding community systems, but also to generate guidance for other organizations on how to improve care. The resulting guidance includes a framework for a better system of care (e.g., processes and provider culture), high-leverage changes and specific change ideas, suggested measures, and practical tips and examples (Schall et al., 2020).

Individual Placement and Support / Supported Employment

The Johnson & Johnson – Dartmouth Program was a national learning collaborative focused on the evidence-based practice of supported employment for people with severe mental illness (Becker et al., 2011). It was not designed explicitly as an IHI-style BTS collaborative. However, the developers acknowledge that it combined many elements of that model to accomplish implementation and initial training of mental health and vocational rehabilitation providers in supported employment (Becker, PC, 2020). This was paired with a network of participating states and their provider organizations, which receive ongoing support to promote sustainability. The Johnson & Johnson Office of Corporate Contributions supported this initiative for 15 years.

In its current iteration, the initiative is operated under the Rockville Institute and is known as the *Individual Placement and Support (IPS) Learning Community* (<https://ipsworks.org/index.php/ips-international-learning-community/>). Twenty-four states and six additional countries participate in ongoing training, technical assistance stakeholder calls, bimonthly state leader calls, fidelity assessments, peer learning, and an annual meeting. They report quarterly outcomes using a standardized online portal, which facilitates benchmarking. This model has been a mechanism for collaboration between state mental health departments and vocational rehabilitation departments/services, which have historically operated in separate silos. Other key strategies have been to require states to match external funds in order to build internal capacity; develop trainers within the state rather than use out-of-state experts; and develop the ability to provide consultation to other states and locales (Becker, PC, 2020).

Like the NCTSN model, this initiative adds a focus on long-term sustainability that is largely absent with most collaboratives. A two-year follow-up study of 129 participating IPS sites that were operational in 2012 found that 124 (96%) were still operational in 2014 and had been active for a mean of 4.5 years (Bond et al., 2016). Over this period the sites had, on average, expanded funding sources, increased fidelity, and increased client employment rates.

NIATx

The Network for the Improvement of Addiction Treatment (NIATx) teaches and coaches treatment centers in the use of process improvement (www.niatx.net). It has traditionally focused within the addiction sector on improving access, reducing wait times, and increasing retention in substance use treatment (McCarty et al., 2007). Over time, it has been applied more broadly to a range of quality improvement topics (<https://www.niatx.net/niatx-as-an-evidence-based-practice/>). NIATx draws on processes from manufacturing and other industries and is often referred to as a quality improvement model (Ford et al., 2018). While not a classic BTS collaborative, it shares many characteristics with that model, including a strong focus on the use of PDSAs for rapid cycle testing (see earlier description of Gustafson et al., 2013).

Other Behavioral Health Collaboratives

Many other learning collaboratives have been launched in behavioral health, though the documentation on these is variable. SAMHSA funds numerous quality improvement and implementation initiatives that reportedly use learning collaborative models or elements, though these are not necessarily well-defined, may be less intensive learning communities, and may not have an evaluation of effectiveness (Everett, PC, 2020).

A number of technical assistance centers that focus on culturally diverse populations have used elements of learning collaboratives or actual learning communities to improve care for their populations of interest. These include the National American Indian & Alaska Native MHTTC (Skinstad & Bear, PC, 2020), the National Hispanic & Latino MHTTC (Orobitg, PC, 2020), and similar TA centers in the Addiction Technology Transfer Center Network (<https://attcnetwork.org>) and Prevention Technology Transfer Center Network (<https://pttcnetwork.org>). Recommendations regarding collaboratives drawn from these initiatives can be found in the best practices and health equity sections of this report.

The Yale Program for Recovery and Community Health (PRCH) (<https://medicine.yale.edu/psychiatry/prch/>) has been using the learning collaborative model in partnership with the Connecticut Department of Mental Health and Addiction Services to implement and improve recovery-oriented services and integrate peers into the service system in multiple roles (Davidson, PC, 2020). A novel practice among these collaboratives has been

inclusion of a peer as a faculty trainer and the requirement that each participating agency have a peer on its project team.

IHI BTS concepts also have been incorporated by PRCH faculty into the collaborative work on person-centered recovery planning (PCRP) in Connecticut, New York, Kentucky, and Texas (Tondora, PC, 2020). Person-centered care is one of the six aims of healthcare quality identified by the Institute of Medicine (2001) in its historic report, *Crossing the Quality Chasm: A New Health System for the 21st Century*. The Texas initiative involved a large-scale collaborative on PCRP managed by the organization Via Hope (www.viahope.org) and evaluated by the Texas Institute for Excellence in Mental Health using the *Consolidated Framework for Implementation Research* (Kaufman et al., 2016).

Best Practices

Learning collaboratives are complex endeavors. Programs that offer instruction on conducting collaboratives are available through IHI. Comprehensive guides to planning and conducting collaboratives are publicly available as well. These resources are identified in the supplement to this report that is available online at the MHTTC website (<https://mhttcnetwork.org/centers/mhttc-network-coordinating-office/training>). During the interviews of key informants and reviews of the literature, numerous best practices related to learning collaboratives were identified. Many of those best practices are described below.

Interpersonal Interaction

The process of people learning and sharing together and working jointly to improve quality is what one key informant described as the “beauty of learning collaboratives” (Hoover, PC, 2020). She described the innovation that emerges from collaboration as distinct from the outcomes of agencies working in isolation with “top-down consultation.” While individuals may benefit from the advice of experts, they often “really want to hear from their peers.” This process also facilitates what Connors et al. (2020) described as the IHI BTS tenet of participants ‘sharing [ideas] seamlessly and stealing shamelessly.’

Other key informants built on this theme, arguing that the benefit of interpersonal interaction in collaboratives has stood the test of time and has been demonstrated with different quality improvement topics and different improvement methods (Reid, PC, 2020). The interaction creates motivation; social and peer pressure; accountability; and a group on a similar journey with which to benchmark, discuss the challenge, and get new ideas. Most elements of a learning collaborative are designed to bring people together, foster their interaction, and thereby accelerate the pace of change.

In Person Meetings

Bringing participants together in person, typically in the beginning, middle and end of the process, has been a cornerstone of learning collaboratives. It is the prime vehicle for building relationships that offer the benefits described above and creating a sense of community. The effectiveness of in person meetings has been noted with respect to protecting participants from many of the distractions of the workplace, engaging them, keeping their attention, generating excitement, and leaving them energized about improving care (Laderman, PC, 2020). The relationships that are created during the meetings and outside of the formal sessions, during breaks or social gatherings, are difficult to replicate in other ways. Over the past decade, the number of in person meetings in the collaboratives included in systematic reviews averaged

three and the typical length of each meeting was two to three days (Nadeem et al., 2013; Nadeem et al., 2014; Wells et al., 2018).

What follows are some specific best practices for using in person gatherings as part of learning collaboratives:

- Attempt to have some in person meetings as part of each learning collaborative (Laderman, PC, 2020; Lang, PC, 2020).
- Holding an in person meeting at the *beginning* of a collaborative is most important (Tondora, PC, 2020).
- Prioritize in person meetings to begin a collaborative when:
 - most participating agencies have not previously participated in collaboratives (Lang, PC, 2020);
 - the collaborative is bringing together agencies and individuals from different sectors, such as child mental health and child welfare (Lang, PC, 2020); and
 - agencies are *mandated* by states to participate (Davidson, PC, 2020).
- Consider small in-person meetings between collaborative faculty and participants from individual agencies to build working relationships (Tondora, PC, 2020).
- Schedule breakouts and time for informal gatherings during in person meetings.
- Consider sending trainers/consultants or peers from other teams to participating states/agencies for in person meetings, including to “show how things are done” (Becker, PC, 2020). Wells et al. (2018) reported this occurring in one third of the studies they reviewed.
- Consider keeping in person meetings short and focused (Vannoy et al., 2011).

Virtual Contacts

Some elements of collaboratives have always been virtual due to the limitations of in person gatherings. Getting together is time intensive, inefficient, costly due to the travel involved, and takes essential employees away from the workplace (Gustafson, PC, 2020; Laderman, PC, 2020). The cost may contribute to healthcare safety-net agencies being unable to participate given that their financial margins are typically small. One key informant also noted the negative impact of travel on the world’s environment (Reid, PC, 2020).

Virtual contacts had gone from being a between-meeting strategy to a more routine form of gathering to expand the reach of collaboratives, conserve time and money, and lessen the burden on participating agencies and their staff. All-virtual collaboratives had been implemented prior to the pandemic (Orobitg, PC, 2020), and used widely by organizations such as the U.S. Veterans Health Administration (Zubkoff et al., 2019) and the Center for Practice Innovations at Columbia University and the New York State Psychiatric Institute (Dixon, PC, 2020). For the moment, it appears that all collaboratives are all-virtual due to the COVID-19 pandemic. A great deal of effort is being expended by professionals to develop effective approaches to all-virtual collaboratives (Amaya-Jackson, PC, 2020).

Not only do virtual collaboratives offer greater inclusion of agencies that might not otherwise be able to afford participation, they also allow inclusion of a greater number of staff from each participating agency. This addresses the isolation that the few staff who attend an in person collaborative meeting can feel when they return to their agency and try to implement what they learned while away (Gustafson, PC, 2020). The potential power of virtual collaboratives in expanding access to this methodology *worldwide* at modest cost was also noted (Reid, PC, 2020).

What follows are the few specific best practices for using virtual gatherings as part of learning collaboratives:

- Use strategies for ensuring interaction and relationship development in this virtual process.
- Require all participants to have a camera or other mechanism for video participation. Build the \$100 cost of cameras into the collaborative budgets for the few individuals who may not be able to afford them (Hoover, PC, 2020).
- Use breakouts during these virtual meetings so that participants can make personal connections and are more comfortable asking questions and sharing their data (Reid, PC, 2020).

Participant Selection

A few key informants specifically recommended a competitive selection process in which agencies apply to participate (Lang, PC, 2020; Tondora, PC, 2020). This allows applicants to address issues related to their readiness, capacity, and commitment. Nadeem et al. (2014) found that among the 20 studies in their systematic review, eight required applications and had specific criteria for inclusion. Vannoy et al. (2011) reported that there were 112 applications from CMHC-CHC pairs for the 16 slots of pairs in their collaborative on behavioral health and primary care integration.

Pre-Work Requirement and Activities

Key informants and published recommendations suggest a variety of pre-collaborative best practices, occurring either before or after final selection. These include the following:

- Communicating expectations in advance (Hoover, PC, 2020).
- Getting to know each participating agency, including its prior experiences and the context in which it operates (Nadeem, PC, 2020; Tondora, PC, 2020).
- Formal or informal assessments of organizational readiness (Lang, PC, 2020; Nadeem et al., 2014).
- Selecting the best team members from the agency for the collaborative, clarifying their roles, engaging them in the process, and arranging necessary supports for them (Nadeem, PC, 2020).
- Articulating the agency leader's goals for participation in the collaborative and clearly conveying those to the team (Gustafson, PC, 2020).
- Clarifying the responsibilities of participating agencies and collaborative leaders, preferably in writing through a formal agreement (Lang et al., 2017).

Agency Teams

The best practices recommended regarding team composition and functioning were relatively straightforward, but warrant enumeration given how critical the teams are to collaborative activities and effectiveness:

- Gustafson (PC, 2020) argued persuasively that the team leader is optimally a bright and "irresistibly influential person" who has an excellent relationship with the agency CEO and understands the CEO's goals for participation in the collaborative.
- The team should be multidisciplinary with individuals who have diverse roles (Becker, PC, 2020).

- Strong project management skills must exist with the team (Reid, PC, 2020).
- Gustafson (PC, 2020) recommended extensive use of checklists to ensure organized follow through with implementation.
- Strong quality improvement experience and capacity should exist within the team (Laderman, PC, 2020).
- Davidson (PC, 2020) made a strong case for the inclusion of people with lived experience as members of the team, as well as the faculty. The inclusion of parents and students in school-based mental health collaboratives was similarly recommended (Connors et al., 2020). Becker (PC, 2020) mentioned the inclusion of family members in the IPS Learning Community Family Committee.
- Teams need to be managed so that all members feel that they are “part of it,” have ownership, and a voice (Becker, PC, 2020).

Change Packages

Learning collaboratives are designed to promote the adoption of EBPs on a specific healthcare topic. It is considered a best practice for the collaborative faculty to assemble the EBPs and other recommended practices and tools into a ‘change package.’ Wells et al. (2018) found in their systematic review that 60% of studies mentioned having a change package, while others may have had but not reported this element. Vannoy et al. (2011) noted that all practice change is local. Therefore, change packages have to be adapted to local needs by each agency. Tondora (PC, 2020) expressed the importance of the goals and strategies selected being incorporated into a written agency plan for change.

Data

The importance of collecting and using data to drive change was a recurrent theme in the literature and among the interviews of key informants. The absence of data and data systems in agencies was identified as a major obstacle to quality improvement and implementation. Among the best practices recommended were the following:

- Develop a clear measurement strategy to understand the impact of the planned changes (Reid, PC, 2020).
- Keep it simple by measuring just a couple of variables that really need to be tracked (Gustafson, PC, 2020).
- Measure what can feasibly and reasonably be tracked (Hoover, PC, 2020; Nadeem, PC, 2020).
- Measure process and patient outcomes, as process measures are insufficient (Tondora, PC, 2020).
- Use mixed methods for data collection (Dixon, PC, 2020).
- Have agency teams collect and report data early in the collaborative and monthly thereafter to get in the habit of working with and using data (Hoover, PC, 2020).
- Have at least a few goals and related data elements that every team can measure in the first cycle of data submission, even if it is only a self-report of perceived implementation status (Hoover, PC, 2020).
- Use the data collected to train providers about care and quality improvement (Lang, PC, 2020).

As discussed above, a number of learning collaboratives are linked to ongoing networks that promote sustainability and involve ongoing data collection, reporting, and benchmarking (e.g., NCTSN, NCSMH). Such networks have tended to develop online data portals and dashboards

to support the use of data. While these systems add a level of sophistication to the collaboratives and the subsequent efforts at sustainability, they still tend to embrace the principles of keeping data collection simple and practical.

With respect to the issue of which variables to measure, the systematic review by Nadeem et al. (2014) provides some guidance as to the possibilities. Among the 11 studies in the review that detailed the variables measured:

- 10 examined provider-level variables
- 11 examined patient-level variables
- 9 examined acceptability of the collaborative model to providers
- 8 examined sustainability of the changes achieved
- 3 examined the impact of specific elements of the collaborative
- 2 provided estimates of the cost of the collaborative

Model for Improvement & PDSA Cycles

IHI promotes a simple *Model for Improvement* that involves asking three questions: (1) What are we trying to accomplish? (2) How will we know that a change is an improvement? and (3) What change can we make that will result in improvement? (Langley et al., 2009). This model is tied to the concept of the Plan-Do-Study-Act (PDSA) cycle developed by Deming (2000), the famous American engineer and management consultant. A PDSA involves planning a test of change, running the test, analyzing the results, and taking action based on what has been learned (adopting, adapting or abandoning the change).

While the key informants sometimes used slightly different language to describe this process, many of them clearly endorsed as best practices being able to answer the three key questions and engage in iterative efforts at change. Here are some of the best practices drawn from the interviews and literature:

- Require the use of PDSA worksheets as the reporting format from participating agencies (Vannoy et al., 2011).
- Use PDSAs frequently and in short cycles (weeks, not months) (Gustafson, PC, 2020).
- Provide individualized coaching and feedback to each team to get data collection and the PDSA cycle moving.
- Require a PDSA and data submission early in the collaborative (first month or two) (Hoover, PC, 2020).
- Start small with a simple test of change (Hoover, PC, 2020).

Despite the widespread use and praise for the PDSA method, there are many concerns about its application (Hoover, PC, 2020). It is common for teams to lack initial enthusiasm for the process given its focus on performance, metrics, and measurement. Team members can view this as a “drag” and prefer instead to explore the nuances of clinical care, though they may come to appreciate the value of PDSAs over time (Amaya-Jackson, PC, 2020).

While PDSAs are often described as a simple process that can be done by anyone, teams routinely struggle to implement them effectively (Reid, PC, 2020). The fact that they are conceptually simple does not mean that they are easy to implement. In an insightful analysis, Reed and Card (2016) have identified the underlying challenges:

- Insufficient resources and talent are invested in the PDSA design.
- Buy-in to the method does not occur.
- The method is often oversimplified.
- The planning phase is too often cut short.
- The PDSA is insufficiently tailored to the team or agency.
- The core principles of PDSAs are often not followed, resulting in an absence of fidelity to the model.
- The process frequently stops at the “Do” phase and a detailed analysis of the findings of a cycle does not occur.
- Necessary adjustments between cycles are not made.
- Efforts to address very complex “big and hairy problems” require but do not receive sufficiently sophisticated PDSAs.
- A lack of time to conduct tests, staff turnover and changing or competing priorities in the organization undermine the entire PDSA process.

These authors argue that PDSAs can offer a significant return on investment. The best practice is to invest sufficient talent and resources and to offer adequate support to their implementation so that they are effective (Reed & Card, 2016).

Between Meeting Activities

Ninety percent of the studies included in the Wells et al. (2018) systematic review reported using between meeting activities, including emails, listservs, conference calls, coaching, and webinars. The frequency of use was biweekly, monthly or quarterly. Nadeem et al. (2013, 2014) found in their reviews that calls were typically held monthly with some or all teams participating. Some calls were designed for specific affinity groups such as senior leaders or supervisors. As a specific best practice, Vannoy et al. (2011) shifted from all-team calls in their 1st cohort on integrated care to utilizing predominantly individual team calls for their next two cohorts in recognition of the diverse areas of focus and needs of each team. The use of these periodic contacts fits with the practice recommended by Tondora (PC, 2020) of monthly check-ins with teams on activity and progress.

Agency Leadership Involvement

Numerous key informants attested to the critical role that agency leaders play with respect to the effectiveness of learning collaboratives for their organizations (Dixon, PC, 2020; Laderman, PC, 2020). They emphasized the importance of generating interest among the leaders in the collaborative, optimally because the topic of the collaborative is of significant concern to them. For example, the IHI collaborative on *Improving Behavioral Health Care in the Emergency Department and Upstream* (Schall et al., 2020) was deemed viable because the challenges related to managing and boarding psychiatric patients in EDs was “top of mind” among hospital leaders (Laderman, PC, 2020). For large health systems, in which behavioral health staff often feel invisible or stigmatized, the importance of leadership visibly supporting learning collaboratives on behavioral health care was also noted (Laderman, PC, 2020).

Leadership responsibility for freeing up the time of staff to participate in a learning collaborative was also highlighted as a best practice, since regular duties and schedules preclude the time and attention necessary to devise and implement an effective change plan (Laderman, PC, 2020; Wells et al., 2018). Leaders are also in a position to provide project funding, technical support, and assistance with information systems and data collection.

A number of collaboratives have offered tracks specifically designed for senior leaders. The NCTSN considers such tracks essential (Amaya-Jackson, PC, 2020). The IPS Learning Community provides training and consultation to state leaders as part of their collaborative and learning community efforts (Becker, PC, 2020).

Length

The optimal length of a collaborative is controversial, particularly as sponsors try to shorten the experience to save cost and reduce burden on participating agencies and their teams. Nadeem et al. (2014) in their systematic review of studies on mental health collaboratives found that they ranged from 9 to 27 months with an average of 14 months and a modal length of 12 months. Everett (PC, 2020) argues that you cannot think about length and intensity without considering the complexity of the intervention. Another perspective is that length is driven largely by the resources available to the sponsor.

Numerous key informants argued that an effective collaborative takes time and that shortening it reduces effectiveness and sustainability (Amaya-Jackson, PC, 2020). IHI collaboratives are reportedly now 18-24 months. The key informants from IHI interviewed for this project argued that it takes this kind of time to bring about change (Laderman, PC, 2020; Reid, PC, 2020). Time is needed, for example, to build a team; conduct pre-work; find and understand the data; learn and implement small PDSAs; learn from improvement efforts; to amend the changes; and implement changes in other parts of an agency.

The NCSMH uses 12-15 months for its collaboratives. Hoover (PC, 2020) argues that a shorter time frame is possible if the goals are narrow. She also envisions the possibility of a sequence of brief collaboratives to improve practice that might attract more participants. Gustafson (PC, 2020) shares this enthusiasm for shorter, more discrete improvement initiatives and has serious concerns that the traditional, lengthy collaborative model outstrips the time, resources, and attention span of many behavioral health agencies.

Lastly, Dixon (PC, 2020) states emphatically that the notion that you can conduct an initiative for 18-24 months and walk away is “absurd,” in part because of staff turnover. An ongoing structure to support sustainability is viewed as essential. The IPS Learning Community embraces the same philosophy in that it is not time-limited (Becker, PC, 2020).

Monitoring Completion and Drop Out Rates

Many best practices have been articulated above that are designed to foster engagement. These can be found under the categories of interpersonal interaction, in person meetings, virtual contacts, participant selection, between meeting activities, and agency leadership involvement. However, completion of specific components of a collaborative and of the collaborative as a whole is virtually never 100%. So, monitoring these variables is a best practice with respect to quality improvement of the collaborative itself.

This review uncovered reported drop-out rates ranging from 6% (Vannoy et al., 2011) to 30% (Øvretveit et al., 2002). Wells et al. (2018) found that studies were tracking completion rates of different activities, such as the initial learning sessions, between session calls, and improvement activities occurring at the agency site. The participation of professionals in collaborative-sponsored training activities can also be problematic. In a recently published study of TF-CBT, 80% of clinicians attended all learning sessions, but only 60% met the requirements for participation in consultation calls and only half met all training requirements (Jensen-Doss et al., 2020).

Other Best Practices

Below are a few additional best practices suggested by key informants:

- Be clear about what you don't know and that there are no magic bullets (Schoenwald, PC, 2020).
- Work with front line clinicians and senior leaders (Schoenwald, PC, 2020).
- Help the participating teams work at multiple levels within their organizations (Schoenwald, PC, 2020).
- An interpersonally skilled improvement advisor should liaison with each site (Hoover, PC, 2020).
- The faculty experts (Gustafson, PC, 2020):
 - need to "have been there" with experience of the issues;
 - should also reach out to other sectors or industries for ideas on improvement;
 - break ideas down into bite size pieces; and
 - should sell their ideas by using stories, since data and principles "don't sell much."
- A senior agency leader who is familiar with collaboratives should be part of the team of faculty (Amaya-Jackson, PC, 2020).
- Always work within a trauma-informed framework (Skinstad, PC, 2020).
- Understand and honor the world in which providers exist, weaving realistic expectations into their world (Venkatesh, PC, 2020).
- Meet participating sites where they are and acknowledge that the work is hard (Hoover, PC, 2020).
- Accept the variability in capacity among agencies and use the success of advanced sites to motivate those that are less advanced (Hoover, PC, 2020).
- Do not allow passive participation and insist on engagement and participation early or all is lost (Hoover, PC, 2020).
- Focus on individual agencies and their needs; not just on cross agency discussions (Tondora, PC, 2020).
- Help participants have fun and laugh a lot throughout this process (Hoover, PC, 2020).
- Leverage state support in terms of funding and as a message to providers about the direction that the state is going in terms of quality improvement and implementation of EBPs (Lang, PC, 2020).
- Provide financial support to agencies to facilitate their participation. CMHC and CHC teams in the learning collaborative on integration sponsored by the National Council each received \$10,000.
- Require agencies to contribute financially to the cost of participation as a sign of commitment and a way to enhance engagement (Tondora, PC, 2020).
- Consider providing financial support to participants, but also require them to invest their own resources to build capacity (Becker, PC, 2020).

Health Equity

The various SAMHSA-funded technical assistance centers that focus on culturally diverse populations have offered a broad range of trainings, consultations, and learning communities. Behavioral health providers argue, at times, that a focus on persons with mental health and substance use conditions is, in and of itself, a focus on a population that is diverse and disadvantaged (Laderman, PC, 2020). Amaya-Jackson (PC, 2020) believes that health inequities become glaring when collaboratives inevitably involve agencies working with diverse

and poor populations that lack access to health care, access to that care in their primary language, and access to providers from their culture.

Beyond that, however, there was near universal agreement among the key informants that there has been little attention to issues of health equity, diversity, and inclusion among the learning collaboratives that have been offered. IHI turned its attention to this issue with the release of its white paper, *Achieving Health Equity: A Guide for Health Care Organizations* (Wyatt et al., 2016). Based on a review of the literature, interviews of experts, and site visits to exemplary organizations, this document offers a framework for agencies to improve health equity. The five key components are (Wyatt et al., 2016, p. 5):

- “Make health equity a strategic priority;
- Develop structure and processes to support health equity work;
- Deploy specific strategies to address the multiple determinants of health on which health care organizations can have direct impact, such as health care services, socioeconomic status, physical environment, and healthy behaviors;
- Decrease institutional racism within the organization; and
- Develop partnerships with community organizations to improve health and equity.”

Using this framework, IHI launched a Pursuing Equity Learning and Action Network in October of 2020 with health systems (<http://www.ihio.org/Engage/Initiatives/Pursuing-Equity/Pages/default.aspx>). This is IHI’s first collaborative focused explicitly on this topic. Its goals are to underscore the urgency of eliminating inequities; provide improvement methods and tools for testing and learning solutions; and create a network for sharing learning across organizations, and disseminating results, challenges, and effective improvements.

While collaborative work on health equity is in its infancy, the key informants had much to share in terms of recommendations:

- An equity lens needs to be applied to all quality improvement efforts. Improvement is not occurring if whole groups of people are being left behind (Reid, PC, 2020).
- Focus improvement efforts on specific disease states that uniquely impact diverse groups (Reid, PC, 2020).
- Consider the impact and implications of diversity for every aspect of a collaborative (e.g., what is the population of focus; who are the providers; who should be the faculty; are the expectations reasonable) (Venkatesh, PC, 2020).
- Make the collaborative more accessible to financially strapped agencies by allowing for video application submissions or video interviews in lieu of formal written applications (Venkatesh, PC, 2020).
- The goals and change strategies need to be designed in collaboration with people who are affected by health inequities (Gustafson, PC, 2020; Reid, PC, 2020).
- Equity must be addressed in all aspects of an organization, so health equity collaboratives need involvement from groups such as procurement and supplies, human resources, quality management, etc. This is not typical in traditional collaboratives (Reid, PC, 2020).
- Phased approaches are possible, beginning with an examination of the cultural determinants of health among those being served (Becker, PC, 2020; Hoover, PC, 2020).
- Learning collaboratives can be linked to ongoing learning communities on this topic to foster and sustain change (Orobitg, PC, 2020).

- Collaboratives can draw from work conducted by the National Network to Eliminate Disparities in Behavioral Health (NNED; <https://nned.net>) (Orobitg, PC, 2020).
- Given how people who have mental health conditions and are diverse have been treated in society, long-term engagement with diverse populations is necessary to build trust (Skinstad, PC, 2020).
- Community-based participatory planning and evaluation should be the gold standard in addressing health equity with diverse populations (Skinstad, PC, 2020).
- Connecting individuals to their communities should always be a goal (Skinstad, PC, 2020).
- Learning collaboratives can be used as a vehicle to provide support for professionals working with diverse communities since these individuals are often isolated from other professionals (Skinstad, PC, 2020).
- Learning collaborative faculty who are from the diverse population of focus can serve as powerful role models for professionals from that population (Skinstad, PC, 2020).
- Faculty who are not from the population of focus need to be educated about the population before beginning the work (Skinstad, PC, 2020).
- Information to be used in collaboratives on improving the care of diverse populations must be adapted to the populations, recognizing that no two diverse groups are fully alike (Skinstad, PC, 2020).

Workforce Issues

The behavioral health workforce was not an explicit focus of this review other than that improving quality involves shaping what healthcare providers do. No questions were asked about workforce turnover, but it appeared repeatedly as a major impediment to quality of care, quality improvement, and the successful conduct of learning collaboratives.

In the NCTSN collaboratives on TF-CBT, Amaya-Jackson (PC, 2020) stated that turnover among participating staff routinely happened before the collaboratives could even get started. In a report on the use of learning collaboratives statewide in Connecticut to implement and improve the quality of TF-CBT, Lang et al. (2017) reported that turnover among participating clinicians was 26.3% annually. Vannoy et al. (2011) identified staff turnover as an obstacle in their learning collaborative on integrated care.

Skinstad (PC, 2020) indicated that the high turnover in native communities is a significant challenge to sustaining learning collaboratives over time. Reed and Card (2016) listed staff turnover as a barrier to the successful completion of PDSA cycles. Laderman (PC, 2020) identified it as a contributor to the erosion of gains achieved during a collaborative. Turnover, and the need to train new staff, was also one of the reasons listed by Dixon (PC, 2020) for establishing ongoing collaboratives or networks for improvement. No other best practices were identified for addressing this issue, though Thackeray et al. (2019) listed the need to anticipate and plan for turnover as *Lesson 1* from conducting multicenter quality improvement collaboratives.

Alternatives

Learning collaboratives are certainly not the only approach to quality improvement or implementation, nor have they been compared with much frequency to other approaches. It is worth noting possible alternatives to collaboratives as identified in the literature and by the key informants.

The field of implementation science, with over 60 models and frameworks, examines strategies and factors that help move evidence-based practices into use (e.g., Albers et al., 2017; Brownson et al., 2017; Dixon & Patel, 2020; Eccles & Mittman, 2006; Tabak et al., 2012) and was mentioned by numerous key informants (Amaya-Jackson, PC, 2020; Schoenwald, PC, 2020; Skinstad, PC, 2020). Implementation strategies are the training and technical assistance methods used to help achieve change. For example, creating a learning collaborative was identified as *one* of 73 discrete strategies in the project *Expert Recommendations for Implementing Change* (ERIC) (Powell et al., 2015). In a similar vein, Moussa et al. (2019) identified 51 *change facilitation strategies* for improving healthcare, which were culled from a review of the literature.

A number of other implementation strategies, alone or in combination, were mentioned by key informants as alternatives to learning collaboratives, such as coaching, audit and feedback, Lean Six Sigma (Nadeem et al., 2014), and quality improvement implemented at the individual agency level with expert consultation (Everett, PC, 2020). Implementation facilitation encompasses a bundle of implementation strategies including coaching, implementation teams, and consensus building (e.g., Becker, PC, 2020; Ritchie et al., 2017). Project ECHO is a guided practice model that is drawing considerable interest (Everett, PC, 2020; Venkatesh, PC, 2020). It uses a hub and spoke tele-mentoring approach in which expert teams lead virtual clinics to improve the ability of providers to implement best practices in care, particularly in underserved communities (<https://hsc.unm.edu/echo/>). The National Council has been working for five years to implement *communities of practice* informed by a detailed online manual for operating these communities, which was developed by the CDC (<http://medbox.iab.me/modules/en-cdc/www.cdc.gov/phcommunities/resourcekit/intro/index.html>.) Others have been exploring the use of *community development teams* (Saldana & Chamberlain, 2012) to create peer networks that foster improvement and implementation (Nadeem, PC, 2020).

Summary of Selected Findings on Learning Collaboratives

Having completed this broad review, the following are offered as some of the most important findings:

1. The traditional IHI Breakthrough Series (BTS) learning collaborative model has been fairly well-defined, broadly disseminated, and widely adopted around the world.
2. Currently, the term 'learning collaborative' is often used loosely as a label for efforts at quality improvement and implementation that tend *not* to be well-defined or described.
3. There is evidence in general healthcare, albeit imperfect, for the effectiveness of traditional learning collaboratives in improving provider practices and health outcomes.
4. There is evidence in general healthcare and strong agreement among experts that learning collaboratives are likely more effective in improving provider practices and health outcomes than low intensity interventions such as lectures, workshops, and webinars.
5. In behavioral health, learning collaboratives have been implemented frequently to address a broad range of topics and there are exceptional examples of large scale and high quality implementation of the traditional learning collaborative model.

6. The body of research is growing, though there are few randomized, controlled studies evaluating the effectiveness of learning collaboratives in behavioral health.
7. Experts have emphasized the elements of learning collaboratives that they deem most important, though the limited amount of research on this issue has yet to consistently show that any specific element has greater impact than others.
8. The time-limited nature of traditional learning collaboratives creates challenges for sustainability, which have been addressed by linking collaboratives to ongoing learning communities.
9. Health equity has received little attention among learning collaboratives in general healthcare or behavioral health, though it is emerging as a major imperative.
10. There is a wealth of resources and expert recommendations available on best practices in conducting learning collaboratives.

Recommendations for Technical Assistance Providers

Based on the findings of this review, the following recommendations are offered for consideration by organizations that provide technical assistance (TA). General recommendations that apply to all TA appear first, followed by recommendations specific to learning collaboratives.

For any TA initiatives:

1. Adopt an explicit framework for clarifying your technical assistance goals and selecting the strategies to accomplish those goals.
2. Ensure that actual improvements in health care quality and health outcomes are among your goals.
3. Adopt a model for improvement or logic model that explicitly identifies how planned changes will lead to desired outcomes and those outcomes will be measured.
4. Be guided by the evidence on how to promote improvement, but do not be paralyzed by the imperfections in the evidence.
5. Make health equity the lens through which all work on improvement and implementation is conducted.
6. Measure the impact of your initiatives by examining participant satisfaction, practice change, health outcomes, cost benefit, and sustainability.

For learning collaboratives specifically:

7. Consider using a traditional IHI BTS learning collaborative as a strategy if there are clear evidence-based practices to promote and sufficient resources and provider interest to make this approach viable.

8. In designing a learning collaborative, draw from the key elements that have been identified by IHI and through systematic reviews of research on collaboratives.
9. Consider variants of a learning collaborative, like learning networks or learning communities, if the evidence-base is less clear or resources and provider interest are less robust.
10. Link time-limited collaboratives to ongoing structures or networks to promote sustainability.
11. Build knowledge of learning collaboratives within your TA organization and the capacity to offer collaboratives using internal talent (your staff) or partnerships with other experts and organizations.
12. Draw on the wealth of resources that are readily available to build internal capacity on learning collaboratives (see Resources on Planning and Conducting Learning Collaboratives, a supplement to this report at <https://mhttcnetwork.org/centers/mhrtc-network-coordinating-office/training>).
13. Document in detail the learning collaboratives you offer and what was learned from them in order to maximize the value of your efforts to the field.

Conclusion

There is no doubt that learning collaboratives are viewed as a “heavy lift” involving significant costs, time, and effort (Nadeem, PC, 2020). In an article on engaging individuals in learning collaboratives, Jensen-Doss et al. (2020) suggested that we must “...reconcile the fact that less intensive training methods, such as one-time workshops, are feasible for participants, yet generally ineffective for creating sustained practice change, whereas more intensive, more effective training methods are challenging for many providers to complete” (p. 288-289). With respect to the ability of organizations to participate in quality initiatives, Reed and Card (2016) have written that “inadequate human resources and financial support doom many [quality] projects to fail and also undermine organizational culture, contributing to change fatigue and disillusionment as yet another project produces no real improvement” (p. 151).

Learning collaboratives are not appropriate for everyone. The role of a technical assistance provider is to select agencies and individuals who have the ability to participate effectively. At the same time, there is little justification for leaving the remainder behind, offered only brief informational opportunities that have little chance of improving what providers do and the health outcomes for those that they serve. This is of special concern since those left behind are most likely to be the safety net providers and the culturally diverse communities that they serve.

There are creative models and a wealth of resources available to inform efforts at using learning collaboratives and other comprehensive strategies to improve practice and health. Efforts are needed to apply these models effectively and to advocate that our communities and the providers that serve them have the resources and supports necessary to be part of these solutions.

References

- Albers, B., Mildon, R., Lyon, A. R., & Shlonsky, A. (2017). Implementation frameworks in child, youth and family services – Results from a scoping review. *Children and Youth Services Review, 81*, 101-116. <https://doi.org/10.1016/j.childyouth.2017.07.003>
- Amaya-Jackson, L., Hagele, D., Sideris, J., Potter, D., Briggs, E. C., Keen, L., Murphy, R. A., Dorsey S., Patchett, V., Ake, G. S., & Socolar, R. (2018). Pilot to policy: Statewide dissemination and implementation of evidence-based treatment for traumatized youth. *BMC Health Services Research, 18*(589). <https://doi.org/10.1186/s12913-018-3395-0>
- Baum, R. A., King, M. A., & Wissow, L. S. (2019). Outcomes of a statewide learning collaborative to implement mental health services in pediatric primary care. *Psychiatric Services, 70*(2), 123-129. <https://doi.org/10.1176/appi.ps.201800163>
- Baum, R. A., Manda, D., Brown, C. M., Anzeljc, S. A., King, M. A., & Duby, J. (2018). A learning collaborative approach to improve mental health service delivery in pediatric primary care. *Pediatric Quality & Safety, 3*(6), e119. <https://dx.doi.org/10.1097%2Fpq9.0000000000000119>
- Becker, D. R., Drake, R. E., Bond, G. R., Nawaz, S., Haslett, W. R., & Martinez, R. A. (2011). Best practices: A national mental health learning collaborative on supported employment. *Psychiatric Services, 62*(7), 704-706. https://doi.org/10.1176/ps.62.7.pss6207_0704
- Bond, G. R., Drake, R. E., Becker, D. R., & Noel, V. A. (2016). The IPS learning community: A longitudinal study of sustainment, quality, and outcome. *Psychiatric Services, 67*(8), 864-869. <https://doi.org/10.1176/appi.ps.201500301>
- Brownson, R. C., Colditz, G. A., & Proctor, E. K. (Eds.). (2017). *Dissemination and implementation research in health: Translating science to practice* (2nd ed.). New York: Oxford University Press.
- Connors, E. H., Smith-Millman, M., Bohnenkamp, J. H., Carter, T., Lever, N., & Hoover, S. A. (2020). Can we move the needle on school mental health quality through systematic quality improvement collaboratives? *School Mental Health, 12*, 478-492. <https://doi.org/10.1007/s12310-020-09374-x>
- Conradi, L., Agosti, J., Tullberg, R., Richardson, L., Langan, H., Ko, S., & Wilson, C. (2011). Promising practices and strategies for using trauma-informed child welfare practice to improve foster care placement stability: A breakthrough series collaborative. *Child Welfare, 90*(6), 207-225.
- Cuijpers, P., Reijndes, M., & Huibers, M. (2019). The role of common factors in psychotherapy outcomes. *Annual Review of Clinical Psychology, 15*, 207-231. <https://doi.org/10.1146/annurev-clinpsy-050718-095424>
- Deming, W. E. (2000). *The new economics for industry, government, and education* (2nd ed.). The MIT Press.
- Dixon, L. B., & Patel, S. R. (2020). The application of implementation science to community mental health. *World Psychiatry, 19*(2), 173-174. <https://doi:10:1002/wps.20731>

Ebert, L., Amaya-Jackson, L., Markiewicz, J. M., Kisiel, C., & Fairbank, J. A. (2012). Use of the breakthrough series collaborative to support broad and sustained use of evidence-based trauma treatment for children in community practice settings. *Administration and Policy in Mental Health*, 39, 187-199. <https://doi.org/10.1007/s10488-011-0347-y>

Eccles, M. P., & Mittman, B. S. (2006). Welcome to implementation science. *Implementation Science*, 1, 1.

Ford, J. H., II., Stumbo, S. P., & Robinson, J. M. (2018). Assessing long-term sustainment of clinic participation in NIATx200: Results and a new methodological approach. *Journal of Substance Abuse Treatment*, 92, 51-63. <https://doi.org/10.1016/j.jsat.2018.06.012>

Franco, L. M., & Marquez, L. (2011). Effectiveness of collaborative improvement: Evidence from 27 applications in 12 less-developed and middle-developed countries. *BMJ Quality & Safety*, 20, 658-665. <https://doi.org/10.1136/bmjqs.2010.044388>

Gustafson, D. H., Quanbeck, A. R., Robinson, J. M., Ford, J. H., II., Pulvermacher, A., French, M. T., McConnell, K. J., Batalden, P. B., Hoffman, K. A., & McCarty, D. (2013). Which elements of improvement collaboratives are most effective? A cluster-randomized trial. *Addiction*, 108(6), 1145-1157. <https://doi.org/10.1111/add.12117>

Hanson, R. F., Saunders, B. E., Ralston, E., Moreland, A. D., Peer, S. O., & Fitzgerald, M. M. (2019). Statewide implementation of child trauma-focused practices using the community-based learning collaborative model. *Psychological Services*, 16(1), 170-181. <http://dx.doi.org/10.1037/ser0000319>

Hanson, R. F., Schoenwald, S., Saunders, B. E., Chapman, J., Palinkas, L. A., Moreland, A. D., & Dopp, A. (2016). Testing the community-based learning collaborative (CBLC) implementation model: A study protocol. *International Journal of Mental Health Systems*, 10(52). <https://doi.org/10.1186/s13033-016-0084-4>

Helseth, S. A., Peer, S. A., Are, F., Korell, A. M., Saunders, B. E., Schoenwald, S. K., Chapman, J. E., & Hanson, R. F. (2020). Sustainment of trauma-focused and evidence-based practices following learning collaborative implementation. *Administration and Policy in Mental Health and Mental Health Services Research*, 47, 569-580. <https://doi.org/10.1007/s10488-020-01024-3>

Hulscher, M. E. J. L., Schouten, L. M. T., Grol, R. P. T. M., & Buchan, H. (2013). Determinants of quality improvement collaboratives: What does the literature show? *BMJ Quality & Safety*, 22, 19-31. <http://dx.doi.org/10.1136/bmjqs-2011-000651>

Institute for Healthcare Improvement. (2003). *The breakthrough series: IHI's collaborative model for achieving breakthrough improvement*. <http://www.ihl.org/resources/Pages/IHIWhitePapers/TheBreakthroughSeriesIHICollaborativeModelforAchievingBreakthroughImprovement.aspx>

Institute of Medicine. (2000). *To err is human: Building a safer health system*. The National Academies Press. <https://doi.org/10.17226/9728>

Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century*. The National Academies Press.

Institute of Medicine. (2006). *Improving the quality of health care for mental and substance-use conditions*. The National Academies Press.

Jensen-Doss, A., Smith, A. M., Walsh, L. M., Mora Ringle, V., Casline, E., Patel, Z., Shaw, A. M., Maxwell, C., Hanson, R., & Webster, R. (2020). Preaching to the choir? Predictors of engagement in a community-based learning collaborative. *Administration and Policy in Mental Health and Mental Health Services Research*, 47(2), 279-290. <https://doi.org/10.1007/s10488-019-00985-4>

Kaufman, L., Lodge, A. C., Daggett, P., & Stevens-Manser, S. (2016). *Using an implementation framework to evaluate person-centered recovery planning in mental health organizations*. Texas Institute for Excellence in Mental Health, School of Social Work, University of Texas at Austin.

Lang, J. M., Randall, K. G., Delaney, M., & Vanderploeg, J. J. (2017). A model for sustaining evidence-based practices in a statewide system. *Families in Society*, 98(1), 18-26. <https://doi.org/10.1606/1044-3894.2017.5>

Langley, G. L., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: A practical approach to enhancing organizational performance* (2nd ed.). Jossey-Bass Publishers.

McCarty, D., Gustafson, D. H., Wisdom, J. P., Ford, J., Choi, D., Molfenter, T., Capoccia, V., & Cotter, F. (2007). The network for the improvement of addiction treatment (NIATx): Enhancing access and retention. *Drug and Alcohol Dependence*, 88(2-3), 138-145. <https://doi.org/10.1016/j.drugalcdep.2006.10.009>

Meredith, L. S., Mendel, P., Pearson, M., Wu, Shin-Yi, Joyce, G., Straus, J. B., Ryan, G., Keeler, E., & Unützer, J. (2006). Implementation and maintenance of quality improvement for treating depression in primary care. *Psychiatric Services*, 57(1), 48-55. <https://doi.org/10.1176/appi.ps.57.1.48>

Moussa, L., Garcia-Cardenas, V., & Benrimoj, S. I. (2019). Change facilitation strategies used in the implementation of innovations in healthcare practice: A systematic review. *Journal of Change Management*, 19(4), 283-301. <https://doi.org/10.1080/14697017.2019.1602552>

Nadeem, E., Olin, S. S., Hill, L. C., Hoagwood, K. E., & Horwitz, S. M. (2013). Understanding the components of quality improvement collaboratives: A systematic literature review. *Milbank Quarterly*, 91(2), 354-394. <https://doi.org/10.1111/milq.12016>

Nadeem, E., Olin, S. S., Hill, L. C., Hoagwood, K. E., & Horwitz, S. M. (2014). A literature review of learning collaboratives in mental health care: Used but untested. *Psychiatric Services*, 65(9), 1088-1099. <https://doi.org/10.1176/appi.ps.201300229>

Ogrinc, G., Davies, L., Goodman, D., Batalden, P., Davidoff, F., & Stevens, D. (2016). Squire 2.0 (standards for quality improvement reporting excellence): Revised publication guidelines from a detailed consensus process. *BMJ Quality & Safety*, 25, 986-992. <https://doi.org/10.1136/bmjqs-2015-004411>

Øvretveit, J., Bate, P., Cleary, P., Cretin, S., Gustafson, D., McInnes, K., McLeod, H., Molfenter, T., Plsek, P., Robert, G., Shortell, S., & Wilson, T. (2002). Quality collaboratives: Lessons from research. *Quality and Safety in Healthcare*, 11(4), 345-351. <https://doi.org/10.1136/qhc.11.4.345>

- Powell, B. J., Waltz, T. J., Chinman, M. J., Damschroder, L. J., Smith, J. L., Matthieu, M. M., Proctor, E. K., & Kirchner, J. E. (2015). A refined compilation of implementation strategies: Results from the expert recommendations for implementing change (ERIC) project. *Implementation Science*, *10*(21). <https://doi.org/10.1186/s13012-015-0209-1>
- Reed, J. E., & Card, A. J. (2016). The problem with plan-do-study-act cycles. *BMJ Quality & Safety*, *25*, 147-152. <https://doi.org/10.1136/bmjqs-2015-005076>
- Ritchie, M. J., Dollar, K. M., Miller, C. J., Oliver, K. A., Smith, J. L., Lindsay, J. A., & Kirchner, J. E. (2017). *Using implementation facilitation to improve care in the Veterans Health Administration (Version 2)*. Veterans Health Administration.
- Saldana, L., & Chamberlain, P. (2012). Supporting implementation: The role of community development teams to build infrastructure. *American Journal of Community Psychology*, *50*(3-4), 334-346. <https://doi.org/10.1007/s10464-012-9503-0>
- Schall, M., Laderman, M., Bamel, D., & Bolender, T. (2020). *Improving behavioral health care in the emergency department and upstream*. Institute for Healthcare Improvement.
- Schouten, L. M. T., Hulsher, M. E. J. L., van Everdingen, J. J. E., Huijsman, R., & Grol, R. P. T. M. (2008). Evidence for the impact of quality improvement collaboratives: Systematic review. *BMJ*, *336*(1491). <https://doi.org/10.1136/bmj.39570.749884.BE>
- Tabak, R. G., Khoong, E. C., Chambers, D., & Brownson, R. C. (2012). Bridging research and practice: Models for dissemination and implementation research. *American Journal of Preventive Medicine*, *43*(3), 337-350. <https://doi.org/10.1016/j.amepre.2012.05.024>
- Thackeray, J. D., Baker, C. A., & Berger, R. P. (2019). Learning from experience: Avoiding common pitfalls in multicenter quality improvement collaboratives. *Pediatric Quality & Safety*, *4*(5), e210. <https://dx.doi.org/10.1097%2Fpq9.0000000000000210>
- Vannoy, S. D., Mauer, B., Kern, J., Girn, K., Ingoglia, C., Campbell, J., Galbreath, L., & Unützer, J. (2011). A learning collaborative of CMHCs and CHCs to support integration of behavioral health and general medical care. *Psychiatric Services*, *62*(7), 753-758. https://doi.org/10.1176/ps.62.7.pss6207_0753
- Wells, S., Tamir, O., Gray, J., Naidoo, D., Bekhit, M., & Goldmann, D. (2018). Are quality improvement collaboratives effective? A systematic review. *BMJ Quality & Safety*, *27*, 226-240. <http://dx.doi.org/10.1136/bmjqs-2017-006926>
- Wyatt, R., Laderman, M., Botwinick, L., Mate, K., & Whittington, J. (2016). *Achieving health equity: A guide for health care organizations*. Institute for Healthcare Improvement.
- Zubkoff, L., Neily, J., & Mills, P. D. (2019). How to do a virtual breakthrough series collaborative. *Journal of Medical Systems*, *43*(27). <https://doi.org/10.1007/s10916-018-1126-z>

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Appendix B Learning Collaboratives in Behavioral Health

Below is a list of published articles on Learning Collaboratives that have been conducted in behavioral health, including mental health and substance use. The principal focus of the search was on Collaboratives described in the published literature between 2010 and 2019. Other relevant reports cited in the references of those articles have been included.

If the focus on the Collaborative is not clear from the title of the publication, key words have been placed in italics after the reference.

Amaya-Jackson, L., Hagele, D., Sideris, J., Potter, D., Briggs, E. C., Keen, L., Murphy, R. A., Dorsey S., Patchett, V., Ake, G. S., & Socolar, R. (2018). Pilot to policy: Statewide dissemination and implementation of evidence-based treatment for traumatized youth. *BMC Health Services Research*, 18(589). <https://doi.org/10.1186/s12913-018-3395-0>

Antonini, V. P., Oeser, B. T., & Urada, D. (2012). The California integration learning collaborative: A forum to address challenges of sud-primary care service integration. *Journal of Psychoactive Drugs*, 44, 285-291. <https://doi.org/10.1080/02791072.2012.718637>

Backer, P. M., Kiser, L. J., Gillham, J. E., & Smith, J. (2015). The Maryland resilience breakthrough series collaborative: A quality improvement initiative for children's mental health services providers. *Psychiatric Services*, 66(8), 778-780. <https://doi.org/10.1176/appi.ps.201500036>

Baum, R. A., King, M. A., & Wissow, L. S. (2019). Outcomes of a statewide learning collaborative to implement mental health services in pediatric primary care. *Psychiatric Services*, 70(2), 123-129. <https://doi.org/10.1176/appi.ps.201800163>

Baum, R. A., Manda, D., Brown, C. M., Anzeljc, S., King, M. A., & DUBY, J. (2018). Building mental wellness: A learning collaborative to improve mental health service delivery in pediatric primary care. *Pediatric Quality & Safety*, 3(6), e119. <https://dx.doi.org/10.1097%2Fpq9.0000000000000119>

Beamish, L., Sagorin, Z., Stanley, C., English, K., Garelnabi, R., Cousineau, D., Barrios, R., & Klimas, J. (2019). Implementation of a regional quality improvement collaborative to improve care of people living with opioid use disorder in a Canadian setting. *BMC Health Services Research*, 19, 663. <https://dx.doi.org/10.1186%2Fs12913-019-4472-8>

Becker, D. R., Drake, R. E., Bond, G. R., Nawaz, S., Haslett, W. R., & Martinez, R. A. (2011). A national mental health collaborative on supported employment. *Psychiatric Services*, 62(7), 704-706. https://doi.org/10.1176/ps.62.7.pss6207_0704

Bond, G. R., Drake, R. E., Becker, D. R., & Noel, V. A. (2016). The IPS learning community: A longitudinal study of sustainment, quality, and outcome. *Psychiatric Services*, 67(8), 864-869. <https://doi.org/10.1176/appi.ps.201500301> [Supported employment]

Bunger, A. C., Hanson, R. J., Doogan, N. J., Powell, B. J., Cao, Y., & Dunn, J. (2016). Can learning collaboratives support implementation by rewiring professional networks? *Administration and Policy in Mental Health and Mental Health Services Research*, 43(1), 79-92. <https://doi.org/10.1007/s10488-014-0621-x> [Trauma-focused CBT with children and youth]

Bunger, A. C., & Lengnick-Hall, R. (2018). Do learning collaboratives strengthen communication? A comparison of organizational team communication networks over time. *Health Care Management Review*, 43(1), 50-60. <https://doi.org/10.1097/hmr.000000000000120> [Trauma-focused CBT with children]

Cavaleri, M. A., Franco, L. M., McKay, M. M., Appel, A., Bannon, W. M., Bigley, M. F., Fazio, M., Gopalan, G., Harrison, M., Salerno, A., & Thaler, S. (2007). The sustainability of a learning collaborative to improve mental health service use among low-income urban youth and families. *Best Practices in Mental Health*, 3(2), 52-61.

Cavaleri, M. A., Gopalan, G., McKay, M. M., Appel, A., Bannon, W. M., Bigley, M. F., Fazio, M., Harrison, M., Nayowith, G., Salerno, A., Sher, T., & Thaler, S. (2006). Impact of a learning collaborative to improve child mental health service use among low-income urban youth and families. *Best Practices in Mental Health*, 2, 67-80.

Cavaleri, M. A., Gopalan, G., McKay, M. M., Messam, T., Velez, E., & Elwyn, L. (2010). The effect of a learning collaborative to improve engagement in child mental health services. *Children and Youth Services Review*, 32(2), 281-285. <https://psycnet.apa.org/doi/10.1016/j.childyouth.2009.09.007>

Child Health and Development Institute of Connecticut. (2019). *Better than usual (care): Evidence-based treatments improve outcomes and reduce disparities for children of color* (Issue Brief No. 71). <https://www.chdi.org/publications/issue-briefs/issue-brief-71-better-usual-care>

Connors, E. H., Smith-Millman, M., Bohnenkamp, J. H., Carter, T., Lever, N., & Hoover, S. A. (2020). Can we move the needle on school mental health quality through systematic quality improvement collaboratives? *School Mental Health*, 12, 478-492. <https://doi.org/10.1007/s12310-020-09374-x>

Conradi, L., Agosti, J., Tullberg, E., Richardson, L., Langan, H., Ko, S., & Wilson, C. (2011). Promising practices and strategies for using trauma-informed child welfare practice to improve foster care placement stability: A breakthrough series collaborative. *Child Welfare*, 90(6), 207-225.

Covell, N. H., Foster, F. P., Margolies, P. J., Lopez, L. O., & Dixon, L. B. (2015). Using distance technologies to facilitate a learning collaborative to implement stagewise treatment. *Psychiatric Services*, 66(6), 645-648. <https://doi.org/10.1176/appi.ps.201400155>

Crèvecoeur-MacPhail, D., Bellows, A., Rutkowski, B. A., Ransom, L., Myers, A. C., & Rawson, R. A. (2010). I've been NIATxed: Participants' experience with process improvement. *Journal of Psychoactive Drugs*, 42(6), 249-259. <https://doi.org/10.1080/02791072.2010.10400548>

Dopp, A. R., Hanson, R. F., Saunders, B. E., Dismuke, B. E., & Moreland, A. D. (2017). Community-based implementation of trauma-focused interventions for youth: Economic impact of the learning collaborative model. *Psychological Services*, 14(1), 57-65. <http://dx.doi.org/10.1037/ser0000131>

Duffy, F. F., Chung, H., Trivedi, M., Rae, D. S., Regier, D. A., & Katzelnick, D. J. (2008). Systematic use of patient-rated depression severity monitoring: Is it helpful and feasible in clinical psychiatry? *Psychiatric Services*, 59(10), 1148-1154. <https://doi.org/10.1176/ps.2008.59.10.1148>

Ebert, L., Amaya-Jackson, L., Markiewicz, J. M., Kisiel, C., & Fairbank, J. A. (2012). Use of the breakthrough series collaborative to support broad and sustained use of evidence-based trauma treatment for children in community practice settings. *Administration and Policy in Mental Health*, 39(3), 187-199. <https://doi.org/10.1007/s10488-011-0347-y>

Epstein, J. N., Langberg, J. M., Lichtenstein, P. K., Altaye, M., Brinkman, W. B., House, K., & Stark, L. J. (2010). Attention-deficit/hyperactivity disorder outcomes for children treated in community-based pediatric settings. *Archives of Pediatrics and Adolescent Medicine*, 164(2), 160-165. <https://doi.org/10.1001/archpediatrics.2009.263>

Epstein, J. N., Langberg, J. M., Lichtenstein, P. K., Kolb, R., & Stark, L. J. (2010). Sustained improvement in pediatricians' ADHD practice behaviors in the context of a community-based quality improvement initiative. *Children's Health Care*, 39(4), 296-311. <https://psycnet.apa.org/doi/10.1080/02739615.2010.515931>

Epstein, J. N., Langberg, J. M., Lichtenstein, P. K., Mainwaring, B. A., Luzader, C. P., & Stark, L. J. (2008). Community-wide intervention to improve the attention-deficit/hyperactivity disorder assessment and treatment practices of community physicians. *Pediatrics*, 122(1), 19-27. <https://doi.org/10.1542/peds.2007-2704>

Fields, D., Knudsen, H. K., & Roman, P. M. (2016). Implementation of Network for the Improvement of Addiction Treatment (NIATx) processes in substance use disorder treatment centers. *Journal of Behavioral Health Services & Research*, 43(3), 354-365. <https://dx.doi.org/10.1007%2Fs11414-015-9466-7>

Ford, J. H., II., Osborne, E. L., Assefa, M. T., McIlvaine, A. M., King, A. M., Campbell, K., & McGovern, M. P. (2018). Using NIATx strategies to implement integrated services in routine care: A study protocol. *BMC Health Services Research*, 18(1), 431. <https://doi.org/10.1186/s12913-018-3241-4>

Ford, J. H., II., Stumbo, S. P., & Robinson, J. M. (2018). Assessing long-term sustainment of clinic participation in NIATx200: Results and a new methodological approach. *Journal of Substance Abuse Treatment*, 92, 51-63. <https://doi.org/10.1016/j.jsat.2018.06.012>

Gadomski, A. M., Wissow, L. S., Palinkas, L., Hoagwood, K. E., Daly, J. M., & Kaye, D. L. (2014). Encouraging and sustaining integration of child mental health into primary care: Interviews with primary care providers participating in Project TEACH (CAPES and CAP PC) in NY. *General Hospital Psychiatry*, 36(6), 555-562. <https://doi.org/10.1016/j.genhosppsych.2014.05.013>

Gustafson, D. H., Quanbeck, A. R., Robinson, J. M., Ford, J. H., II., Pulvermacher, A., French, M. T., McConnell, K. J., Batalden, P. B., Hoffman, K. A., & McCarty, D. (2013). Which elements of improvement collaboratives are most effective? A cluster-randomized trial. *Addiction*, 108(6), 1145-1157. <https://doi.org/10.1111/add.12117>

Haine-Schlagel, R., Brookman-Frazee, L., Janis, B., & Gordon, J. (2013). Evaluating a learning collaborative to implement evidence-informed engagement strategies in community-based services for young children. *Child Youth Care Forum*, 42(5), 457-473.

<https://dx.doi.org/10.1007%2Fs10566-013-9210-5>

Hanson, R. F., Saunders, B. E., Peer, S. O., Ralston, E., Moreland, A. D., Schoenwald, S., & Chapman, J. (2018). Community-based learning collaboratives and participant reports of interprofessional collaboration, barriers to, and utilization of child trauma services. *Children and Youth Services Review*, 94, 306-314. <https://doi.org/10.1016/j.chidyouth.2018.09.038>

Hanson, R. F., Saunders, B. E., Ralston, E., Moreland, A. D., Peer, S. O., & Fitzgerald, M. M. (2019). Statewide implementation of child trauma-focused practices using the community-based learning collaborative model. *Psychological Services*, 16(1), 170-181.

<https://dx.doi.org/10.1037/ser0000319>

Hanson, R. F., Schoenwald, S., Saunders, B. E., Chapman, J., Palinkas, L. A., Moreland, A. D., & Dopp, A. (2016). Testing the community-based learning collaborative (CBLC) implementation model: A study protocol. *International Journal of Mental Health Systems*, 10(52).

<https://doi.org/10.1186/s13033-016-0084-4> [Trauma-focused CBT with youth]

Helseth, S. A., Peer, S. A., Are, F., Korell, A. M., Saunders, B. E., Schoenwald, S. K., Chapman, J. E., & Hanson, R. F. (2020). Sustainment of trauma-focused and evidence-based practices following learning collaborative implementation. *Administration and Policy in Mental Health and Mental Health Services Research*, 47, 569-580. <https://doi.org/10.1007/s10488-020-01024-3>

Hoffman, K. A., Ford, J. H., II., Choi, D., Gustafson, D. H., & McCarty, D. (2008). Replication and sustainability of improved access and retention within the Network for the Improvement of Addiction Treatment. *Drug and Alcohol Dependence*, 98(102), 63-69.

<https://dx.doi.org/10.1016%2Fj.drugalcdep.2008.04.016>

Jensen-Doss, A., Smith, A. M., Walsh, L. M., Mora Ringle, V., Casline, E., Patel, Z., Shaw, A. M., Maxwell, C., Hanson, R., & Webster, R. (2020). Preaching to the choir? Predictors of engagement in a community-based learning collaborative. *Administration and Policy in Mental Health and Mental Health Services Research*, 47(2), 279-290. <https://doi.org/10.1007/s10488-019-00985-4> [Trauma-focused CBT with children]

Katzelnick, D. J., Von Korff, M., Chung, H., Provost, L. P., & Wagner, E. H. (2005). Applying depression-specific change concepts in a collaborative breakthrough series. *Joint Commission Journal on Quality and Patient Safety*, 31(7), 386-397. [https://doi.org/10.1016/s1553-7250\(05\)31052-x](https://doi.org/10.1016/s1553-7250(05)31052-x)

Kaufman, L., Lodge, A. C., Daggett, P., & Stevens-Manser, S. (2016). *Using an implementation framework to evaluate person-centered recovery planning in mental health organizations*. Texas Institute for Excellence in Mental Health, School of Social Work, University of Texas at Austin.

Kilbourne, A. M., Goodrich, D. E., Nord, K. M., Van Poppelen, C., Kyle, J., Bauer, M. S., Waxmonsky, J. A., Lai, Z., Kim, H. M., Eisenberg, D., & Thomas, M. R. (2015). Long-term clinical outcomes from a randomized controlled trial of two implementation strategies to promote collaborative care attendance in community practices. *Administration and Policy in Mental Health*, 42(5), 642-653. <https://doi.org/10.1007/s10488-014-0598-5> [Collaborative care model for bipolar disorder]

King, M. A., Wissow, L. S., & Baum, R. A. (2018). The role of organizational context in the implementation of a statewide initiative to integrate mental health services into pediatric primary care. *Health Care Management Review, 43*(3), 206–217.

<https://doi.org/10.1097/hmr.000000000000169>

Kopelovich, S. L., Hughes, M., Monroe-DeVita, M. B., Peterson, R., Cather, C., & Gottlieb, J. (2019). Statewide implementation of cognitive behavioral therapy for psychosis through a learning collaborative model. *Cognitive and Behavioral Practice, 26*(3), 439-452.

<https://doi.org/10.1016/j.cbpra.2018.08.004>

Lang, J., & Bory, C. (2015). Statewide implementation & sustainment of evidence-based treatment using learning collaboratives: A five-year mixed-methods study. *Implementation Science, 10*(Suppl 1), A78. <https://dx.doi.org/10.1186%2F1748-5908-10-S1-A78> [Trauma-focused CBT with children]

Lang, J. M., Franks, R. P., Epstein, C., Stover, C., & Oliver, J. A. (2015). Statewide dissemination of an evidence-based practice using breakthrough series collaboratives. *Children and Youth Services Review, 55*, 201-209. <https://doi.org/10.1016/j.childyouth.2015.06.005> [Trauma-focused CBT with children]

Lang, J. M., Randall, K. G., Delaney, M., & Vanderploeg, J. J. (2017). A model for sustaining evidence-based practices in a statewide system. *Families in Society, 98*(1), 18-26.

<https://doi.org/10.1606/1044-3894.2017.5>

LoSavio, S. T., Dillon, K. H., Murphy, R. A., Goetz, K., Houston, F., & Resick, P. A. (2019). Using a learning collaborative model to disseminate cognitive processing therapy to community-based agencies. *Behavior Therapy, 50*(1), 36-49. <https://doi.org/10.1016/j.beth.2018.03.007>

MacDonald-Wilson, K. L., Hutchinson, S. L., Karpov, I., Wittman, P., & Deegan, P. E. (2017). A successful implementation strategy to support adoption of decision making in mental health services. *Community Mental Health Journal, 53*(3), 251-256. <https://doi.org/10.1007/s10597-016-0027-1>

MacDonald-Wilson, K. L., & Nemecek, P. B. (2015). Education and training column: The learning collaborative. *Psychiatric Rehabilitation Journal, 38*(1), 96-98.

<https://doi.org/10.1037/prj0000126>

Margolies, P. J., Broadway-Wilson, K., Gregory, R., Jewell, T. C., Scannevin, G., Myers, R. W., Fernandez, H. A., Ruderman, D., McNabb, L., Chiang, I., Marino, L., & Dixon, L. B. (2015). Use of learning collaboratives by the center for practice innovations to bring IPS to scale in New York state. *Psychiatric Services, 66*(1), 4-6. <https://doi.org/10.1176/appi.ps.201400383> [Collaborative model for supported employment]

McCarty, D., Gustafson, D. H., Wisdom, J. P., Ford, J., Choi, D., Molfenter, T., Capoccia, V., & Cotter, F. (2007). The network for the improvement of addiction treatment (NIATx): Enhancing access and retention. *Drug and Alcohol Dependence, 88*(2-3), 138-145.

<https://doi.org/10.1016/j.drugalcdep.2006.10.009>

Meredith, L. S., Mendel, P., Pearson, M., Wu, S., Joyce, G., Straus, J. B., Ryan, G., Keeler, E., & Unützer, J. (2006). Implementation and maintenance of quality improvement for treating

depression in primary care. *Psychiatric Services*, 57(1), 48-55.
<https://doi.org/10.1176/appi.ps.57.1.48>

Metz, M. J., Veerbeek, M. A., Franx, G. C., van der Feltz-Cornelis, C. M., de Beurs, E., & Beekman, A. T. F. (2017). A national quality improvement collaborative for the clinical use of outcome measurement in specialized mental healthcare: Results from a parallel group design and a nested cluster randomised controlled trial. *BJPsych Open*, 3(3), 106-112.
<https://doi.org/10.1192/bjpo.bp.116.004366>
 [Dutch use of routine outcome monitoring]

Miller, O. A., & Ward, K. J. (2008). Emerging strategies for reducing racial disproportionality and disparate outcomes in child welfare: The results of a national breakthrough series collaborative. *Child Welfare*, 87(2), 211-240.

Nadeem, E., Weiss, D., Olin, S., Hoagwood, K. E., & Horwitz, S. M. (2016). Using a theory-guided learning collaborative model to improve implementation of EBPs in a state children's mental health system: A pilot study. *Administration and Policy in Mental Health*, 43(6), 978-990.
<https://doi.org/10.1007/s10488-016-0735-4>

Okafor, M., Ede, V., Kinuthia, R., & Satcher, D. (2018). Explication of a behavioral health-primary care integration learning collaborative and its quality improvement implications. *Community Mental Health Journal*, 54(4), 1109-115. <https://doi.org/10.1007/s10597-017-0230-8>

Pankow, J., Willett, J., Yang, Y., Swan, H., Dembo, R., Burdon, W., Patterson, Y., Pearson, F. S., Belenko, S., & Frisman, L. K. (2018). Evaluating fidelity to a modified NIATx process improvement strategy for improving HIV services in correctional facilities. *Journal of Behavioral Health Services & Research*, 45(2), 187-203. <https://dx.doi.org/10.1007%2Fs11414-017-9551-1>

Quanbeck, A. R., Madden, L., Edmundson, E., Ford, J. H., II., McConnell, K. J., McCarty, D., & Gustafson, D. H. (2012). A business case for quality improvement in addiction treatment: Evidence from the NIATx collaborative. *Journal of Behavioral Health Services & Research*, 39(1), 91-100. <https://dx.doi.org/10.1007%2Fs11414-011-9259-6>

Roosa, M., Scripa, J. S., Zastowny, T. R., & Ford, J. H., II. (2011). Using a NIATx based local learning collaborative for performance improvement. *Evaluation and Program Planning*, 34(4), 390-398. <https://dx.doi.org/10.1016%2Fj.evalprogplan.2011.02.006>

Rutkowski, B. A., Gallon, S., Rawson, R. A., Freese, T. E., Bruel, A., Crèvecoeur-MacPhail, D., Sugita, W., Molfenter, T., & Cotter, F. (2010). Improving client engagement and retention in treatment: The Los Angeles County experience. *Journal of Substance Abuse Treatment*, 39(1), 78-86. <https://doi.org/10.1016/j.jsat.2010.03.015> [Implementation of the NIATx model of process improvement among substance use treatment]

Saldana, L., & Chamberlain, P. (2012). Supporting implementation: The role of community development teams to build infrastructure. *American Journal of Community Psychology*, 50(3-4), 334-346. <https://doi.org/10.1007/s10464-012-9503-0>

Stephan, S. H., Connors, E. H., Arora, P., & Brey, L. (2013). A learning collaborative approach to training school-based health providers in evidence-based mental health treatment. *Children and Youth Services Review*, 35(12), 1970-1978.
<https://doi.org/10.1016/j.childyouth.2013.09.008>

Stephan, S., Mulloy, M., & Brey, L. (2011). Improving collaborative mental health care by school-based primary care and mental health providers. *School Mental Health*, 3, 70-80. <https://doi.org/10.1007/s12310-010-9047-0>

Strating, M. M. H., Broer, T., van Rooijen, S., Bal, R. A., & Nieboer, A. P. (2012). Quality improvement in long-term mental health: Results from four collaboratives. *Journal of Psychiatric and Mental Health Nursing*, 19(5), 379-388. <https://doi.org/10.1111/j.1365-2850.2011.01802.x>

Thackeray, J., Crane, D., Fontanella, C., Sorter, M., Baum, R., & Applegate, M. (2018). A Medicaid quality improvement collaborative on psychotropic medication prescribing for children. *Psychiatric Services*, 69(5), 501-504. <https://doi.org/10.1176/appi.ps.201700547>

Van Duin, D., Franx, G., Van Wijngaarden B., Van Der Gaag, M., Van Weeghel, J., Slooff, C., & Wensing, M. (2013). Bridging the science-to-service gap in schizophrenia care in the Netherlands: The schizophrenia quality improvement collaborative. *International Journal for Quality in Health Care*, 25(6), 626-632. <https://doi.org/10.1093/intqhc/mzt072>

Vannoy, S. D., Mauer, B., Kern, J., Kamaljeet, G., Ingoglia, C., Campbell, J., Galbreath, L., & Unützer, J. (2011). A learning collaborative of CMHCs and CHCs to support integration of behavioral health and general medical care. *Psychiatric Services*, 62(7), 753-758. https://doi.org/10.1176/ps.62.7.pss6207_0753

Versteeg, M. H., Laurant, M. G. H., Franx, G. C., Jacobs, A. J., & Wensing, M. J. P. (2012). Factors associated with the impact of quality improvement collaboratives in mental healthcare: An exploratory study. *Implementation Science*, 7:1. <https://doi.org/10.1186/1748-5908-7-1> [Implementing multidisciplinary practice guidelines in the Netherlands]