

# Measuring Costs to Community-Based Agencies for Implementation of an Evidence-Based Practice

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## Abstract

*Healthcare reform has led to an increase in dissemination of evidence-based practices. Cost is frequently cited as a significant yet rarely studied barrier to dissemination of evidence-based practices and the associated improvements in quality of care. This study describes an approach to measuring the incremental, unreimbursed costs in staff time and direct costs to community-based clinics implementing an evidence-based practice through participating in a learning collaborative. Initial implementation costs exceeding those for providing “treatment as usual” were collected for ten clinics implementing trauma-focused cognitive behavioral therapy through participation in 10-month learning collaboratives. Incremental implementation costs of these ten community-based clinic teams averaged the equivalent of US\$89,575 (US\$ 2012). The most costly activities were training, supervision, preparation time, and implementation team meetings. Recommendations are made for further research on implementation costs, dissemination of evidence-based practices, and implications for researchers and policy makers.*

## Introduction

There has been great interest in the dissemination and implementation (D&I) of evidence-based practices (EBPs) in health and mental health over the past several decades. Dissemination generally refers to an “active approach of spreading evidence-based interventions to the target audience via determined channels using planned strategies” (spreading a practice to multiple sites), while implementation is the “process of putting to use or integrating evidence-based interventions within

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a setting” (putting the practice in place within a site).<sup>1(p. 339)</sup> These efforts have accelerated with the passing of the Patient Protection and Affordable Care Act, which promises to increase access to mental health services while also improving quality and efficiency of patient care. Despite the rapidly increasing number of EBPs being developed, successful dissemination of these models to community settings—and subsequent improvements in public health—has been limited.<sup>2,3</sup> The field of implementation science has emerged to address these challenges, and there are now over 60 different models and frameworks for D&I research.<sup>1</sup> However, little is known about the costs of EBP dissemination,<sup>4,5</sup> and very little research exists specifically about the costs to community mental health agencies implementing EBPs. This paper describes an approach to documenting implementation costs to child outpatient clinics at community mental health agencies (hereafter referred to as “clinics”) participating in a year-long statewide dissemination of Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)<sup>6</sup> through learning collaboratives.

D&I cost evaluation differs from traditional economic evaluations of interventions. Traditional economic evaluations are designed to describe or compare the costs associated with delivering one or more *interventions*, while economic evaluations of D&I are used to determine the costs of one or more *D&I strategies* used to deploy an intervention.<sup>7</sup> Thus, the primary question addressed by D&I cost research is to identify the most cost-effective methods of disseminating and implementing an EBP (e.g., a stand-alone training, training and ongoing consultation, or use of “branded” D&I strategies such as Breakthrough Series Collaboratives or community development teams).<sup>7</sup> Proctor et al. note that D&I costs vary based on three factors: the complexity of the *intervention* being implemented, the *D&I strategy* used, and the *setting* in which the intervention is implemented.<sup>4</sup> D&I costs also vary across stages of implementation, which are typically conceptualized as adoption/preparation or pre-implementation (preparatory work prior to implementation), implementation (the initial process of putting the program into practice), and sustainment (continued delivery of the program over time).<sup>8,9</sup> The pre-implementation and implementation stages typically require more intensive one-time efforts to install the program; costs incurred in these stages are similar to the notion of “start-up” costs in traditional economic evaluation. The goal of the current study was to describe the incremental EBP implementation costs, or the costs that exceed those for providing “treatment as usual.” Thus, the current study describes incremental costs to outpatient clinics (the setting) to deploy TF-CBT (the intervention) through participation in a learning collaborative (the D&I approach).

Recent efforts to improve the quality and reduce costs of healthcare have fueled the development of efficacious interventions, and there is increasing research showing that many EBPs are cost-effective. For example, a number of EBPs for children suffering from behavioral health problems have been shown to reduce future costs of healthcare, criminal justice involvement, lost work productivity, and other social costs.<sup>10–12</sup> Despite this growing evidence that EBPs can be cost-effective over time, upfront or initial installation costs are frequently cited as a major barrier to the dissemination of EBPs.<sup>8,13,14</sup> These costs vary by D&I approach and quantity of training/consultation provided and may include costs of external trainers and consultants, internal staff time (e.g., for training, consultation, data collection and reporting, additional supervision, and fidelity monitoring), and costs for travel, books, and other required materials. Aarons et al. found that, among a diverse group of stakeholders, cost was cited as the most significant and least modifiable barrier to EBP implementation.<sup>14</sup> Sigel et al. estimated that the average cost to funders of 13 large-scale initiatives to disseminate TF-CBT<sup>15</sup> was approximately US\$500,000 annually (incremental pre-implementation and implementation costs).<sup>16</sup> While economists sometimes argue that initial D&I or “start-up” costs are of limited value in economic evaluation, others note that initial D&I costs are important for determining adoption and feasibility and that the relative costs of different D&I strategies are important for decision makers charged with determining *which D&I strategy* to use to deploy an EBP as well as *which EBP* to deploy.<sup>4,13</sup>

The cost estimates of large-scale dissemination efforts such as those described by Sigel et al.<sup>16</sup> are often based on the total amount of funding support through grant or contract expenses to the

disseminating agency (dissemination costs). These estimates typically include costs of model developers or an intermediary organization<sup>17</sup> that is charged with overseeing dissemination and may include trainers and other consultants, training costs, data collection, evaluation, and supplies. However, the grant or contract cost of a large-scale dissemination rarely includes additional staff time and costs incurred by the clinics trained to implement the model (implementation costs), even if the training and consultation are offered at no cost to the clinics, such as through a grant. For example, even if the costs of an external trainer are covered, the time for clinicians at the clinic to attend training (and the resulting lost billing revenue for the agency) is not often covered. The focus of this paper is on measuring these implementation costs.

Many of the costs associated with implementation are borne by the clinics whose staff are trained to deliver the EBP.<sup>18</sup> Yet it is notable that virtually none of the cost savings attributed to EBPs—future reductions in healthcare utilization, improved work productivity, and decreases in crime—are realized by the clinics. Clinics may struggle with absorbing these additional costs even if their leadership and staff are committed to implementing EBPs. For example, staff may need to attend training (including travel time and expenses), consult with trainers, review model materials, provide or receive model-specific supervision, collect and report assessment or implementation data, modify electronic health records or other data systems, provide quality assurance, modify agency practices and policies, and educate other agency staff or external partners about the EBP. These activities require additional staff time that may negatively impact the clinic in the form of lost revenue. In many states, the reimbursement rates (including Medicaid rates) for mental health services have remained flat or declined, and, despite the push to expand EBP availability, clinics are rarely paid more for the use of EBPs than “treatment as usual”.<sup>19</sup> The incremental costs of EBP implementation, in the absence of significant cost savings or enhanced reimbursement rates, are a significant barrier for clinics seeking to implement or sustain EBPs, and thus for national efforts to disseminate EBPs and improve healthcare.

Measuring implementation costs is an important component of D&I evaluations so alternative EBPs and implementation strategies can be compared.<sup>4</sup> For example, EBPs vary significantly in their requirements for implementation, including the amount and format of training and consultation required, data reporting requirements, and how service delivery is aligned with reimbursement mechanisms. Similarly, dissemination methodologies—or the strategies used to spread an EBP across a number of settings—can vary dramatically. For example, methods can vary in the frequency and duration of training and consultation, data reporting requirements, and the number and role of staff participating. Understanding these costs is ultimately necessary to inform funding and policy decisions about EBP dissemination (which EBPs are disseminated and the dissemination methods used) and reimbursement rates (to adequately reimburse clinics for delivering the EBP). However, while economic evaluations have been reported for behavioral health and substance use services more broadly,<sup>20,21</sup> there is limited data documenting the costs to clinics of child behavioral health EBP implementation generally nor of specific implementation approaches. In one of the only published examples, Saldana et al. reported the average costs to 53 sites implementing Multidimensional Treatment Foster Care (MTFC) using two different D&I approaches, community development teams and individual implementation.<sup>13</sup> Saldana et al. reported costs by participating providers in terms of staff time in hours and fees charged by the purveyor organization. The authors noted the dearth of research on cost evaluations of D&I approaches for EBPs and recommended similar analyses of a range of EBPs and D&I strategies.

One important distinction among EBPs for measuring costs is whether the model requires “specialists” (who provide the EBP only) or whether staff can also provide other services, including treatment as usual (“generalists”). For example, many EBPs, including MTFC and most in-home models, require a dedicated “specialist” staff that solely provides the EBP; thus, all time and costs associated with those dedicated staff during implementation are implementation costs. However, staff trained in other EBPs, often those provided in outpatient settings, are usually

generalists who provide the EBP along with other treatment approaches. For example, nearly all community-based outpatient clinicians treat children with a wide range of clinical concerns, and use of a specific EBP for a targeted problem may be relevant for a small percentage of their caseload. This distinction is important because it complicates personnel costs of implementation for generalists trained in EBPs, who also provide “treatment as usual” (with the same reimbursement rate) when not providing the EBP. Thus, only additional staff time required for implementation of the EBP should be considered an implementation cost for generalists.

The current study expands upon the work of Saldana et al. to develop a structured approach to measuring *incremental* implementation costs to clinics implementing an EBP. Incremental implementation costs are defined as those costs beyond what would be expected for “treatment as usual.” For example, the time and cost of receiving supervision in the EBP beyond standard supervision a generalist receives is an incremental cost; the amount of standard supervision time the clinician receives when providing “treatment as usual” is not. This study examines costs during the preparation and initial implementation phases<sup>8</sup> (or “start-up” period), when the bulk of training and consultation is required.

In this study, TF-CBT was the EBP implemented. TF-CBT is a clinical intervention for children aged 3–18 years suffering from traumatic stress reactions that includes psychoeducation and teaching practical skills for children to manage thoughts and feelings associated with traumatic stress reactions, the development and processing of a “trauma narrative” and sharing of the narrative with a caregiver in a safe therapeutic setting, and skills to enhance future safety and development.<sup>6</sup> TF-CBT is supported by more than 21 studies, including 15 randomized clinical trials, which demonstrate improvements in children’s PTSD, depression, and anxiety symptoms and improvements in parental distress and parenting skills.<sup>22</sup>

The *D&I strategy* being evaluated in this cost study is the Breakthrough Series Collaborative or learning collaborative. The Breakthrough Series Collaborative is a quality improvement model that was adapted for the dissemination of EBPs by the Substance Abuse and Mental Health Services Administration’s National Child Traumatic Stress Network,<sup>23</sup> and subsequently by Connecticut and other states in what were called learning collaboratives.<sup>24</sup> A learning collaborative is an intensive 6- to 18-month implementation process with teams from multiple agencies participating in several in-person trainings and includes an emphasis on quality improvement approaches, use of data for improvement, and high levels of consultation and support. The use of learning collaboratives and other intensive D&I strategies has increased with recognition that dissemination of EBPs is a complex process that requires more than traditional, stand-alone training models.<sup>25,26</sup>

Thus, this study describes the incremental implementation costs to clinics implementing TF-CBT (the intervention) through participation in a Breakthrough Series Collaborative (the D&I strategy) in outpatient clinics (the setting) based on the Proctor et al. definition of implementation costs.<sup>4</sup> Thus, the specific questions addressed were: (1) What are the incremental (additional) costs in dollars and staff time to a clinic implementing TF-CBT through a learning collaborative and (2) What implementation activities account for these costs?

## Method

### Participating clinics

Data from the first 10 months of operations for two separate TF-CBT learning collaborative cohorts are presented: a cohort of five outpatient children’s behavioral health clinics funded by the Connecticut Department of Children and Families (DCF) in 2008<sup>24</sup> and a cohort of five such additional clinics funded by a grant to DCF from the Administration for Children and Families in 2012.<sup>27</sup> In each cohort, a sixth agency also participated, but submitted incomplete data that were not sufficient to be included in the analysis. Participating clinics were all housed in community-

based behavioral health agencies which varied in size and services offered (e.g., some were primarily child guidance clinics, but most offered other services including in-home treatment, mobile crisis services, or adult behavioral health treatment). However, TF-CBT implementation occurred in the outpatient child behavioral health clinic located within each agency. The Child Health and Development Institute was selected through a competitive procurement process by DCF to be a statewide TF-CBT Coordinating Center and to oversee the dissemination through its role as an intermediary organization.<sup>17</sup> The participating clinics in each cohort applied through a competitive statewide process to participate in the 10-month learning collaborative. Clinics selected to participate executed contracts detailing their participation requirements during the implementation year, and each received a stipend of either US\$12,000 or US\$30,600 (solely based on available funding at the time of dissemination) to help offset the costs of participating. This stipend was originally intended to help offset the incremental implementation costs examined in this study.

Each clinic initiated and maintained an agency-based TF-CBT implementation team of 5–11 staff that included clinicians, clinical supervisors, a site coordinator, and at least one senior leader (e.g., an administrator who oversaw implementation, often the clinic director). The site coordinator (usually a clinician on the team) was responsible for managing the agency TF-CBT implementation team meetings, entering the team's clinical assessment and implementation data, and communicating with the TF-CBT Coordinating Center. As part of the implementation plan, staff attended 7 days of in-person training (including 2 days of TF-CBT clinical training), participated in at least one monthly consultation call with a TF-CBT trainer, received on-site TF-CBT supervision, and participated in weekly TF-CBT implementation team meetings at their agency. Staff also reported data monthly about their use of TF-CBT and received monthly data reports for internal quality assurance purposes.

Prior to implementation, no clinicians at the clinics were providing TF-CBT. It is important to note that TF-CBT is appropriate for only a subset of children served in outpatient settings; all therapists providing TF-CBT were “generalists.” In addition, nearly all of the children provided with TF-CBT had been referred for outpatient treatment and would have received “treatment as usual” had they not received TF-CBT. Therefore, in contrast to an EBP implementation for a new population or one involving new referral sources, providing TF-CBT did not represent a new revenue source for participating agencies, but was instead a change in practice for existing clients (hence the need to identify incremental implementation costs compared to providing treatment as usual). Agencies received the standard outpatient behavioral health reimbursement rate through Medicaid or private insurance for TF-CBT services provided.

## Measures

### *The Implementation Cost Survey*

The Implementation Cost Survey (ICS) is a 38-item measure that was developed for this study to assess the start-up incremental implementation costs to a clinic of implementing an EBP through a learning collaborative. The ICS has excellent internal reliability in this sample ( $\alpha = .91$ ). The items on the ICS were developed through discussions and focus groups with senior leaders about the costs to their agencies of implementing TF-CBT in the context of a learning collaborative (however, the items are relevant to most D&I approaches and the ICS could be used to measure other approaches with minor modification to the language to reflect the activities associated with a particular D&I approach). An initial item set was developed by the first author and was discussed with clinic leaders to solicit feedback about the items. Several iterations of this process occurred to ensure that all common agency costs were included. The ICS is intended to be completed by the agency administrator together with the implementation team, as it inquires about the time spent in key implementation activities for each team member, staff costs in salary and indirect rates, and other direct costs to the agency related to implementation.

The ICS includes sections on preparation (pre-implementation) activities and initial implementation (including learning sessions where in-person training is provided and action periods, the time between learning sessions when the EBP is put into practice in a clinic). The average staff time required for each implementation activity is reported separately for clinicians, clinical supervisors, the site coordinator, and the senior leader because these staff had different responsibilities and salaries. The ICS includes items across 11 implementation activities: training, consultation, EBP-specific supervision, data management, leadership/agency communication, travel, supplies, family partner (consumer participation on the implementation team), implementation team meetings, project coordination, and non-billable time. Some items are included in multiple phases (for example, supervision time is included in both the preparation and initial implementation phases). Example items include asking about the average hours spent per month for “training time,” “consultation calls and prep time,” “travel time,” and “TF-CBT supervision (giving or receiving).” One additional item regarding time to coordinate services with child welfare was added to the ICS for the five agencies participating in one of the learning collaboratives. This item was excluded from analysis because it was not applicable to or available for the other five agencies and was not specific to EBP implementation.

The ICS uses previously described methods to assess staff time and costs associated with the preparation or pre-implementation phase and the initial implementation phase of a learning collaborative. As the purpose of this study was to assess incremental EBP implementation costs to clinics, the ICS does not include the significant extra-agency dissemination costs borne by the funder, state, or other entities, including the TF-CBT Coordinating Center (for example, costs of external trainers and consultants). Because the ICS is a measure of *incremental* EBP implementation costs compared to treatment as usual, it also does not include billable time for direct clinical services, which is equivalent for TF-CBT and treatment as usual. In summary, the ICS measures the additional time and costs to clinics for implementing an EBP using the learning collaborative implementation approach beyond what is required to provide treatment as usual, thus capturing the added burden on the staff and agency of implementing the EBP. The ICS is available from the first author via e-mail.

### ***Implementation metrics***

Individual staff providing TF-CBT completed monthly implementation metrics as part of the learning collaborative. These metrics were completed through a web-based survey platform ([www.surveygizmo.com](http://www.surveygizmo.com)) following e-mail reminders sent to each staff person monthly. Aggregate data about the number of children receiving TF-CBT and number of sessions provided were used in this study to indicate the implementation outcomes of TF-CBT and to calculate a per child and per session incremental implementation cost.

### **Data collection and analysis**

At the end of the learning collaborative, the senior leader at each clinic oversaw completion of the ICS by their TF-CBT implementation team. Each ICS was reviewed by one of the authors or their staff with clinic staff to clarify responses and coding of data and to ensure that all staff hours reported across the ICS were non-duplicated. Data were collected in 2008 and 2012, and all costs are reported in 2012 US dollars.

Data were analyzed with SPSS 22.0.<sup>28</sup> Staff time was calculated across implementation phases (a 3-month pre-implementation period and 7-month initial implementation period); initial implementation was further broken down by action periods and learning sessions, key components of the learning collaborative approach. All hours of staff time, which were reported by agencies as a monthly average on the ICS, were adjusted for holidays, sick time, vacation, and other paid time

off using an estimate of 6 weeks per year. Staff time in hours was converted to full time equivalents (FTEs) based on a 40-h workweek. Staff time in hours was also converted to a monetary cost using each agency's average annual cost per FTE for each position (coordinator, clinician, supervisor, and senior leader), inclusive of salary, benefits, and indirect (overhead) costs.

## Results

Table 1 shows the mean time in hours and FTEs for which agency staff participated in implementation activities during each phase of the 10-month learning collaborative. Site coordinators devoted the most time (.23 FTE), followed by individual clinicians (.15 FTE), clinical supervisors (.14 FTE), and senior leaders (.12 FTE). Staff time was higher in the initial implementation (action periods, followed by learning sessions) than the pre-implementation period.

Incremental implementation costs varied considerably by agency. The average clinic team size was 7.8 staff (1 coordinator, 3.8 clinicians, 1.7 supervisors, and 1.3 senior leaders) that cumulatively spent an average of 2127 h (SD = 797, median = 2242, range = 917–3388 h) on implementation activities during the year, in addition to US\$4513 (SD = US\$2006, median = US\$3984, range = US\$2580–8311) in other direct, non-labor costs. These direct costs included purchasing of clinical materials, mileage and meal reimbursement for travel, and a modest stipend for a family partner to participate on the team. The average incremental cost to clinics was US\$89,575 (SD = US\$26,280, median = US\$94,393, range = US\$34,697–130,063), with US\$85,061 (SD = US\$25,904, median = US\$90,196, range = US\$31,993–124,853) attributed to staff time and the remaining US\$4513 to direct costs. Agency costs averaged US\$11,659 (SD = US\$2930, median = US\$11,169, range = US\$6939–14,451) per team member. Additionally, it is important to note that the full cost of staff time may not represent an equivalent realized increase in true agency costs as participating staff were not hired specifically for this implementation; they would have been paid and would have provided clinical services if the agency or staff member was not implementing TF-CBT.

The children served and TF-CBT sessions provided by each agency, along with per child and per session incremental implementation costs, also varied considerably. The ten participating agencies served an average of 42.3 children (SD = 22.5, median = 42, range = 12–93) and completed an

**Table 1**

Staff time in hours and FTE spent implementing TF-CBT through a learning collaborative

	Site coordinator, mean (SD)	Individual clinician, mean (SD)	Individual clinical supervisor, mean (SD)	Individual senior leader, mean (SD)
Pre-implementation	65.36 (36.56)	36.55 (13.52)	37.61 (14.28)	28.10 (12.48)
Initial implementation				
Learning session training	73.47 (18.37)	68.29 (16.81)	67.41 (18.31)	61.08 (9.74)
Action periods	259.01 (102.43)	155.12 (52.06)	140.84 (48.36)	109.81 (40.84)
Total hours (10 months)	397.84 (145.64)	259.96 (73.14)	245.86 (63.17)	198.98 (54.47)
FTE	.23	.15	.14	.12

Percentage of staff time required based upon 40-h workweek to implement TF-CBT through the learning collaborative

FTE full time equivalent

average of 575.4 sessions (SD = 316.6, median = 500, range = 199–1288) during the learning collaborative. Per child incremental costs averaged US\$2742 (SD = US\$1615, median = US\$1871, range = US\$807–\$5722), and per session incremental costs averaged US\$203 (SD = 114, median = US\$186, range = US\$41–365). It is important to note that per child and per session incremental implementation costs are likely to be much higher in the initial implementation (“start-up”) phase, when the bulk of activities occurs, and lower as more children are served over time during sustainment.

Staff time and costs attributed to each implementation activity by staff position are shown in Table 2. Training accounted for 24% of total costs and included in-person training time and preparation as well as completing online training and readings. Supervision accounted for 17% of costs and included providing and receiving TF-CBT supervision in individual, peer, or group formats. Non-billable session time accounted for 12% of costs and included additional time spent preparing for sessions, reviewing model materials, and non-billable clinical time. Other significant costs were implementation team meetings at the agency (11%), travel (11%), clinical and implementation consultation by external consultants (9%), agency leadership support/communication about the program (7%), and project coordination (5%). Other activities reflected relatively small percentages of the overall costs for implementation.

## Discussion

While cost is frequently cited as a significant barrier to D&I of EBPs, there are few approaches to measure these costs and no published studies documenting the time and costs associated with specific implementation strategies for child behavioral health EBPs in outpatient clinics. In this study, clinics implementing TF-CBT through learning collaboratives reported that staff spent considerable time—an average of 2127 staff hours over 10 months—on implementation activities

**Table 2**  
Percent of staff time and total costs per agency by implementation activity (N = 10)

	Coord. hours (%)	Clin. hours (%)	Sup. hours (%)	Sr. lead hours (%)	Direct costs (%)	Total costs <sup>a</sup> (%)
Training	17.9	27.0	27.5	30.6	NA	24.4
Supervision	13.0	20.8	18.9	15.4	NA	17.3
Non-billable session/prep time	8.9	18.7	13.3	1.5	NA	11.8
Implementation team	8.5	12.6	13.5	12.4	NA	11.0
Travel	4.7	7.7	8.5	7.3	73.2	11.0
Consultation	10.0	7.9	11.6	10.8	NA	9.2
Leadership/agency communication	5.5	2.7	4.2	21.2	NA	6.6
Project coordination	27.6	NA	NA	NA	NA	5.2
Data entry and interpretation	3.7	2.6	2.6	0.8	NA	2.2
Family partner	NA	NA	NA	NA	13.5	0.7
Supplies and materials	NA	NA	NA	NA	13.3	0.7

<sup>a</sup>Total costs include staff time costs in dollars plus direct costs

above and beyond their usual day-to-day responsibilities. Agencies spent an average of US\$4519 in direct costs related to implementation. The staff time and costs encompassed a number of different activities, but were primarily spent on training, supervision, non-billable clinical/preparation time, implementation meetings, travel, and external consultation. While these costs may appear high, particularly in terms of per child and per session cost, they are consistent with the very limited research on the D&I costs of other interventions. It is also worth noting that these per child and per session costs typically decrease following initial implementation and that EBPs have been shown to result in significant cost savings in terms of reduced need for high-end and ancillary services over the long term.<sup>29</sup> However, the participating clinics were reimbursed for service delivery at the same rate as treatment as usual, as is typical for outpatient children's behavioral health services.

The relatively high variability across agencies in implementation costs and per child and per session costs is noteworthy. Variations in total costs may be attributable to the size of implementation teams (larger teams have higher costs), but the wide range of costs per staff member account for this and still ranged from US\$6939 to US\$15,540 per individual. One explanation for this variability is that some agencies were more or less efficient implementers. Alternatively, perhaps some agencies or staff did not complete implementation activities because of competing demands, lack of interest, or other reasons. Research that delineates why implementation costs vary and how costs are associated with outcomes would contribute to knowledge about when to best implement, with which strategies, and with which agencies.

Converting the staff time spent on implementation from hours to direct costs in dollars to clinics poses an interesting challenge. Much of the staff time spent on implementation was in addition to other responsibilities including standard productivity requirements for billed sessions. Thus, staff spent on average several extra hours per week on implementation, but received the same salary they otherwise would have. Thus, not all—and perhaps not most—incremental staff time reported actually resulted in direct financial costs to agencies. However, additional responsibilities in an already demanding job in clinics may negatively impact staff performance, morale, and turnover, which can result in additional costs to the agency. The additional staff time can also result in lost opportunity costs as staff could have been pursuing other strategies to improve care in the additional time used for implementation (especially with children they were serving who did *not* receive TF-CBT). It is also plausible that the additional time requirements resulted in fewer billable sessions and thus lost revenue for the clinics, although these data were not available in the current study. Some clinics may intentionally reduce productivity requirements for clinicians participating in implementation activities, thus increasing direct implementation costs. For example, even a 1-h per week productivity reduction for a team of five clinicians and supervisors would result in approximately US\$14,514 in lost revenue over 10 months, based on an US\$80 per session reimbursement rate and 6 weeks of paid time off. Further research is needed to determine how incremental staff time spent on implementation translates into lost revenue.

While beyond the scope of this study, there may also be cost *savings* to clinics implementing EBPs that could partially offset implementation costs. For example, the use of an EBP may result in increased client engagement and reductions in no-show appointments and treatment dropout. EBPs could also be reimbursed at higher rates than treatment as usual, thus bringing in additional revenue to offset their higher costs (although this is rare currently). Clinicians trained in an EBP may also be *less* likely to leave their agency (thus saving substantial hiring costs), for example if the EBP implementation results in greater self-efficacy, increased morale, and the perception that their agency supports their professional development.

There were several important limitations to this study. First, the study included a small sample of ten clinics. Second, data were collected retrospectively and via self-report at the end of the initial implementation year. While this approach was deemed less time-consuming and more palatable for clinics, retrospective data may be less accurate than prospective data and may be prone to recency

effects and subject to outliers (reporting about the unusual events rather than typical events); future research should assess implementation costs prospectively (e.g., on a monthly or other regular basis) to address this concern. Finally, as noted previously, this study did not collect objective data about whether there was lost billing revenue during the implementation, which could be an additional cost to clinics.

As others have observed, costs are rarely described, but should be considered a routine component of D&I evaluations.<sup>4</sup> Costs in this study specifically described the TF-CBT implementation costs to clinics participating in a learning collaborative, adapted from the Breakthrough Series Collaborative model.<sup>30</sup> Learning collaboratives are just one of many D&I models<sup>1</sup> and are a relatively time-intensive and costly approach; other D&I approaches will likely have different costs, but understanding the costs of various D&I approaches is important for determining which to use. However, the total costs in this study were comparable to (but somewhat less than) the costs in a study of another EBP that compared the pre-implementation and implementation costs of two different D&I strategies, community development teams (US\$133,106) and implementation as usual (US\$118,699).<sup>13</sup> However, there are two significant differences with the Saldana et al. study that limit direct comparison of costs to the present study. First, the EBP being implemented in Saldana et al. required new staff to deliver the model rather than using staff providing “treatment as usual” to offer the EBP. Second, the Saldana et al. costs included model developer/trainer costs in addition to the costs incurred by agencies. With respect to TF-CBT, one study examining the costs for competing D&I models showed that, although learning collaboratives required more time for in-person training and monthly consultation than competing models (e.g., live training and ongoing consultation), the total costs did not differ significantly across D&I models.<sup>16</sup>

Nonetheless, further research is needed on the costs of other D&I models, as well as other implementation outcomes, in order to compare the cost-effectiveness of different approaches. The ICS and methods used in this study could be applied to other cost studies of different EBPs and D&I strategies in order to expand the research base on the costs of various EBPs and D&I approaches. The ICS could be modified to reflect D&I strategies other than learning collaboratives, for example by including specific activities associated with another approach and capturing staff time or direct costs in similar ways. In addition, this study focused on the initial implementation (“start-up”) period, which may not be enough time for most staff at the clinics to become fully competent and skilled in an EBP. Given that a full implementation can take 3–5 years,<sup>31</sup> further research on implementation should examine the ongoing costs of providing EBPs, including sustainment. The costs per child served are likely to decrease over time as the initial implementation typically requires more time and support. Development of EBPs that are more cost-efficient to implement and deliver (e.g., briefer, requiring reduced training time, appropriate for a broader range of consumers) is another much-needed area of research.

The additional ongoing requirements of many EBPs for data collection, fidelity monitoring, training, and quality assurance may also result in EBPs continuing to cost more than “treatment as usual” for a long time, if not indefinitely. Research on these ongoing costs will be important for determining adequate reimbursement rates or other incentives for the delivery of EBPs. Similarly, additional research is needed to identify the potential cost savings attributed to EBP dissemination in order to identify cost-shifting mechanisms to support clinics with implementation. For example, research on TF-CBT shows significant future cost savings in reduced healthcare costs and improved productivity that would likely more than offset the implementation costs.<sup>12</sup>

Finally, there is wide variability in implementation outcomes, even using intensive D&I models such as the learning collaborative approach. Research is needed to understand how various funding approaches and incentives for D&I can contribute to improved implementation and child outcomes. For example, providing funding for clinics that meet performance-based implementation

benchmarks may be more effective at improving implementation outcomes than a static funding approach.

### **Implications for Behavioral Health**

The operationalization of a method to determine implementation costs and the findings of significant costs to clinics for EBP implementation through a learning collaborative have important implications for the dissemination of EBPs and improvements in behavioral health. Most importantly, federal, state, and agency policies and programs that promote or require the use of EBPs must consider the time and costs borne by clinics in addition to the more commonly discussed costs ascribed to dissemination entities (e.g., trainers, consultants, data systems, and quality assurance provided by external consultants). Minimally, clinics should be informed about the potential costs prior to decisions about implementation; ideally, funding is provided to defray these costs. Cost estimates from this and other studies can be used to consider differential reimbursement rates for EBPs. As clinics begin to implement multiple EBPs, the implementation costs may become an increasingly significant challenge.

Behavioral health agencies considering EBP implementation may wish to ask more detailed questions about the costs associated with the EBP and the implementation strategy, perhaps using the framework of the ICS as a template to determine what questions to ask. In the absence of enhanced reimbursement rates, agencies may also seek out EBPs and implementation approaches that are more cost-efficient. A common elements approach that is applicable to a large proportion of children in outpatient settings may be a promising strategy for EBPs. For example, the Modular Approach to Therapy for Children with Anxiety, Depression, Trauma, and Conduct Problems (MATCH-ADTC) synthesizes common elements from dozens of EBPs that can be flexibly used to serve up to 75% of children in outpatient clinics.<sup>32</sup> More cost-effective implementation strategies could include the use of technology or video as an alternative to live training, identifying the minimal “dose” of training and consultation needed to implement an EBP and reducing the complexity and cost of “branded” implementation strategies such as learning collaboratives, community development teams, and other approaches to their most essential and lowest cost elements.

Cost is one of the most frequently cited barriers to D&I, yet is also one of the least widely studied factors. Additional research on the costs of implementing and sustaining EBPs, the associated benefits and future cost savings, and best approaches to funding implementation costs for clinics is critical to expand uptake of EBPs and to have a public health impact on behavioral health. Efforts to use standardized methods to measure D&I costs will allow better comparison across models and methods.<sup>13</sup> Ultimately, when those who make the funding and policy decisions about healthcare have accurate information about the costs and cost savings, they can make more informed decisions about how to allocate and incentivize EBP dissemination in ways that will improve the quality and efficiency of healthcare.

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## Compliance with Ethical Standards

*Conflict of Interest* The authors declare that they have no conflicts of interest.

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