

Preliminary Estimate of Costs Associated with Implementing
Research and Evidence-Based Practices for Children and Youth in
Washington State

Suzanne Kerns, PhD; Carol Levin, PhD; Jessica Leith, MS;
Cathea Carey, BS & Andie Uomoto, BS

University of Washington
Division of Public Behavioral Health and Justice Policy
In collaboration with the School of Public Health Department of Global Health

Funded by: Division of Behavioral Health and Recovery

The following draft report was funded by the Washington State Division of Behavioral Health and Recovery, through [HB1088](#) and the Evidence Based Practices Institute. The purpose of the project is to provide more accurate guidance about the costs associated with delivery of Evidence-Based Practices for children and youth in Washington State. This report includes information about the study goals, methods, and preliminary results

Introduction

Childhood behavioral health disorders such as depression, anxiety, post-traumatic stress disorder, disruptive behavior problems, attention problems, and others are a significant public health concern representing a high degree of morbidity and overall cost to society (Institute of Medicine, 2015). While effective treatments have been developed, largely in academic settings, the vast majority are not widely implemented in community-based settings. Because these proven effective interventions hold significant promise to address this public health concern (e.g., Dopp, Borduin, Wagner & Sawyer, 2014; Prinz, Sanders, Shapiro, Whittaker, 2009), and many of these interventions have demonstrated cost-benefits (Lee et al., 2014), jurisdictions are increasingly mandating the use of research and evidence based behavioral health practices (R/EBPs) as a strategy to improve quality of care and outcomes for children, youth, and their families in need of effective services. Washington State is among the jurisdictions with recent legislation enacted to increase the base rate of R/EBPs being offered within child serving systems, including juvenile rehabilitation, child welfare, health care authority and publicly funded behavioral health programs for children and youth (e.g., [HB2536](#); 2012). The bill required these child serving divisions of the Department of Social and Health Services (DSHS) as well as the Health Care Authority (HCA) to increase the use of EBP programs in the 2015-2017 and 2017-2019 biennia.

Many community behavioral health agency directors express concerns related to the expense and burden associated with up skilling the workforce to deliver these programs (Proctor et al., 2007). In particular, there has been a call for increasing the knowledge base about exactly ‘what it takes’ to implement these programs with fidelity within community behavioral health. Agency executive directors and administrators in a public sector study cited uncertainty about future funding allocations as a reason not to invest in EBPs. Previous research in other agency settings suggests that payers can improve EBP implementation by supporting initial costs such as time spent on training (Aarons et. al, 2009). In response to these findings and others, the University of Washington, in collaboration with the Division of Behavioral Health and Recovery as well as their community behavioral health partners, conducted an economic evaluation of agency-related expenses associated with delivering evidence-based services. Because of the legislative mandate to increase use of R/EBPs, a comprehensive examination of costs associated with upskilling agency providers to deliver new programs and practices is critical. This project was developed as a tool to assess costs at the agency level while taking into consideration the various types of R/EBP’s offered (intensive vs normal outpatient), geography (rural/urban), and size of the agency (small/large). This costs estimated in this evaluation are limited to those agencies who agreed to participate in the study and thus provides a snapshot of what these

EBPs could potentially cost as information varies from agency to agency. Agencies differed in the extent to which they were able to estimate costs. When possible, we worked together with the agency to determine a 'best guess' scenario for cost categories, but there was variability in responding. Therefore, this report should be interpreted as a sampling of the costs and considered alongside other agency-specific knowledge and information if using these results for fiscal planning.

The specific aims of the R/EBP Cost Study were to determine the following:

1. What are the incremental financial and full economic costs to community behavioral health agencies of implementing Evidence Based Practices (R/EBPs)?
2. What are the relative proportions of costs going to implementation stages, activities and inputs?
3. What are factors (agency size, number and types of R/EBPs implemented, staff numbers and composition) associated with the variation in costs across behavioral health agencies?

Considerations of Implementation Frameworks to Guide Cost Estimates

The field of Implementation Science increasingly identifies factors associated with successful implementation/installment of evidence based practices. Multiple models have been described, all of which delineate activities that go well beyond participation in an initial training activity. These activities are necessary components of R/EBP implementation because training alone is not effective to achieve practice change (e.g., Beidas & Kendall, 2010). One particularly useful framework that characterizes the activities associated with implementation is the National Implementation Research Network (NIRN) implementation framework (Fixsen et. al, 2005). As described by NIRN, the implementation activities that are undertaken by agencies roughly fall into four stages: exploration, installation, initial implementation and full implementation.

- **Exploration Stage.** During the *exploration stage*, agencies are identifying the need for an intervention, assessing the feasibility and fit of the intervention within the agency, and preparing various stakeholders within the agency for the new intervention.
- **Installation Stage.** Once the decision to bring the intervention to the agency has been made, the agency then moves into the *installation stage*. During this stage, all of the structural supports are put into place. This may include referral strategies, policy changes, reporting requirements, and any additional activities required to ensure that staffs are ready for training.
- **Initial Implementation.** *Initial implementation* is when the change actually happens – the training is new so the agency must actively address any perceived or actual barriers to implementation.

- **Full Implementation.** Once the new practice becomes imbedded within an agency, they are now in *full implementation* mode. It takes time and effort to get to this stage. Challenges during this phase often include staff turnover and identifying consistent funding. Also during this time, many agencies find that making adjustments to the intervention are required to meet the unique needs of the intervention recipients. There may be cultural adaptations or needs for language translation. There may be particular challenges that require additional strategies. For example, low attendance by clients may be addressed by additional training in motivational techniques and strategies.

Each of these stages contains a variety activities and approaches that may have costs associated with them at the agency level. For example, an agency in the exploration stage may be pulling together key leaders and stakeholders for regular meetings to evaluate the feasibility and acceptability of the new program. An agency in the installation phase may be doing active planning for the training event, contracting with a purveyor, and adapting electronic health records.

Including Implementation in Cost Estimates

Implementation Science detailed the shortcomings of current economic evaluations of implementation efforts within health care settings (Hoomans & Severens, 2014). In this editorial, the authors posit the importance of cost analyses of *implementation*, not just the more traditional focus on costs associated with delivery of services.

For many existing cost estimates in the social sciences, costs associated with the development of materials and training when initiating a new intervention are commonly included, along with the costs for actually delivering the service (operational costs). However, the full range of costs associated with carefully embedding and supporting an intervention are rarely documented and considered. Yet, these activities are *essential* for adequate allocation of resources for implementation and sustainability (Fixsen et. al, 2005). The NIRN framework, described above, provides a useful categorization for costs that may be incurred at different stages of implementation. Consideration to the full array of activities involved in installing a new innovation, in this case a therapeutic intervention, is critical.

There are several potential limitations to using existing cost estimates to inform policy decisions around R/EBPs, such as resource allocations to support implementation. Currently the most sophisticated EBP cost analyses to date have been conducted by the Washington State Institute for Public Policy (WSIPP). These cost estimates represent 'best guess' cost estimates based on information largely provided by purveyor organizations. Included in these estimates are the time it takes to deliver the intervention and, when indicated, capital costs are also included (Washington State Institute for Public Policy, 2014). In other words, the WSIPP estimates provide the most accurate information for the full operational cost, but they do not consider all-inclusive implementation costs.

There are very limited examples of behavioral health program costs across different target populations, implementation settings, and methods of recruitment. This is important because context and scope of programs will affect costs. For example, delivery of an intervention as a clinic-based service compared with a home-based service necessarily uses different types and level of resources, and will be associated with different coverage and costs. While home-based services incur additional costs associated with therapist transportation and time, they may have overall lower overhead costs due to reduced needs for office space. Further, larger clinics may be able to absorb costs or identify economies of scale that are not possible with smaller clinics.

Importance of having representation from diverse service providers

In any generalizable study on costs, it is important to ensure adequate representation from service providers that reflect the diverse geographic distribution and agency size. There are significant differences in clinician salaries and funding allocations across the state. In areas of WA State with high immigration and Hispanic families, there may be more extensive investments in interventions that meet the different cultural and linguistic needs.

Method

Recruitment of Agencies/Participants

Agency participants were recruited through a number of strategies beginning in June 2014. The research team engaged in direct outreach by attending meetings with regional support network (RSN) children's care coordinators (CCC) and administrators, agency clinical directors, and members of the Washington Community Mental Health Council (WCMHC). A small sub-group of RSN's volunteered to collaborate with UW and submit recommendations for eligible agency participants throughout their regions. In addition, we developed an informational flier which was distributed at various meetings and to listservs through the regional support networks children's care coordinators and the Washington Community Mental Health Council.

Agencies that were recommended to the UW for participation in the cost study were contacted via telephone and email to give more information about the study and to solicit participation. An informational webinar was provided so agencies could get more information about the nature of the study, expected commitment, and incentives.

Eligibility criteria included:

- Agencies in Washington State that deliver mental health services to children within the public mental health system
- Implemented one or more EBP with "reasonable fidelity"
- At least one of the programs was implemented within the past 5 years

We did not audit agencies with regard to fidelity. We asked agencies to describe their implementation of the R/EBP and if it was aligned with best practices as outlined by the treatment manual.

Agency/Participant Sample

30 agencies in Washington State were invited to participate in an online survey developed by the research team. We received a 63 percent response rate of 19 community health agencies serving children, youth, and families. Of these agencies, 7 dropped out before the study was complete. Reasons reported for the attrition include insufficient staff time and/or access to the data required to complete the survey. As a result, the final sample included a total of 12 agencies. Five of these agencies were representative of a larger system with several branches or “satellite” offices in various locations throughout their counties and/or the state. The number of agency satellite sites range from 1 to 8. Therefore, the number of sites represented in this report is 30.

Agencies were directed to provide information for up to 3 EBP’s currently on the Inventory of Evidence-based, Research-based, and Promising Practices in Washington State ([WSIPP, September 2014](#)). Participants were strongly encouraged to focus on EBPs that had been successfully implemented and documented in order to gather the full range of costs accurately.

Agencies completed surveys between October 2014 and April 2015.

Incentives Provided

Participation in the survey was voluntary. Agencies were provided a monetary incentive of \$800. One site that served as a ‘beta test site’ was paid \$1000 in recognition of the additional effort of providing iterative feedback.

Pre-Survey Technical Assistance

Once agencies agreed to participate, technical assistance was offered to all study participants. Shortly after the agency agreed to participate in the study and prior to receiving the survey, an in-depth webinar meeting was scheduled with each agency. These meetings were conducted via Go-To-Meeting and the purpose was to review the survey item-by-item with the study team. Background information (such as number of locations, populations served, services provided, etc.) was collected from each agency to provide contextual information. Each question in the survey was reviewed and the agencies had an opportunity to ask any questions and/or practice answering difficult items. During this meeting, a worksheet was introduced and demonstrated to aid the collection of R/EBP expenses. All 11 of the agency participants attended an individually-tailored 2 hour Technical Assistance session. The sessions occurred between October 10th and November 18th, 2014.

Survey Description

Survey questions were divided into four main categories across each implementation phase: 1) staffing, 2) operations, 3) finances, 4) training, and 5) expenses (See Appendix A for the entire survey). In addition, the survey gathered agency characteristic and demographic information on the participants such as type of agency, location (rural/urban community), services provided, and populations served. Other agency-level characteristics consisted of an inventory of all of the R/EBP's offered at the agency and information on training, caseload, adherence monitoring, and whether or not they have conducted any evaluations on the practice. Agencies selected up to 3 R/EBP's to use for input throughout the survey. In alignment with the NIRN framework, questions about staffing and training were considered across each of the implementation phases.

Training: Specific questions about the agency's training process included how many people participated in the initial training for each EBP, how many were lost to turn-over, and if there were any subsequent trainings (to address turn-over or increase capacity). Participation in required or recommended booster sessions was also asked. Follow up contextual questions included the training source, with options such as 'outside purveyors' or whether it was conducted as 'onsite' training.

Staffing: Staffing questions focused on trying to understand the overall agency staff as a whole that are providing services as well as the breakdown of full time exempt (FTE) employees. We further delineated these by asking how many are providing the specific EBP in terms of hours (weekly/monthly) and percentage of time. Classification of staff with salary information was requested as well as the hours of week they were expected to work, specific to each R/EBP reported. In addition, we requested information on turnover rates for their staff in percentages if this information was attainable.

Operations: Operations were considered to be the indirect costs of the agency related to leasing and overhead rates allocated for mental health services.

Expenses: A number of questions focused on the agency's financial costs related to R/EBP-specific expenses and are displayed in a chart by implementation stage. Sample questions in this category include the total amount of the R/EBP specific budget and what expenses are related to language translation of materials (innovation). Costs related to the funding sources for the programs were asked and itemized to reflect their reimbursement rate and capitation plan with the Regional Support Network (RSN). Agencies were also asked if the funds were enough, in their opinion, to cover the costs of providing the EBP and any additional technical assistance costs.

Each of the 5 categories of questions on the survey are represented in the final results and are rolled up into costs related to planning, installation, implementation, operation, innovation, and sustainability to align with the NIRN framework model.

Qualitative Response Options

At the start of the survey, agencies were asked to provide a general history of each R/EBP they were reporting on. This included any planning process, material development, community awareness, marketing, training, and implementation knowledge related to the practice that they were aware of. If agencies were able to determine how many children and/or youth benefit from the specific R/EBP in both FY13 and FY14 they were asked to describe this in qualitative form. Other qualitative questions asked for agencies perspectives on the impact of R/EBP's, in addition to the total time spent to complete the survey questions. These data were used, in part, to validate quantitative responses.

Beta-testing

An earlier version of the survey was beta-tested with three agencies outside of Washington State. These agencies reported on the feasibility of the survey method for collecting cost data. Specifically, agencies provided feedback about 1) interpretability of the survey questions; 2) feasibility of data extraction; and 3) time to complete. The survey was refined based on agency feedback.

One large agency based in eastern Washington State agreed to be a beta-test site for the revised survey. Individuals from this agency participated in an in person introductory meeting to the survey and subsequently completed the survey on-line. They provided valuable feedback and ideas to further increase the usability and reduce the burden associated with the survey development. Despite these refinements, it was anticipated that it would take an agency on average at least 6-8 hours to complete the survey for two reasons: 1) because of the nature of the data needed to conduct the cost analysis, and 2) because many of these data elements are not typically readily accessible at the agency level.

Procedure

Two versions of the survey were developed, a paper version (in Appendix A) and a web-based version. Representatives at participating agencies received an email containing the paper version as an attachment, a link to a Qualtrics-based on-line survey for data entry, and a companion tool in Excel to assist with cost estimations. The survey platform, Qualtrics, was chosen because it offers a high degree of flexibility in survey design as well as completion across multiple time periods. Participants were initially given 12 weeks to complete the survey, however many took several months. Participants received regular check-ins regarding progress

and problem-solving for difficult-to-answer items. Once agencies had completed their survey, the data were reviewed for errors and any follow up questions or clarification were sent to the agency via telephone or email.

Post-Survey Validity Check

Following the completion of data analysis for each individual site, we requested a GoToMeeting for each participant in order to review their preliminary results based on the data submitted, solicit feedback and impressions, and to clarify any data inconsistencies. Five agencies were able to participate in the GoToMeeting. The remaining 7 agencies were unable to participate in a GoToMeeting format and therefore this part of the process was completed via telephone and email. All agencies participated in this process and were responsive. Agencies were provided personalized reports to facilitate inquiries about data accuracy and initial impressions. Although data are aggregated in this report, this individualized step was critical for the validity check. The feedback we received as a result of this data check indicated that agencies perceived our costing estimates were accurate.

Missing Data. Many of the agencies who were missing data were unable to gather cost numbers due to a lack of procedures to collect or identify this data. When possible, data were imputed by the research team based on established assumptions (described below). When possible we asked agencies to provide anecdotal confirmation regarding the research team's assumptions with some of the limited data.

Internal Review Board (IRB) Exempt Status

Funding for the project was provided by the Division of Behavioral Health and Recovery in the Department of Social and Health Services. An IRB application was submitted for review through DSHS and the study was determined to be exempt. Approval for IRB exempt status was received on February 24, 2014.

Analysis

Survey data were analyzed using Microsoft Excel. For each agency, we estimated costs by (1) activities; (2) start-up and recurrent; and (3) inputs. The activities included planning, initiation and implementation activities, such as meetings, orientation, training, procuring materials, developing materials, etc. These are also considered start-up costs. Recurrent costs included operational costs, and costs associated with innovation (translation of services and cultural adaptation when recurrent) and sustainability (report writing, refresher training and monitoring and evaluation). We recorded information on labor, supplies, equipment and services.

It was assumed that most start-up costs are a type of fixed costs that persist beyond a single year. Most start-up costs, except training, assumed that the initial investments persisted for the

period from project initiation to FY 2014, and we included financial annualized costs (i.e., the cost divided by number of years the project has been running to arrive at an annual cost). For training, since turnover can be high, and training is often a continuous process, we assumed training costs persisted for 2-5 years. To estimate labor costs, we asked respondents to provide an estimate of staff labor allocated to each evidence based practice, giving them a choice of recall periods, of either a week, month or year. We then estimated the share of hours allocated to each EBP based on a total 2,080 hours per year. These estimates include an estimate of overhead or indirect shared program costs¹. We estimated this in a two-step process in most cases. In step one, we asked agencies to provide the share of overhead or indirect that was allocated to all mental health services. We then allocated a share of those costs to evidence based practices based on the number of clients receiving evidence based youth services out of total facility mental health clients. There were three facilities that were not able to allocate any indirect costs to mental health services. For these facilities, we applied a 20% overhead cost to their cost estimates.

After calculating total costs, we removed all indirect costs to evaluate incremental costs, assuming infrastructure and supportive services already existed. We assumed all costs were in US \$2014 and did not adjust start-up costs if they occurred in previous years.

Finally, number of clients served was analyzed as ‘intent to treat’ – that is, this number represents any child or family that received any part of the R/EBP, regardless of whether they completed the program.

Cost metrics

For each agency, we estimated total cost per evidence based practice and cost per beneficiary, based on the number of clients receiving each R/EBP. For the final analysis, we calculated a weighted average for each R/EBP across agencies based on unit costs and the number of clients served. We then calculated an average cost for intensive outpatient R/EBPs and general outpatient R/EBPs. Intensive outpatient EPBs were Multisystemic Therapy (MST), Functional Family Therapy (FFT), Family Integrated Transitions (FIT), Dialectical Behavior Therapy (DBT) and Wraparound for Serious Emotional Disturbance (SED) as intensive outpatient EBPs. General outpatient EBPs included Incredible Years (IY), Cognitive Behavioral Therapy Plus (CBT+), Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), Positive Parenting Program (Triple P), Motivational Interviewing (MI) and Parent Child Interaction Therapy (PCIT). We also estimated cost shares, or the proportion of costs allocated to activities, start-up and recurrent and different inputs, out of total costs.

¹ Agencies use different terminology for overhead and indirect costs.

RESULTS

Demographic Characteristics

Demographic characteristics of the 12 participating agencies are in Table 1 below. The majority reported themselves as an independent, community based agency. Participants were located across Washington State, covering 10 out of 11 RSN regions. A majority of the agencies reported serving clients in rural, suburban, and urban communities. Agency size ranged from those serving a few hundred clients to those serving several thousand. All of the agencies reported serving adult and children or youth. The sites provided a range of different services, including group treatment, medication management, outpatient services, home-based services, school-based services, and case management.

Table 1. Sample Demographic

Surveyed agencies (N=12)	N	%
Services provided		
<i>Behavioral health Treatment only</i>	3	25
<i>Behavioral health and Chemical Dependency Treatment</i>	9	75
Type of locations/Locations served		
<i>Urban</i>	2	16.7
<i>Rural</i>	1	8.3
<i>Urban and Suburban</i>	1	8.3
<i>Urban, Suburban, and Rural</i>	5	41.7
<i>Rural and Frontier</i>	1	8.3
<i>Suburban and Rural</i>	1	8.3
<i>Urban, Suburban, Rural, and Frontier</i>	1	8.3
<i>No response</i>	1	8.3
Agency type		
<i>An independent, community based agency</i>	5	41.7
<i>A local branch of a multi-site health care agency</i>	1	8.3
<i>The main office of a multi-site health care agency</i>	3	25
<i>Other</i>	3	25
Populations served		
<i>Adults (18 years and over) & Youth (13-17 years old) & Children (under 13 years old)</i>	10	83.3
<i>Adults (18 years and over) & Children (under 13 years old)</i>	2	16.7
Specific children's behavioral health or support services		
<i>Special Populations</i>	9	75
<i>Group Treatment</i>	9	75

Prescribing/medication Management	10	83.3
Outpatient Services	10	83.3
Home-based Services	10	83.3
School-based Treatment	9	75
Case Management Services	11	91.7

Information on R/EBP's

Across all agency participants, 11 different R/EBPs were included in the analysis (see Table 2). Seven agencies reported costs associated with Trauma-Focused Cognitive Behavioral Therapy (TF-CBT). Three agencies reported on Wraparound for Serious Emotional Disturbance, Cognitive Behavioral Therapy Plus (CBT+), Parent-Child Interaction Therapy (PCIT), and Positive Parenting Program (Triple P). Two agencies reported on Multisystemic Therapy (MST), and one each for Functional Family Therapy (FFT), Family Integrated Transitions (FIT), Incredible Years (IY), and Motivational Interviewing (MI). The EBP categories are representative of programs listed on the WSIPP inventory under mental health (n=4), child welfare (n=3), and juvenile justice programs (n=4). Motivational Interviewing is not listed on the inventory but was included due to its high prevalence of use in Washington State community mental health agencies and its inclusion on several other inventories such as the NREPP

(www.nrepp.samhsa.gov).

Table 2. Agency Reported R/EBPs	Number of R/EBP	Number clients
Intensive outpatient		
Wraparound for SED	3	168
Dialectical Behavioral Therapy (DBT)	2	81
Multi-systemic Therapy (MST)	2	75
Functional Family Therapy (FFT)	1	46
Family Integrated Transitions (FIT)	1	30
General outpatient		
Trauma Focused Cognitive Behavioral Therapy (TF-CBT)	7	765
CBT+	3	560
Parent Child Interaction Therapy (PCIT)	3	95
Triple P-Positive Parenting Program	3	36
Incredible Years (IY)	1	6
Motivational Interviewing (MI)	1	60
TOTAL	27	1026

Cost results

The first set of cost data we provide indicates the total economic cost of implementing an R/EBP. This represents how much the agency is spending per client. These costs include the R/EBP program's share of overhead and indirect costs, staff time, and all implementation activities.

Tables 3 and 4 below present the average cost per client for intensive outpatient R/EBPs (Table 3) and general outpatient R/EBPs (Table 4). As expected, intensive outpatient R/EBPs are more expensive to implement compared to general outpatient R/EBPs. The average costs per client for the intensive R/EBP's was unable to be calculated due to varying costs² but higher than the average of US\$824 per client for general outpatient R/EBPs. The most expensive intensive R/EBP is Multi-systemic Therapy (MST), offered in two sample agencies, costing over US\$8,878 and \$17,780³ respectively per youth served. Dialectical Behavioral Therapy (DBT) and Functional Family Therapy (FFT) were the least expensive at US\$1,234 and US\$1,451, respectively. Intensive therapies were offered at 5 of the 12 sample agencies to 400 youth clients. The general outpatient R/EBPs are typically less expensive, although several R/EBP therapies cost between US\$1,000 and US\$2,800 per client. The most expensive general outpatient therapy was Incredible Years (US\$2,810) and the least expensive were Motivational Interviewing (US\$311) and CBT+ (US\$473). General outpatient therapies were offered at more clinics to a larger number of beneficiaries (10 clinics provided these services to 1,522 child and youth clients).

Table 3. Average cost per client for intensive outpatient R/EBP

Intensive outpatient EBP	Average cost per client	Number of EBPs	Number of clients
All intensive outpatient EBPs	\$5,679	9	400
By EBP			
Multisystemic Therapy (MST)	\$15,788	2	75
Family Integrated Transitions (FIT)	\$9,753	1	30
Wraparound for SED	\$3,735	3	168
Functional Family Therapy (FFT)	\$1,456	1	46
Dialectical Behavioral Therapy (DBT)	\$1,238	2	81

**Two sites reported significantly different costs (\$8,878 and \$17,780) to implementing MST due to varying infrastructure needs and thus these numbers are not listed as it is not indicative of MST costs in general. Please see discussion for more information.*

² Two sites reported significantly different costs (\$8,878 and \$17,780) to implementing MST due to varying infrastructure needs and thus these numbers are not listed as it is not indicative of MST costs in general.

³ This number represents a sample agency which required a large investment in startup costs in order to meet the requirements of Medicaid funding to provide the intervention and is not indicative of the intervention itself.

Table 2 Average cost per client for general outpatient EBP

General Outpatient	Average cost per client	Number of EBPs	Number of clients
All	\$828	19	1522
By EBP			
Parent Child Interaction Therapy (PCIT)	\$925	4	95
Triple P	\$2,408	3	36
TFCBT	\$1,025	7	765
Incredible Years (IY)	\$2,813	1	6
CBT+	\$473	3	560
Motivational Interviewing	\$311	1	60
Total			

Figures (1) and (2) provide a breakdown of costs by implementation stages, as described in the methods section. The largest share of costs supports recurrent operations and is comprised mostly of labor costs for service provision. A larger share of costs (12%) goes to activities to sustain the program, including refresher training, report writing and monitoring and evaluation in the more intensive outpatient R/EBPs, compared to only 1% of these costs for general outpatient R/EBPs. Similarly, when considering the breakdown between start-up costs (planning, training, installation of the program, etc.) and recurrent costs (service delivery, refresher training, etc.), recurrent costs comprise 90-95% of total costs. Finally, labor costs comprise the greatest share of overall costs, followed by indirect and overhead (18% for intensive outpatient R/EBPs and 27% for general outpatient R/EBPs) costs and supplies (7-8%).

Figure 1. Cost profile by implementation stages for intensive outpatient R/EBPs

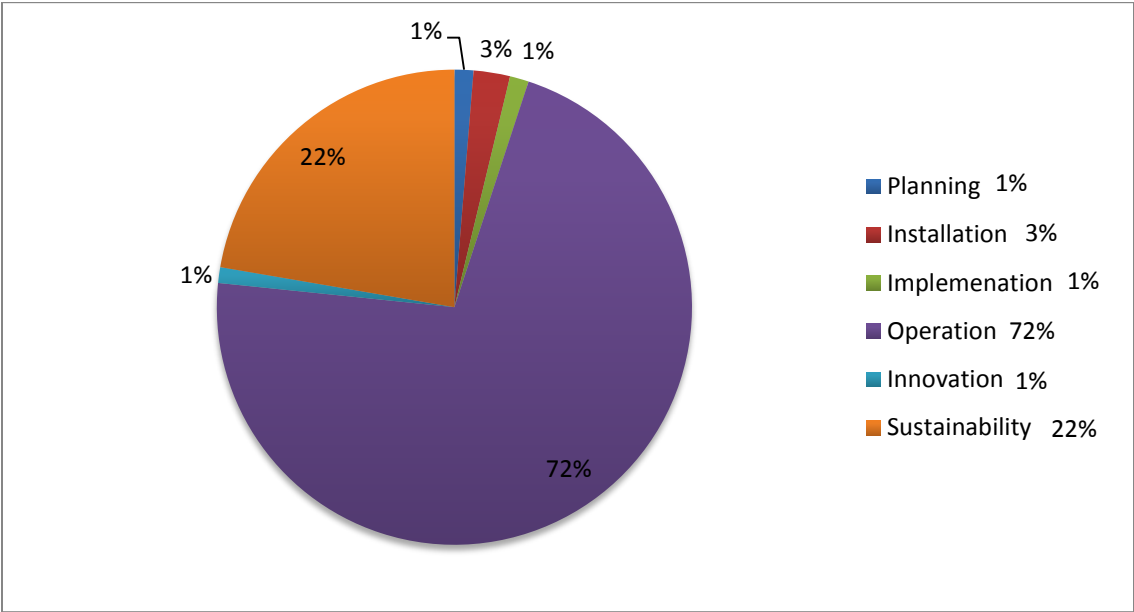
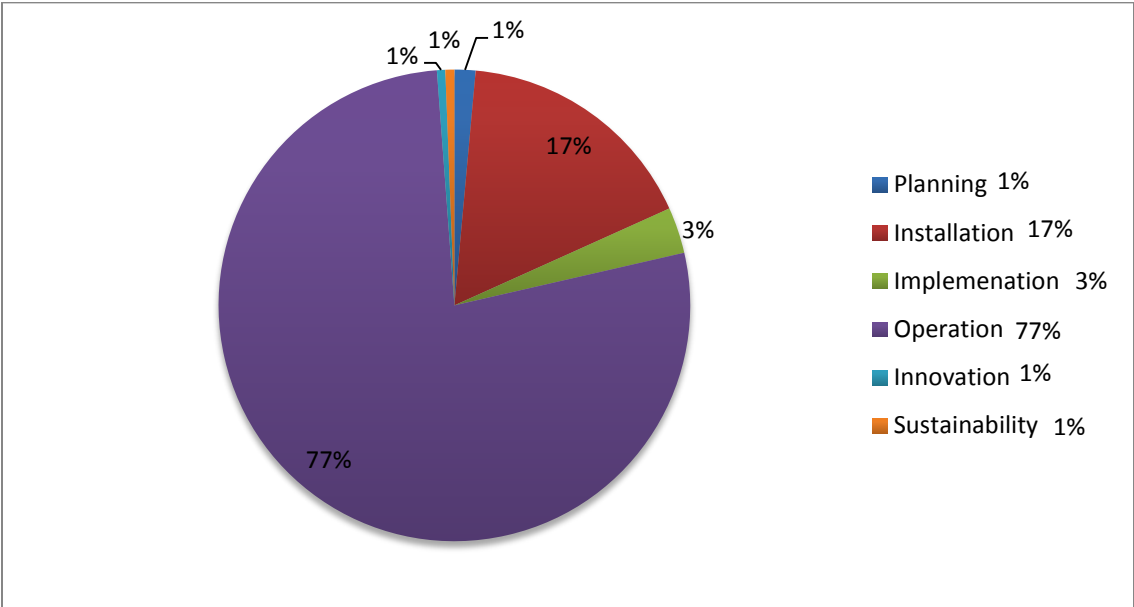


Figure 2. Cost profile by implementation stages for general outpatient R/EBPs



Cost profiles for distribution by implementation stages, start-up/recurrent and type of input

Figures 1 and 2 above depict the relative percentages of costs across the stages of implementation. As can be seen, for intensive outpatient R/EBPs, the vast majority of costs are operational costs, followed by costs associated with maintaining sustainability for the intensive outpatient programs. The planning and installation costs are a relatively smaller proportion of the total costs. For general outpatient R/EBPs, 91% of costs were operating costs, with a somewhat larger relative percentage spent on installation activities and lower relative percentage on sustainability activities.

Next we looked at costs incurred during start-up compared with recurrent costs. As you can see in both Figure 3 (intensive outpatient) and Figure 4 (general outpatient), the clear majority of costs are recurrent, with only 5-7% of costs being start-up costs. Given the overall budgets associated with these R/EBPs, this is not an insignificant cost; however, it does demonstrate that start-up expenses are only a relatively small portion. All start-up costs were adjusted for inflation using the US Bureau of Labor statistics CPI Inflation calculator (http://www.bls.gov/data/inflation_calculator.htm).

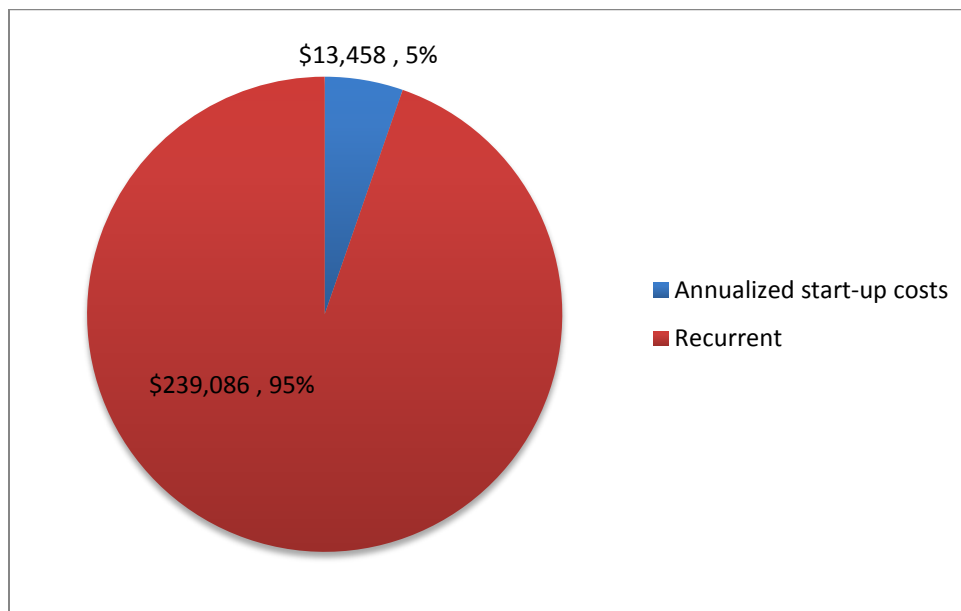
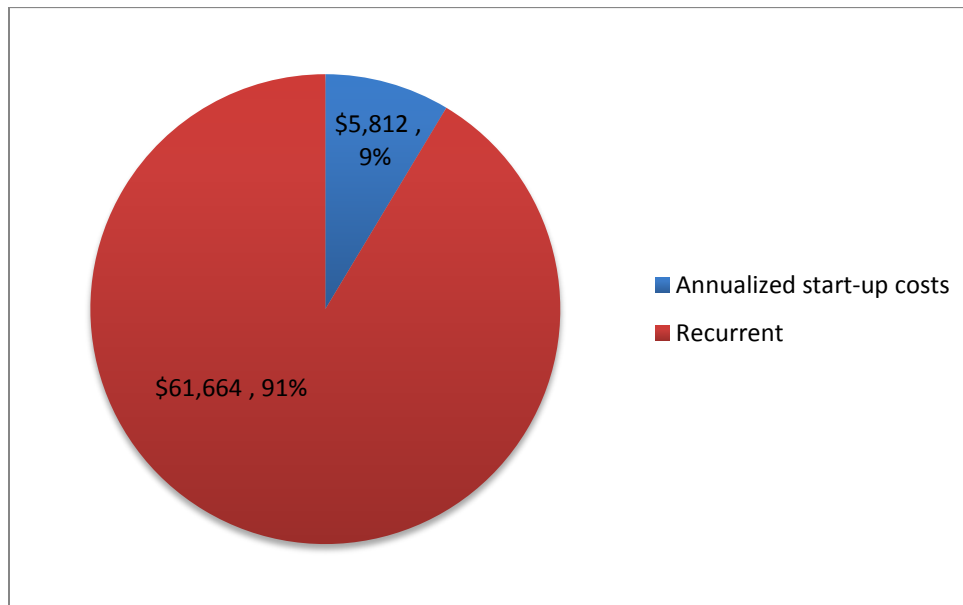
Figure 3. Cost profile by start-up/recurrent costs for intensive outpatient R/EBPs

Figure 4. Cost profile by start-up/recurrent costs for general outpatient R/EBPs



Next, we examined the incremental costs associated with implementation of an R/EBP. Given that most of these agencies would be engaging in business as usual if not for the R/EBP we wanted to estimate the additional costs (i.e., unique costs – net of overhead/indirect costs) associated with R/EBP implementation. Total costs, recurrent costs and incremental costs in Tables 5 and 6, are three separate ways of looking at costs. We exclude indirect costs because these data had the most gaps in completeness and interpretation on what these costs include may have varied most across respondents, when completing the web-based survey. Please note that recurrent and incremental do not add up to total costs. Recurrent cost per client is defined as recurrent costs excluding start-up and indirect/overhead. Incremental cost per client is defined as both start up and recurrent costs, excluding overhead and shared labor costs. It appears that incremental costs are particularly sensitive to the number of clients seen within each R/EBP. The more clients who are seen, the lower the incremental cost. This is because the unique costs are spread across more individuals, thus creating an economy of scale.

Table 5. Weighted cost per client for Intensive R/EBPs

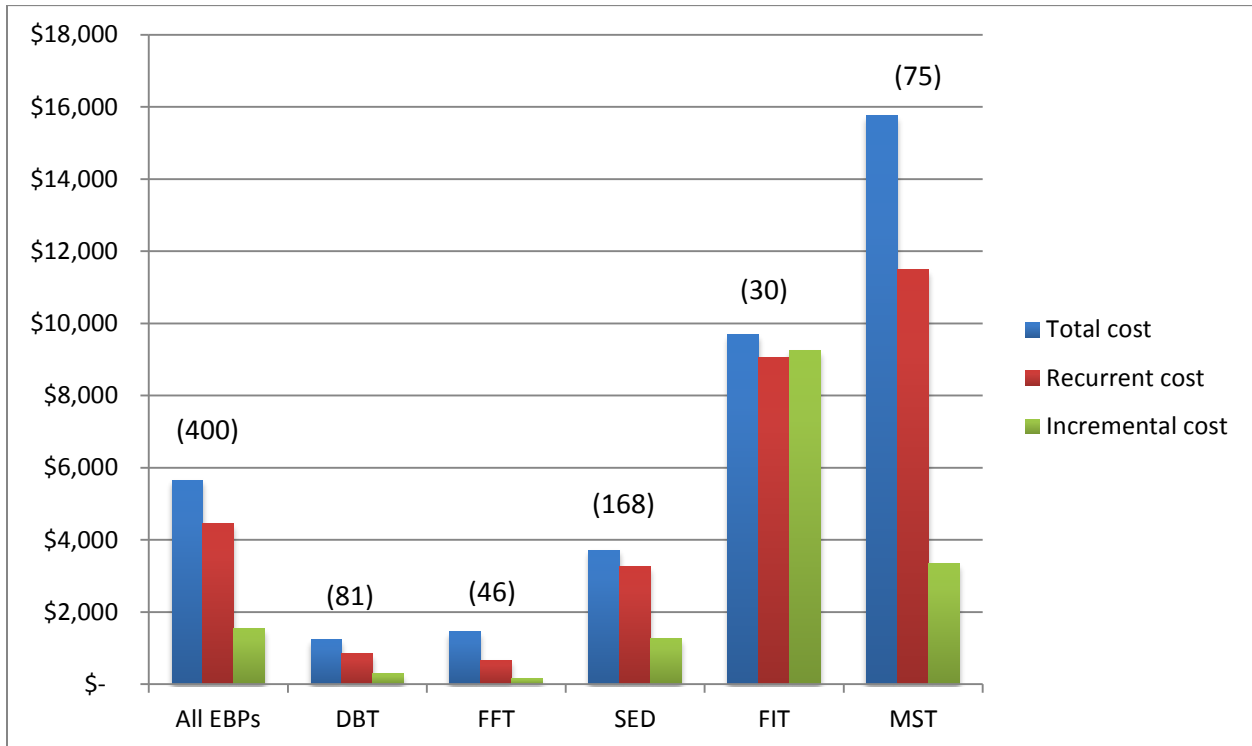
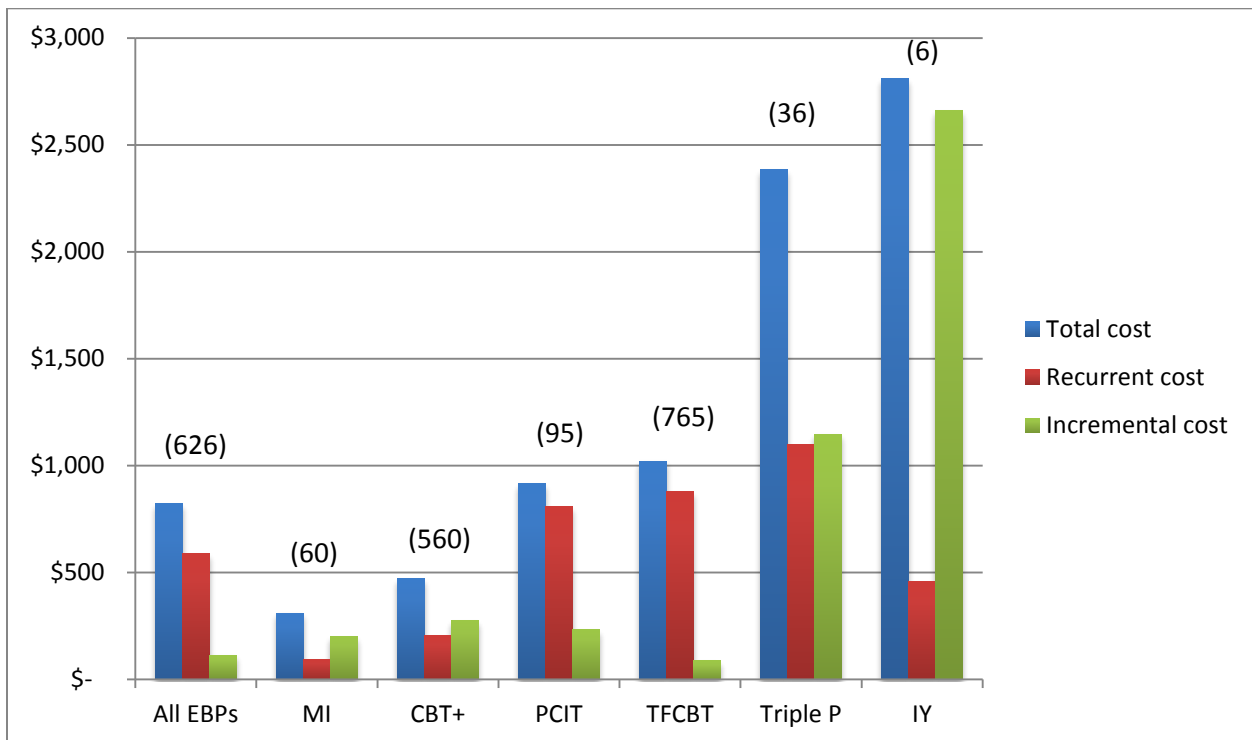


Table 6. Weighted cost per client for General Outpatient R/EBPs



Qualitative results

Implementation of the R/EBPs was quite varied across the agencies. Three agencies had initiated implementation of their first R/EBP ten or more years ago, and three agencies had two or less years of experience across any reported R/EBP. The average length of implementation was 4.93 years. This is an important variable because it is likely that agencies that have been successfully implementing R/EBPs for multiple years may have found additional efficiencies and have to invest less time in recruiting families and referral sources. At the same time, agencies that have less experience may not yet be engaging in some of the sustainability-related or innovation-related activities and thus those are not included in their cost estimates.

Another interesting area of variability is the type of training that was used. Table 7 provides an overview of the various types of R/EBP trainings that were offered to providers at each agency. The most common method was sending providers to a training/external trainer. This has implications for costs when there is staff turn-over. Only five agencies reported that they had capacity to have in-house trainings.

Table 7. Types of Training offered by Agency

Methods of Training Provided	N
Sent to training/external trainer	10
Formal Orientation	7
Shadowing	7
Formal training at agency	4
Other	3
Web	1

Next, we wanted to explore if there were any perceived benefits at the agency level to implementing R/EBPs. We examined perceived impact on therapist caseload. The majority of agencies reported that there was not a change in the amount of clients that a therapist can see if they are implementing an R/EBP (Table 8). The majority of agencies reported that R/EBP implementation did not have an impact on the rate of no-shows. Notably, although it's a minority of agencies, 4 agencies indicated that there was a decrease in no-shows. While not the focus of this report, this information is useful because both the number of clients seen and the number of no-shows can impact costs at the agency level.

Table 8. Change in therapist caseload by agency				
Change in number of clients?				
Yes	1			
No	7			
N/A	4			
TOTAL	12			

Change in no-shows?			
Decrease	4		
Increase	0		
N/A	8		
TOTAL	12		

While we were not able to address financing explicitly within the scope of this evaluation, we did ask the agencies their impressions about the current funding source(s) ability to cover the costs associated with implementing the R/EBP. Here, information was about evenly split across R/EBP (Table 9).

Table 9. Impressions of costs covered	Yes	No	Not indicated
Intensive outpatient			
Wraparound for SED	1	2	0
Dialectical Behavioral Therapy (DBT)	0	1	1
Multi-systemic Therapy (MST)	0	2	0
Functional Family Therapy (FFT)	0	1	0
Family Integrated Transitions (FIT)	1	0	0
General outpatient			
Trauma Focused Cognitive Behavioral Therapy (TF-CBT)	3	3	1
CBT+	2	1	2
Parent Child Interaction Therapy (PCIT)	2	2	0
Triple P-Positive Parenting Program	1	1	1
Incredible Years (IY)	1	0	0
Motivational Interviewing (MI)	1	0	0
TOTAL	12	13	5

Technical assistance can be a source of support to R/EBP implementation, and also a cost depending on the amount of time spent in TA-related activities. Table 12 describes the different sources of TA that agencies reported using. Most frequently cited was TA from a University. This was followed by program-specific TA from program developers.

Table 10. Report of Technical Assistance by Agency							
	<i>Program developer (1)</i>	<i>University (2)</i>	<i>Regional Technical Assistance Center (3)</i>	<i>National Technical Assistance Center (4)</i>	<i>Other local agencies (5)</i>	<i>other (6)</i>	<i>missing (7)</i>
Total*	4	5	1	1	1	2	4

* Facilities were able to select more than one response on how Technical Assistance was achieved

We inquired about whether the agencies were in the process of adopting a new R/EBP in this next year. Six agencies indicated that they are planning on expanding their R/EBP service array. Interestingly, we were unable to identify a causal relationship between agencies who are able

to cover the costs of their current R/EBPs, and those which reported that they are planning to expand their array of R/EBPs. Of the agencies who reported that the costs of providing the R/EBP's is covered by current resources (n=5), only two of them responded that they planned to pursue more R/EBPs. On the other side, of the agencies who responded that the costs are in excess of their current funding resource (n=5), two of them reported that they are planning to adopt another R/EBP. One of these agencies currently provides an intensive R/EBP and the intervention they are interested in adding is within the general outpatient R/EBP category and thus less expensive to operate and a potential contributing factor. All but one of these agencies were able to distinguish the ability to cover costs within each program, with one site stating they could cover one out of three of their R/EBP's. The remaining agencies responded with yes or no across their entire R/EBP programs.

Discussion

This preliminary study explored the impact of including the full range of implementation activities on cost estimates for provision of evidence-based practices. Total costs as well as recurrent and incremental costs were evaluated. Due to the sample size, we were only able to look at relationships between different agency characteristics and costs in a descriptive manner. Future research with a larger sample size could improve the extent to which we understand features of agencies that are associated with relatively higher or lower costs. There are several requisite next steps, discussed below, that are necessary to increase the confidence in these preliminary numbers. Despite some notable limitations in the availability of specific costs, the cost estimates derived for this study can be considered a notable 'next step' in progressing information about the costs incurred by agencies to deliver evidence-based therapeutic services.

For this report, we separated costs along two service levels: intensive outpatient, and general outpatient. Services that were considered intensive outpatient included Multisystemic Therapy, Family Integrated Transitions, Dialectical Behavior Therapy and Wraparound-SED. We characterized these interventions together because they are typically delivered by therapists under specific conditions. With the possible exception of Dialectical Behavior Therapy, the other interventions are delivered exclusively by teams of therapists for whom the specific intervention is the only service that is provided. For all of the interventions, the treatment model requires smaller caseloads (e.g., typically under 10 clients) and several hours of intervention time per client per week. This is contrasted with the interventions we deemed 'general outpatient.' For these interventions, therapists may deliver the intervention as part of a suite of different types of therapy they may provide. As such, these are typically part of 'workforce enhancement strategies' that are not generally associated with formation of unique treatment-providing groups. Services are generally provided in the one hour per client per week modality.

Perhaps unsurprisingly, costs were dramatically different across intensive outpatient compared with general outpatient. Specifically, those interventions that are more intensive cost between

\$1,234 and \$17,780 per client (average \$5,661). This is contrasted with general outpatient, which cost between \$311 and \$2,810 per client (average \$824).

An examination of the incremental costs helps to describe what additional costs are being incurred by agencies delivering these practices – assuming that they would be conducting ‘treatment as usual’ if they were not delivering the R/EBP. The incremental costs appear to be strongly associated with the number of children or families seen for the intervention. This makes sense because all unique costs associated with implementation (e.g., training providers, consultation) are spread across the number of clients. Said another way, the greater the clients, the better the economy of scale. This clearly demonstrates the importance of focusing on implementation. An investment in effective implementation functions to reduce the overall costs per client over time.

Notably, compared to the cost estimates for delivery of services provided by WSIPP, some of the R/EBPs evaluated for this study had higher costs and others had lower costs (Table 15).

Table 11. Cost of Agency reported R/EBP’s by WSIPP

R/EBP	Program Cost (2013)
Multisystemic Therapy	\$7,576
Functional Family Therapy	\$3,357
Family Integrated Transitions	\$11,565
Wraparound for SED	\$2,120 (2007)
Incredible Years	
<i>Parent and Child Training</i>	\$2,610 (2013)
<i>Parent only training</i>	\$2,215 (2013)
CBT+ (training format)	
<i>CBT for Anxiety</i>	
<i>Individual Therapy</i>	\$1621 (2010)
<i>Group Therapy</i>	\$559 (2010)
<i>CBT for Adolescent Depression</i>	\$1207 (2010)
<i>CBT for PTSD</i>	\$733 (2009)
<i>Behavioral Parent Training</i>	\$778
Trauma-Focused CBT	\$733
Triple P	
<i>Individual</i>	\$1,792 (2010)
<i>Group</i>	\$367 (2010)
Parent Child Interaction Therapy for children with disruptive behavior	\$2,240 (2007)
Motivational Interviewing	

Note, WSIPP did not provide cost estimates for DBT.

These differences could be attributable to the unique differences in our sample and the ways in which WSIPP created their cost estimates. With our relatively small sample size, there is a high

susceptibility for costs to be driven by the unique features of each agency – and this is particularly pronounced for R/EBPs for which only one agency responded (e.g., Family Integrated Transitions). Additionally, some agencies may be delivering the service in a distinct way compared with typical practice. For example, Triple P is being implemented as a home-based service in the agencies reporting on this program, compared to the clinic-based services that were estimated by WSIPP. The assumptions on which WSIPP bases their cost estimates may vary across the agencies in this study, creating additional variability in our estimates. In the case of the parenting interventions Triple P and PCIT, it is possible that the per client costs are higher in this study because the agencies have made the significant investment in the training of the programs yet are not delivering the intervention with the expected number of families. Another area of variability may be who sponsored the training events. The agencies may have paid themselves, thus having a larger cost to the agency, or they may have been part of a state-sponsored initiative in which there was little out of pocket expenses associated with the delivery of the training. This could partially account for the differences with CBT+, TF-CBT, and Triple P where the state undertook a state-wide initiative and sponsored the training events.

This study has potentially important implications as Washington State progresses in increasing the proportion of services that meet the definition of evidence- or research-based. Pairing this study with the Gaps Analysis report (Walker et al., 2015) helps to delineate where investments in R/EBPs are particularly important and what some of the costs to initiate and sustain the R/EBPs may be.

Findings from this preliminary study need to be considered alongside some important limitations. For all agencies, there were costs associated with implementation that were unable to be estimated. This was particularly true for agencies that had first initiated the program many years ago. In these cases, some of the institutional knowledge about the activities associated with start-up may be subject to recall bias, or may be completely unavailable due to turn-over. Therefore, it is highly likely that these cost estimates are an underrepresentation of the ‘true’ cost of implementation. Agencies reported on implementation efforts that were initiated up to eleven years ago. Historical records and recollections are subject to recall bias and inaccuracies, resulting in poor estimates. Because of this variability, we were unable to capture the same data from every agency – each agency has their own constellation of missing data. There was a particular challenge with missing data in the areas of sustainability and adaptation. Because of this, the reliability of the estimates is a major concern. To partially address this limitation, we used the weighted averages for costs to attempt to contain the error at the agency level.

If BHA chooses to move forward with this study, we will examine the impacts on variable costs, such as the salary of the therapists and the costs to purveyors for the training events. We will explore, descriptively, differences between larger and smaller agencies and those that serve more rural settings compared with more urban settings.

In order to finalize this report, several critical steps are necessary in order to increase the reliability and validity of the data. The key steps currently underway include:

- Coding qualitative responses to better understand activities for which we were not able to estimate costs.
- Use survey data to extrapolate missing information for agencies that are similar and offer the same types of R/EPB services.
- Conduct stakeholder meetings to further understand the implications of this report and generate conclusions and recommendations.

References

- Aarons, G. A., Wells, R. S., Zagursky, K., Fettes, D. L., & Palinkas, L. A. (2009). Implementing Evidence-Based Practice in Community Mental Health Agencies: A Multiple Stakeholder Analysis. *American Journal of Public Health*, 99(11), 2087–2095. doi:10.2105/AJPH.2009.161711
- Beidas, R. S. and Kendall, P. C. (2010), Training Therapists in Evidence-Based Practice: A Critical Review of Studies From a Systems-Contextual Perspective. *Clinical Psychology: Science and Practice*, 17: 1–30. doi: 10.1111/j.1468-2850.2009.01187.x
- Dopp, A. R., Borduin, C. M., Wagner, D. V., & Sawyer, A. M. (2014). The economic impact of multisystemic therapy through midlife: A cost–benefit analysis with serious juvenile offenders and their siblings. *Journal of Consulting And Clinical Psychology*, 82(4), 694-705. doi:10.1037/a0036415
- Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M., & Wallace, F. (2005). Implementation research: A synthesis of the literature. Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network.
- Hoomans, T., & Severens, J. (2014). Economic evaluation of implementation strategies in health care. *Implement Sci*, 9, 168.
- Institute of Medicine (2015); Opportunities to Promote Children’s Behavioral Health: Health Care Reform and Beyond: Workshop Summary; iom.nationalacademies.org/reports
- National Registry of Evidence-based Programs and Practices (SAMSHA); www.nrepp.samhsa.gov
- Prinz, R. J., Sanders, M. R., Shapiro, C. J., Whitaker, D. J., & Lutzker, J. R. (2009). Population-based prevention of child maltreatment: The US Triple P system population trial. *Prevention Science*, 10(1), 1-12.
- Proctor, E. K., Knudsen, K. J., Fedoravicius, N., Hovmand, P., Rosen, A., & Perron, B. (2007). Implementation of evidence-based practice in community behavioral health: Agency director perspectives. *Administration and Policy in Mental Health and Mental Health Services Research*, 34(5), 479-488.
- Ritzwoller, D. P., Sukhanova, A., Gaglio, B., & Glasgow, R. E. (2009). Costing behavioral interventions: A practical guide to enhance translation. *Annals Of Behavioral Medicine*, 37(2), 218-227. doi:10.1007/s12160-009-9088-5
- Updated Inventory of Evidence-Based, Research-Based, and Promising Practices for Prevention and Intervention Services for Children and Juveniles in the Child Welfare, Juvenile

Justice, and Mental Health Systems (September 2014). Evidence-based Practice Institute & Washington State Institute for Public Policy. Document No. E2SHB2536-5i

Walker, S.C., Hurvitz, P., Leith, J. & Weiss, N. (2015). Gaps analysis of research/evidence-based treatment for children's public mental health in Washington State. Report.

Washington State Institute for Public Policy (2014). *Benefit-cost technical documentation*. Olympia, WA: Author.

