

Analyzing the Costs of Integrated Care

A Brief Guide for SAMHSA PBHCI Grantees

Integrating primary care into a behavioral health clinic means bringing on new staff, establishing new services, developing new operations, and acquiring new supplies and equipment. Providing integrated care services intends to reduce the long-term costs of health care, but to evaluate if the program is successful, clinics need to understand and appropriately estimate the actual costs to provide integrated care.

The purpose of this guide is to help community behavioral health center administrators to understand the process of estimating and analyzing the costs of providing primary care services to adults with serious mental illness (SMI) so that they can effectively budget for and evaluate their integrated care program. In 2013, five Substance Abuse and Mental Health Services Administration (SAMHSA) Primary and Behavioral Health Care Integration (PBHCI) grantee organizations undertook a cost analysis of their community mental health center-based programs of integrated care. The experiences of these clinics illustrate the concepts throughout this guide.

All health care clinics incur costs at different stages of program implementation, as outlined in the table below.

Cost Category Examples	Stages of Program Implementation				
	Planning	Training	Start-up	Ongoing operation, monitoring, & maintenance	Shut down (if indicated)
Personnel	X	X	X	X	X
Supplies	X	X	X	X	X
Equipment			X	X	
Training	X	X	X	X	
Information systems			X	X	X
Outreach and communication			X	X	X
External consultant costs		X	X	X	

Types of Cost Analyses: Definitions

In this document, the term “cost analysis” is used generically to indicate a variety of techniques for describing and evaluating the use and impact of funding. The steps presented in this guide are the required first steps for most cost analysis approaches from the most basic to more complex, such as cost-effectiveness, cost bundling (e.g., episode of care or case rate estimation), and cost-benefit analysis. It is important to define these terms because cost effectiveness and cost benefit are often erroneously used interchangeably.

A **cost estimate** is an approximation of the total dollars spent running a program or service. This includes the amount of revenue generated by billing a funder for services rendered against the cost of maintaining overhead and staffing. Cost estimation is useful for budget planning, and the information used to create the cost estimate is also much of the same information that is used to conduct other cost-related analyses, such as cost-benefit analysis or cost-effectiveness analysis. Cost estimation is also used as part of the process for estimating the reimbursement rates for care bundles or reimbursable “episodes” of care (e.g., following a cost assessment a clinic can determine the average cost of treating a condition from the process of screening/identification, treatment, and stabilization or cure).

A **cost-effectiveness analysis** compares the relative costs and outcomes of two or more courses of action (e.g., two different types of interventions). Specifically, a cost-effectiveness analysis describes the relative gain in health (e.g., years of life, cardiac events averted, weight lost) over the monetary cost of the health gain. Programs can use this information to decide between two or more different interventions based on the impact(s) and cost(s) of each. Cost-effectiveness analyses often report outcomes in terms of quality-adjusted life years (QALY). A QALY is a general metric describing the quality and quantity of participant life lived following the intervention, and can be used to compare the cost-effectiveness of very different interventions that broadly affect health; for example, a smoking cessation intervention vs. sexual health intervention. Clinics attempting to answer the question, “*is integrated care cost-effective?*” must obtain information for an appropriate control group that is not offering integrated care so that both the costs and effects on health can simultaneously be weighed and compared.

A **cost-benefit analysis** is used by clinics or other businesses to balance the total expected costs of one activity or intervention against the total expected benefits in terms of labor, time, cost savings, and other factors. Sometimes these benefits may include abstract concepts that are difficult to monetize (i.e., put a dollar value on) such as consumer well-being. For example, clinics might use cost-benefit analysis to answer the question, is it better to partner with a local health center to provide integrated care or is it better to hire our own primary care provider, given that the financial costs may be greater to hire instead of partner. Cost-benefit analyses are complicated and are best suited to individuals or agencies with relevant expertise. Clinics without this expertise can consider hiring an outside consultant.

Types of Cost Analysis

A **cost estimation/assessment** can tell you that the average cost of providing primary care services to a behavioral health consumer at your integrated clinic is \$500/year.

A **cost-effectiveness analysis** can tell you that, from a payer perspective, the \$500/year integrated primary care cost per consumer at your clinic is less than the per consumer cost at a control clinic that has lower prevention costs but higher total hospitalization costs and poorer consumer physical and behavioral health outcomes.

A **cost-benefit analysis** projects the total costs to the clinic (or payer) associated with two alternate approaches to providing integrated care; for example, no integration vs. integration).

The key to distinguishing a cost-benefit from a cost-effectiveness analysis is to examine the units of measurement used in the analysis. Cost-benefit relies on a common measure, with costs and benefits expressed in monetary units. If the costs and outcomes of a program are expressed in dollars, for example, the analysis is a cost-benefit. Cost-effectiveness analysis measures project results in units rather than monetary figures. For example, a cost-effectiveness analysis of a company wellness program might study the program in terms of its costs versus the reduction in sick days taken by employees. A cost-benefit analysis of the same program could measure benefits as the money the company saved as measure in reduced sick days.

The Seven Steps of a Cost Analysis

There are seven key steps to conduct a cost analysis of integrated care services. These are:

1. Choose the Cost Analysis Team
2. Identify the Audience
3. Define the Scope
4. Structure the Cost Estimate
5. Develop a Cost Analysis Design
6. Gather Data and Conduct the Data Analysis
7. Effectively Present Findings

Step 1: Choose the Cost Analysis Team

The first step in designing and executing a cost analysis is to choose a team who can fully execute the task. This team will need to have a clear charge or charter from the clinic leadership defining what is being asked of them, including access to information that will support the analysis. In many cases, clinics will need to draw from both internal staff and external experts. Internal staff may include the chief financial officer, a health information technology (HIT) staff person, lead clinical staff involved in the programs, and continuous quality improvement staff. External team members could include university faculty and/or other consultants with expertise in health econometrics, biostatistics, data analytics, or quantitative program evaluation.

The cost analysis team should work with organizational leadership to establish the following:

1. **Purpose:** To ensure that the cost analysis project produces information that is useful to the organization, the team should begin with a clear purpose or need to be addressed by the cost analysis (see Ginder, Peck, & Keating, 2014).
2. **Goals:** The cost analysis should have specific, measurable results that are aligned with the work group's purpose and vision. Goals for the analysis will have specific, measurable objectives and tasks.
3. **Preliminary Expectations for Scope:** Project scope should help the analysts identify the bounds of their work. The scope should define what aspects of a program should be included in the analysis, as well as what elements are *not* included (e.g., the analysis could include acquiring hospitalization data from managed care providers but will NOT include acquiring data from individual hospitals). Other aspects to be talked through in the early planning stages should include the target population, cost analysis timing, and type of services provided. Timing is important since program capacity, costs, and effectiveness often change over time, and may be lowest when a new program is in the early stages of implementation. We note that decisions made in the early stages about scope are subject to change based on the ultimate availability of data, budget, and time to support the cost analysis work.
4. **Key Roles and Responsibilities:** From an organizational perspective, a description of who is on the team and their functional responsibilities can ensure that the cost analysis is completed as planned.
5. **Operations:** This part of the charter clearly lays out expectations for specific behaviors from the team members (i.e., response to emails from team members within two business days; attendance at weekly meetings; vetting all communications with persons outside the team by Persons A & B before distribution). Setting clear expectations for team behavior is especially important when the team is cross-functional with members in different reporting structures, organizations, or organizational cultures.
6. **Operating Procedures:** Descriptions of meeting structure, communication norms, decision-making methods, conflict resolution, resource acquisition, and reflection strategies.

Example from the Field:

One participating PBHCl grantee clinic used the cost analysis to inform the development of the sustainability plan. They identified the purpose of the analysis and the key players before applying to participate in a cost analysis project. The project lead was a member of the clinic's senior management team. His role was to ensure the analysis

was relevant to the sustainability plan. The lead analyst was an external evaluator who had worked with the organization on other projects. Additional internal staff members were assigned to assist the external evaluator to allow a more timely flow of information to the lead analyst.

Step 2: Define the Audience

A cost analysis is conducted to answer a specific question. This question often comes from one or more internal or external stakeholders. Knowing the target audience for the cost analysis will help the cost analysis team choose the best approach to take. Sometimes data access limitations (e.g., the data needed to answer a question are absent or not accessible due to technology constraints) or resource limitations (e.g., lack of qualified staff to conduct a needed analysis) constrain the capabilities of the cost analysis team and stakeholder questions may need to be adapted based on the data and resources available. For example, it is not unusual for leadership to request a cost analysis to assess a new program or a program that the leadership would like to showcase to a funder or potential partner agency; in cases such as this, the cost analysis team can take early steps to understand if there are specific program components or approaches of particular interest to the audience that should be highlighted (and understood in particularly fine detail) in a final presentation or report. This will help define the next steps in the development of the analysis strategy.

Questions the cost analysis team should answer to define the audience:

1. Who is the audience or stakeholders that will use the analysis/report? or who requested the analysis?
2. What question(s) does the audience or stakeholders expect to be answered?
3. What cost perspective is of greatest interest to audience or stakeholders (e.g., total cost of care, program level costs, or costs to a specific payer or stakeholder)?
4. Which costs should be included in the analysis (e.g., primary care costs, behavioral health care costs, or both)?
5. Should the analysis account for cost-offsets (e.g., increases in revenue from integrated care)?
6. What phase(s) of the integrated care project will be of greatest interest to the audience (e.g., preparation, startup/initial implementation, and/or sustained operation)?
7. Which data and for what time interval would be necessary for the question to be answered?
8. What does the literature say are the greatest drivers of cost? Does the team have access to data covering all of these drivers?
9. Will the analysis inform a particular healthcare reform, community effort, and/or agency strategic goal? Who might be interested in the results of this work?
10. What is the intended final product? (e.g., an internal report, academic paper, and/or report to policymakers or funders)?

Example from the Field:

Based on previous work, one participating organization identified state and local government officials as the primary audience for their cost analysis results. By providing cost information to government officials, they believe it would lead to government investment in the program and to its long-term sustainability. Based on this audience, they decided to pay particular attention to ongoing operational costs of providing integrated services as well as access and engagement with health care services. The audience's primary goals were a main consideration during the design period.

Step 3: Define the Scope

Once the team understands the leadership charter and the stakeholder/audience expectations, the scope of the analysis can be developed. This step is critical. In order for cost analyses to be manageable and meaningful, the scope of the project must be clearly laid out. As above, the scope determines which costs should be included and not included in the analysis, the time period in which the costs were generated, and, for a sophisticated analysis of costs relative to usual care (or another approach), the comparison or control sample.¹ The scope of the analysis is likely to undergo several iterations as the reality of data source access limitations, level of team analytic expertise, time, or revenue constraints emerge. The team must work hard to assess the data sources and tools they have available to answer the question they were charged to answer. Given the scope of the analysis, if the question cannot be answered with available resources, the question must be changed or addressed in an alternative way. If an alternative approach is not possible, the team must meet with leadership to address how to overcome limitations (e.g., obtain resources) or reframe the question to be evaluated.

Other considerations include: Identifying the date range for the data, the extent to which billing or claims data capture the full extent of services provided (e.g., certain wellness activities cannot be billed so claims data cannot capture the service), and/or a determination as to whether an electronic health record report can capture the needed data or if new code (e.g., dummy code for a non-billable service) is required to support the necessary data extraction. If an agency does not have an electronic record, the data will likely need to be extracted from paper charts, which requires the development of tools for capturing the data reliably (e.g., code books into which the data will be entered, instructions for the data collection staff on where to find the data, and what to do if it is missing). Notably, some service utilization data is available for purchase from vendors. Purchasing data may be a viable option if specialized data is needed. Another option could be to access large datasets for free or reduced cost from data warehouses owned by nonprofits or universities; some states may offer access to Medicaid claims data, however working with these data requires considerable analytic and data-cleaning expertise. Managed care companies may also be willing to provide these data since they may have collected them for their own purposes. When determining the analysis scope, the required level of analysis and the software and staff skills needed to conduct the analysis must also be understood. Some analyses may be conducted using in-house software (e.g., MS Excel) and staff, while other analyses may require specialized statistical software (e.g., SAS, STATA, R) that must be purchased and/or require a consultant to be hired to conduct the analysis.

Finally, once the scope is defined, the team must determine if the analysis requires an Institution Review Board (IRB) approval. Some agencies have the IRB process built into their continuous quality improvement activities. If you are working with a university faculty member, their university will typically require that an IRB approve the cost analysis plan; sometimes these approvals move quickly (weeks), but in other cases, they do not (months). Either way, health care data must be protected so staff will need to be trained on how to follow proper data collection, handling, and storage policies and procedures. All staff handling project data should undergo data safety and protections trainings (many standard accrediting agencies offer online training).

Questions that must be answered when specifying the scope:

- Which consumers are in the PBHCI program (and if applicable, control samples)?
- What time frame of data will be included (e.g., calendar days, an individual's length of/time in treatment)?
- What are potential influences on cost (e.g., are data available for specialist visits and services)?
- Given the audience for the project, from whose perspective(s) should you calculate costs (e.g., consumers, providers, payers, etc.)?
- What metrics and cost outcomes are most meaningful to stakeholders?
- Which costs are relevant to the goals of PBHCI (e.g., hospitalizations, emergency room visits, primary care visits, medication compliance, etc.)?
- Is approval from a federally-designated IRB required?

¹ The control sample may be internal to the agency (e.g., a similar clinic within a large agency that does not offer PBHCI-supported services) or external (e.g., perhaps the team has access to state-level data from other agencies that are offering integrated care).

- What kind of data protection policies and procedures must be followed given the source and type of data (e.g., accessing state Medicaid data requires an IRB explaining how the data will be used and findings disseminated)?

Example from the Field:

One organization decided, based on the availability of data, to use their primary care partners' county-wide data. They identified adults in the county behavioral health system of care who had been seen at the primary care partner's regular clinics, but not at an integrated clinic, and used those adults as their comparison group. They compared the changes in health in each group over a 12 month period. To measure access to primary care, they counted the number of primary care visits participants in the integrated care group had during a 12 month period before, and a 12 month period after enrolling in integrated services.

This approach has at least two major challenges: (1) spill-over effects from the intervention group (i.e., the whole clinic was primed to be thinking about whole-health and consumer need for primary care) and (2) selection effects, since consumers receiving integrated care may have been systematically different from those who did not (e.g., those already enrolled in primary care elsewhere may have been receiving preventive care for some time and in better overall health).

At another clinic, the cost analysis team had to be put on hold and a new team was appointed with a charter to specifically acquire cost data directly from the managed care organizations. This was an essential first step, since without the cost data from the managed care organizations, the cost analysis team could not proceed with the work defined in the charter.

Step 4: Structure the Cost Estimate

Once the scope is defined, the cost data must be organized. For example, figure 1 offers a framework within which clinics can account for various costs related to PBHCI. This schematic is only a starting place; clinics may choose to expand/decrease or refine the schematic to suit individual program needs. It is very important to select a cost structure that is comprehensive where each cost center or business unit within the budget is mutually exclusive. This ensures that costs are not overlooked or double-counted. Remember to estimate all of the same costs for both your PBHCI program AND, if indicated, for your control group. More discussion of the benefits of a control group can be found in Step 5: Developing the Analysis Design.

Many providers are estimating cost through bundling costs into episodes of care. This approach allows a provider to estimate the cost associated with treating a specific health condition from onset through treatment and recovery. For example, a PBHCI program may want to determine the average cost associated with treating a person with high blood pressure. Behavioral health providers may include the following services in their blood pressure episode of care: screening for high blood pressure, coordinating access to primary care services, and assisting the person to/from their primary care and cardiac specialist appointments. The behavioral health team might assist with gaining access to low cost medication and support the person in following through on their treatment plan goals (e.g., take medication as prescribed, increase exercise, and reduce sodium intake). Using the treatment of High Blood Pressure as an example, the steps for designing an episode of care include:

1. **Choose Condition:** High Blood Pressure (BP)
2. **Define Population:** People diagnosed with high blood pressure as evidenced by positive screens and assessment by a qualified health care provider.
3. **Identified Services and Associated Cost:** Blood pressure screening at intake/quarterly; referral and coordination with primary and specialty care, patient education and support.
4. **Episode Length of Time:** 6 -9 months from diagnosis to stabilization of blood pressure.
5. **Calculate Cost:** How much on average would it cost to treat an average episode of care?

Total Cost for High BP Care Coordination: \$100,000

Number of Patient Days in an Episode: 90

Number of Patients: 100/year

Case Rate: Per Member Per Day \$11; Per Member Per Month \$338; Per Member Per Year \$4,056

[Total Cost Divided by (Number of Patient Days in an Episode x Number of Patients)]365 = Per Member Per Year

[\$100,000/(90 x 100)]365 = \$4,056 Yearly PMP

Yearly Per Member Per Year/12 = Per Member Per Month

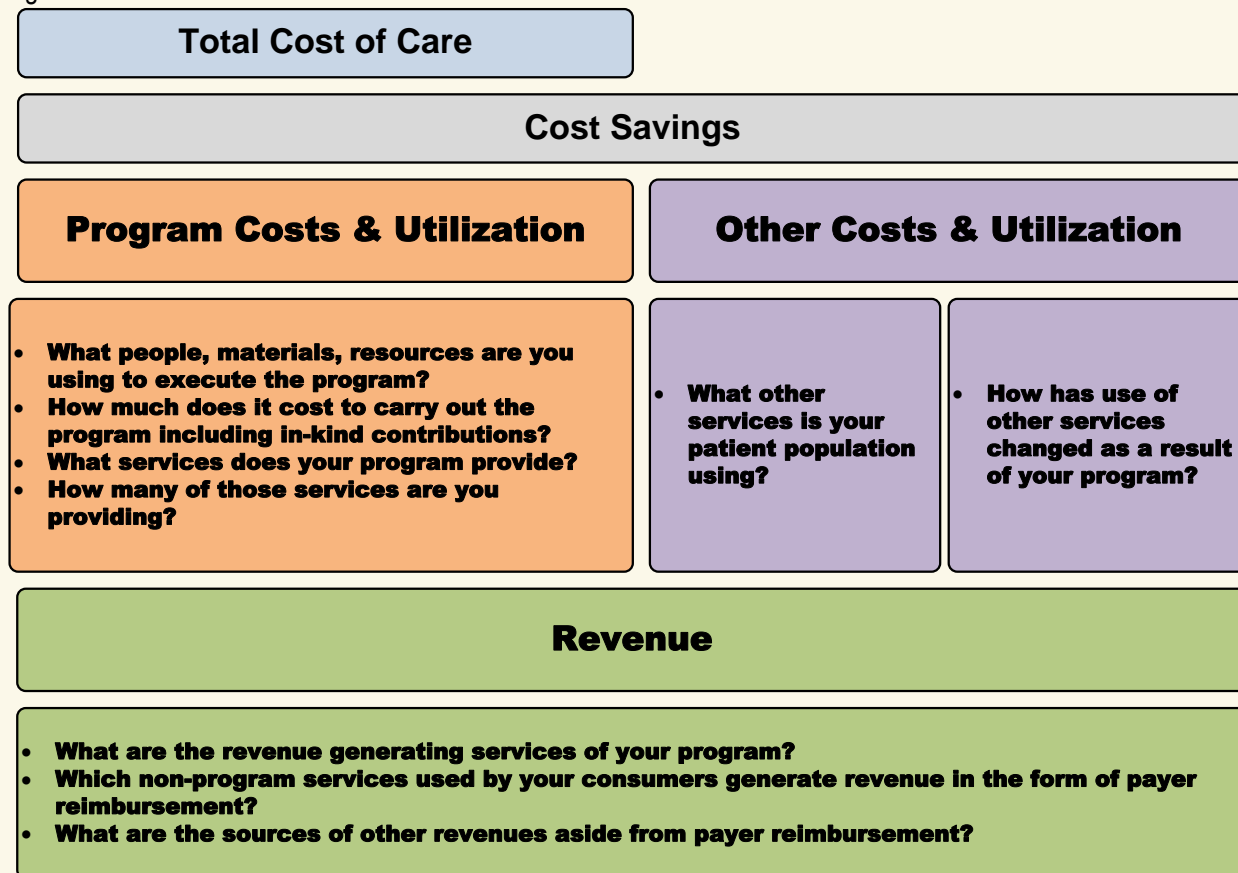
\$4,056/12 = \$338

Yearly Per Member Per Year/365 = Per Member Per Day

\$4,056/365 = \$11

(Source: Adapted from Manderscheid, R.)

Figure 1



Source: D. Scharf, P. Chen & V. Towe

Definitions

Direct costs: Costs that are directly related to PBHCI program operation. These costs would not have been incurred without PBHCI. These costs can be fixed or variable. An example of a direct cost is the salary and benefits paid to personnel.

Indirect costs: Sometimes called “overhead costs,” indirect costs are incurred regardless of whether the program operates. Typically, indirect costs are related to general infrastructure support (e.g., facility management and maintenance; general administration such as salaries for senior leadership for the organization as a whole). Salaries related to PBHCI-specific leadership should be included in *direct* (not indirect) costs. Like direct costs, indirect costs can be fixed or variable.

Fixed costs: These costs do not change as service volume increases or decreases. These costs typically involve equipment that can be used for more than one year (e.g., computers, diagnostic equipment, and vehicles). The related costs have to be allocated across the different years included in the analysis.

Variable costs: Costs that change as service volume increases or decreases. These are typically accounted for within one year (e.g., annual personnel costs, annual travel costs, etc.). That is, these costs will need to be calculated separately for each year included in the analysis.

Example from the Field:

An organization looked at operational costs (as opposed to start-up costs) to make a case for the specific funds needed to maintain the program. Another organization looked strictly at the costs for services utilized by consumers during the period under study. A third organization looked at utilization costs at their site plus costs associated with services used by other providers to determine total cost (to payers) of providing services to study participants. This kind of information may be available in claims (Medicaid, Medicare, or insurer) data sources.

Step 5: Develop a Cost Analysis Design

The cost analysis design lays out the method(s) by which cost estimates will be derived. The rigor of the cost analysis design will determine the extent to which one can have certainty that PBHCI (or the aspects of PBHCI identified in the project scope) is impacting costs. While analysis plans that include a control group are much more labor intensive, they allow the analytic team to make much stronger assertions about the impact of PBHCI relative to the original status of the program before integrated care, or compared to another program without integrated care, or a program taking a different approach to integration. Nonetheless, the analysis design can take many forms. Below are four common cost analysis designs (familiar to researchers of all types), listed from the least to the most robust.

Cost Assessment

A cost assessment approach takes into consideration the start-up and/or operating costs associated with beginning and/or running a program. This approach is **strictly descriptive**, in that it details a clinic’s costs and revenues but makes no assertions about the importance or impact of those costs on, for example, what costs would be without integration, or how they may be valued relative to the anticipated increase in scope and quality of care. For some cost analysis approaches, an agency may simply want to answer the question, “how much does our PBHCI program cost to start and/or operate?” With this cost assessment information, continuous quality improvement efforts can be targeted to high-cost areas thereby potentially reducing the total cost of the program. This information is likely to be very useful internally, and can be used to estimate the cost of replicating and sustaining a program. This kind of information is unlikely to be of interest to most peer-reviewed journals.

Pre-Post Design

The pre-post design allows analysts to estimate changes in cost over time. A basic pre-post design (i.e., one without a control group) might examine the cost associated with providing care to the same group of consumers during a period prior to, and subsequent to involvement in the integrated care program. For instance, a clinic might examine consumers’ use of services

(and associated costs) during the year prior to participating in integrated care, and during consumers' first year participating in the integrated care program. The comparison between pre and post intervention is a logical and useful approach. At the same time, it has important limitations. Without a matched control group, the analysis team cannot attribute changes in consumer service utilization and costs to the introduction of the integrated care program per se, since there may be cohort effects (i.e., broader trends happening in the community) accounting for the change. For example, a federal initiative (e.g., Medicaid expansion, mental health parity, etc.) could be driving the increased use of services; not simply the availability of integrated care at the clinic.

Quasi-experimental Design

A quasi-experimental design is a rigorous research design that includes naturally occurring intervention and control groups. For example, an analysis that analyzed individual consumer care costs at a PBHCI clinic and a similar clinic that did not receive a PBHCI grant, would be a quasi-experiment, because there is a control group (i.e., the clinic with no grant). The grant was not randomly assigned to the clinic, nor were consumers randomly assigned to receive usual or integrated care. The grantee clinic applied for, and won the grant; as such, the two clinics are likely to be different in important ways.

A quasi-experimental design is a more robust approach than a pre-post design because PBHCI changes in consumer service use and costs from the baseline to follow-up period can be compared against changes in the control group, thus allowing analysts to attribute any observed change in costs and utilization to the presence of the grant-funded services (as opposed to some other, broader trend). A quasi-experimental design is widely-used and respected in community-based research, and if done correctly, could warrant publication in an academic journal (an added bonus to your cost analysis efforts).

Experimental Design

The most robust cost analysis design is an experimental design, in which consumers or clinics are randomly assigned to receive the integrated care intervention under study. This design is more common in academic settings and is typically not feasible for most agencies. In clinical research, it can also raise ethical concerns since some individuals may be assigned to no-treatment (or treatment-as-usual) conditions and not receive what could be a successful treatment. In most cases, a quasi-experimental analysis (above) will be considered rigorous and appropriate to meet most cost analysis needs.

Attrition

An important additional consideration to any cost analysis design is how the analytic team will account for participant attrition (i.e., individuals who drop-out of treatment, or who are lost to follow-up and who do not remain in care throughout the entire study period). While the scope of this report precludes a complete discussion of the ways that analysts can account for attrition, it is important to note that individuals who do not complete treatment may be different from those who stay in care, leading analytic teams to either under-estimate or over-estimate consumer and clinic impacts on service use, outcomes, and costs of care. In any case, every analytic design should include a plan for documenting and accounting for individuals whose services are not fully accounted for during the cost analysis period (from baseline to the end of follow-up).

The extent to which a team decides to use a particular design will depend on the cost analysis under question, the scope of the project, and the available data and resources. The more robust the design, the more data, time, analysis expertise, and financial resources will be needed to conduct the evaluation. Each design provides a glimpse into the cost of a program. Being able to articulate the strengths and weaknesses of a design is as important as the design itself. Otherwise, key stakeholders and decision makers can be misled.

In the process of choosing the design for your organization, ask these questions:

1. What financial resources are available to design and analyze the cost analysis design?
2. Which research design (e.g., descriptive, pre-post; quasi-experiment) meets the purpose of our charter and the needs of our key stakeholders?
3. Can we track all participants and for how long (i.e., how are we accounting for attrition?)?
4. Are we able to include a control group? How will the addition of a control group enhance our analysis? Do we need one to meet our project aims?
5. What are the features of an appropriate control group? Can we randomize assignment to the control and intervention groups?
6. What are the dates for the analysis time period?
7. What are other limitations of our design and how are we documenting them for our final written product?

Example from the Field:

For participating grantees, the design was largely based on the availability of data. None of the groups were able to employ an experimental design approach since randomizing to a PBHCI and control group was not possible. However, properly matched control groups were available to organizations that had access to system-wide claims data. Some grantees worked with cost analysis consultants and created matched control groups in a quasi-experimental design to create highly rigorous, publication-worthy analyses.

Step 6: Gather Data and Conduct the Analysis

Now that the design is in place, the mechanics of collecting and analyzing the data must be determined. The data collection process may involve either uploading or downloading the data received from a third party and/or from the electronic health record(s). If the analysis team is using paper records, the data must be hand entered (or scanned into) into a software system such as MS Excel or IBM-SPSS. Either way, the data parameters must be clearly articulated using a data code book (a.k.a. data dictionary). This document lists the specification for each of the data elements (i.e., variables) included in the data set (e.g. dates are in the mm/dd/yyyy format). The data code book is critical for ensuring that data are entered and analyzed in a consistent and reliable way. Once the data are collected and entered into the analytic software, the data are ready to be cleaned. Data can be cleaned in several ways. The most common are to first assess each of the data variables to make sure they are in proper format (e.g., are some of the cost data using cents and other not?). Software can transform data to make sure the data are within specifications as defined by the data code book (e.g., maximum value for consumer age is 100 years).

Plotting the data can also help to show if there are data entry errors. Plots will reveal outlier data or data points that are far outside of the other data (e.g., a service cost in the millions when all the other services do not rise above a thousand dollars). These outliers may be a result of error (e.g., typing mistakes during data entry) or they may be a naturally occurring outlier (a valid value that, by chance, fell outside of other values). Finally, data from different sources (e.g., control and intervention group databases) may need to be standardized to ensure that data are reported in similar units (e.g., blood pressure screening is reported monthly, so Body Mass Index screening should also be reported monthly to ensure that total costs are all reported in the same units).

Some key checks during the data gathering and analyzing stages are:

1. Have the data been organized, properly cleaned, and checked for quality prior to analysis?
2. Have proper analytic approaches been chosen given the data available and design?
3. Are data analysis resources (e.g., consultants, software, etc.) in place?
4. Were data cleaned (e.g., plotted for outliers that are a result of data entry errors)?
5. Do data need to be standardized or transformed in some way to account for different time frames or units?
6. Have you shared your results with internal individuals who may be able to provide insight into the plausibility and reason for key findings?

Example from the Field:

During the review of preliminary data, one organization noted that clients identified as Latino seemed to be disproportionately low on the access/engagement scale. The organization plans to perform further analysis to investigate this disparity, which may or may not be naturally occurring. The staff would not have been alerted to this difference unless they had taken the time to clean the data.

Step 7: Presenting the Findings: Making a strong case

Indeed, a cost analysis is not a simple process and when sharing the findings, there is a risk that the audience can get confused. Prior to presenting results, the cost analysis team should gauge the ability of the audience to understand the findings. Some audiences will want a discussion rooted in graphs and tables, while other audiences may want a few bottom line conclusions with little discussion of data points and numbers. Regardless of who the audience is, the presentation must articulate the limitations and strengths of the evaluation. For example, if there was no control group included in the analysis, then the significance of the findings should be appropriately weighed against the absence of data.

The presentation should be structured to answer the questions posed by the clinic leadership and stakeholder groups. Remember, an analysis may not find savings in a particular area, or the data may not be conclusive in answering a question. These findings are just as important as those findings that do answer a question or reveal cost savings. Depending on the scope of the analysis, the findings can be used to advocate for additional or improved services, make a case for more resources and/or changes in policy and/or procedures. It is important for the team to carefully consider the counter point of any recommendations. The audience may respond to a recommendation with a question about the viability of conclusions drawn from the significance of your findings or the design of your study. The presentation of the cost analysis findings is a great opportunity to ask new questions that need further investigation. The analysis may generate more questions than answers so it is important for the team to decide what the next logical step is given the findings. A new study may be needed and requested. Knowing what resources and timelines are necessary for conducting a new or next stage study at the time of a formal presentation may result in the approval/funding to conduct another evaluation.

Example from the Field:

An organization found that clients who previously used few services (low utilizers) increased usage from .5 visits/year to 5.1 visits/year following the implementation of integrated care. Medium utilizers increased usage from 4.1 visits/year to 4.8 visits/year. High utilizers decreased their utilization from 12.9 visits/year to 6.3 visits/year. The program's next identified step is to determine the cost outlays and savings associated with these utilization numbers.

Conclusion

PBHCI grantees can use cost data for a variety of purposes, from internal accounting and planning, to advocating for investment from partners (e.g., local hospitals) or major payers (e.g., managed care plans, state Medicaid). Cost analyses can be fairly simple, ranging from a cost assessment (i.e., a descriptive accounting of the clinic's partial or total investment in integrated care) to the highly complex, including cost-effectiveness and cost-benefit analyses, using quasi-experimental or experimental designs.

Common challenges to PBHCI grantee cost analyses included: (1) identifying and accessing consumer service utilization data to support the cost analysis (i.e., complete records of consumer use of primary care services, including consumer data *before* integrated care was offered at the behavioral health clinic) (2) identifying an appropriate control group; and (3) identifying and obtaining data from the control group, particularly in a timely way.

PBHCI grantees who successfully conducted cost analyses tended to partner with academic colleagues (e.g., health services researchers at local universities) or with cost accounting consultants, particularly benefitting from partnerships with consultants who specialize in health care and can anticipate nuances in the data. Working as a team with their cost analysis partner, PBHCI grantees were able to leverage internal (e.g., access to electronic health records) and external resources (e.g., access to Medicaid claims data) to conduct rigorous analyses that were useful both to clinics themselves and to their partners, payers, and other stakeholders (including the broader health care community). Successful projects generated new information about which services drive PBHCI clinic costs, by how much, where efficiencies in service delivery can be increased, and what rates of reimbursement are necessary for clinics to sustain their PBHCI services beyond the life of the grant. Examples of successful projects include partnerships between PBHCI grantees and state Medicaid offices to estimate an appropriate Per Member Per Month (PMPM) reimbursement rate for care coordination. Another project showed that integrated care resulted in cost-savings to a local hospital partner, who in turn began to look for ways to work with the behavioral health clinic to support integrated care.

In sum, PBHCI grantees can conduct cost analyses of their integrated care programs. These analyses can inform multiple aspects of integrated care delivery and sustainability. Although cost analyses can be challenging, clinics can (in many cases) conduct simple and informative analyses that can help with internal planning purposes. When clinics partner with cost analysis experts, they can generate powerful information that can be used to make a business case for the sustainability of integrated care locally, state- and nationwide.

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