



Continuous Quality Improvement

Part 2: Gathering Data to Improve PAF Programs

What's Covered

This is the second of three briefs on continuous quality improvement (CQI). In this brief you will learn about gathering data for your CQI initiative. It covers setting questions based on a logic model, identifying data sources, linking data, and ensuring data quality. The first CQI brief, "[Basics for Pregnancy Assistance Fund Grantees](#)," can be used as a primer or review of what CQI is. The next brief in this series will cover turning data into action.

Who Is This For?

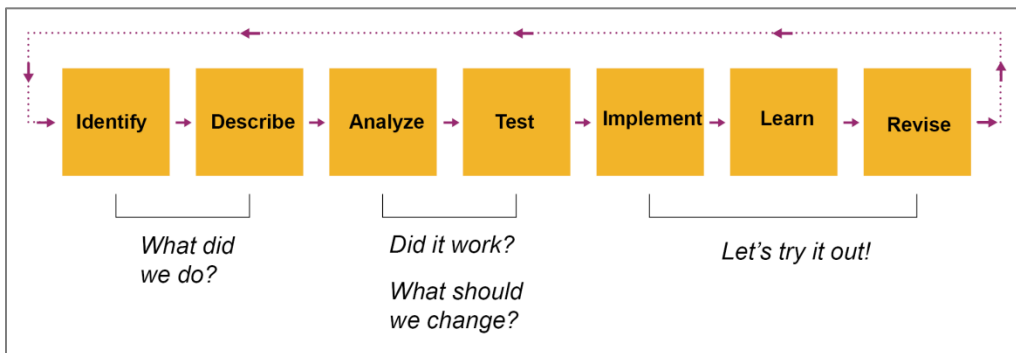
These briefs are intended to be used across agencies, departments, and organizations, as well as at the state, regional, and local level. We will use the term "organization" to describe the entity which is organizing the CQI effort throughout.

Introduction

A Review of CQI

A continuous quality improvement (CQI) effort helps programs rapidly identify the strengths and weaknesses of their program and test strategies to fix issues and/or refine program elements. As shown in Figure 1, organizations use the CQI process to investigate whether what they are doing works and to identify areas for improvement.

Figure 1. The Basic CQI Process



Data: The Foundation for CQI

To engage in the CQI effort and improve your Pregnancy Assistance Fund (PAF) programs, you need a couple of different types of data. The first is **program data**, which details the resources going into your programs, what they do, and how they currently operate. Secondly, you need **output data** that provides insight into who your programs reach and what participants are

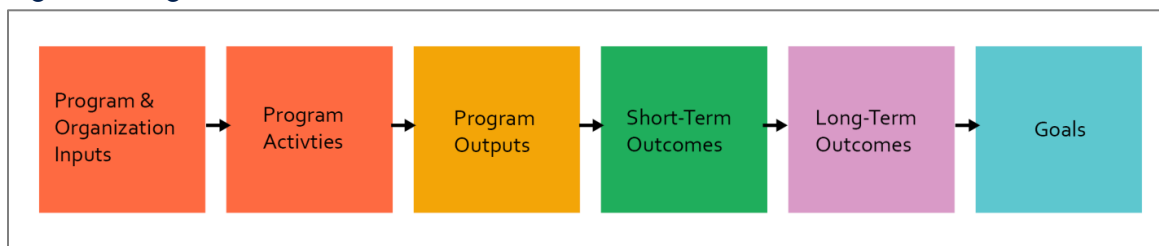
taking away from the program (e.g., knowledge gained or services received). Comparing the links between program and output data forms the base for CQI actions.

Data Basics

Using the Logic Model to Set CQI Questions

As noted in the previous brief, having a logic model (your “road map” for getting from where you are now to the outcomes you want to see) is an essential piece of starting a CQI effort. Grounding CQI in your logic model will help you keep the effort focused and oriented specifically to your CQI goals. Similarly, your CQI effort can inform your logic model by pointing out areas that you did not realize were having an impact, or alerting you if activities are not having the impact you intended.

Figure 2. Logic Model



When you begin thinking of questions for your CQI effort, start by looking at the expected outputs of the particular suite of programs you administer through PAF. Remember that in a logic model (see Figure 2 above), **outputs** are the results most directly related to program activities, and they lead to your short-term outcomes. Essentially, outputs are not merely your minimum expectations for programs; they are the *minimum requirements* of what needs to happen in order to cause change in your community. Examples of program outputs include:

- Number of people receiving services
- Number of people who saw an ad (i.e., for a communications campaign)
- Percentage of people who are able to score proficiently on a post-test
- Percentage of staff who perform at a given level

Since CQI is about rapid feedback and change, it may be helpful to prioritize specific activities and outputs (e.g., to address them one-at-a-time or one for each program included in the CQI effort). Your priorities will likely be based on how much data you have, and what it is telling you:

- When data is limited, focus on simple outcomes. For example, most programs have a record of enrollees and can gauge whether they need to work on recruitment.
- If you have data, look for the weak spots. For example, program logs may show that instructors are only covering 80 percent of the lesson and that the amount of referrals is lower than you expected.
 - When you have multiple weak spots, look back to your logic model to see which ones matter most to your program. In the example above, if your program

focuses heavily on parent education, you would probably want to start by helping instructors cover their lessons better.

Once you have prioritized outputs, you will begin building the questions that will guide the types of data you use, as well as your analysis of the data. These questions can span a variety of topics:

- Program reach
 - Are we reaching our target population?
 - Are we reaching groups who would most benefit from our program?
 - Do the demographics and other characteristics of our participants match the demographics and other characteristics of expectant and parenting teens, women, fathers, and families in this state or tribe?
- Program capacity and staffing
 - Do program staff feel confident in the training they have received, and are they using their training?
 - Do we have enough sites in the area to meet the need?
 - Are staff able to easily communicate when coordinating services for participants?
- Program experience
 - How satisfied are participants after receiving services?
 - Are participants receiving full interventions?
 - If not, how much of the interventions are they receiving?
 - *[If it's a curriculum]* Which content topics do participants seem to not understand?

CQI Tip for PAF Project Directors

As an administrator of multiple programs, make sure that you're spreading the priorities out so that all programs can be included. Also, don't forget to ask questions related to how well programs are working together, including:

- How often do programs and organizations funded by your grant communicate about possible overlapping projects?
- Do they share records as appropriate and in a timely manner?

Having a diverse representation of organizations and stakeholders on your CQI team will help with these conversations.

Finding and Choosing Data Sources

Once you have outputs prioritized and questions identified, your team will need data to answer these questions. Data can be **quantitative** (numbers-based) or **qualitative** (descriptive). Examples of quantitative data include: number of attendees, number of sessions held, and satisfaction survey responses that are provided on a scale (e.g., "On a scale of one to five, how happy are you with your home visiting nurse?"). Qualitative data examples include observation notes, focus groups with participants, and descriptions of conversations with participants, pulled from case notes (e.g., "Today, we talked about proper nutrition for a developing baby" or "Referred client to relationship counseling services").

If data is all the information about your programs, **data sources** are the ways in which you collect/gather and record that information. Data sources can be formal or informal. CQI data does not need to come from scratch--often quality and efficiency are better when data collection processes *are not* new. Programs usually have data that they already collect to report to funders, or for program evaluations, that can also be used for CQI. Already-established data sources can include:

- Intake forms
- Enrollment records
- Attendance records
- Case manager visit logs and notes
- Client satisfaction forms
- Order forms/purchase orders
 - These can be helpful in a situation such as tracking printed materials you hand out frequently. They can be proxy measures for how many you distribute, by showing how often you need to stock up.
- Testimonials and verbal feedback from community members
- Staff meeting notes
- Work plans
- Focus group results
- Community needs assessments

CQI Tip for PAF Project Directors

As a PAF grantee, you already report on Performance Measures to OAH. These Performance Measures can be a good data source and/or highlight data sources you can use.

Each program involved in the CQI effort should take an inventory of the data they collect and share it with the group. Beyond individual program data, as a state or tribal agency, you may also have more direct access to state or tribal administrative data that can help put program data into greater context, including:

- Vital statistics, including births data
- Infectious disease reporting, including STDs
- Crime reporting statistics
- School enrollment and other education data

Data sources, especially those at the state or tribal level, can contain a plethora of information--usually a lot more than you need for your CQI initiative. There may also be some duplication between what data sources measure. To make the data analysis more practical, look back at the questions you identified from the logic model, and work with the data specialists and program administrators to determine which variables and/or sections of data to analyze from your sources. In cases where data is duplicated or similar, you may want to consider:

- Which data source is the most complete or will have less missing data?
- Which source is most accurate?
- How often is the data collected?

Other Data Considerations

Data Linkages

As noted above, you can have a lot of data when running a state or tribal-level CQI effort covering multiple programs, which means taking time as a CQI team to identify points of duplication and pick the best data sources. However, in some cases, you can get a fuller view of what is happening with your programs by creating **data linkages**. Data linkage is the process of combining data sources, usually through identification numbers or by looking at certain bits of data, so that the information and data sets can be linked back to individual records and provide a more unified picture. Often data linkages help track people over time, especially after they age out of and into different programs. For example, for teens who became parents in high school, linkages between the K-12 and local college system can provide insight into how many enroll into college. Another example would be if hospital data were linked with social service data to see how well referrals work in cases where domestic violence is suspected.

After all possible data sources have been identified, the CQI team can look for common indicators amongst sources that promote data linkages across programs and service providers (see “Potential Indicators for Linkages” box). Data linkage has been more commonly used in the healthcare field to assess health service needs and access by patients. Some of these linkages have become easier with electronic health records. It also is a growing trend within the early childhood field to track child outcomes over time. For example, some states are moving to integrated data system models, where social services and early childhood data are linked to K-12 education data to track young children’s development. CQI teams may find it worthwhile to check with agencies and/or local health centers to see if some of this data exists.

Data linkages, whether they are across programs or over time, can help agencies learn how programs work together. When beginning data linkage efforts, it is important for CQI teams to get the correct clearance from data owners (e.g., a privately owned registry) and plan for protecting confidentiality. The GTO toolkit listed in the resource box has several helpful worksheets for organizing and linking data. At the end of this brief is the appendix, “Key Information for Data Sources,” which you can use to record information about the data sets you plan on using for your CQI effort. Additionally, for more information on the approaches to data linkages, check out the “Data Linkages and Quality” section of the resources box.

Potential Indicators for Linkages

In some cases, programs may already automatically link data through identification numbers (e.g., social security numbers). When these are not available, agencies can also use other identifying information, such as:

- Names
- Addresses and zip codes
- Date of birth
- Gender

Data Capacity and Quality Assurance

As noted above, CQI teams should work to ensure that they collect and use data on participants to get an accurate picture of what is happening within programs and then use those data to make changes that lead to outcome improvements for their target population(s). Systems-level data encompassing a whole state or tribe and linking multiple agencies result in the production of large data sets. In addition to having server/computer capacity to handle that amount of information, those working on CQI efforts should seek out analysts who have the statistical abilities to manage these large data sets. CQI teams can keep data from being overwhelming by working with agencies to specify the indicators of greatest interest. **Data governance standards** are protocols that agencies agree to, in order to secure the data and ensure its quality. They can include specified roles and responsibilities for those working with the data, practices to de-identify data quickly, and procedures for making sure the data is up-to-date and accurate.

Apart from ensuring technical and analytic capacity, CQI teams need to protect the consistency and quality of data so that linkages are possible and the team can draw accurate conclusions. Since PAF grantees administer programs at the state or tribal level, CQI teams manage more than just a single organization’s data. Two of the biggest issues for data quality are errors and missing data. The table below describes them in greater detail:

Data Issue	Example(s)	Ways to Address
<p>Errors: usually caused by manual data entry and/or switching between formats; may also be out-of-date</p>	<p>While manually entering a paper form into a database, the data manager changes the name “Jon Smith” to “Jan Smith.”</p> <p>A participant legally changes her name. Enrollment records for some programs have the new name while other program records have her original name.</p>	<ul style="list-style-type: none"> Minimizing the potential for error by avoiding having to switch from paper to electronic formats Data governance standards that include regular checks and processes for updating and cleaning data (including similar update timelines across agencies)
<p>Missing data: usually from people either choosing not to answer a question or not seeing the question</p>	<p>Half of the people who responded to a survey about the program did not respond to the last five questions.</p>	<ul style="list-style-type: none"> Keep surveys and forms as short and simple as possible. Depending on how much is missing, you may be able to impute the data. This process uses others’ responses to make a likely guess to fill in the missing information. If linking across agencies, other groups may have the missing data.

Resources

Data Tools

- HHS Data, Tools, and Statistics (National Library of Medicine, National Information Center on Health Services Research and Health Care Technology) – <https://www.nlm.nih.gov/hsrinfo/datasites.html>
- Performance Management Training Topic in the PAF Resource Center (OAH) – http://www.hhs.gov/ash/oah/oah-initiatives/paf_rc/training/performance-management.html

Data Linkages and Quality

- An Overview of Record Linkage Methods – <http://www.ncbi.nlm.nih.gov/books/NBK253312/>
- Data Governance Checklist (U.S. Department of Education) – <http://ptac.ed.gov/sites/default/files/data-governance-checklist.pdf>
- Getting to Outcomes Toolkit (RAND Health) – <http://www.rand.org/health/projects/getting-to-outcomes.html>
- Health Services Research and Data Linkages: Issues, Methods, and Directions for the Future – <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2965887/>
- Roadmap for Early Childhood and K-12 Linkages: Key Focus Areas to Ensure Quality Implementation (Early Childhood Data Collaborative) – <http://www.childtrends.org/?publications=roadmap-for-early-childhood-and-k-12-data-linkages-key-focus-areas-to-ensure-quality-implementation>
- Understanding Data Use for Continuous Quality Improvement in Head Start (Urban Institute and HHS, Office of Planning, Research & Evaluation) – http://www.acf.hhs.gov/sites/default/files/opre/brief_cqi_in_head_start_finaldraftcleanv2_508.pdf

Key Terms Review

- **Data:** information about the programs you operate
 - **Quantitative:** numbers-based data (e.g., the number enrolled in a program)
 - **Qualitative:** descriptive data (e.g., focus group responses)
- **Outputs:** results most directly related to your program activities that lead to short-term outcomes, the minimum targets you think you need to hit for your program to create change
- **Data Source:** the ways in which information is collected/gathered and recorded
- **Data Linkages:** the process of combining data sources, usually through identification numbers or by looking at certain bits of data, so that the information and data sets can be linked back to individual records and provide a more unified picture of the individual
- **Data Governance Standards:** protocols that agencies agree to, in order to secure the data and ensure its quality
- **Impute:** a process for filling in missing data by using other responses to make a likely guess

Appendix: Key Information for Data Sources

It may not always be possible for your CQI team to include the data specialists who are the most knowledgeable on every data source being used. However, filling out some basic background and contact information can help you stay organized so that you can make decisions and find guidance quickly.

Instructions: During your CQI team's discussion on potential data sources, fill out an information sheet (see the following page) for each data source identified. This sheet can then be maintained by the data specialists on the CQI team and updated with new data sources and/or information as needed. Below is a description of each part of the data source sheet:

- Basic Data Information
 - Data set name: either its formal name (e.g., if it's survey results, note the name of the survey) or how it is being referred to on the team; it also can refer to a file name if it consists of an electronic record
 - Data type: whether data is qualitative or quantitative
 - Data owner/collectors: the organization where it came from and that collected the data in the first place; in the case of program records, you might just want to note which program the data applies to and what level of staff are collecting the data
 - Data manager and contact information: the person or people most responsible for managing the data, including the protocol for how the data is cleaned and who can answer questions about the data should they arise; contact information should include preferred method of contact (e.g., via e-mail, phone, online form, etc.)
- Permissions and Usage Notes
 - Permission needed/obtained: some data sets, especially those that are privately owned, may require special permission to be analyzed if that analysis is being done outside of the organization (e.g., a research firm's special data set on poverty at the community level)
 - Permission documents: location of the documentation that shows the CQI team has permission to do the analysis
 - Permission restrictions: limits, if any, on how the data can be used and shared
 - Data security: summary of any and all protocols that need to be followed to keep personal identifiers safe
 - Other data sources linked to this data source: notes on whether the source is part of a formal data linkage effort at the state or tribal level
- Analysis Notes
 - Data quality measures: notes on how data analysts should treat missing data or how the data is cleaned so that they can be aware of those things for analysis
 - Variables of interest: list of variables that will be explored in the analysis, including how the variable is listed within the data set (e.g., if it is truncated, has an abbreviation, etc.) and analysis considerations (e.g., continuous vs. categorical treatment; qualitative data; etc.)

Data Source Information Sheet

Basic Information

Data Source Name: _____

Data Type: _____ Data Owner/Collectors: _____

Data Manager(s) and Contact Information: _____

Permissions and Usage Information

Permission Needed to Use? Yes No Permission Obtained? Yes No

Permission Documentation: _____

Permission Restrictions: _____

Data Security: _____

Other Data Sources Linked To This Data Source: _____

Analysis Notes

Data Quality Measures: _____

Variables of Interest:

What Variable Measures	Variable Name in Data and Analysis Considerations