County of Los Angeles
Department of Mental Health

Program Support Bureau
Quality Improvement Division

QUALITY IMPROVEMENT TOOLS

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Introduction

It is our goal to provide the County of Los Angeles, Department of Mental Health staff, service providers, and stakeholders with a brief guide and toolkit for use in the process of identifying and implementing specific Quality Improvement Projects (QIP). We hope this guide will encourage and support ongoing quality improvement efforts throughout the County of Los Angeles Department of Mental Health. These efforts may be specific to a single clinic or program, more broadly applied by service area committee workgroups, or the efforts might be used for County wide change. Although similar to a Performance Improvement Project (PIP), a Quality Improvement Project (QIP) is not one that is officially mandated. Thus, a QIP is not subject to formal evaluation, which differentiates it from a PIP, which is formally evaluated by APS Healthcare, California External Quality Review Organization. It is our intention to clearly differentiate a QIP from the more formal and officially mandated Performance Improvement Project (PIP).

This guide includes basic information on identifying an opportunity to improve, forming a working group, formalizing the scope of the working group and documenting the organizational charge to proceed. It defines steps to a QIP and includes various quality improvement tools which may be helpful to you as you move along through the steps to a QIP. By defining and outlining the "Steps to a QIP" (page 7) we hope to provide you with a comprehensive and useful reference or template to follow. We have also included tools for conducting effective meetings, tools for generating ideas, tools for collecting data, tools for data and process analysis, and tools for evaluating change.

This brief guide is intended to be a quality improvement user's toolkit and it is distinct from the formal Corrective Action Plan process that has been officially adopted and mandated by the County of Los Angeles Board of Supervisors. Effective May 18, 1999 the County of Los Angeles Board of Supervisors officially requires the completion of a comprehensive Corrective Action Plan (CAP) for all liability settlements exceeding $100,000 and effective November 1, 2007 the Board requires a Summary Corrective Action Plan (SCAP) for liability settlements in excess of $20,000. A Corrective Action Plan is a collection of corrective actions to mitigate or eliminate the causes of a loss event. Further information on Corrective Action Plans can be obtained in the Corrective Action Plan User's Guide (User's Guide,) an unpublished work by the County of Los Angeles, Chief Executive Office, Risk Management Branch.

This guide and toolkit will most likely be used by Service Area Quality Improvement Committee (QIC) members interested in pulling together individuals with expertise and enthusiasm for conducting quality improvement projects for their service area. Please note that useful websites are included in the complete set of references beginning on page 42 herein.

Section 1: Getting Started

Finding an Opportunity to Improve

Ideas for quality improvement projects can emerge from many different places. Stakeholders, consumers, family members, or staff, are all potential sources of ideas on how to improve mental health service delivery or systems. The Service Area (SA) Quality Improvement Committee (QIC) is another source of ideas for SA specific quality improvement projects. Ideas for quality improvement projects will likely emerge through the committee's sharing and discussion of problems and concerns, as well as through the careful consideration of relevant, reliable and valid data. Once opportunities for improvement are identified generating interest and enthusiasm for change, it will be helpful to form a smaller QIP work group that can more readily formulate and implement a QIP. The work group might appropriately include stakeholders, consumers, family members, and/or staff. It could also consist entirely of Service Area Quality Improvement Committee members but the group should form a multifunctional team.

Assembling a QIP Work Group

Work Groups vary in size from just 4 people on up to 7 people or more. In assembling your work group, consider what size will have availability to be able to work together efficiently to accomplish the steps to a QIP. Identify team members who will be focused on the specific problem you have identified and who will be able to implement the solution to your chosen problem. Interest and enthusiasm for exploring and implementing the change for improvement will be important prerequisites for each group member to have. It is also very important for members to have knowledge of the subject, to bring skills and some previous experience. Include representatives from the various stakeholder groups, especially consumers and family members as appropriate. Anticipate the reactions of stakeholders and give consideration to how those reactions might impact your QIP. As you assemble your work group, think of ways to bring stakeholders on board with your project as early in the process as possible. Ensure that the work group members have the ability to identify, implement, and evaluate performance improvement activities.

In conjunction with identifying who will be work group members and the reason for each to be a part of the group, it is also important to designate a QIP work group leader and facilitator. Leader and facilitator roles could both be handled by one person or they could be roles designated to two different individuals. The group leader is responsible for providing structure to the meetings such as starting and ending the meeting on time. The facilitator is responsible for facilitating group process, such as clarifying the understanding of member input, summarizing when necessary, or even seeking group consensus or compromise during the meeting. Process for running effective work group meetings is a tool that provides more information and is located on page 9 of this document.

Formalizing the Organizational Charge to Proceed

Once a problem for improvement has been identified and a QIP work group has been assembled it will be important to clarify the QIP work group's organizational charge to proceed. The charge to proceed, or authority to pursue the Quality Improvement Project, comes from a person in authority, such as the Service Area District Chief. If working within a Service Area Quality Improvement Committee it is the QIP working group leader's responsibility for keeping the Service Area District Chief informed of the QIP development and progression. It is recommended that the charge to proceed be formalized and one way to do this is by completing a Quality Improvement Project Charge Document. A sample of this document is provided herein. This document identifies who is a part of the working group, what problem will be addressed and how it will be addressed. It identifies what the end result will be. It also provides written approval from a person with appropriate authority such as the Service Area District Chief or the Service Area Quality Improvement Committee Chair.

We hope that each County of Los Angeles Service Area Quality Improvement Committee will eventually be actively involved and engaged with ongoing quality improvement projects in their respective service area. The ongoing support and involvement of the Service Area District Chiefs will be essential to these efforts in order to effect change.

PROGRAM SUPPORT BUREAU
QUALITY IMPROVEMENT DIVISION

Quality Improvement Work Group Charge Document

Title of QI Work Group:

Date of Charge:

Area of Concern:

Persons in QIP Work Group:
Work Group Leader(s):

Group Members:

What concern(s) will the QIP address?

Relevant Data Supporting the Initiative for Change: (baseline data)

Outcome or Expected Goal to be Achieved:

Estimated time-line for completion:

Authorizing Signature (possibly the District Chief) required in the space provided below in order to approve the QIP

Name:

_____
Please Print

_____
Please Sign

Participants:

Signatures: Date:

Section 2: Steps to a Quality Improvement Project (QIP)

Step 1: Finding an Opportunity to Improve
- Use the Service Area Quality Improvement Committee (QIC) to identify and list shortcomings, problems, weaknesses in service or delivery.
- Review relevant data, countywide or SA specific outcomes, complaints or concerns. Consider collecting new data to validate the problem.
- Identify priority area(s) of concern.
- Pick one for a Quality Improvement Project.

Step 2: Assemble a Quality Improvement Project (QIP) Work Group
- Include members with enthusiasm, availability and knowledge of the subject.
- Consider group size to ensure availability to work efficiently on the QIP.
- Identify stakeholders and anticipate their reactions. Include them in the group when appropriate to do so. Seek their feedback and involvement early on.
- Designate a group leader and facilitator.
- The leader must ensure clear communication w/ the SA District Chief and obtain the appropriate charge to proceed.

Step 3: Clarifying the problem - Why is this happening?
- Does the problem affect consumers' satisfaction, outcomes, or functional status? Does it impact productivity? Is it within our scope of influence to improve? What barriers do we anticipate?
- When possible, use numbers – rates or frequency to validate and better understand the problem.
- What would indicate "improvement"? Why? Can the improvement be quantified?
- Consider graphic representation of the data to identify patterns of variation.
- Investigate what is or is not happening, using root cause analysis, process mapping or other tools as appropriate.

Step 4: Exploring Solutions - How can we try to address the problem?
- Identify potential intervention for improvement – explore all possible solutions.
- Evaluate interventions and select an intervention clearly stating your rationale.
- What change will represent success? How will we measure success?
- Develop an implementation plan.

Step 5: Develop an Intervention
- Develop an implementation plan that identifies the activities and tasks that will take place, person(s) responsible, start date and time, and end date and time.
- What specific measure will be used for evaluating the intervention?
- List predictions the group believes will happen as a result of the intervention.

Step 6: Apply Intervention - What do we see?
- Implement the intervention according to the plan.
- Note any barriers encountered through the process.
- Are there new barriers resulting from the intervention?

Step 7: Study the results - Was the QIP successful?
- What are the outcomes? Were the goals achieved? Analyze the data and compare with predicted results.
- Has the QIP demonstrated improvement for consumers? Are modifications needed? (If yes, begin again at step 3.)
- If successful be sure to publicly celebrate your team's success!!

These steps are also included as worksheets in Appendix B starting on page 32.

Table Indicating Tools Most Relevant to QIP Steps

	Brainstorming	Affinity Grouping	Multi-voting	Fishbone Diagram	Pareto Diagram	Run Chart	Histogram
Step 1	√	√	√				√
Step 2							
Step 3	√	√	√	√	√	√	√
Step 4	√	√	√	√			
Step 5	√	√	√				
Step 6				√	√	√	
Step 7	√		√				√

Section 3: Tools for Effective Meetings

Process for Running Effective Work Group Meetings

A defined method for running meetings is a vital project management tool. It standardizes the meeting process, minimizes wasted time, and promotes the effective execution of important tasks.

Using the Process for Running Effective Meetings tool has a number of benefits.

- It helps keep the work group on task.
- It minimizes wasted time and effort in meetings.
- It improves the probability that meetings will be accelerators of the improvement process, rather than slowing the process down.
- It promotes clarity and agreement on key tasks to be achieved.
- It provides a historical record of the meeting, decisions, outcomes, assignments, accountabilities, and next steps.

Directions for Running Effective Meetings

1. Clarify the objectives of the meeting and ensure that everyone understands the objectives for meeting.
2. Keep a running attendance sheet from meeting to meeting.
3. Establish meeting rules. Examples include: starting the meeting on time and ending it on time, shutting off all cell phones, no interruptions, etc.
4. Review the meeting roles. Review who will be timekeeper, recorder, leader, and facilitator. Often it is the leader that is responsible for keeping time. Decide at what intervals the timekeeper will give feedback about time. If appropriate, members may have more than one role in the group.
5. Review the agenda and ensure that all team members understand the agenda items. Address any issues of confusion or lack of agreement.
6. Work through the agenda items.
7. Use helpful tools such as a flip chart when possible. Write as much of the meeting issues, decisions, plans, and next steps on the chart so that team members can help with real-time correction of any errors.
8. Review the information on the flip chart. For each agenda item, record only the summary of discussion, key decisions and next steps, assignments, and due dates on a record sheet (A minute record template is provided on the following page).
9. Plan the agenda for the next meeting. Decide on objectives and goals for the next meeting, and who will do what in preparation for that meeting.
10. Evaluate the meeting. What did the team do well that it should continue doing? What should the team do differently to improve future meetings?
11. Obtain approval of the meeting record sheet (minutes) and disseminate as soon as possible after the meeting.

Meeting Record

Type of Meeting	Service Area	Date	
Location		Start Time:	
Chairperson		End Time:	
Co-Chair			
Members Present			
Excused Members			
Absent Members			

Agenda Item & Presenter	Discussion and Findings	Decisions, Recommendations, Actions, & Scheduled Tasks	Person Responsible & Due Date

Section 4: Tools for Generating Ideas

Brainstorming

Brainstorming is an idea generating tool designed to produce a large number of ideas through the interaction of a group of people. It allows every member to participate. It encourages many people to contribute instead of just one or two people. It sparks creativity in group members as they listen to the ideas of others. It can generate a substantial list of ideas rather than just the few things that come to mind.

Steps in Brainstorming

1. The work group leader should clearly state the purpose of the brainstorming session.
2. Participants will call out one idea at a time, either going around the room in turn, which structures participation from everyone, or at random, which may favor greater creativity. Another option is to begin the brainstorming session by going in turn and after a few rounds open it up to all to call out ideas as they occur.
3. Refrain from discussing, complimenting, or criticizing ideas as they are presented. Consider every idea to be a good one. The quantity of ideas is what matters; evaluation of the ideas and their relative merit comes later. This tool is designed to generate many ideas in a short period of time. Discussing ideas may lead to premature judgment and slow down the process.
4. Record all ideas on a flipchart, or on self-adhesive notes, so that all group members can see them.
5. Build on and expand the ideas of other group members. Encourage creative thinking.
6. When generating ideas in turn, let participants pass if an idea does not come to mind quickly.
7. Keep going when the ideas slow down in order to create as long a list as possible and reach for less obvious ideas.
8. After all ideas are listed, clarify each one and eliminate exact duplicates.
9. Resist the temptation to "lump" or group ideas. Combining similar ideas can come later.

Affinity Grouping

Affinity grouping is a brainstorming method in which participants organize their ideas and identify common themes.

Steps in Affinity Grouping

1. Write ideas on individual cards or adhesive notes.
2. Randomly place cards on the table or place notes on flip chart paper taped to the wall.
3. Without talking, each person looks for two cards or notes that seem to be related and places these together, off to one side. Others can add additional cards or notes to a group as it forms or reform existing groups. Set aside any cards or notes that becomes contentious.
4. Continue until all items have been grouped (or set aside). There should be fewer than 10 groupings.
5. Now discuss the groupings as a team. Generate short, descriptive sentences that describe each group and use these as title cards or notes. Avoid one- or two-word titles.
6. Items can be moved from one group to another if a consensus emerges during the discussion.
7. Consider additional brainstorming to capture new ideas using the group titles to stimulate thinking.

Multi-voting

Teams and work groups use tools, (e.g., brainstorming), to generate lists of process-related problems, potential solutions, approaches or options to address an issue. Once this is done, however, teams are sometimes unable to quickly and easily reduce the items on the list into a few manageable ideas. When team members perceive that more than one item has significant merit, multi-voting can be used to quickly identify the most important items on the list. Multi-voting is best suited for use in large groups that are reviewing long lists. It is valuable when there is difficulty in reaching a consensus on the highest priority items.

Guidelines

To conduct a multi-voting exercise in a team or work group meeting:

- Display the items under consideration on a flipchart, making sure to eliminate duplicate items.
- Number the items on the list to facilitate recordkeeping.
- Give each team member a number of votes equal to approximately one half of the number of items on the list (e.g., 10 votes for a 20-item list).
- Have each team member vote for the items he or she believes are most important. Team members may cast all votes for one item, for several items, or vote for individual items until they use their allotted number of votes.
- Dots - members are each given a sheet of adhesive dots. One dot is provided for each vote the member is allocated. If desired, each member can be given different colored dots. Members stick their dots next to items on the flipchart. As stated earlier, they may cast all votes for one item, or distribute their votes as they choose.
- Tally the votes.
- Select the four-to-six items that receive the highest number of votes. Discuss and rank order the items. If the team cannot establish the top four-to-six, remove the items having the fewest votes and then conduct another vote.

Why Use Multi-voting?

Multi-voting is used to help teams focus on problem-solving and identifying high priority items in an efficient manner. It is particularly valuable in deciding issues because each member has a clear understanding of how the team will reduce the number of items to manageable proportions and how it will identify them in priority order. Multi-voting allows for each member to participate equally in the decision making process. This is particularly important in gaining acceptance and buy-in for future actions based on the decision.

Section 5: Tools for Collecting Data

Simple Data Collection Planning

Simple data collection planning is a process to ensure that the data you collect for performance improvement are useful and reliable, without being unnecessarily costly and time-consuming to obtain.

Simple data collection planning has a variety of benefits:
- It helps to ensure that the data gathered contain real information, useful to the improvement effort.
- It prevents errors that commonly occur in the data collection process.
- It saves time and money that otherwise might be spent on repeated or failed attempts to collect useful data.

A. Begin your data collection planning by answering these key questions:
1. What question do we need to answer—that is, why are we collecting these data?
2. What data analysis tools do we envision using to display the data after we have it? (For example, the run chart is the recommended tool for displaying data showing the performance of a process over time.)
3. What type of data do we need to answer our question(s)?
4. Where can we get this data?
5. Who can give us this data?
6. How can we collect this data with minimum effort and chance of error?
7. What additional data do we need to collect for future analysis, reference, and traceability?

B. Keep the following points in mind when planning for data collection:
1. Seek usefulness, not perfection! Remember, we need data that are "good enough" to permit us to take the next step in improving a process.
2. Make data collection an easy process.
3. Consider using sampling as a technique to simplify data collection.
4. Design data collection forms keeping in mind what data is most important.
5. Minimize the possibility of errors by providing clear, unambiguous directions, and by conducting trial runs before actually implementing the data collection process.
6. Use existing data whenever possible.

C. Develop your plan by very specifically answering the following questions:
1. Who will collect the data, when will it be collected, and where? Consider writing this information on a chart that can be used to monitor the progress of the intervention. (Note: It is helpful to put operational definitions of the data to be collected somewhere on the data collection

form—for example, noting that "30-Days Following Intake" is defined as 30 calendar days (as opposed to work days), and begins on the same date that the initial intake is conducted.)

2. What data will be collected? What forms or materials will be used?

D. When you have developed a method to collect the data, test it with a few people who will actually be collecting the data and incorporate their ideas for improving the data collection plan.

E. Be aware of the cost of collecting the data relative to the benefit gained from having the data.

F. Teach all of the data collectors how to collect the data correctly.

G. Record what went wrong during the data collection so that learning can take place.

H. Audit the data as it comes in for accuracy and completeness. Correct errors early.

Sampling

Decisions for improvement using data should be made from a sample that is representative of the program or the organization. Using random sampling techniques allows each individual an equal chance to be part of the sample or data-set, thereby reducing selection bias and making it representative of the entire population.

Collecting data from a random sample instead of asking questions from all the individuals in a program saves time and resources. In order to move forward to the next step, a team needs just enough data to make a sensible judgment as to next steps. Instead of measuring the entire population in a program (e.g., all consumers waiting in the clinic during a month; all consumers who visit a program or a clinic), measuring a sample (e.g., every sixth consumer for one week; the next eight consumers) is a simple, efficient way to help a team understand how a system is performing. Sampling saves time and resources while accurately tracking and representing the performance of a program, clinic or an organization.

Systematic Random Sampling

Systematic random sampling is a method used to randomly collect data at fixed time or count intervals – for example, every hour on the hour, or every fifth consumer. This process is useful for agencies or clinics with a high volume of

consumers. Systematic random sampling reduces the impact of time and sequencing (i.e., queuing effects) on data.

- Decide how much data is needed to assess the impact of a program or an intervention.
- How many resources do you have to collect data? Keep in mind that you can learn a lot about the performance of a process from small samples of data as long as random sampling techniques are used.
- Use short time periods when running PDSA cycles (PDSA Cycle description is listed on page 28). Instead of collecting data over a month, collect it over a week; instead of a week, try just three days; instead of a day, try a few hours. This speeds up data collection while keeping the random sampling techniques intact.
- To determine the sampling interval; divide the total number of measurement units (such as days, weeks or months) by the number of sample size you need. For example, if you see 300 consumers per week, and you need a sample of 50 consumers, collect data from every sixth consumer (300 divided by 50).

Longitudinal Sampling

Longitudinal sampling is a method designed to select sample size in a block of predetermined size. Instead of measuring at a fixed time or count interval, as in systematic random sampling techniques, longitudinal sampling collects data from a sequence of events within a limited time frame. Longitudinal sampling is used to gain a picture of the data that is time or sequence dependent. It is helpful when attempting to capture the detailed behavior of the process.

- Decide how many intervals of data are needed.
- Make sure you have the resources necessary to collect the data.
- Select the time and/or intervals to begin the data collection.
- Select the first unit at that time and location and every unit that follows until you have the needed number of units. Be sure to preserve the sequence of the data.

Cause-and-Effect Diagram

A Cause-and-Effect Diagram is used to show the causes of a problem. Since there is generally more than one cause to any problem, the diagram is used to further divide causes into groups or categories. This approach often uncovers the root causes of our problem. When the root causes are identified, we can evaluate how much each cause contributes to the problem. These diagrams are sometimes called "fishbone diagrams", because they resemble a fish skeleton when completed. They are also known as Ishikawa Diagrams.

Why Use Cause-and-Effect Diagrams?

Cause-and-Effect Diagrams can help illustrate possible relationships between causes. They can be used to uncover the causes of problems or specific problem steps or bottlenecks in a work process. By arranging possible causes into categories in a diagram, we can get a better understanding of problems and the contributing factors. To prepare a diagram, we must expand our original understanding of the problem situation. Our exploration often gives us a look at the underlying assumptions of our work.

Example Fishbone Diagram

Potential Reasons Consumers Are Not Seen For Initial
Appointments for Healthy Way LA (HWLA) Tier 2
Mental Health Service (MHS) within 30 Days of Referral
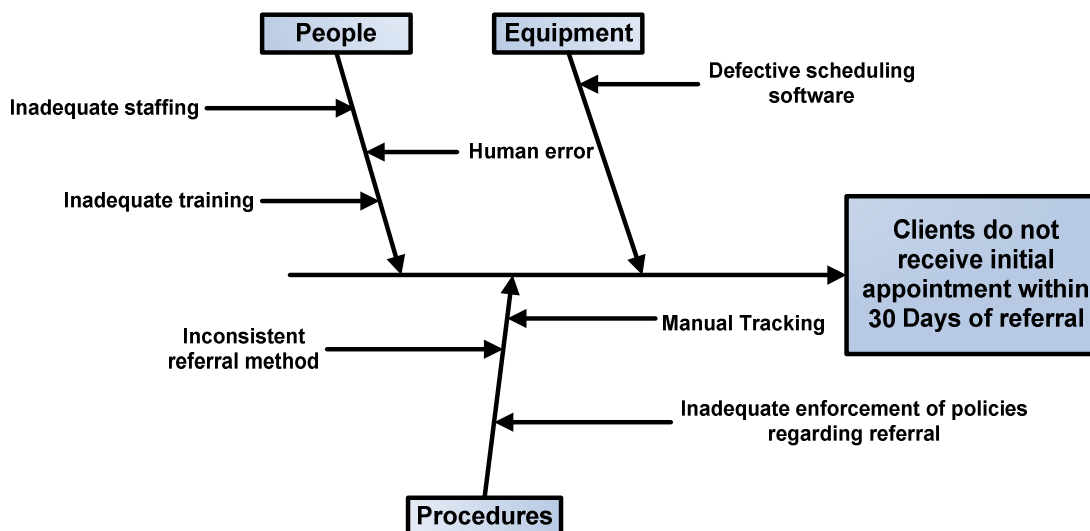
Walk-through

Walk-through is a qualitative data collection technique. Walk-throughs enable providers to better understand the experience of care from the consumer's and family's points of view by going through the experience themselves. This tool is most useful in answering the question: What are we trying to accomplish?

Using the Walk-through tool has a variety of benefits:
- It provides first hand knowledge of what it is like to be a consumer in a clinic and or organization.
- It creates incentive for the clinic or organization to improve the process of providing care through enhanced consumer experience.
- It generates data about the consumer experience, including direct observations as well as what feelings may be generated for the consumer.
- It generates ideas for process improvement and innovation.

Directions

1. Let the staff you are likely to come in contact with know in advance that you will be doing this Walk-through. They might be on their best behavior, but it is better to have them be part of the process than to go behind their back. Ask them not to give you special treatment.
2. Go through the experience **just as the consumer and family member would.**
3. As you go through the process, try to put yourself in the consumer's and family member's position.
4. At each step, ask the staff to tell you what changes (other than hiring new staff) would make the experience better for the consumer and what would make it better for the staff.
5. Finally, between the two of you (the "consumer" and the "family member"), write down a list of what needs you found and what improvements could be made.

A variation of this technique is the Secret Shopper method in which a Walk-through is performed to better understand the experience from a consumer's perspective and the Secret Shopper is not identified or known to the staff or provider. Collecting the data anonymously allows for the collection of data that is not diluted by direct observation or the "knowledge" of direct observation. An example of this variation is the Test Calls protocol implemented by the Program Support Bureau, Quality Improvement Division, in collaboration with the ACCESS Center staff. Suggestions and recommendations for improvement are developed and implemented in collaboration with the ACCESS Center staff using the Secret Shopper experiences and findings to guide and inform the improvement processes and activities.

Section 6: Tools for Process and Data Analysis

Pareto Diagram

There may be many causes for problems or conditions that adversely affect work processes. A Pareto diagram is a type of bar chart in which the bars representing each problem cause are arranged, or ranked, by their frequency in descending order. A Pareto diagram is useful in interpreting data and confirming the relationships that are suggested in cause-and-effect studies. This approach is based on the idea that 80% of the problem comes from 20% of the causes; the diagram is used to separate the "vital few" problem causes from the "trivial many". This aids in focusing on correcting or improving the vital few causes that contribute most to the problem.

Example Pareto Diagram

Most Common Reasons Consumers are Not Seen for an Initial Appointment for HWLA Tier 2 MHS within 30 Days of Referral from Primary Care Provider (PCP)
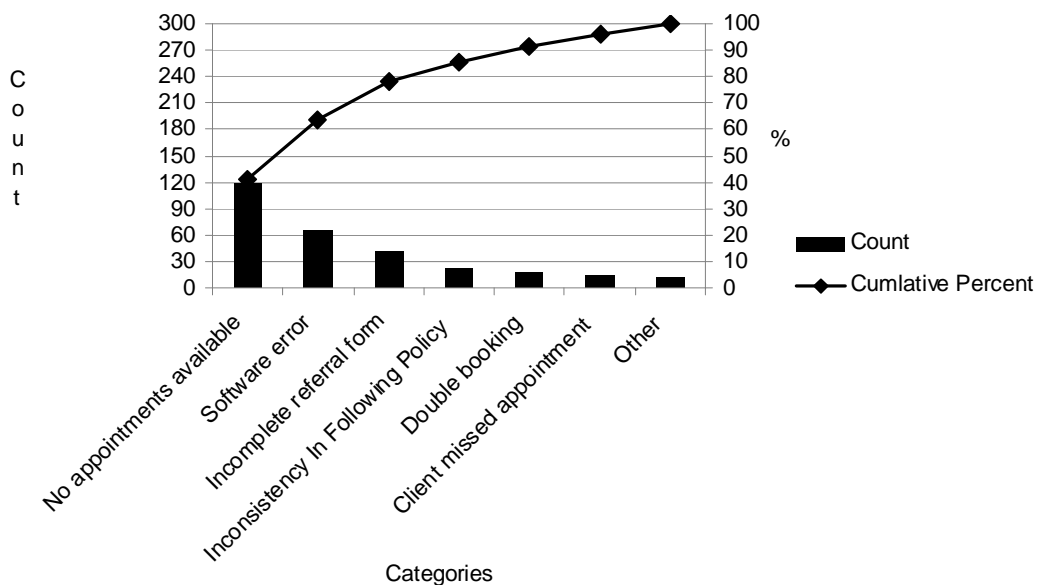
Run Chart

When we collect data about a work process, it can be helpful to illustrate the results in a graph.   A run chart is one type of graph that is used to see if we perform our work in a consistent way, or if there are obvious changes as the work progresses over the course of time. In a run chart, the data for a process measure are plotted either after several batches of work are done or as work is completed over a period of time. In an intermittent or batch process, data are usually obtained in a sequence. For a continuous process, data are usually obtained at set time intervals.

Run charts can be used to monitor characteristics or features in organizational work processes. Process characteristics that are typically measured include dimensions of quantity, quality, or time. When the data is plotted, the chart can be used to identify trends, shifts, patterns, and outliers that may exist in our work.

Example Run Chart

Monthly Average of Consumers Not Seen for an Initial Visit
for HWLA Tier 2 MHS Within 30 Days of
Referral from their PCP
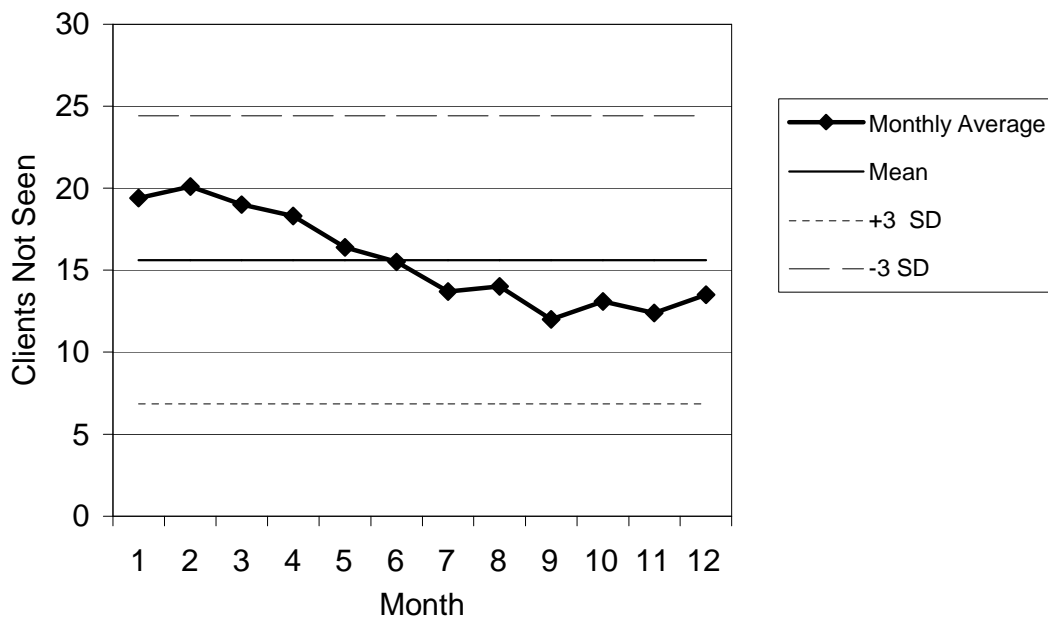
Why Use Run Charts?

Run charts are used to determine if a process is performing as expected and whether there are changes in a process characteristic in a sequence or over time. Run charts are also used to identify early patterns and outliers among the observed data. This analysis can be useful for problem solving and for comparing to a process standard or requirement.

Histogram

Before taking steps to improve our work, we often collect data to see how we are doing at the present time. One way to describe and evaluate our performance is to display this data in a chart called a "histogram". In a histogram, data are grouped into defined intervals and displayed according to their frequency of occurrence in each interval. This method provides insights about performance and, in particular, the variation that normally occurs in work.

Example Histogram

Number of Days Between Date of Referral from PCP and Consumers' Initial Visit for HWLA Tier 2 Mental Health Service (in a 60 day time period)

N = 309
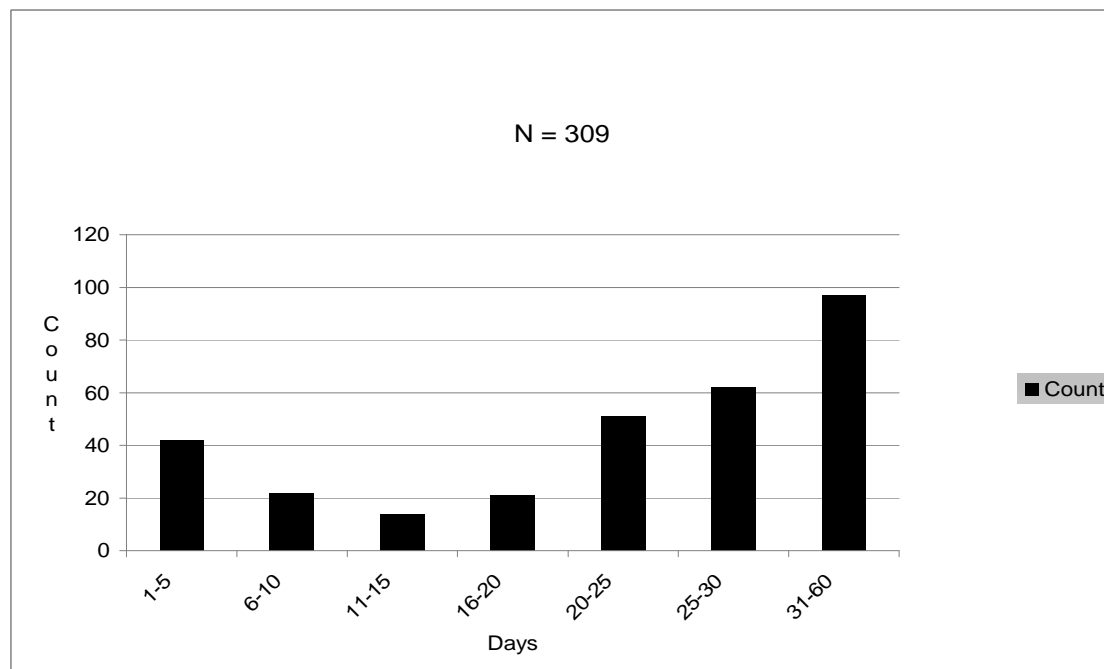
Why Use Histograms?

A histogram is a picture of the data distribution that includes its spread and shape. This can provide clues about the variation that exists in the work performed. Distributions can be skewed in either a positive (tail of the distribution to the right) or negative (tail of the distribution to the left) direction from the center. By examining the spread and shape of a distribution, the extent of variation in a work process can be determined. This can provoke further discussions to identify the cause of variation and the measures needed to either control or reduce it. A histogram is a useful tool to our current performance and show how we are improving work processes over time.

Flow Charting

Flow charting is a tool used to show the individual steps of a process in a sequential order. In quality improvement, flow charting is used to graphically show the actual steps of a process in comparison to the ideal steps of a process. It allows you to draw a picture of the way a process actually works so that you can understand the existing process and develop ideas about how to improve it. Flow charting can reveal duplicate, missing, or out-of-order steps in a process. It can also be used as a communication tool for explaining the process, assigning responsibility, and estimating time. Using a flowchart helps team members gain a shared understanding of the process and use this knowledge to collect data, identify problems, focus discussions, and identify resources.

Directions:

1. Bring together the individuals responsible for implementing the process.
2. Define the process to be diagrammed.
3. Discuss and decide the scope of the process. For example, where or when does the process start? Where or when does it end?
4. Determine the level of detail to be included in the diagram.
5. Identify all the steps in the process without putting them in a particular order. Use cards, sticky-notes, or any method that records each step individually and enables them to be put in an order.
6. Arrange the steps into a sequence.
7. Discuss and confirm the steps and their sequence are correct.
8. Draw arrows between the steps to show the flow of the process.
9. Review the flow chart with stakeholders to finalize the flow chart and gain consensus.

Commonly Used Flow Chart Symbols

Action

Flow Lines

Decision

Document

Cloud (Things you don't know)

Database

Terminate
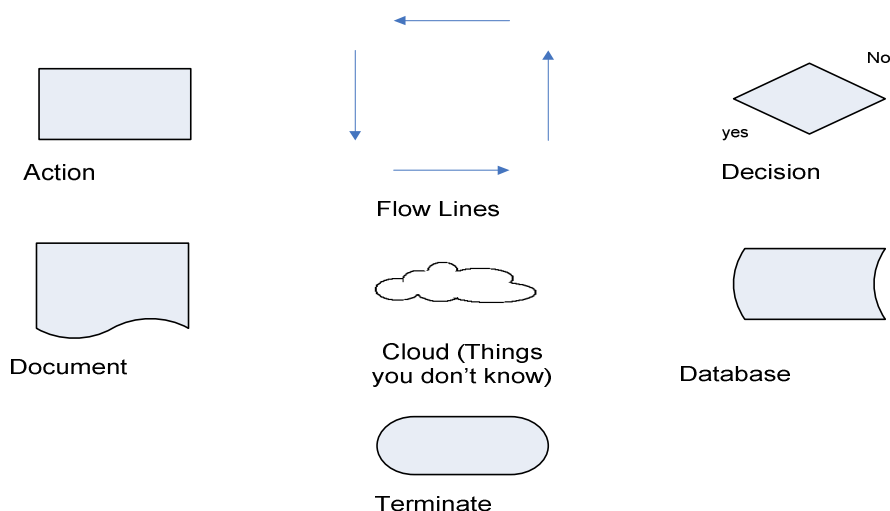
Example Flow Chart

Process of Referral to HWLA Tier 2 MHS and Scheduling of the First Appointment for HWLA Tier 2 Services

```
┌─────────────────────┐
│ Primary Care         │
│ Provider (PCP)       │
│ screening tools      │
│ (PHQ-2, PHQ-4,       │
│ PHQ-9) w/            │
│ consumer and         │
│ determines           │
│ consumer may         │
│ benefit from         │
│ referral for MHS     │
└─────────────────────┘
          │
┌─────────────────────┐
│ PCP discusses        │
│ recommendation       │
│ for referral w/      │
│ consumer             │
└─────────────────────┘
          │
    ◇ Will consumer ◇  ──No──►  ┌──────────────────┐
      accept?                    │ Document actions  │
          │ Yes                  │ and that consumer │
                                 │ declined          │
                                 └──────────────────┘
┌─────────────────────┐
│ PCP completes "DMH   │
│ Referral for a HWLA  │
│ Referral for Mental  │
│ Health Providers"    │
│ form and routes      │
│ referral to MHS      │
│ coordinator          │
└─────────────────────┘
          │
    ◇ Based on referral, ◇ ──No──►  ┌──────────────────────┐
      is consumer                    │ MHS coordinator       │
      appropriate HWLA               │ contacts consumer,    │
      Tier -2 MHS?                    │ explains reason       │
          │ Yes                      │ service is not        │
                                     │ appropriate, and      │
┌─────────────────────┐              │ provides referral to  │
│ MHS coordinator      │             │ appropriate level     │
│ schedules appt w/    │             │ of care               │
│ consumer, assigns    │──►┌───────┐ └──────────────────────┘
│ appropriate staff to │   │ MHS         │
│ complete intake      │   │ coordinator │         │
│ and financial        │   │ completes   │  ┌──────────────┐
│ screening            │   │ "Response   │  │ Documents     │
└─────────────────────┘   │ top         │  │ actions and   │
          │               │ Referral"   │  │ justification │
┌─────────────────────┐   │ back to     │  └──────────────┘
│ Document             │   │ PCP         │
│ appointment in       │   └───────┘
│ scheduling           │
│ software             │
└─────────────────────┘
          │
┌─────────────────────┐
│ Staff complete       │
│ financial screening  │
│ and intaket w/       │
│ consumer             │
└─────────────────────┘
          │
    ◇ Is client eligible ◇ ──No──┐
      for HWLA Tier                │
      2 services                   │
      based on info                │
      from financial               │
      screening and/               │
      or intake                    │
          │ Yes                    │
┌─────────────────────┐            │
│ Staff completing     │           │
│ intake               │───────────┘
│ recommends           │
│ HWLA Tier 2 Tx,      │
│ explains Tx,         │
│ schedules appt w/    │
│ consumer             │
└─────────────────────┘
```

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Section 7: Tools for Evaluating Change

Root Cause Analysis: Tracing a problem to its origins

Root Cause Analysis (RCA) is often used to identify the origin of a problem. It is a technique that employs a set of specific steps with associated tools in order to identify a primary cause of a problem. Using RCA, organizations can:

1. Determine what happened.
2. Determine why it happened.
3. Figure out what to do to reduce the likelihood that it will happen again.

Root Cause Analysis can help you determine the goal(s) for your Quality Improvement Project (QIP). Root Cause Analysis is more than a tool for organizing information. It provides a structure for evaluating and forming conclusions about information. Given the broader scope of RCA, QI tools such as those listed in this document can be used to facilitate the process of RCA.

The Root Cause Analysis Process

Step One: Define the Problem
• What do you see happening?
• What are the specific symptoms?

Step Two: Collect Data
• What proof do you have that the problem exists?
• How long has the problem existed?
• What is the impact of the problem?

Step Three: Identify Possible Causal Factors
• What sequence of events leads to the problem?
• What conditions allow the problem to occur?
• What factors may contribute to the occurrence of the problem?

Step Four: Identify the Root Cause(s)
• What factors contributed to occurrence of the problem?
• What caused these factors to be operative?

Step Five: Recommend and Implement Solutions
• What can be done to prevent the problem from happening again?
• How will the solution be implemented?
• Who will be responsible for its implementation?
• What are the risks of implementing the solution?
• What are the risks of not implementing the solution?

The table below outlines tools that can be used within the RCA steps:

	Brainstorming	Affinity Grouping	Multi-voting	Fishbone Diagram	Pareto Diagram	Run Chart	Histogram
Step 1	√	√	√				√
Step 2	√		√	√		√	√
Step 3	√	√	√	√	√	√	
Step 4	√	√	√	√			
Step 5	√	√	√				

A Process of Identifying Causes in Root Cause Analysis

Root Cause Analysis is often used to investigate failures and/or errors. Examples include: errors in dispensing medication, causes of an equipment failure, or frequent errors in billing in an organization. Typical components in identifying causes include:

Undesired Event/Situation
The event preceding the loss is the contact that could or does cause the harm or damage to anything in the work environment (for example, giving the wrong medication).

Immediate Cause
The specific act or condition which resulted in the incident is the circumstances immediately preceding the contact. These factors can also be called the symptom(s) of the underlying problem. These are caused by substandard acts and substandard conditions (for example, a person slips on a wet floor). Immediate causes can be defined in terms of two components, an action (regarding the photocopy machine not working because the cord has been kicked out) and a pre-existing condition (regarding the photocopy machine not working because the ink cartridge is empty).

Root Cause
The specific item that when corrected would result in a long term prevention of similar accidents or undesired events. They are the underlying symptoms or immediate cause(s) of the problem.

Generating relevant causal hypotheses is essential to the success in producing a useful RCA, namely Step 3 above. The following techniques help to generate causal hypotheses:

- Appreciation – Use the facts and ask "So what?" to determine all the possible consequences of a fact.
- 5 Whys – Ask "Why?" until you get to the root of the problem.
- Drill Down – Break down a problem into small, detailed parts to better understand the big picture.

Root Cause Analysis assumes that systems and events are interrelated. An action in one area triggers a reaction in another, and in another, and so on. By tracing back these actions you may discover the factors affecting the undesirable event or situation, and get insight into what interventions may address the situation and/or problem.

You will often find the following types of causes:

1. **Physical causes** – Tangible, material items failed in some way (for example, a tape recorder has no batteries).

2. **Human causes** – People did something wrong, or did not do something that was needed. Human causes typically lead to physical causes (for example, no one changed the used up batteries, which led to tape recorder not working during the session).

3. **Organizational causes** – A system, process, or policy that people use to make decisions or do their work is faulty (for example, no one person was responsible for replacing the batteries, and everyone assumed someone else had replaced the batteries).
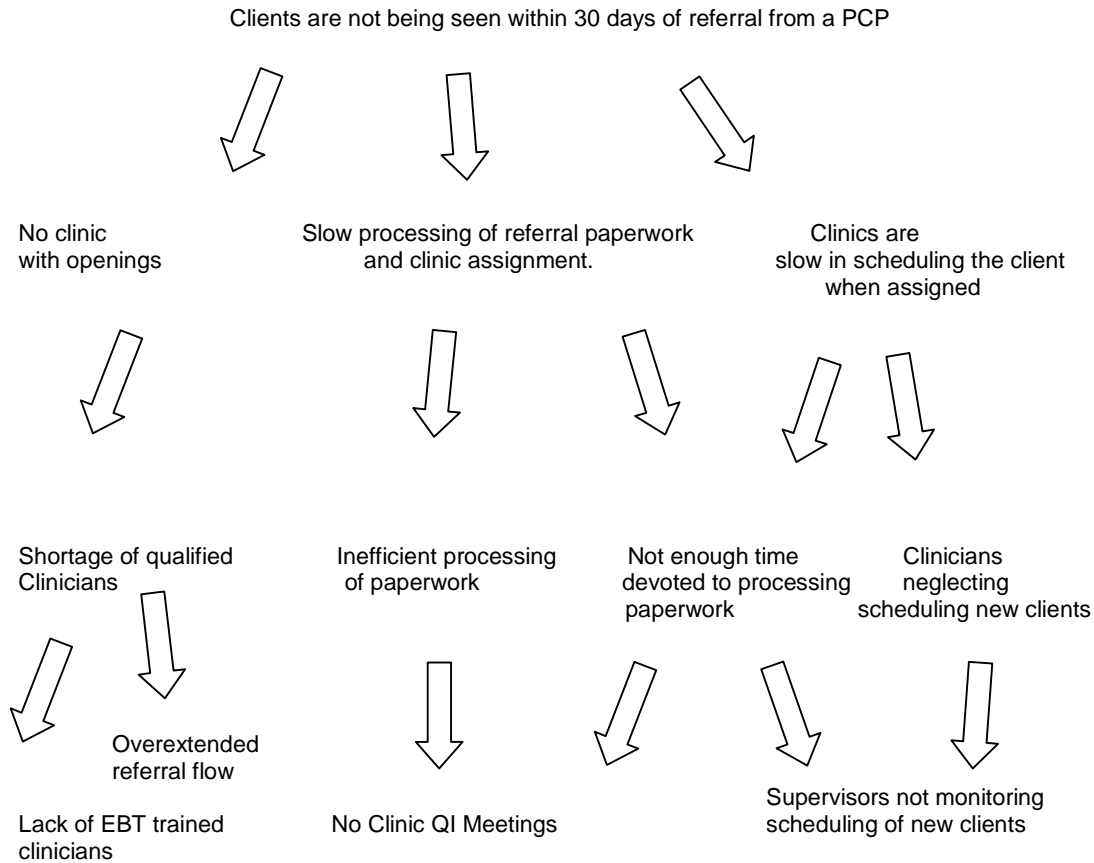
Given that an undesired event is typically related to a web of interacting actions and systems, it is important to remember that identified root causes are hypothetical and not absolutes.

It can be helpful to organize the information in RCA in diagrams highlighting causal relationships. An example is the Causal Tree Diagram presented on the following page. This hypothetical example shows the event and/or cause that is associated with a prior level of causes, following the process of identifying causes outlined above.

Please note that the Causal Tree generated could be very different depending on the group or individual generating the causal hypotheses. It does highlight points of intervention, however, that may be relevant for particular clinical settings.

Example Causal Tree

The following example is presented to illustrate the use of RCA in identifying interventions for an undesirable event/situation.

Clients are not being seen within 30 days of referral from a PCP

No clinic with openings

Slow processing of referral paperwork and clinic assignment.

Clinics are slow in scheduling the client when assigned

Shortage of qualified Clinicians

Inefficient processing of paperwork

Not enough time devoted to processing paperwork

Clinicians neglecting scheduling new clients

Overextended referral flow

Lack of EBT trained clinicians

No Clinic QI Meetings

Supervisors not monitoring scheduling of new clients

Note: EBT=Evidence Based Therapies.

The above example provides an overview of the RCA procedure, and how interventions can be formulated. For example, given this diagram, having executive management reevaluate the need for further EBT training of staff, ensuring the clinic has regularly scheduled QI Meetings, and making prompt scheduling of referrals a clinic's priority may be possible interventions. It is also important to note that this Causal Tree Diagram example can be used to establish needed research. In the above example, it is possible paperwork is being processed efficiently; however clinicians are neglecting following up on their new client assignments. Research may be needed to tease apart these two possible factors. At the end of the RCA, based on the Causal Tree that is generated, it may be decided that a research project is needed, or that interventions can be formulated, or both.

Plan – Do – Study – Act (PDSA) Cycle

Once a team has set an aim, established its membership, and developed measures to determine whether a change leads to an improvement, the next step is to test a change in the real work setting. The Plan-Do-Study-Act (PDSA) cycle is shorthand for testing a change — by planning it, trying it, observing the results, and acting on what is learned. This is the scientific method, used for action-oriented learning.

Reasons to Test Changes
- To increase your belief that the change will result in improvement.
- To decide which of several proposed changes will lead to the desired improvement.
- To evaluate how much improvement can be expected from the change.
- To decide whether the proposed change will work in the actual environment of interest.
- To evaluate costs, social impact, and side effects from a proposed change.
- To minimize resistance upon implementation.

Step 1: Plan **-** Plan the test or observation, including a plan for collecting data.
- State the objective of the test.
- Make predictions about what will happen and why.
- Develop a plan to test the change. (Who? What? When? Where? What data need to be collected?)

Step 2: Do - Try out the test on a small scale.
- Carry out the test.
- Document problems and unexpected observations.
- Begin analysis of the data.

Step 3: Study **-** Set aside time to analyze the data and study the results.
- Complete the analysis of the data.
- Compare the data to your predictions.
- Summarize and reflect on what was learned.

Step 4: Act **-** Refine the change, based on what was learned from the test.
- Determine what modifications should be made.
- Prepare a plan for the next test.

PDSA Worksheet for Testing Change

AIM: (overall goal you wish to achieve)

Every goal will require multiple smaller tests of change

Describe your first or next test of change:	Person responsible	When to be done	Where to be done

PLAN:

List the tasks needed to set up this test of change:	Person responsible	When to be done	Where to be done

Predict what will happen when the test is carried out:	Measures to determine if prediction succeeds

DO: Describe what actually happened when you ran the test:

STUDY: Describe the measured results; how they compared to the predictions:

ACT: Describe what modifications to the plan will be made for the next cycle:

Appendix A: Quality Improvement Terms

Bench marking: The practice of setting operating targets for a particular function by selecting the top performance levels, either within or outside a company's own industry. In a broader sense, bench marking involves searching for and copying new ideas and best practices for the improvement of processes, products and services.

Consumer: The recipient of the services provided. (See "customer").
Critical indicator: clearly defined measurements that compare various input and process characteristics.

Customer: In the broadest sense, the recipient of the service provided or the purchaser of the services. Generally, however, the term refers to the purchaser of the service. (See "consumer").

Cycle time: The amount of time it takes to complete a defined task.

Data Sources: documents, people and observations that provide information for the assessment or evaluation. One example of a reliable high quality data source is the Mental Health Statistics Improvement Program (MHSIP) Survey.

Defect: Non-conformance to requirements or the lack of a necessary characteristic.

Effectiveness: Conformity to requirements; the degree to which the service is performed in the correct and desired manner.

External customers: Individuals and entities who are outside of the actual operation of the organization and who receive services provided by the organization, a component or an individual working within the organization.

Goals: General guidelines that explain what you want to achieve.

Hypothesis: A proposed explanation for a phenomenon. A working hypothesis is a provisionally accepted theory of what is happening.

Implementation: The execution, practice of a plan, or the carrying out of a method, or design for doing something.

Internal customers: Individuals, entities and organizations who are involved in or with the operation of the organization and who receive services provided by the organization, a component of the organization, or an individual working within the organization. Internal customers include employees and volunteers, members of the organizational leadership councils or committees that plan and coordinate the organization.

Linkage: Interactions that affect coordination and completion of tasks.

Methodology: A procedure, technique, or way of doing something.

Objectives: Measurable statements that are consistent with the mission, vision and key drivers.

Outcome: A final product or end result.

Problem: The result of non-conformance to consumer and other stakeholder requirements.

Process management: Improvement of work activities and work flow across functional or department boundaries.

Quality: The extent to which products and services meet or exceed customer requirements.

Quality assurance (QA): Retrospective review or inspection of services or processes that is intended to identify problems.

Quality care: The extent to which health care services meet the consumer's needs and produce the desired health outcome.

Quality improvement: The continuous study and improvement of a process, system or organization.

Quality indicators: Characteristics of products, services or processes that represent quality.

Sentinel event: An undesirable event or phenomenon that triggers further analysis and investigation.

Stakeholder: Individuals and organizations, other than the consumer who receives the services, that have some interest in the operation of the organization, e.g., the consumer's family, the community in which the system operates, government officials, the consumers insurer/third-party payer, and health care providers.

Strategic quality planning: An integrated planning process that incorporates strategic planning with quality planning.

Appendix B: Steps to a QIP Worksheets

Step 1: Find an Opportunity to Improve

Use the SA QIC to identify and list shortcomings, problems, weaknesses in service or delivery.

1.

2.

3.

4.

5.
(Attach additional pages if necessary to list more identified issues)

Review relevant data, countywide or SA specific outcomes, complaints, or concerns. Consider collecting new data to validate and better understand the problems. List the top three priorities for improvement and the rationale for targeting each.

Priority 1:
Rationale:

Priority 2:
Rationale:

Priority 3:
Rationale:

Pick one for a Quality Improvement Project (consider using a tool such as multi-Voting) and list it here:

Step 2: Assemble a Quality Improvement Project (QIP) Work Group

Include knowledgeable and enthusiastic members. Clearly assign the roles of group leader and facilitator.

QIP Work Group Members:
1. Leader:

2.

3.

4.

5.

The leader must ensure clear communication w/ the SA District Chief and obtain the appropriate charge to proceed with the QI Project.

Identify primary stakeholders and anticipate their reactions.

1. QIP Stakeholders:

Anticipated Reaction:

2. QIP Stakeholders:

Anticipated Reaction:

3. QIP Stakeholders:

Anticipated Reaction:

4. QIP Stakeholders:

Anticipated Reaction:

Seek feedback and involvement from the stakeholders early in the process. Consider including stakeholders in the QIP Work Group if appropriate.

Step 3: Clarifying the Problem

Does the problem affect consumers' satisfaction, outcomes, or functional status?
If yes, list how and what are the indicators. Are these indicators measurable?

Does the problem impact staff productivity?
If yes, list how and what are the indicators. Are these indicators measurable?

Consider representing your data in the form of a chart or graph, using a tool, such as a histogram, run chart, or pareto diagram. Attach it to this worksheet.

Is it within our scope of influence to improve?
If yes, what specific interventions can be carried out? What would be the desired effects? Are they measurable?

Investigate what is or is not happening. What reasons explain the problem?
Would root cause analysis be helpful in further understanding the problem and
identifying possible ways to intervene? If yes, root cause analysis can be
conducted using the fishbone diagram or the causal tree diagram.

Step 4: Exploring Solutions—How can we try to address the problem?

Identify potential interventions for improvement. Explore all possible solutions and list them here.

Evaluate the interventions identified. Consider using tools such as multi-voting to identify the intervention(s) to use. What data can be used to identify progress?

Determine the specific steps to implement the chosen intervention. Consider using a flow chart to diagram implementation of the project.

Step 5: Develop an Intervention

Identify who will perform each task and activity. Identify timelines for the completion of each task, and where each task will be completed.

Based on the work completed in the prior steps, define precisely how the indicators will be measured. How will the data be collected? What measures specifically will be used to evaluate the intervention?

Specify what outcomes you expect to occur as the result of the intervention. Identify alternative outcomes (for example, having outcome measures that are not expected based on the hypotheses that have been generated) and discuss how these should be interpreted.

Step 6: Applying the Intervention—What do you see?

Carry out the steps of the intervention as delineated. Develop a diagram to chart and monitor progress of the implementation.

Consider having regularly scheduled meetings in order to evaluate progress and address obstacles/problems. At these meetings, consider using QI Tools in order to address obstacles/problems as needed.

Step 7: Study the results—was the QIP successful?

What are the outcomes? As a group, go over the results obtained from the intervention. How do results fit with expectations? What new information do the results provide? Consider using QI Tools to formulate hypotheses about the obtained results.

Are there any future interventions or actions that should be carried out? What new projects can be developed to follow up on results of this intervention? Again, consider using QI Tools to generate a list of possible future projects.

References

American College of Cardiology's Pinnacle Network. *QI 101 toolkit.*

    Retrieved (2011, June 21) htttp://www.cardiosource.org/Science-And-

    Quality/Quality-Programs/PINNACLE-Network/Quality-and-Performance-

    Improvement/QI-101-Toolkit.aspx

American College of Cardiology's Pinnacle Network. (2010). *Quality*

    Improvement in action: Using the FOCUS-PDSA method to conduct a QI

    project [PowerPoint slides]. Retrieved from

    http://www.cardiosource.org/Science-And-

    Quality/QualityPrograms/PINNACLE-Network/Quality-and-Performance-

    Improvement/~/media/Files/Science%20and%20Quality/Quality%20Progr

    ams/QIToolkit/3_KnowledgeAssessmentQuiz.ashx

APS Healthcare. (2006). *CA EQRO PIP outline via roadmap* (v. 5.5) [Word

    document]. Retrieved from

    http://caeqro.com/California%20EQRO%20Resources/

County of Los Angeles Chief Executive Office. (2007). *Corrective action plan:*

    Users guide (v. 3).

Institute for Healthcare Improvement. (2004). *Improvement Methods.* Retrieved

    from

    http://www.ihi.org/IHI/Topics/Improvement/ImprovementMethods/Tools/

Kelly, D. L. & Paul Johnson, S. (2006). Measurement and statistical analysis in

CQI. In C.P. McLaughlin. & A.D. Kaluzny (Eds.), *Continuous quality*

improvement in health care: Theory, implications, and applications (3rd

ed.) Sudsbury, MA: Jones & Bartlett Publishers.

National Highway Traffic Safety Administration. (1997). *A leadership guide to*

quality improvement for emergency medical services (EMS) systems.

Retrieved from http://ntl.bts.gov/lib/20000/20700/20758/PB98145899.pdf

National Patient Safety Agency. (2003). *Exploring incidents – improving safety: A*

guide to root cause analysis from the NPSA. Retrieved from

https://report.npsa.nhs.uk/rcatoolkit/course/iindex.htm

New York State Office of Mental Health. (2005). *Quality improvement plan*

toolkit. Retrieved from

https://www.omh.state.ny.us/omhweb/cqi/second_year_eval_template.htm

Static Solutions Group. (2007). *Introduction to continuous quality*

improvement techniques for healthcare process improvement . Retrieved

from http://www.statit.com/services/CQIOverview.pdf

The Dartmouth Institute for Health Policy and Clinical Practice. (2010).

Microsystems at a glance. Retrieved from

http://clinicalmicrosystem.org/assets/toolkits/getting_started/glance_bookl

et.pdf