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MANAGEMENT STRATEGIES FOR IMPROVING FAMILY PLANNING SERVICE DELIVERY

In This Issue

Editors' Note 1
The CQI Process 2
Differences Between Traditional Management and CQI 3
Understanding the Principles of CQI 4
Preparing for CQI 5
Working Solutions—Mexico The Importance of Preparation 6
Initiating CQI Activities 7
CQI Team Roles 7
Implementing the CQI Cycle 8
The CQI Cycle 8
Sample Flowchart 10
Using Data in the CQI Process 11
Sample Pareto Analysis 12
Achieving Results with CQI 14
Working Solutions—Mexico Implementing the CQI Cycle 15
Reviewers' Corner 18
Supporting Your Staff 19
References 19
Checklist for Using CQI 20

Case Scenario

Pursuing Quality at the Santa Rosa Clinic

Supplement

Manager's Toolbox for CQI

Using CQI to Strengthen Family Planning Programs

Editors' Note

Continuous Quality Improvement (CQI) is an exciting management approach that is being introduced in family planning programs around the world. CQI is based on the belief that anybody at any level of the organization can make valuable suggestions about ways to improve operations. Unlike traditional management approaches, which focus on improving only the processes that are not functioning well, CQI assumes that any process within an organization can benefit from some improvement. Because CQI emphasizes a process of constant improvement in operations, it requires long-term organizational commitment and teamwork. Family planning programs that use CQI can raise staff morale, and improve productivity, efficiency, and client satisfaction.

This issue offers some practical suggestions for using CQI in your organization. Included with this issue is a supplement called the *Manager's Toolbox for CQI,* which contains important tools and techniques that managers can use to implement CQI.

The Guest Editors for this issue are Ann Buxbaum, Nancy Murray, and Ricardo Vernon. Ann Buxbaum, Director of Management Sciences for Health's work with the Nigeria Family Health Services Project, oversees management training, organizational development, and management information systems for the project. Nancy Murray, FPMD's Regional Director for Latin America and the Caribbean, is collaborating in the Population Council's Operations Research Project (INOPAL II) with the IPPF affiliate in Mexico, MEXFAM. Ricardo Vernon, Deputy Director for INOPAL II in Latin America, is collaborating with MEXFAM and the Guatemala Ministry of Health in implementing INOPAL's CQI initiatives.

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The CQI Process

The principles and techniques of quality improvement were formulated in the 1950s by W. Edwards Deming, an American management expert, using the ideas of Walter Shewart from the 1930s. These principles and techniques have been applied in corporations all over the world, particularly in Japan, where they have revolutionized corporate thinking and practice. Although quality improvement was first introduced and most widely used in business and manufacturing, its usefulness is not limited to these types of organizations. Recently, the concept of quality improvement been used in managing health services, including those offered by family planning programs.

CQI can be implemented across an entire organization such as a business, hospital, social or health agency, or school. Managers can adapt and use CQI to improve services in individual organizational units, or in several units combined. Clinic managers can adapt the techniques presented in this issue to suit their work setting. Whether CQI is implemented across an entire organization, or within a single unit, strong commitment from management, appropriate resources, and adequate time are all required to make the CQI process successful.

CQI recognizes that many organizational problems result from *systems and processes*, rather than from individuals. CQI encourages staff members at all levels to work as a team, to draw on their collective experience and skills, to analyze systems and processes, to use information to identify the nature and size of each problem, and to design and implement activities to improve services. When staff begin to make improvements, they themselves monitor the impact of their changes. If at first the desired outcomes of the process are not achieved, then the staff can continue to make improvements until these results are achieved.

This issue presents the principles of CQI. It discusses what you need to do to prepare for CQI, how to initiate CQI in your organization, and the steps involved in implementing the CQI cycle.

In preparing to introduce CQI, managers must create an environment for quality improvement by obtaining the commitment of leadership, focusing on the client's perspective, analyzing the work process, and motivating all levels of staff to participate in a continuous effort to improve family planning services.

Once the preparation for CQI has been completed, CQI teams must be formed and trained to **initiate** CQI. There are seven steps involved in **implementing** the CQI cycle.

Step 1: **Identify an area** where opportunities for improvement exist.

Step 2: **Define a problem** within that area, and **outline the sequence of activities (the process)** that occurs in that problem area.

Step 3: **Establish the desired outcomes** of the process and the **requirements needed** to achieve them.

Step 4: **Select specific steps** in the process to study and for each step, list the factors that prevent the achievement of the desired outcome.

Step 5: **Collect and analyze data** about the factors that are preventing the achievement of the desired outcomes of the specific step being studied, and quantify the outcomes of that step.

Step 6: **Take corrective action** to improve the process.

Step 7: **Monitor the results** of the actions taken.

It is essential to build CQI into routine organizational procedures by continuously repeating the CQI cycle. This will help to maintain improvements and to identify and address new areas where services can be improved on a regular basis. ■

Differences Between Traditional Management and CQI

Aspects	Traditional Management	CQI
Quality standards	**Quality is based on pre-determined program objectives and is monitored periodically.**	**Quality is based on clients' feedback and needs. Quality is monitored continuously and is built into the work process.**
Problem solving	**Problem solving and decision making done by senior managers and specialists.**	Problem solving and decision making done in collaboration with staff and based on hard data.
Improvement process	**Short-term improvements made, often at point of crisis (reactive).**	Gradual, continuous improvements made in all functions (proactive).
Program clients	**Clients are not usually consulted for their opinions.**	Clients are partners and are regularly consulted.
Work environment	**Staff work individually.**	Staff work in teams.
Performance recognition	**Authority is rewarded.**	Capabilities are rewarded.
Source of problems	**Problems come from people.**	Problems come from complex processes and systems.
Style of supervision	**Control and direct staff.**	Encourage staff to take initiatives.
Financial perspective	**Quality costs money.**	Quality saves money.

Adapted from Llewelyn Leach and Mayer articles, 1992.

Understanding the Principles of CQI

Managers who initiate the CQI process must incorporate the five basic principles of CQI into their management style.

Leadership Must Provide Firm Commitment and Support for CQI. CQI requires new ways of thinking, a willingness to change, and mutual support among management and staff. Therefore, the family planning manager, whether a director of a large country program or a manager of a busy clinic, must be willing to initiate CQI and provide ongoing leadership and guidance to the staff at every stage of the process. Managers must consider the improvement of quality to be a top priority, must communicate the importance of quality to their staff, must allocate enough resources to make the CQI process work, and must be prepared to implement changes proposed by their staff.

Satisfy Your Clients. In family planning programs there are two kinds of clients—internal and external clients.

Internal clients are the *program staff* who are served by organizational operations. For example, service providers become satisfied internal clients of a commodities supply system when managers, warehouse staff, and delivery agents have ensured that sufficient levels of contraceptives are always in stock. CQI requires that managers believe in the importance of serving internal clients well. To improve the satisfaction of internal clients, managers need to be ready to involve every level of staff in quality improvement activities, and must create a cooperative work environment.

External clients are the *women and men who receive family planning services*. When external clients are satisfied, a clinic or program not only gains more new acceptors and continuing users, but significantly contributes to the impact of the family planning program on health and fertility. CQI demands that managers believe that meeting clients' needs and expectations will improve services and will better satisfy those clients.

Focus on Process to Solve Problems. A process, or system, is a set of operations or activities that are performed repeatedly to produce services. CQI assumes that problems in service delivery are the result of inefficient, poorly designed, or malfunctioning processes, rather than ineffective staff. If you improve the appropriate part of a process or system where a problem has been identified, you will usually fix the problem. CQI therefore focuses on defining and improving processes to achieve an organization's desired service outcomes.

Respect Your Staff's Ability to Improve Processes. Managers who respect the skills and abilities of their staff can empower them to work together to prevent or solve problems and improve the quality of services. In a busy program or clinic, it is difficult for even the most conscientious manager to be completely aware of every step involved in delivering services. Staff who carry out the day-to-day activities of the clinic know which aspects of their work function well and which don't. They are in an excellent position to use this knowledge to propose practical changes that they themselves will ultimately carry out. Managers who implement CQI need to create an environment in which staff members contribute ideas, make decisions, and do not fear reprisals. This environment empowers staff and increases job satisfaction, which in turn contributes to improved client satisfaction and quality of services.

Collect and Use Data. Decisions about process improvements must be based on facts. Most family planning facilities already generate considerable amounts of service data that can be analyzed to suggest possible solutions. In CQI, managers must use data to determine the nature and size of the problems, and to justify any decisions made to improve processes. ■

CQI's Major Principles

- Secure full commitment and support of leadership.
- Satisfy internal and external clients.
- Focus on processes to solve problems.
- Respect the contributions of all staff.
- Collect and use data to improve processes.

Adapted from Hardee and Gould 1992

Preparing for CQI

Preparing for CQI involves making senior managers aware that CQI can improve organizational management, and creating a core group that will implement the CQI process.

Raise Awareness and Secure the Commitment of Leadership

A senior manager should be the initiator of the CQI effort. This senior manager should gain the full participation of all managers by helping them to understand the principles of CQI, the improvements it has brought to other organizations, and the risks involved in implementing such an effort. To do this, managers may wish to read about CQI and, if possible, visit other organizations that are using CQI. Local business schools, universities, or schools of management are a resource for finding these materials. For a list of references, see the reference section on page 19 of this issue.

Managers must develop a realistic vision of what they would like CQI to bring to their organization, and be able to communicate that vision to staff at other organizational levels. During this preparation stage, managers can identify and adapt training materials that will be used to introduce and explain CQI to staff. These materials should include information about the steps involved in implementing the CQI process, staff responsibilities for supporting the process, the resources needed, the demands that CQI will place on their staff, and the potential benefits of CQI.

Create a CQI Core Group

In a large organization, the initiating manager will be most effective if he or she organizes a group of senior managers, often called the "CQI core group," who will lead the process. This core group will be responsible for planning the implementation of CQI, getting the process started, and supporting it at all levels of the organization. They will lay out the steps for the ongoing CQI process, develop training materials, organize training for all staff, and provide technical assistance to the teams that will subsequently be formed to carry out CQI. If CQI is being implemented on a small scale, a single unit manager or a designated staff person may perform most of the functions of the core group.

If you are leading the CQI initiative, you will find that even if you form a core group you are the one who will ultimately be in charge. Your job will be to support the entire process. You should make sure that your core group is trained, and that CQI responsibilities are included in the job descriptions of the group members. Their performance should be monitored and rewarded in the same way as their performance in other job functions, and they should be properly trained and helped to grow in the job through feedback and in-service education. You should lead by example and encourage the other core group members to do the same. You must listen to criticism, work closely with your core group, and encourage their full participation in the CQI process. As the CQI teams are formed, and throughout the CQI process, the core group will perform the same support functions for the teams as the CQI initiator has for the core group. ■

Tools and Techniques for CQI

This issue refers to a number of tools and techniques that can be used in implementing the CQI process. The accompanying supplement, *Manager's Toolbox for CQI*, explains when in the CQI process to use these tools and techniques, and how they can be applied in implementing CQI in a family planning program. Please refer to the *Manager's Toolbox for CQI to learn more about:*

- using a matrix for selecting areas for improvement;
- flowcharting;
- brainstorming;
- cause-and-effect diagrams;
- client flow analysis;
- tally sheets;
- bar charts and histograms;
- "Pareto" analysis;
- benchmarking.

The Importance of Preparation: Highlights from MEXFAM's CQI Training Program

In 1991, MEXFAM, the International Planned Parenthood Federation's (IPPF) affiliate in Mexico, initiated a CQI program to improve the quality of the family planning services provided at its headquarters and at six regional service delivery sites. Initially, only some of the departments and regional centers who had been trained, actively embraced the CQI program. As a result of this uneven acceptance, the core group realized that they needed to tailor the general CQI philosophy to MEXFAM's environment, and to develop a uniform conceptual approach that was appropriate to the organization. Consequently, a manual was developed to orient the staff about the principles, purpose, and benefits of using the CQI approach at MEXFAM. The manual was used to train the staff about CQI and provided them with reference material that they could use during the entire implementation process.

The manual stressed the importance of following the key principles of CQI, outlined the implementation schedule of MEXFAM's CQI program, and emphasized the critical elements of the program.

Critical Program Elements:

- CQI is a long-term process.
- CQI results are permanent because they become institutionalized.
- Basic support systems for CQI include knowing the needs of both internal and external clients, producing and managing information, and measuring outcomes.
- Leaders in the process are also responsible for promoting change, facilitating the process, and being active participants who lead by example.
- CQI activities are an investment rather than an expenditure. The positive long-term results of CQI will more than compensate for the effort.
- The CQI process does not necessarily eliminate all of the normal problems and conflicts that always arise.
- CQI provides better tools for identifying and solving problems. Using CQI as a problem-solving technique develops staff's maturity and intellectual skills.

Source: Sistema de Calidad en MEXFAM

Initiating CQI Activities

To initiate CQI in your organization, you will need to form CQI teams and train the members in CQI methods.

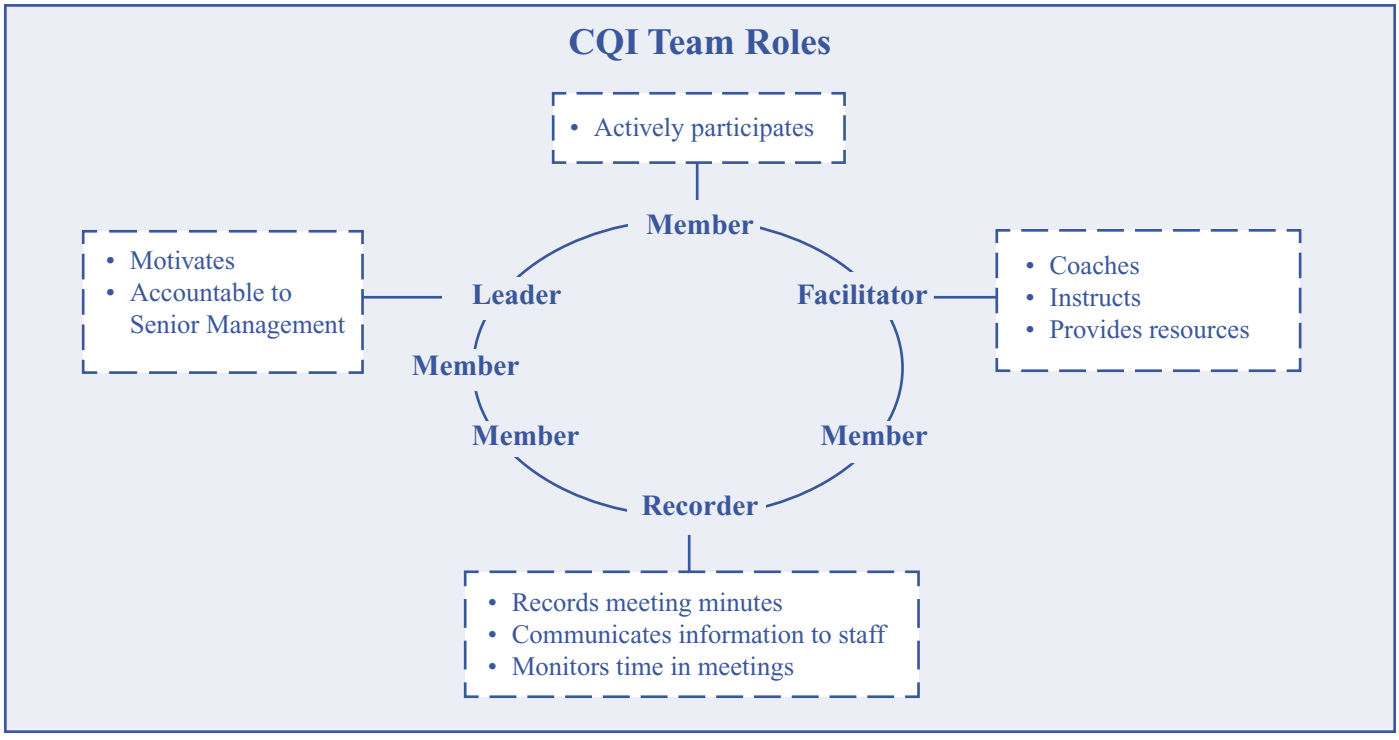
Form CQI Teams

Once you have formed and trained your core group, you are ready to perform the support functions for the CQI initiative. The first task is to form a CQI team made up of staff members who will look at management processes and activities and identify areas for improvement. Members of the CQI team are sometimes made up of staff within a single department of the organization. Another possibility is to form a **cross-functional team** made up of staff members from several departments, such as nursing, laboratory services, and administration. Cross-functional teams have the advantage of being able to look at processes, systems, and problems from different perspectives. The CQI team should include members of the CQI core group, at least in the beginning, to help guide the process. Once the team is formed, the roles and responsibilities of each team member should be determined by the team. At a minimum, each team should have a leader and/or facilitator, and a recorder. If the team is small, the leader and the facilitator may be the same person.

The composition of the CQI team may change once its members have agreed on the first area for improvement. Adding people with expertise in a chosen area can strengthen the team's ability to effectively address the selected problem. On the other hand, members of the CQI team with few skills in that particular problem area may become less active until the team has completed its work on that problem and meets to decide on another area for improvement. CQI teams may be permanent, or they may be formed for a specific quality-improvement activity and then disbanded when the improvement has been instituted. Depending on the situation, either approach can be successful.

Conduct Training

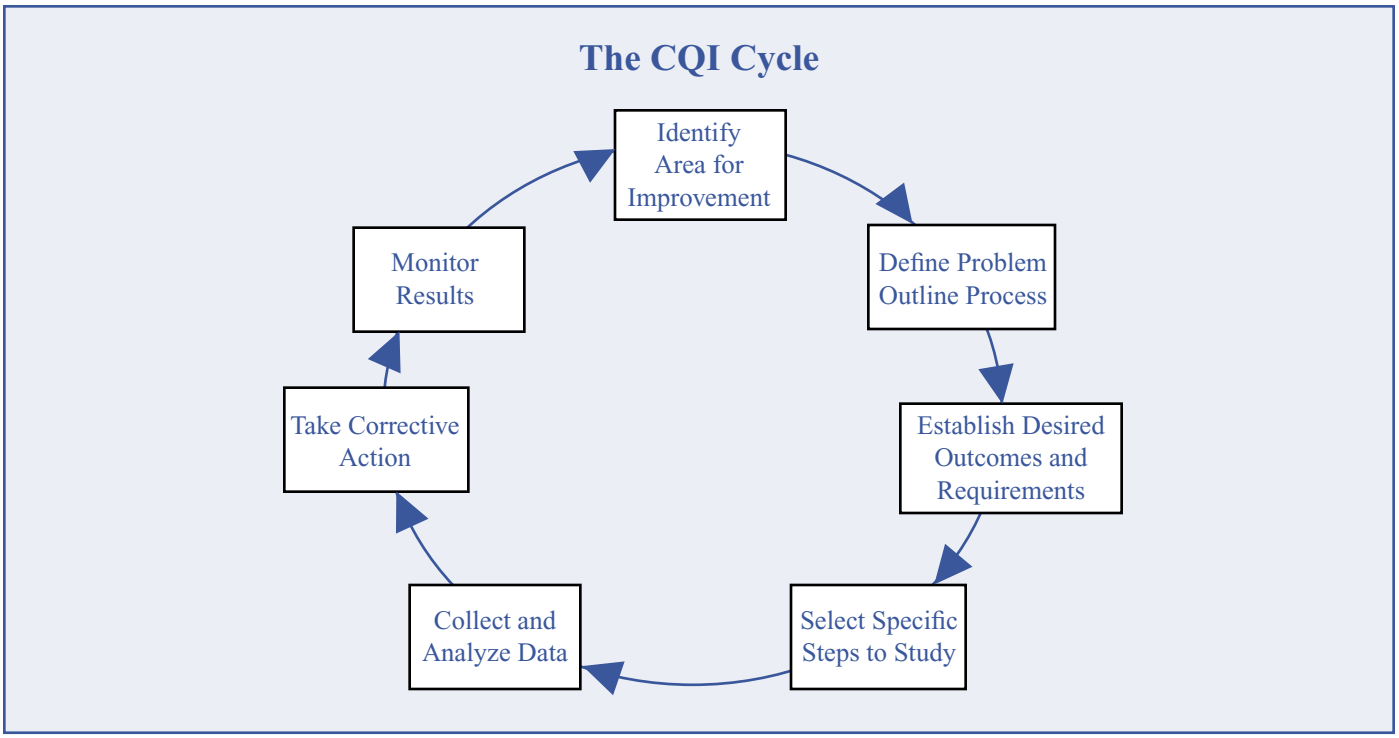
The members of the CQI team must be trained in the techniques that they will use to implement CQI. These include: teamwork, process analysis, the measurement and interpretation of data, problem solving, and the monitoring of activities. Staff may be trained formally, through seminars, or informally, through reading and discussion groups. Any materials used in training should be gathered or prepared well ahead of time so that the training can begin as soon as the CQI teams have been formed. Immediate training of new CQI teams is the most effective way to motivate staff. ■



Implementing the CQI Cycle

CQI is a cyclical process. It involves identifying an area where there is an opportunity for improvement, defining a problem within this area and outlining the sequence of activities (the process) that occur in that problem area, establishing the desired outcomes of the process and the requirements needed to achieve them, selecting specific steps in the process to study, collecting and analyzing data about the process, taking corrective action, and finally, monitoring the results of those actions. Once the cycle is completed, the CQI team must determine whether the problem has been solved. If the problem continues, the cycle should be repeated: the process should be restudied and new actions taken until the desired outcome is achieved. If the problem has been solved, the CQI cycle starts again to identify and address a new area for improvement.

The CQI core group supports the CQI team to implement the CQI cycle, and should encourage flexibility in using the CQI process. There is no one right way to do CQI. The contribution of individual ideas and differing work styles will enrich the CQI process and enhance the likelihood of success.



Step 1

Identify an area for improvement. Opportunities for improvement exist in many areas of a family planning program, such as the management of clients, cost recovery, cost reduction, client satisfaction, staff satisfaction, and administrative systems. Ideas for improvement may come from a variety of sources both inside and outside the organization. Organizational assessments, client focus groups, interviews, suggestion boxes, supervisors or managers, staff members themselves, and service statistics are some of the sources the CQI team can use to identify areas for improvement. If a team comes up with a lot of different ideas, the members will want to develop criteria to help them to determine which ones to focus on first. (For an example of selection criteria, see the supplement to this issue, *Manager's Toolbox for CQI*.)

An example of an area for improvement: A clinic nurse brings to the attention of the CQI team recent complaints from clients about how they are treated when they arrive at the clinic.

Step 2

Define a problem and outline the process. Once the area for improvement has been selected, the CQI team must define a problem within that area and outline the sequence of activities (the process) that occurs within that problem area. This step lies at the heart of CQI success.

An example of a problem: The CQI team discusses and lists the types of complaints clients made about how they are treated when they arrive at the clinic. The CQI team decides to focus on delays in the client registration process, as one important aspect of how clients are treated.

After the CQI team defines the problem, the members must describe the entire process (the sequence of activities) related to that problem. Developing a **flowchart** helps to break up a routine process, or set of activities, into a series of sub-steps that make up that process (see Sample Flowchart of the Client Registration Process, page 10). The team will need to define the beginning and the end of that process, and outline (in sequence) the activities that complete the process. This allows the team to further define and analyze each step in the process.

Step 3

Establish the desired outcomes of the process and the requirements needed to achieve them. The team must establish the desired outcomes of the *entire* process, as well as the desired outcomes of *each step* in the process. These desired outcomes are used to define standards that should be consistently achieved for each step in the process, and for the process as a whole.

An example of a desired outcome of the entire process: Registration process is completed within 30 minutes of client's arrival at the clinic.

An example of a desired outcome of one step in the registration process (pulling the client's record): Registration clerk always locates the client's record within 5 minutes of her arrival at the clinic.

Once the desired outcomes have been determined, the team identifies the conditions or requirements needed in order to achieve each step in the process. Requirements are usually related to resources (human, financial, and material).

An example of the requirements needed to achieve one step in the registration process (pulling the client's record): A filing system exists, and the registration clerk is proficient in using the system.

The desired outcomes and the requirements needed to achieve them are then written next to each step on the flowchart. They should be discussed and fully understood by the team. The completed flowchart should be widely circulated among the staff and referred to frequently in staff meetings and discussions, so that staff will understand what the CQI team is working on and can contribute their ideas.

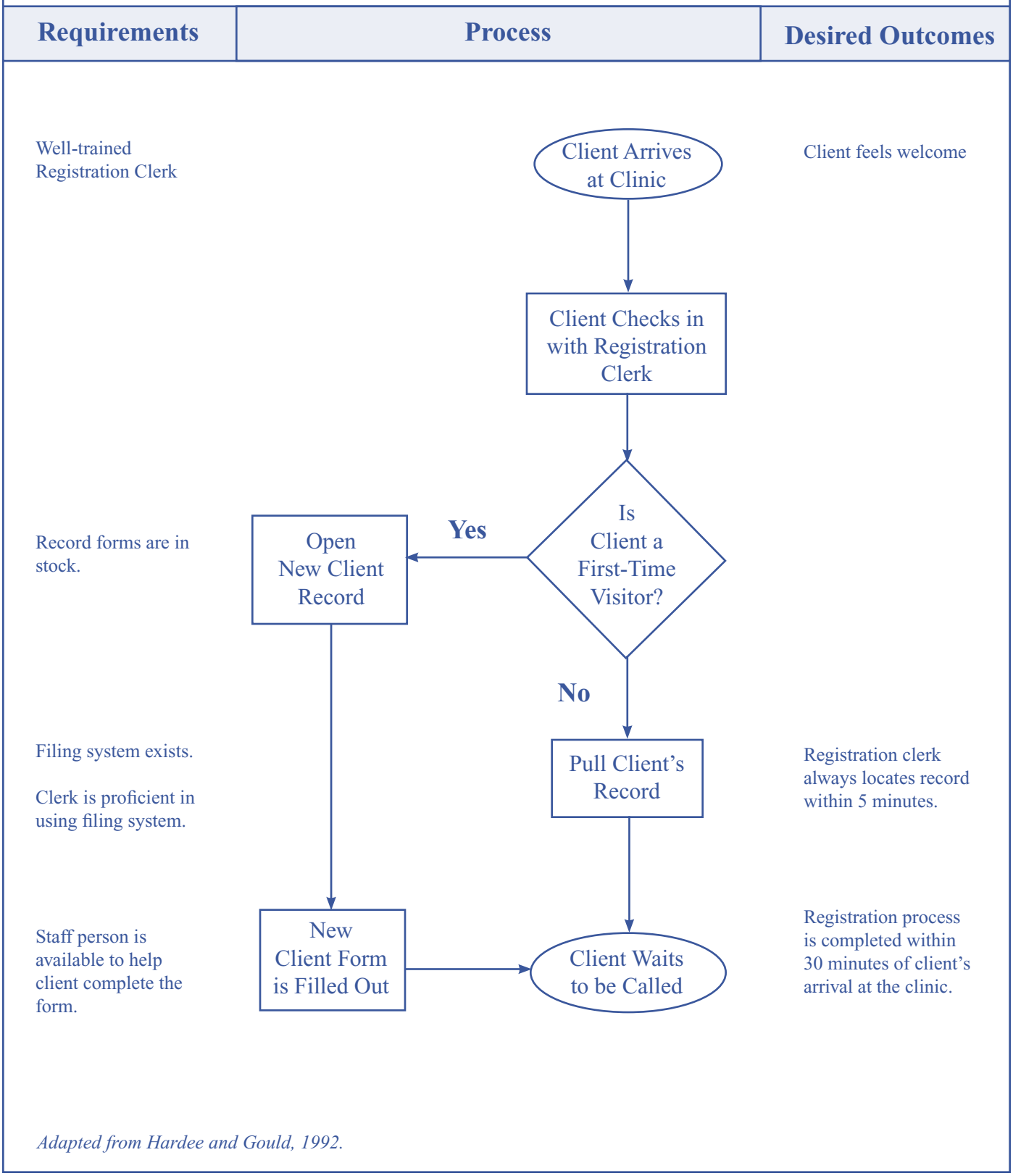
Step 4

Select specific steps in the process to study and, for each step, list the factors that prevent the achievement of the desired outcome. The team will need to identify the specific steps in the process where they believe the desired outcomes are not being achieved. Focusing on these steps will help them to understand the main factors (causes of the problem) that are contributing to an ineffective or inefficient process.

An example of a step in the process to study further: After discussing the steps in the flowchart, the CQI team decides to work on the step labeled "Pull client's record." The CQI team agrees that the client files are not being located quickly. Because the desired outcome of this step is not being achieved—"Registration clerk always locates the client's record within 5 minutes"—the team discusses the factors that are responsible for the desired outcome not being achieved.

There are several techniques that can help the team to identify the possible causes of process failure, including: reviewing the process flowchart; examining the factors that influence the problem; and conducting a brainstorming session where the team can discuss all the possible reasons why the desired outcomes are not being reached. (For more information about these techniques, see the *Manager's Toolbox for CQI*.)

Sample Flowchart of the Client Registration Process



Adapted from Hardee and Gould, 1992.

An example of several factors that prevent the desired outcome of this step "Pull client's record" from being achieved: The CQI team conducts a brainstorming session to identify the possible factors that are preventing the achievement of the desired outcome of the activity, "Registration clerk always locates the client's record within 5 minutes." The team identifies several possible factors that may be preventing the clerk from achieving the desired outcome. These include: lost records, misfiled records, files are too far away from registration area, inadequate storage space for client records, and illegible records.

The team should consider and list *all* the possible factors so that they are sure not to overlook some of the most significant, but less obvious, causes of the problem. The team can develop a list of possible causes and develop a diagram which arranges and groups the causes of the problem in a way that helps the team to identify the primary and secondary causes of the problem (see Cause-and-Effect Diagram in the *Manager's Toolbox for CQI*).

Step 5

Collect and analyze data. The CQI team initially needs to collect data in order to verify their impressions about the specific problem being studied and the potential causes of the problem, such as those listed in Step 4. Later, the team will collect and analyze data to make sure that the requirements are in place and that they are indeed leading to the desired outcomes.

An example of data that can be collected: The CQI team designs a study to collect data on the factors that delay registration. To do this, they observe the registration process for two days. During the observation, they use a tally sheet to record each factor that causes a delay in finding a client's record and the number of times the record is delayed for each factor listed. Calculating the frequency of each factor that delays registration enables the team to identify the most important causes of delayed registration. These causes should be the focus of the team's efforts to improve the process.

Since collecting data is costly and time-consuming, the CQI team needs to set limits on the amount of data they collect. As data are collected the team should regularly analyze them to determine if they are helpful in verifying the size of the problem, prioritizing its main causes, and suggesting what corrective actions should be taken. Once useful results have been obtained, special studies usually will not have to be repeated. If useful results are not being obtained, the team should re-evaluate this activity and consider collecting other data.

Using Data in the CQI Process

The CQI team may be able to use routine data from service statistics and medical records to verify the existence of problems and to identify causes. Alternatively, they may have to collect non-routine data through different types of surveys or special discussion groups. The CQI team should start with data from routine sources, and, as they need more information, they can introduce non-routine data sources to deepen their study.

- Routine **service statistics** on acceptors, dropouts, or method mix often provide the first indication that a problem exists, and often suggest which processes may be hindering the delivery of high quality services.
- Selected information from **medical records** may further pinpoint the nature and size of the problem as it affects the health and welfare of clients. *For example, calculating the percentage of clients with pelvic infections who receive IUDs, or the percentage of clients with high blood pressure who receive pills, will suggest how well clinical protocols are being followed.*
- Special **assessments** can shed more light on the problem. *For example, using a tally sheet to determine what percentage of providers follow all the steps in a protocol can help indicate the nature and size of a problem, as well as the source of the problem.*
- **Interviews** with clients, either in groups (focus groups), or individually when they leave the clinic (exit interviews), can identify which aspects of the service delivery system cause satisfaction or dissatisfaction, as well as the extent to which various desired outcomes are being achieved.

Analyzing Data in CQI. Analyzing data can help the CQI team to:

- Quantify the difference between the actual and the desired outcomes. These results will indicate how serious the problem is, and whether it may be affecting other aspects of service delivery.
- Determine whether the problem is confined to a specific step or to several steps in the process.
- Determine whether clients are concerned about the problem.
- Determine how long a problem has existed and whether or not the problem is getting worse.
- Indicate whether progress has been made in improving the process.

As the team analyzes the data, they will be able to identify with greater certainty the primary factors that are most responsible for preventing the achievement of the desired outcomes. Analyzing the data will also help them to identify the types of actions that can be taken to correct the problem.

An example of analyzing data: The CQI team prepares a frequency table of the causes of delays in registration. They graph this data and perform a Pareto analysis to show the primary causes of the problem. The sample Pareto analysis indicates that misfiling and inadequate storage space are the two primary causes or reasons why the registration clerk was not able to locate the client records within 5 minutes. Together, these 2 causes account for 70% of the problem.

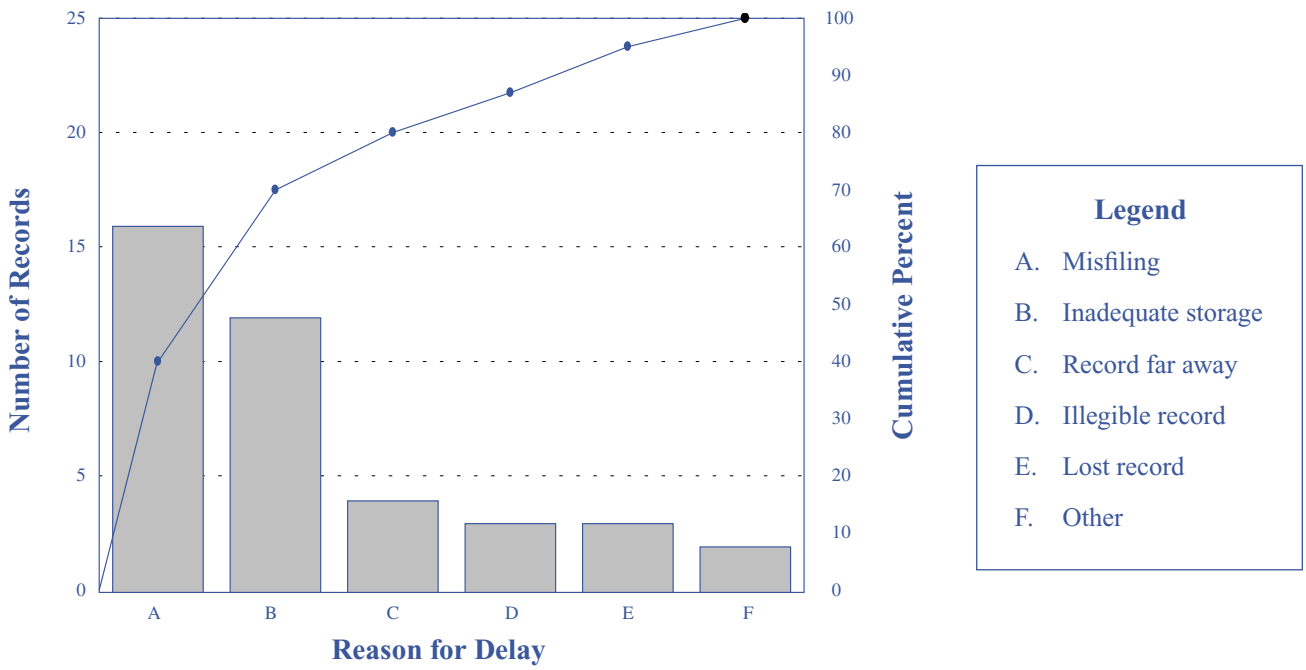
The CQI team can use basic graphing techniques to present the data and to illustrate the magnitude of the problem being studied. It is important to display the data in a way that allows the team to spot trends, so that they can discover the root causes of the problem. Using pie charts, bar charts, and line graphs to display the data will facilitate data analysis and the primary cause of the problem can often be seen more clearly. Performing a "Pareto" analysis helps the team to determine which two or three factors are most responsible for causing the problem. (For infor-mation on how to prepare and use pie charts, bar charts, and line graphs, see Issue Number 2 of *The Family Planning Manager*, "Using Service Data: Tools for Taking Action." For data display techniques specific to CQI and how to perform a Pareto analysis, see the *Manager's Toolbox for CQI.*)

Sample Pareto Analysis: Frequency Table

Reasons Identified by CQI Team for Delays in Locating Clients' Records

Reason for Delay (Ordered by frequency of occurrence)	Frequency		Cumulative Percent
	Number of Records	% of Total Records	
A. Misfiling	16	40	40.0
B. Inadequate storage space for client records	12	30	**70.0**
C. Record is far away from registration area	4	10	80.0
D. Illegible record	3	7.5	87.5
E. Lost record	3	7.5	95.0
F. Other	2	5.0	100.0
Total	**40**	**100.0**	**100.0**

Sample Pareto Diagram



Step 6

Take corrective action. As a next step, the CQI team members will decide on a course of corrective action. The data analysis alone will not determine the specific actions that should be taken, but it will suggest some good alternatives to try. The CQI team can use a technique called "benchmarking" to compare the processes followed in their organization with those of a recognized leading organization in the same field (see *Manager's Toolbox for CQI*). Benchmarking is especially useful when managers wish to redesign a process. Since staff often tend to cling to the procedures that they have always followed, this type of comparison often yields valuable new ideas for improving performance that your staff might not necessarily think of.

Examples of corrective actions that could be taken: Relocating the registration desk to be closer to the files, moving the files closer to the registration area, purchasing a filing cabinet, relabeling the files, creating a less congested work space for the registration clerk, and providing refresher training to the registration clerk in filing procedures. In this example, the corrective actions that the team decides to take are to buy a filing cabinet and to provide refresher training to the registration clerk in filing procedures.

The team should develop an action plan that specifies each action to be taken, the proposed outcomes of these actions, the person who has the primary responsibility for implementing each activity, and a timetable for activities, including the points at which new data will be collected and monitored. The action plan should be integrated with other organizational work plans, to ensure that it is realistic, taking into consideration the staff's other obligations.

It is reasonable to expect that the action plan will change during implementation—dates may have to be adjusted, different staff members may become involved, and intervening events may suggest adding or removing an activity. These changes should be communicated to the staff, agreed upon, and added to the plan, so that the written document always reflects reality and always provides an accurate record of the implementation process.

Step 7

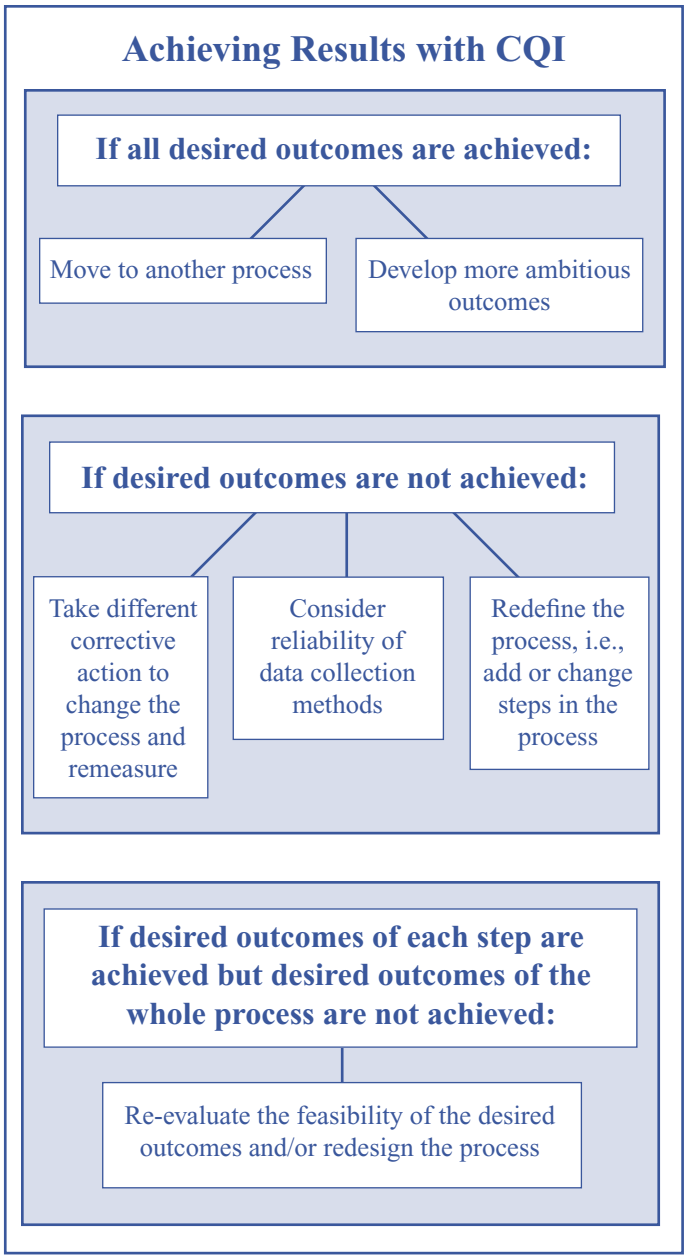
Monitor the results. Using the same techniques as those used in data collection, a CQI team can determine whether the actions they have taken have, in fact, corrected the problem. There are three likely possibilities:

- Desired outcomes of both the process steps and the process as a whole *have* been achieved;
- Desired outcomes of both the process steps and the process as a whole *have not* been achieved;
- Desired outcomes of the process steps *have* been achieved, but the desired outcome of the whole process *has not been achieved.*

Each possibility requires a different kind of response. The ultimate goal of CQI is to develop a process that continuously improves the services that your organization provides.

An example of monitoring results: After the corrective actions have been implemented (purchasing a filing cabinet and retraining the registration clerk in filing procedures), the CQI team has to determine whether these actions have brought about the desired outcome of the specific step in the process being studied and of the overall process. The CQI team repeats the observation for one day to find out whether the registration clerk is locating each client's record within 5 minutes, is using the filing system effectively, and is completing the entire registration process within 30 minutes of each client's arrival. Conducting random interviews with clients as they leave the clinic helps the team to determine whether clients are satisfied with how they are treated when they arrive at the clinic.

Once staff have adopted the new (revised) process, a team member should be assigned to periodically monitor the process, to ensure that the staff continue to follow the modified process. This team member should look out for changes in the data that might indicate a return to the patterns that caused the problem in the first place.



If the desired outcome of the step is still not being achieved—"Registration clerk always locates the client's record within 5 minutes"—the CQI team should consider implementing some of the other corrective actions that they identified, and monitor the effects of these interventions. If the **desired outcome of the step is being achieved** but the **overall desired outcome is not being achieved**—"Registration process is completed within 30 minutes of client's arrival at the clinic"—the CQI team should re-evaluate the registration process and determine whether the desired outcome is realistic, or redesign the process.

Implementing the CQI Cycle: The Experience of MEXFAM's Management Information Systems Department

Under MEXFAM's CQI initiative, MEXFAM's Management Information Systems (MIS) Department began meeting regularly to discuss operations that needed improvement. During these discussions, several members of this team expressed concern that they were spending more time providing ad hoc training and technical assistance to staff in the use of computer software than in carrying out their most important task: developing computer systems and software that were necessary for the organization to maintain its level of growth *(Step 1: Identify an area for improvement).*

The MIS Department agreed that the problem was that they had too little time for software and systems development. They determined that the process most related to the problem was how ad hoc training and technical assistance for computer problems was being handled. The team decided to develop a flowchart to illustrate the training and technical assistance process (Step 2: Define a problem and outline the process).

The team agreed that the final outcome of the training and technical assistance process should be fewer requests for technical assistance to solve software problems. A requirement should be that all staff have a basic level of computer skills that would allow them to solve most software problems on their own, so that almost all MEXFAM documents could be produced without special assistance (Step 3: Establish desired outcomes of the process and requirements needed to achieve them).

Unanimously, the team agreed that the training step was not being satisfactorily carried out, because staff could not solve basic software problems on their own. They did not know how to produce and print documents using all the basic software packages; nor did they know how to interact with the basic computer disk operating system (DOS), on which all the software packages were run (Step 4: Select specific steps in the process to study and list the factors that prevent the achievement of the desired outcome).

The team carried out the simple exercise of quantifying the amount of time each MIS Department staff member spent providing basic technical assistance to MEXFAM employees in solving problems related to printing documents, interacting with the DOS-system, using Word Perfect and Lotus, and other computer-related activities. They also quantified the time spent developing computer systems and software (Step 5: Collect and analyze data). The unshaded bars in the bar chart show the results of this initial analysis. The analysis verified that the MIS Department staff were spending so much time responding to requests for computer assistance that they had very little time to develop computer systems and software for MEXFAM, which was their primary responsibility.

As a first step towards reducing the amount of time spent providing technical assistance, the MIS Department staff developed an action plan to provide training to groups of MEXFAM employees from different working areas. The training was given for two hours a week over a six-week period *(Step 6: Take corrective action).* When the MIS Department staff remeasured the time they spent on various activities, they found that there had been no change in the number of requests for technical assistance *(Step 7: Monitor the results of the corrective actions).*

They re-examined the training program and discovered that because of absenteeism, many of the employees had not been able to attend the training sessions. They then developed a series of one-week training courses tailored to the needs of staff in each department (repeat of Step 6: Take corrective action).

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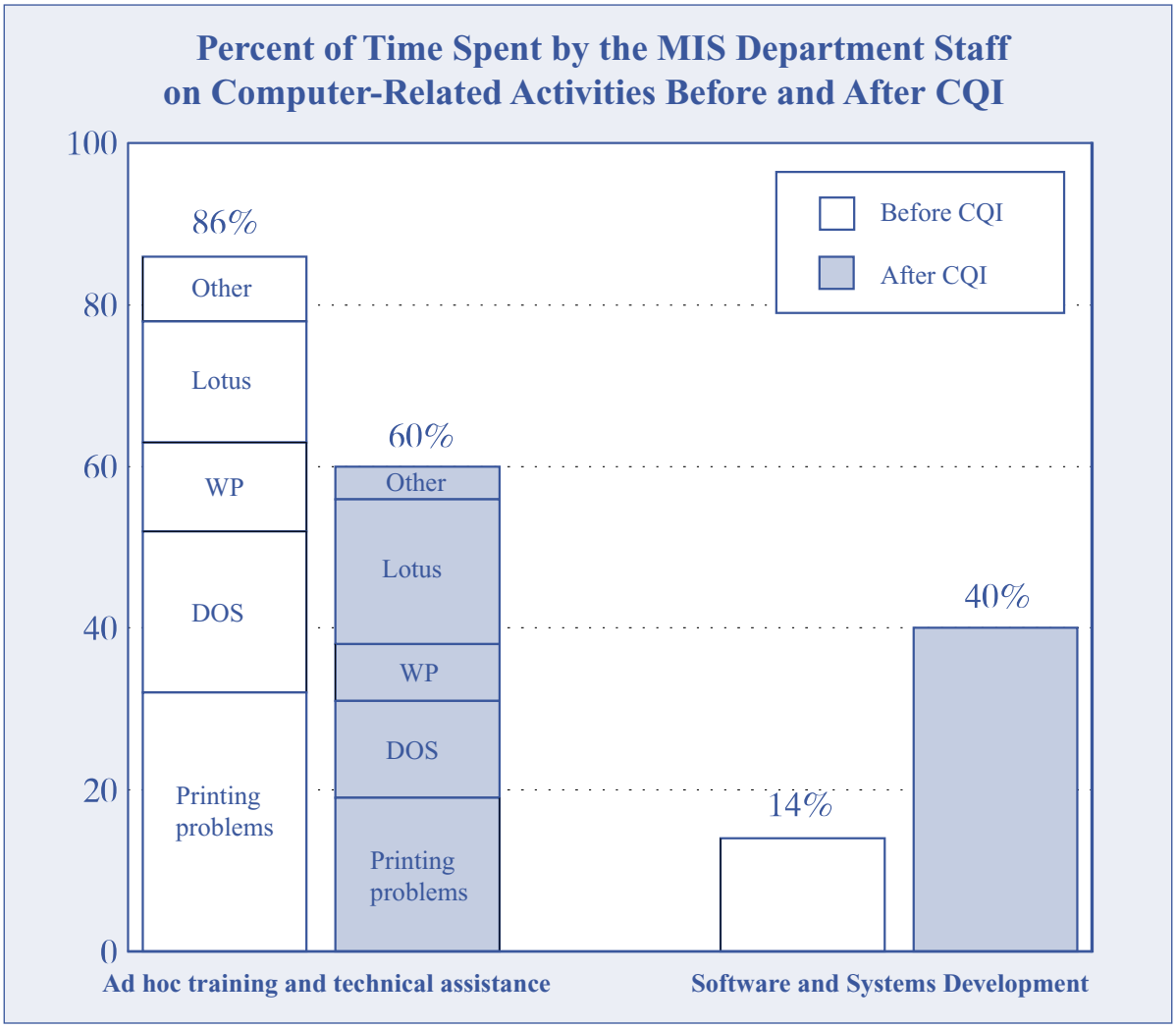
They again measured the proportion of time spent by MIS Department staff on the various activities (repeat of Step 7: Monitor the results of corrective actions). The shaded bars in the bar chart show the results of this second measurement. The proportion of weekly staff time spent providing ad hoc training and technical assistance decreased from over 85% to 60%. The MIS Department had achieved their goal of reducing the amount of time spent providing ad hoc training and assistance, thus increasing the amount of time they could spend developing software and systems packages. As a result of the changes in the training and technical assistance process, the time spent developing software and systems jumped from 14% to 40%. This also resulted in the introduction of 3 new packages in the first 3 months, as compared with the previous year, when only 2 new packages were designed during the entire year.



After the second training program, all MEXFAM employees had learned how to fully utilize the computer software programs, were able to work more independently, and could more often solve computer-related problems on their own. Organizational communications also improved significantly. The CQI initiative had successfully reduced a major source of inefficiency, and had boosted staff morale.

In order to permanently reduce time spent on providing ad hoc training and assistance, MEXFAM's computer training and technical assistance process was modified to include two new steps:

- assess computer skills of all current and new staff;
- provide computer training to staff in each department, tailored to the needs of the department.

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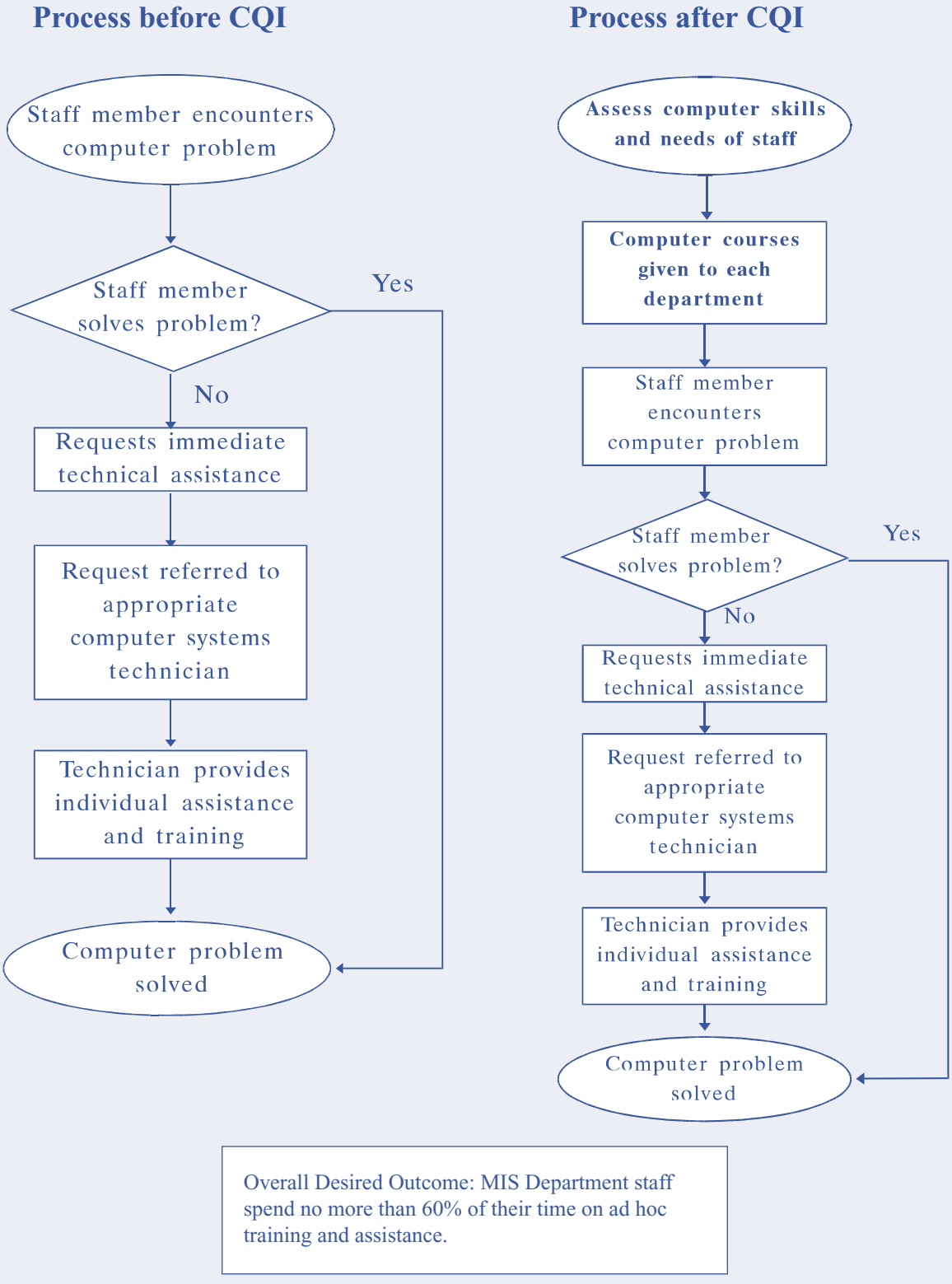
MEXFAM's Computer Training and Technical Assistance Process



Information supplied courtesy of Lic. Alfonso Lopez Juarez, Executive Director of MEXFAM, and Dr. Pedro Manuel Acosta and Lic. Jesus Vertiz, of MEXFAM's Evaluation Department.

Reviewer's Corner

A forum for discussing additional applications of FPM concepts and techniques

On Institutionalizing the CQI process . . . *One reviewer comments*, "Program managers should consider incorporating CQI into routine organizational procedures. The processes described in CQI are similar to those that are typically applied to problem solving. What differentiates normal problem solving from CQI is that CQI is a management philosophy that is designed to be incorporated into routine organizational operations, and can be used to constantly improve operations as the systems evolve. This allows CQI not only to solve existing problems, but also to prevent other problems from developing, by recognizing the potential for a problem before it occurs."

On Organizational Improvement . . . *One reviewer offers*, "CQI creates an opportunity for the staff who carry out the day-to-day routine to work with top management to improve those routine operations. This is very important, because staff who feel that their concerns about clients are not heard or taken into account often become easily discouraged about their work. CQI makes a vertical organization more horizontal, which allows senior staff to exchange ideas and learn from staff who deal with the problems directly."

On the Timing of Implementing CQI . . . *One reviewer advises,* "It is important to initiate the CQI process immediately after training staff in CQI, in order to maintain enthusiasm and to obtain their full and active participation in the process."

On the Risks Involved in Carrying Out a CQI Process . . . *Several reviewers offered advice about the potential risks involved in initiating and implementing the CQI process.*

On Creating False Expectations . . . "CQI teams have to be careful not to create 'false expectations' about whether the changes will completely solve the problem. Raising and then not meeting expectations can discredit the process."

On Overburdening the Staff . . . "It is extremely important not to increase the workload of the staff who carry out the day-to-day routine. CQI often involves additional tasks, particularly in data collection and in time spent in brainstorming, analyzing, and planning solutions. Overburdened staff soon become exhausted, particularly if no immediate improvements are apparent. This can lead to a rejection of the process by the staff because they see it as a waste of time and effort."

On Alienating Clients . . . "Although the goal of CQI is to improve service quality, the process may create disruptions as solutions are tested, or as staff take the time to meet to analyze processes and problem areas. Additional clients may drop out as a result of these inconveniences. Proposed solutions may also create unexpected problems in service delivery in other components of the family planing program, which can have a negative impact on client satisfaction."

On Half-Hearted Leadership . . . "CQI depends on complete, unqualified commitment from the leadership of the organization. Changes in top-level management, or the emergence of pressures from the external environment, can often compromise such commitment or divert the leadership's attention from the process. This can negatively affect the quality of the analysis of the problems and the choice of solutions, and can ultimately worsen the outcomes of the CQI process."

Supporting Your Staff

It is important to remind your staff that the CQI process is cyclical, and that sometimes steps may need to be repeated in order to fully achieve the desired outcomes. Even after corrective actions have been taken, some process outcomes may still not be satisfactory. If a goal has not been reached the first time around, the CQI team can work through the implementation steps again and incorporate the experience gained in the previous efforts. In this way, they can:

- Examine the problem and its process steps from a new perspective (Step 2).
- Review the desired outcomes and requirements (Step 3).
- Review specific steps and factors that inhibit the process (Step 4).
- Collect and analyze other relevant data (Step 5).
- Take corrective action (Step 6).
- Monitor the new results (Step 7).

If staff discover that they need to repeat the CQI cycle again, your enthusiasm as supervisor will help to maintain morale and motivation. Remind your staff that CQI is not a computer program or a scientific formula. It is a skill that harnesses the combined contributions of the entire staff, and, like all skills, it must be built up through experimentation and practice. With consistent effort and commitment, incremental, ongoing improvements will provide a solid foundation for building and sustaining a high-quality program. Whatever the results, be sure to recognize the team's contribution to the CQI process. ■

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Checklist for Using CQI to Strengthen Family Planning Programs

For Senior-level Managers

- ☐ Raise awareness and secure commitment of leadership for CQI initiative.
- ☐ Become active participants in the CQI process.
- ☐ Create a CQI core group, and provide training and support to the group.
- ☐ Empower staff to carry out the CQI process and provide incentives for successful CQI efforts.
- ☐ Assess CQI results and adopt effective CQI improvements.

For Clinic Managers and Supervisors

- ☐ Establish a CQI team.
- ☐ Empower staff to carry out the CQI process.
- ☐ Become active participants in the CQI process.
- ☐ Monitor the effects of the improvements.
- ☐ Restart the CQI cycle to make more improvements.

For the CQI Team

- ☐ Identify areas where there are opportunities for organizational improvement.
- ☐ Select one area for improvement, and outline the sequence of activities that occur in that problem area (the process).
- ☐ Establish desired outcomes of each step in the process.
- ☐ Select and study the most important steps in the process.
- ☐ Collect and analyze relevant data to quantify the existing outcomes of critical process steps.
- ☐ Develop effective techniques for analyzing and discussing those data within your team.
- ☐ Make improvements in the process to narrow the gap between existing and desired outcomes.

The Family Planning Manager is designed to help managers develop and support the delivery of high-quality family planning services. The editors welcome any comments, queries, or requests for free subscriptions. Please send to:

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The Family Planning Manager

CASE SCENARIOS FOR TRAINING AND GROUP DISCUSSION

Pursuing Quality at the Santa Rosa Clinic

Note to Trainers:
This case is divided into three parts and there are several ways to use it. We suggest that you stop after each part, and answer the questions related to that section before going on to the next one.

Part I

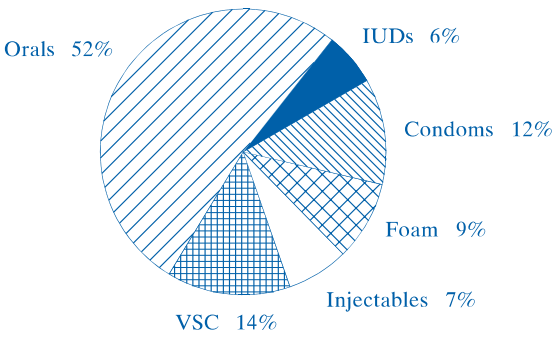
Mr. Alvarez, Director of Clinical Services for the Santa Rosa Clinic, walked into the small meeting room where the members of the cross-functional Continuous Quality Improvement (CQI) team were assembled around a table. The team was composed of two nurses, Nurse Lozano and Nurse Cruz; the Office Manager, Mrs. Gutierrez; the logistics manager, Mr. Diaz; and the laboratory manager, Miss Leon. The team had been organized by a district supervisor who had been trained with other staff in CQI. A year ago, the team had received training in the CQI process, and had been meeting every month since then to consider ways to improve the quality of the services in the clinic. Although the members of the CQI team had had some trouble at first in constructing flowcharts, analyzing problems, and drawing cause-and-effect diagrams, they had discovered that the more they used these tools, the easier it became to use them.

Mr. Alvarez, who served as the team facilitator, opened the meeting by congratulating the members on the results of the recent Client Flow Analysis. "The results show a significant reduction in client waiting time since our first analysis," he said.

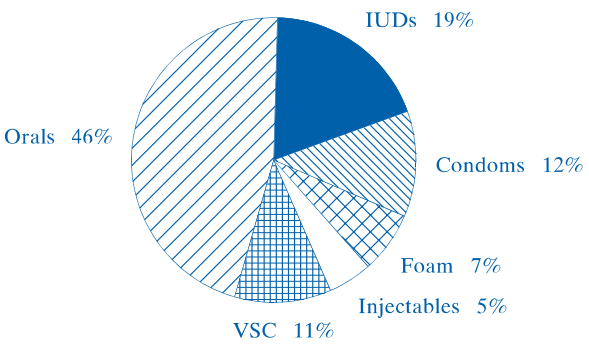
"All of us should be very proud that we identified this problem and led a successful effort to correct it. We have also begun to interview clients about our services to try and find out their reactions to the improvements."

"Preliminary results of the first two focus groups show that people feel that the waiting time has been shortened," continued Mr. Alvarez. "They also reveal something unexpected. Several of the women indicated that they wanted an IUD, but weren't able to get one and left with pills instead. Also, on the subject of IUDs, when we met last month and brainstormed to create a list of areas this team could investigate, one of the problems we identified was that many women who had selected IUDs did not return later to have them inserted. In addition, I just received a report yesterday from our Central Office that contained pie charts showing the method mixes of all the clinics in the Santa Ana region. These charts show that our clinic provides proportionally fewer IUDs than other clinics in our region that serve similar populations."

Santa Rosa Clinic



All Clinics in Santa Ana Region



"So the lower use of IUDs that we noticed informally seems to have shown up in the service statistics," said Mrs. Gutierrez. "I think this is something we should definitely look into. What does everyone else think?"

The rest of the team agreed: they felt that clients not receiving the method of their choice was more urgent than the other areas they had been considering. After some discussion, they defined the problem as the fact that women who selected IUDs as their contraceptive method often did not have them inserted.

Mr. Alvarez stood up, walked over to the flip chart, and picked up a pen. "Let's begin by walking ourselves through the steps that a client at our clinic would go through to get an IUD, and draw them on a flowchart. We'll begin with the client's arrival at the clinic. What happens first?"

Mrs. Gutierrez began. "On arrival, the client sees the registration clerk, who begins a new medical record if it's the client's first visit, or pulls out her existing record from the file if she's been in the clinic before. Then the registration clerk asks what sort of appointment the client has come for, and the client waits for the next available provider."

"Then the client has a family planning interview with one of the nurses," said Nurse Cruz. "If it's a first visit to obtain a contraceptive method, we describe all the methods and discuss the advantages and disadvantages of each one with her. We also take a medical history and the vital signs."

"Now, if the client selects an IUD," said Nurse Lozano, "we take a medical history and then conduct a physical exam to find out if there are any contra-indications. If there are, we have to go back and discuss other methods. If there aren't any contraindications, we ask if there is any possibility that she might be pregnant. If she says yes, then we provide her with an interim method and ask her to return when she has her menses, so that we can be sure she is not pregnant. If there is no chance that she is pregnant, then she can have the IUD inserted."

"But only on the days that the nurse supervisor is here," said Nurse Cruz. "She is the only one who is trained to insert IUDs. If she is not here, then the client has to come back on one of the days that she is in the clinic."

"Is there anything else that would prevent you from providing a client with an IUD?" asked Miss Leon.

"If we ran out of IUDs, or if we didn't have enough instruments sterilized on a given day, then we wouldn't be able to provide the client with an IUD," said Nurse Lozano. "So, sterilized equipment and adequate supplies are also necessary."

"What happens after the IUD is inserted?" asked Mr. Diaz. "Does the client go through any more steps before leaving?"

"After she has rested for a while and we are sure she is fine, we give her instructions on what physical signs she should look out for, and we ask her to return for a check-up visit after her next period," said Nurse Lozano.

See Case Discussion Questions—Part I (page 4)

Part II

"Good," said Mr. Alvarez, "Next we need to discuss each of these steps and see if we can find out the causes of the problem. So, let's begin with the client registering with the Registration Clerk. Are we achieving the desired outcome? Is the registration process completed within 30 minutes of the client's arrival? Are the clients directed to wait for the right kind of service?"

"Yes, I think everything is going well there," said Mrs. Gutierrez. "I recently completed the Registration Clerk's performance review and did a random check of some of the records. Everything seems to be in order."

"And as far as I know," said Nurse Lozano, "the clients are always assigned to wait for the right kind of visit. We have had no problem with communication between the Registration Clerk and the nurses."

"All right, next is the family planning interview," said Mr. Alvarez. "How are we doing on that desired outcome?"

"The nurses all give complete information," said Nurse Lozano. "We have done some training on that, and have discussed it in interviews. In general the clients are satisfied with the information they receive, and the exit interviews show that they understand the different methods and have been able to make an informed choice."

"So, there is no problem there," said Mr. Alvarez. "What about the physical exam? On our flowchart we have divided the physical exam into three parts. The first part is to determine whether there are any contra-indications. Do we have any problems with this step?"

"Contraindications are identified in two ways," said Nurse Cruz. "One is through the medical history the nurses take, and the other is through the physical exam. Since we revised our medical history form two years ago, we feel it serves as an excellent screening tool. All the nurses are very experienced in giving physical exams, and are observed and evaluated twice a year."

"And what if the client has no contraindications but can't tell us for certain that she is not pregnant?" asked Mr. Alvarez.

Nurse Lozano responded, "The clinical protocol states that we can only insert an IUD when pregnancy has been ruled out. If the client has had unprotected intercourse since her last menses, then we ask her to return at the time of her next menses. I think some of the problem lies here; often it seems that women don't return to get the IUD."

"All right, we'll discuss this further in a minute," said Mr Alvarez. "Let's keep going through the process. What if there are no contraindications and there is no chance that she is pregnant?"

"The nurse supervisor is the only person who is trained to insert IUDs," said Nurse Cruz. "If her client chooses the IUD on one of the days that the nurse supervisor is at the clinic, the nurse supervisor does the physical exam and inserts the IUD. If the nurse supervisor is not at the clinic that day, one of the nurses does the physical exam and the woman has to come back another day to get the IUD inserted. This may be another point at which we lose some IUD users."

"We'll also get back to this point in a minute," said Mr. Alvarez. "What about supplies of IUDs and sterilized instruments? Are there ever any problems with those?"

"We have never had a problem with supplies of IUDs, and we rarely have trouble autoclaving our instruments for 20 minutes," responded Nurse Lozano. "If there is a problem with the autoclave, then we boil the instruments for 20 minutes."

"What about the instructions about physical problems to look out for that we give clients when they leave? Are there any problems with those?" asked Mr. Alvarez.

"The exit interviews we've conducted show that the clients know what to look for," replied Nurse Cruz. "We've also found that when clients come back to the clinic for their one-month check-up, they still remember what these problems are."

See Case Discussion Questions—Part II (page 4)

Part III

"Well," said Mr. Alvarez, "we have gone through the entire process, and it seems that there are two steps in which we might have some problems. Let's go back and look at these more closely. First, let's talk about the clients who aren't sure whether or not they are pregnant so they have to return at their next menses to have the IUD inserted. What is the problem here?"

"One aspect of the problem is that the women don't come back," responded Nurse Lozano. "We don't know why exactly, but maybe they don't like having to wait again, or they've changed their minds, or it's difficult for them to come back. Perhaps it's too expensive, or they live too far away, or maybe they're just too busy. However, the fact of the matter is that we can't provide an IUD if we're not sure of a client's pregnancy status. If she has had unprotected intercourse since her last menses, then she will have to return at her next menses to have the IUD inserted."

"The most important thing is to protect these clients from getting pregnant," added Nurse Cruz. "We need to make sure that they have a method to protect them in the interim."

"But we would still have the problem of the nurse supervisor not being here for every clinic session," replied Nurse Lozano. "It is so important that they be able to get the IUD when they come back and we know they're not pregnant. Few women are willing or able to return a third or fourth time."

"We don't know how often clients are asked to come back because we can't verify their pregnancy status or exactly why they aren't coming back," said Mr. Alvarez. "Perhaps we should collect some data on this."

"Yes, I think we should definitely collect data on this so we know how big a problem this is," volunteered Miss Leon.

Mr. Alvarez continued, "I think we should wait until after this meeting to look at the service statistics and find out what proportion of clients who want IUDs are not coming back. For now, let's talk about the fact that only the nurse supervisor can insert IUDs."

"Well, the nurse supervisor is here on regularly scheduled days," answered Nurse Lozano. "But women often ask for IUDs on the days when the nurse supervisor isn't here, and it is even more complicated to try and schedule women who have to come back during their next menses to return on a day when the nurse supervisor is here."

"I know that in Santa Marta clinic all the nurses are trained to insert IUDs," said Miss Leon. "Maybe we should find out what other clinics in our area do."

"All right," said Mr. Alvarez. "That's a good idea, let's talk about what kind of information we need on that subject."

Case Discussion Questions: The Santa Rosa Clinic

Case Discussion Questions—Part I

1. **Review the discussion and create a flowchart for women who select IUDs.**
2. **For each step in the flowchart, suggest a desired outcome.**

Case Discussion Question—Part II

3. **Using the flowchart, select the specific steps for which it is most difficult to reach the desired outcome. Propose a corrective action that might help the program reach the desired outcome of those steps.**

Case Discussion Questions—Part III

4. **How will the team collect and analyze data to quantify the outcomes of the specific steps that have been selected for study?**
5. **Describe the additional steps that will need to be done in order to complete the CQI cycle.**

Case Analysis: The Santa Rosa Clinic

Case Analysis—Part I

1. **Review the discussion and create a flowchart for women who select IUDs.**

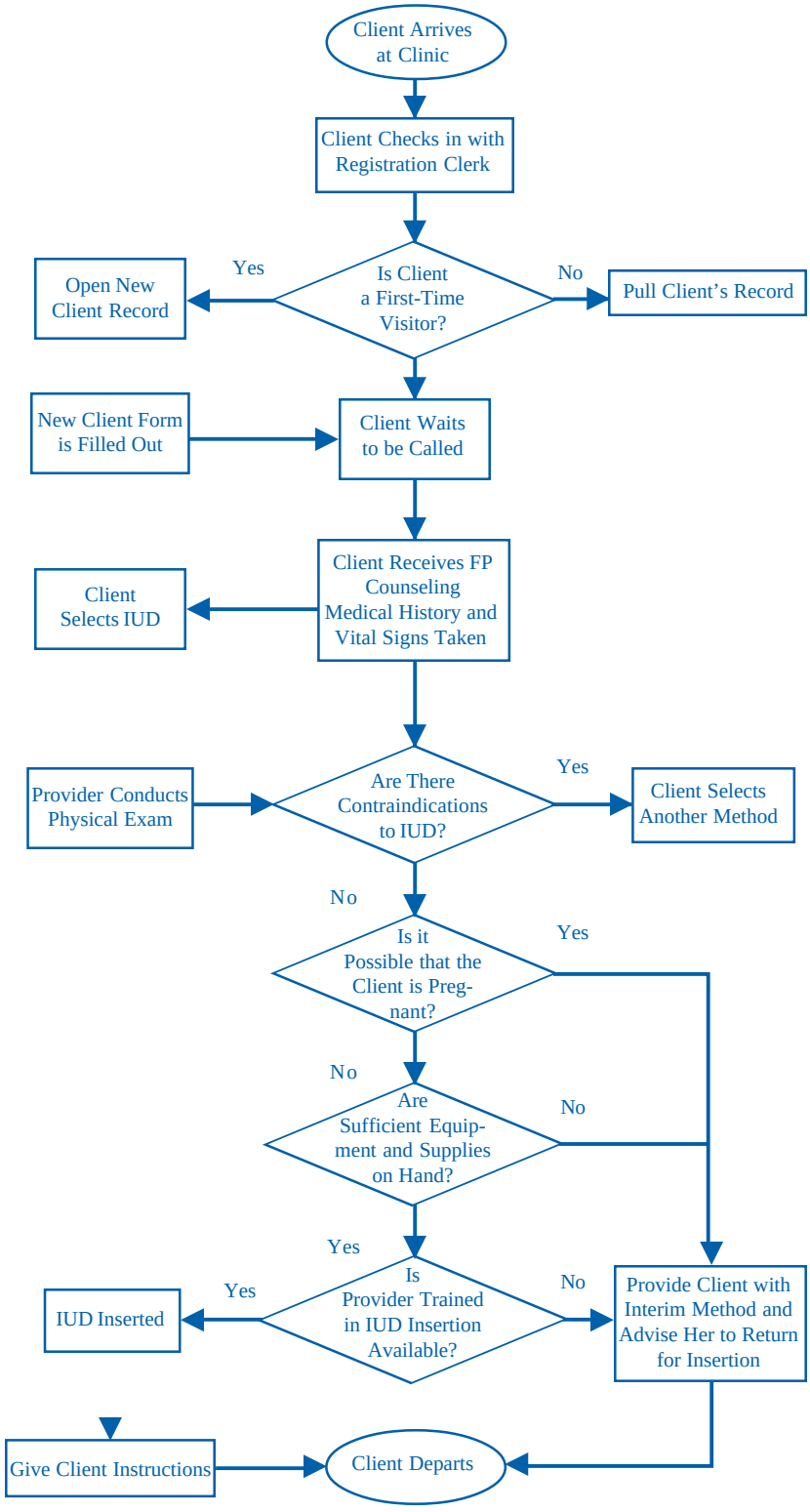
The flowchart shown on page 5 is provided as a guideline. The flowchart that you have drawn will not be identical, but it should show a similar sequence in the process. Your flowchart may be drawn more vertically than the one shown on page 5, which has been drawn in a limited space.

2. **For each step in the flowchart, suggest a desired outcome.**

The desired outcomes listed on the flowchart on page 5 correspond to the each step listed in that flowchart. No two flowcharts are identical. If your flowchart is different, your desired outcomes may be stated differently. Because of limited space, the requirements needed to achieve the desired outcomes of each step have been omitted in this example. On your flowchart, the requirements should be listed to the left of the steps (see page 10 of *The Family Planning Manager*).

Case Analysis: The Santa Rosa Clinic

Flowchart for Clients Selecting an IUD

Process	Desired Outcomes
	Client feels welcome. Registration process is completed within 30 minutes of client's arrival. Client is treated with respect, courtesy, and efficiency. Client is directed to the appropriate provider. Client is provided with information on all available methods in order to make an informed decision. Provider determines all possible contraindications. Client's possible pregnancy status is determined. Trained provider inserts IUD safely according to protocol. OR Client is provided with interim method. Client returns to clinic. Client fully understands instructions and warning signs.

Case Analysis: The Santa Rosa Clinic

Case Analysis—Part II

3. Using the flowchart, select the steps for which it is most difficult to reach the desired outcome. Propose a corrective action that might help the program reach the desired outcomes of those steps.

Process Step	Desired Outcome(s)	Corrective Action
Is it possible that the client is pregnant? Pregnancy must be ruled out prior to IUD insertion and women who have had unprotected intercourse since their last menses are asked to return at their next menses. These women often don't return to the clinic.	Client's possible pregnancy status is determined. Client is provided with interim method. Client returns to clinic.	Make sure there is always a provider trained in IUD insertion on hand so client won't be discouraged from returning. Set up flexible appointment system so client can be seen during menses. Design and implement a system to follow up clients who don't return.
Is provider trained in IUD insertion available? Women who select an IUD and have no contraindications are asked to return if the Nurse Supervisor is unavailable for insertion.	IUD is safely inserted by a trained provider on the same day.	Train more providers in IUD insertion.

Case Analysis—Part III

4. How will the team collect and analyze data to quantify the outcomes of the specific steps that have been selected for study?

In order to study the patterns of women's IUD choice and subsequent insertion, keep a register of all women who select an IUD, and note whether they had it inserted the same day, whether they had to come back another day, why they had to return (because they were asked to return during their menses, or because a trained provider was not available that day), the date(s) of their return visit(s), and the final outcome. Try to contact the women who didn't return to have an IUD inserted, to find out why they didn't return to the clinic.

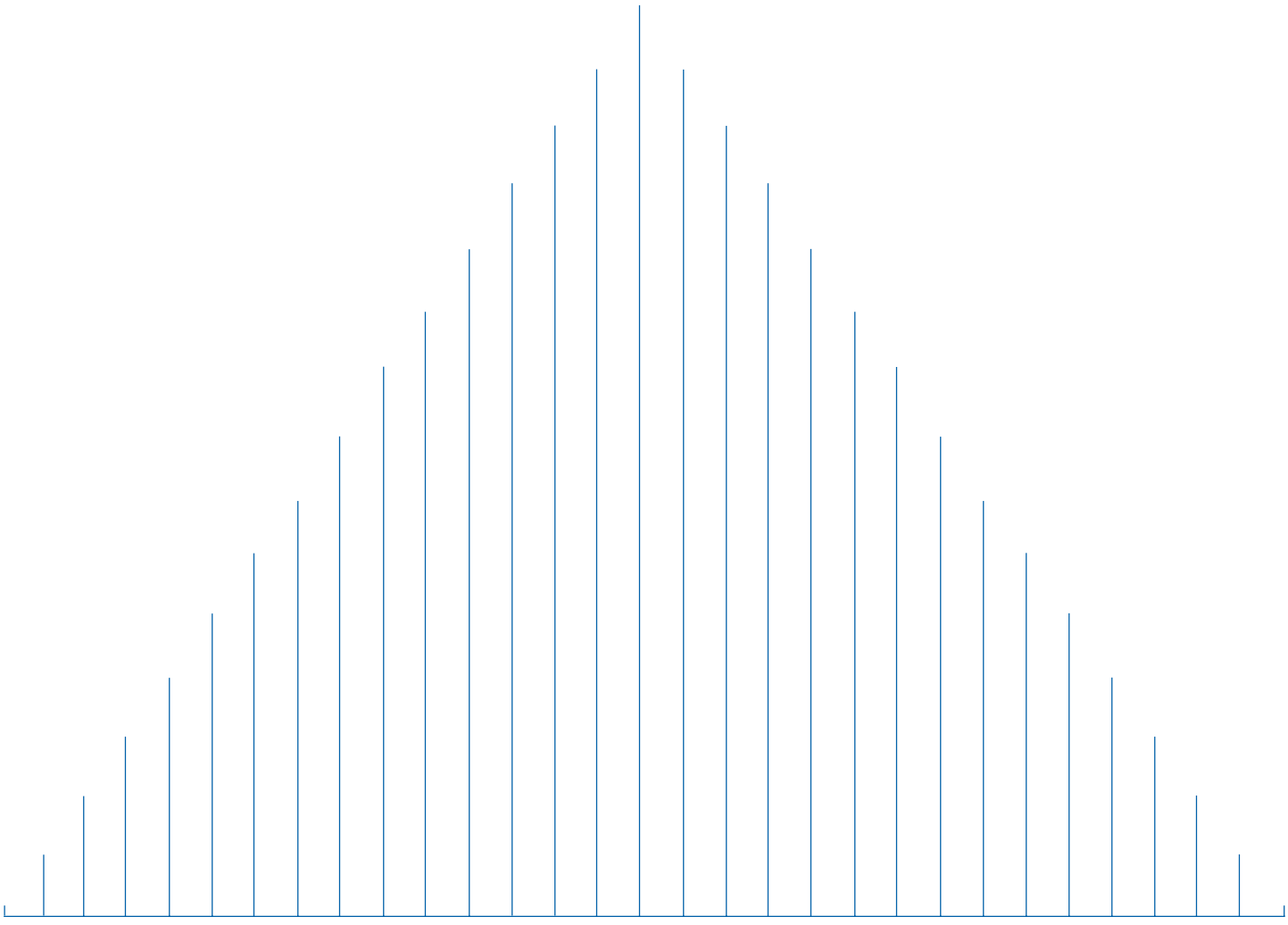
This is the type of problem in which benchmarking could be very useful. Find a clinic in the region that has a higher proportion of IUDs inserted, and work with that clinic's staff to identify the strengths of their program. Collect information on provider training, clinic protocols, clinic scheduling and staffing, etc.

5. Describe the additional steps that will need to be taken in order to complete the CQI cycle.

After corrective action is taken, keep collecting information to see whether there is a change in the percentage of women who have the IUD inserted the same day, versus those who have to come back later for insertion, and in the percentage of those who actually come back to the clinic when they are supposed to. By continuing to monitor both the number of women who don't return for insertion, and their reasons for not returning, you can determine whether the changes you have implemented have resulted in a decrease in the number of women who don't return, and whether their reasons are changing. Using this information, you can respond to the needs of your clients and continue to improve the effectiveness of your program.

The Family Planning Manager

Manager's Toolbox for CQI



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Manager's Toolbox for CQI

In This Supplement

Using a Matrix to Select Areas for Improvement 2

Flowcharting 3

Sample Flowchart 4

Brainstorming 5

Cause-and-Effect Diagrams 6

Sample Cause-and-Effect Diagram 7

Client Flow Analysis 8

Tally Sheets 8

Sample Tally Sheet 9

Bar Charts and Histograms 9

Sample Bar Chart 10

Sample Histogram 10

Pareto Analysis 11

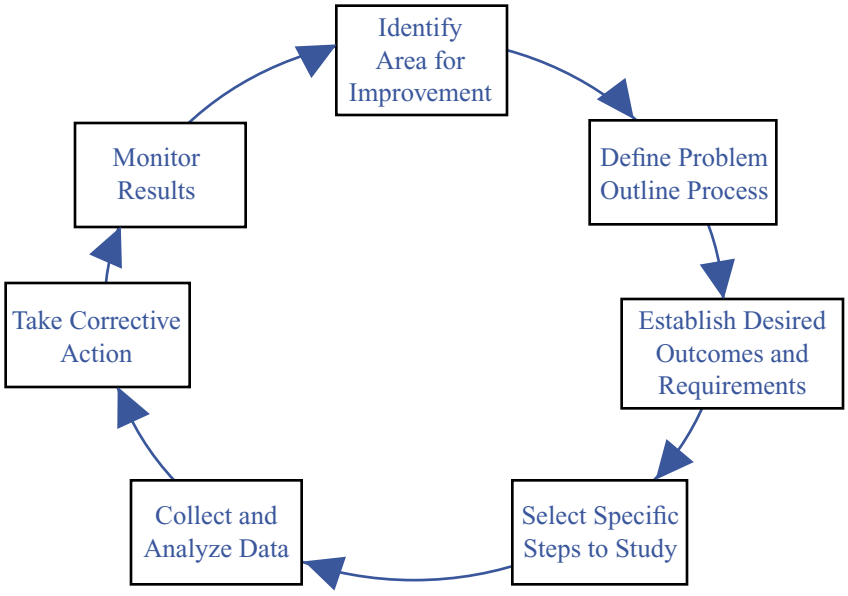
Sample Pareto Analysis 12

Benchmarking 13

Checklist for Using the Manager's Toolbox for CQI .. 14

This supplement contains guidelines for using important tools and techniques to enhance the Continuous Quality Improvement (CQI) process in your organization. It describes how each technique can be used, and provides examples that illustrate how the techniques can be applied in a family planning program. This supplement also suggests when, and under what circumstances, each tool or technique can be used in implementing the CQI cycle.

The CQI Cycle



Using a Matrix to Select Areas for Improvement

The first step in implementing the CQI process requires identifying areas in which improvements are both necessary and feasible. This can be done by selecting areas that the organization has control over changing, and by determining which changes will have the most impact on improving the quality and/or efficiency of services. Often CQI team members will identify many areas where improvements should be made, but will find it difficult to decide which of those areas to study. This step can be made easier by developing a list of criteria that reflect organizational priorities, resources, and constraints, and by assessing each proposed area for improvement in the light of these criteria.

Once the team develops the list of criteria, a comparison table (or matrix) should be prepared that will allow the team to consider each proposed area for improvement against each criterion. By developing and using this matrix, the team can more easily identify which area for improvement will have the most impact on improving quality and/or efficiency. The matrix will also help the CQI team members to decide which problem they should work on first, and to prioritize other areas that they will study next.

Sample Selection Matrix

Area for Improvement	Criteria									
	Organization Has Control Over Changing	Process Is Important to External Client	Process Is Important to Internal Client	CQI Team Members Agree on Importance of Problem	Process Has High Visibility	Scope of Process is Limited/Changes are Feasible	People Involved in Process will Cooperate	Process Has Short Cycle	Data on Process Are Regularly Collected	Resources Are Available for Making Changes
Client Registration	x	x	Some	Some	x	x	?	x	x	x
Oral Contraceptive Supply System	x	x	x	x	x	x	x		x	x
Follow-up System for Clients who Miss Scheduled Appointment	x	?	x	x	?		?			
Old Records Storage	x		x			x	x	x		x

Adapted from Hardee and Gould, from Institute for Healthcare Improvement, 1992

In this example, the oral contraceptive supply system was determined to be the most important area for improvement, since making sure that the program did not run out of pills fulfilled most of the criteria that were important to the program. Next the team would have to define a problem to study within that area for improvement, such as the ordering process, the inventory control system, the record keeping system, etc. The team would then outline the process for that problem area, using the flowcharting technique (Steps 2 and 3).

Flowcharting

Flowcharting is a technique used to analyze the sequence of activities that occur in a particular process that you have chosen to study. Developing a flowchart helps you to break up a routine process, or set of activities, into a series of sub-steps that make up that process. A flowchart also helps you to define the relationship between the activities and the desired outcomes of those activities. To develop a flowchart, you need to define the beginning and the end of a particular process or system, and outline (in sequence) the activities that complete the process.

How to . . .

Make a Process Flowchart

1. Determine the first and last steps of the process.
2. Record the first step at the top of the page and draw an **Ellipse** around it.
3. Write down each step in the process in sequence.

   Use **Rectangles** for activities.

   Use **Diamonds** for decisions.
4. Mark the path of the flowchart from the beginning to the end by connecting all the rectangles (activities) and diamonds (decision points).
5. Return to the beginning of the path and repeat Step 4 for any paths that branch off from the main path.
6. Record the last step at the bottom of the page, draw an **Ellipse** around it, and connect the primary path and any branching paths to the last step.
7. Review for accuracy.

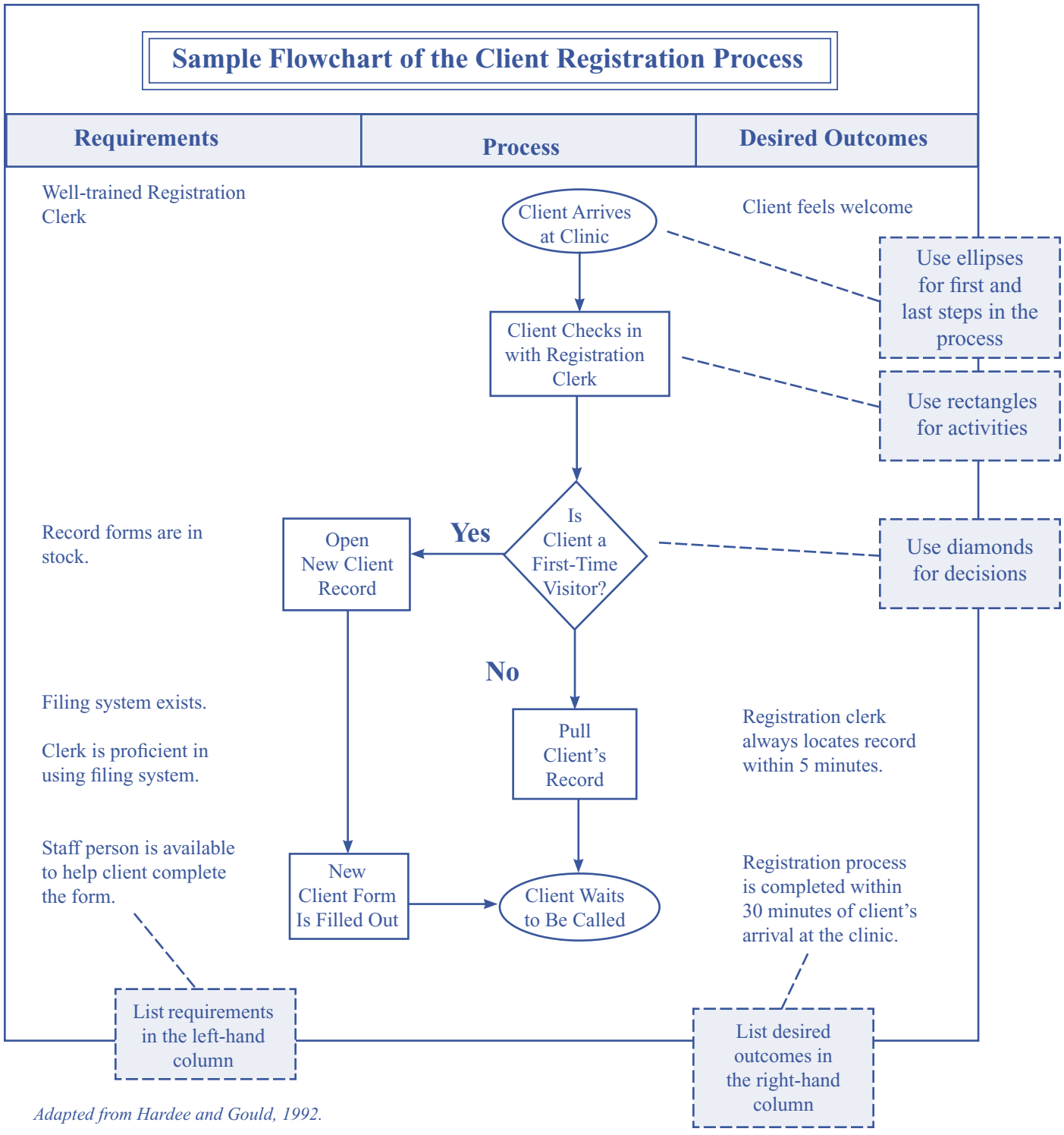
On more complicated flowcharts there may be smaller paths that will branch off from a decision point, since each decision point indicates an alternative process that may take place before it rejoins and completes the process later.

Determine requirements and outcomes

To complete the diagram, write the **requirements** that are needed in order for each activity to occur. Write the requirements in the left-hand column next to each activity. These requirements are often related to resources, such as human, financial, and material resources. Then, in the right-hand column, write the **desired outcomes** of each activity in the process. Write the desired outcomes of the whole process at the bottom of the flowchart. When determining the requirements and desired outcomes of the process, it is also important to consider the time needed to carry out each activity, as well as other constraints.

Once the flowchart is completed and requirements and desired outcomes are noted, the flowchart can be used to compare the differences between the desired and actual outcomes. Often problems are found where the desired outcomes are very different from the actual outcomes. Making this comparison will help you to select the specific steps on which the team should focus its efforts.

Flowcharts are used at Steps 2 and 3 in the CQI process, and should be revised as new recommendations for improvement are made during the CQI process. It would also be helpful to create a flowchart of any new or revised system, which you can then use to present that new system (or process) to other staff in your organization. The flowchart will help staff to see where changes have been made, and how the changes will produce a positive result.



Adapted from Hardee and Gould, 1992.

Brainstorming

Brainstorming is an excellent technique for generating ideas about all the possible causes of a problem. This technique is based on the assumption that all ideas are useful, thus encouraging the team to think creatively. By inviting people to a brainstorming meeting who have very different perspectives (for example, a clinician, a staff member, an administrator, a client, a finance officer, etc.), the meeting is more likely to produce innovative ideas that may not have been considered before. This technique can be used at any step in the CQI process, but can be particularly helpful when the team is discussing the possible causes of a problem, or the factors that are preventing the desired outcomes from being achieved (Step 4).

How to . . .

Brainstorm About the Possible Causes of a Problem

1. Form a group of people to generate a list of possible causes of a problem.
2. Write the problem clearly on a flip chart or blackboard. Check to make sure everyone understands the problem.
3. Agree on rules for the brainstorming session and post the rules:

> **Rules of brainstorming**
>
> Every idea is valid.
>
> Every idea is written down in the words of the speaker. If an idea takes a long time to explain, the speaker should list the major points for summary on the blackboard.
>
> No one may interrupt or criticize.
>
> Only questions of clarification may be asked.

4. Ask the group to identify the possible causes of the problem being studied, and record every idea. (The facilitator can assist this process by asking *why* the desired outcomes are not being achieved.)
5. Continue until no more ideas are offered.

Cause-and-Effect Diagrams

A cause-and-effect diagram is a tool that the CQI team can use to group, in an orderly way, people's ideas about the causes of a problem. A cause-and-effect diagram (also known as a Fishbone diagram) helps the team to determine both the primary and the secondary causes of a problem, and is helpful for organizing the ideas generated from a brainstorming session. The sample "Fishbone" diagram shown here, lists the primary and secondary reasons (causes) why clients may have decided to discontinue using oral contraceptives.

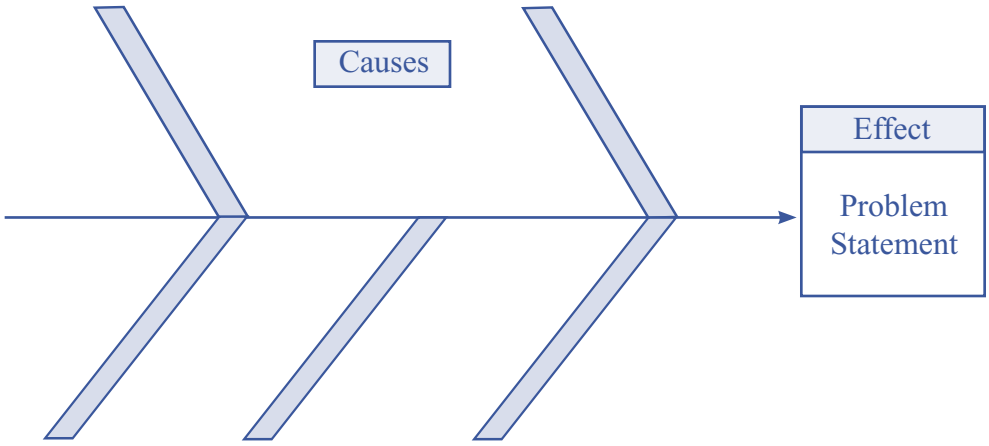
Using a cause-and-effect diagram forces the team to consider the complexity of the problem and to take an objective look at all the contributing factors. Otherwise, the CQI team members may think that one or two causes related to the most recent occurrence of the problem are the most important, when in fact, there may be other more important underlying causes. Constructing a diagram does not solve the problem, but it ensures that the team does not overlook any possible causes of the problem. Data collection tools such as tally sheets, surveys, and clinic registers are some of the sources the team can use to pinpoint the possible causes of a problem. A cause-and-effect diagram should be used when the team is deciding which specific steps in the process to study (Step 4).

By examining a cause-and-effect diagram, team members can more easily choose one or more aspects of the problem that they have some control over changing, and identify those that they believe will significantly improve the situation.

How to . . .

Develop a Cause-and-Effect Diagram

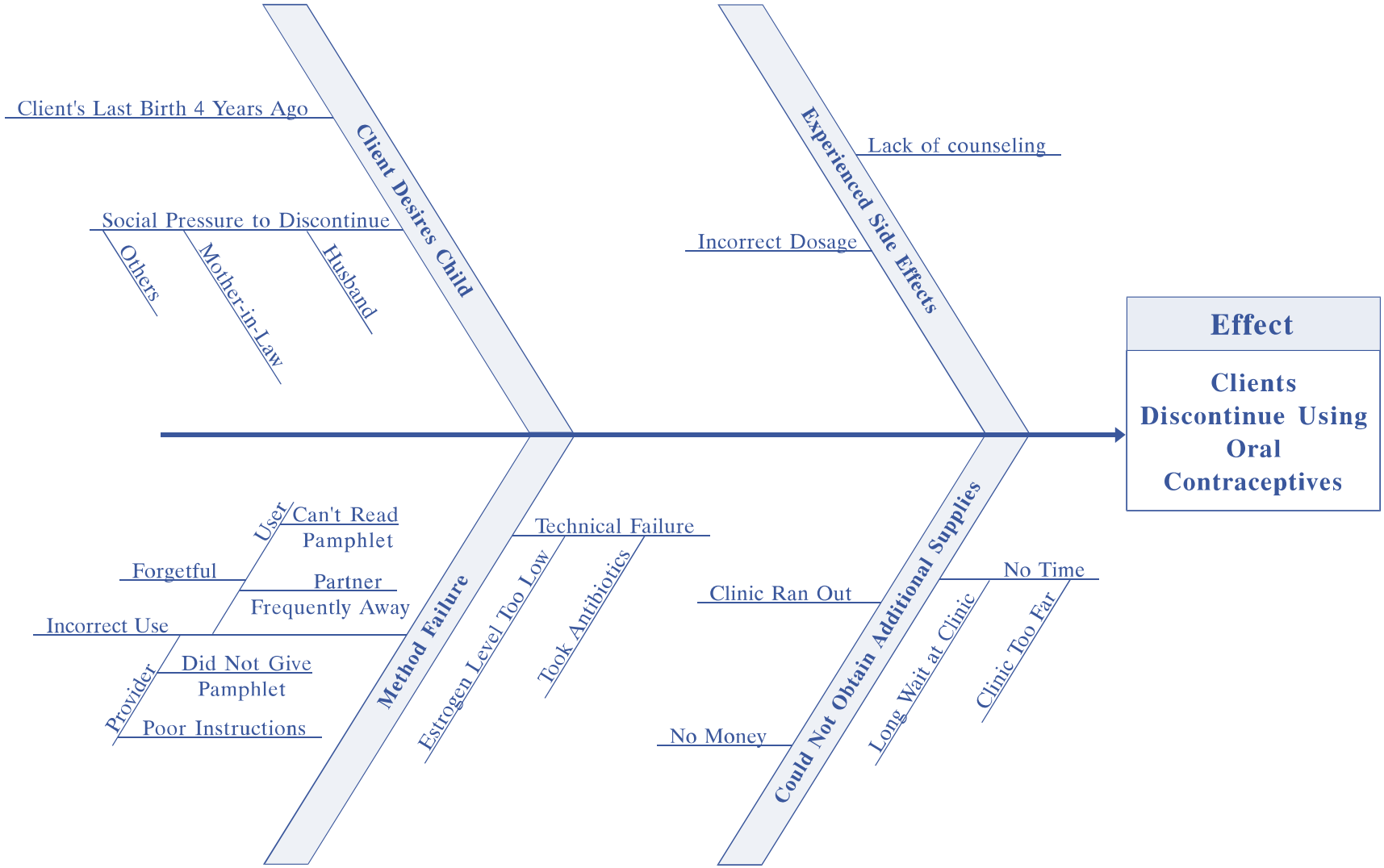
1. Draw a preliminary sketch or outline of a "fishbone" diagram, and fill in the box marked "Effect" with a statement of the problem.



2. Review the process flowchart that you have drawn, and consider the various aspects of the problem you are studying.
3. Brainstorm about the factors (causes) that affect the outcomes of each process step. To help determine the causes of the problem, remember that causes can be related to many aspects of service delivery: the facility itself, material resources, processes of implementation, people, or the system by which performance is measured.
4. Fill in the diagram so that the causes are organized in a logical way, and show both the primary and secondary causes of the problem.
5. Examine the diagram, summarize the primary and secondary causes of the problem, determine which causes the team has control over changing or improving, and collect data to determine which factors contribute most to the problem (Step 5).

Sample Cause-and-Effect Diagram

Problem: Clients Discontinue Using Oral Contraceptives



Adapted from Hardee and Gould, 1992.

Client Flow Analysis

In many clinics clients often have to spend a long time waiting before being served by a provider. Conducting a client flow analysis is helpful for discovering the primary causes of waiting times (Step 5). It can also help to analyze and understand overall clinic operations, including the route that clients follow as they progress through the clinic, and can indicate changes that will ensure a smooth and efficient process as clients are seen by different clinic staff members.

A client flow analysis consists of keeping track of the time it takes each client to proceed through the various activities involved in a clinic visit. Client flow forms, which can help the CQI team to collect and analyze this type of data, are designed to be used by staff members, and can produce valuable information about clinic procedures. At the end of the day, the information from the client flow analysis can be graphed to show, for example, the amount of time the clients spend waiting, instead of being served by a provider. Other information, such as the amount of time staff spend with clients, or where the client flow becomes particularly congested, can provide the CQI team with suggestions on which factors are impeding the efficient use of staff, time, and materials. For more information about how to conduct a client flow analysis, please see Volume I, Number 1 of *The Family Planning Manager*, "Reducing Client Waiting Time."

For more information on client flow analysis, please refer to the following sources:

- "Reducing Client Waiting Time," Volume I, Number 1, *The Family Planning Manager*. Available from Family Planning Management Development, Management Sciences for Health, 400 Centre Street, Newton, MA 02158, USA.
- "COPE: A Self-Assessment Technique for Improving Family Planning Services." Available from the Association for Voluntary Surgical Contraception, Distribution Unit, 79 Madison Avenue, 7th Floor, New York, NY 10006, USA.
- "Patient Flow Analysis." This is a computerized program available from the Centers for Disease Control, National Center for Chronic Disease Prevention and Health Promotion, Clinic Management Unit, Mail Stop K22, 4770 Buford Highway Northeast, Atlanta, GA 30341-3724, USA.

Tally Sheets

Tally sheets are one way to easily and efficiently collect and organize data (Step 5). Tally sheets do not need to be complicated and can be used to collect data that may already be available in the existing Management Information System (MIS). Data collection tools, such as registers, surveys, and logs, are good sources for examining the possible causes of a problem.

Tally sheets should be used to list the types of data that will be collected and to record the number of observations or occurrences that are counted in each category. The sample tally sheet shows how a tally sheet can be used to track client complaints in six different categories. The data collected on the tally sheet can then be used to produce graphs, which can help the CQI team to visualize and pinpoint the factors that have the greatest impact on a problem.

Sample Tally Sheet for Client Complaints

Date: _____

Clinic Name: _____

Staff Member Completing Form: _____

Remarks: _____

_____

_____

Type of Complaint	Tally	Frequency
Lack of privacy	||	2
Clinic not clean	|	1
Method not available	|||	3
Waited too long	|||| ||	7
Staff impolite	||||	4
Clinic hours inconvenient	|||| ||||	9
No bathroom available	|||	3
Other	||	2

Adapted from Hardee and Gould, 1992.

Bar Charts and Histograms

Bar charts and histograms can be used to display data graphically, which will help the team to organize and interpret a large number of facts, and to pinpoint the causes of a problem (Step 5). Bar charts and histograms are similar in that they both show the frequency distribution of data, in other words, they provide a graphic representation of the number of occurrences measured in *different categories of data* (bar charts), or in the *variables within a single data category* (histograms).

Examples of different categories of data: Different types and brands of contraceptives, different reasons given for not using contraception, different complaints about the clinic services.

Examples of a continuous variable within a single data category: The age groups (20-24, 25-29, 30-34, 35-39, etc.) of women using the IUD, the number of minutes (less than 5, 5-9, 10-14, 15-19, etc.) spent waiting to been seen by a provider.

continued on page 10

continued from page 9

A simple **bar chart** compares different categories of data, such as *the average lead time promised by the distributor for* ***each method of contraception****; in other words, the average number of weeks it will take to receive delivery of each contraceptive method, after it has been ordered.* The data categories in a bar chart have no natural sequence on the horizontal axis since it doesn't matter in what sequence the data categories (in this case, the methods) are listed.

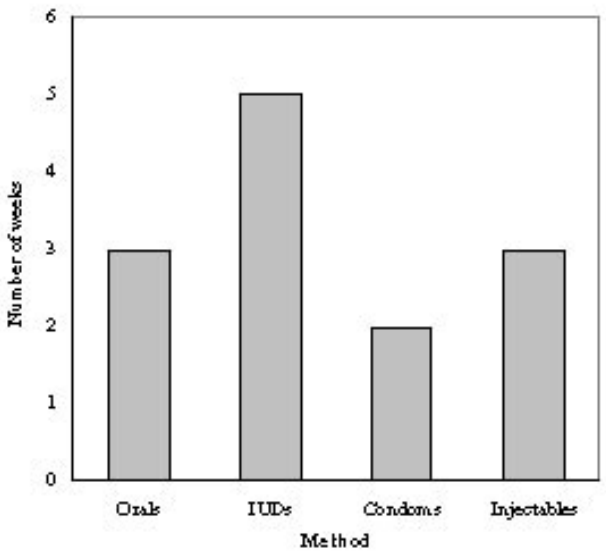
The sample bar chart shows that the distributor has promised a lead time of three weeks for orders of oral contraceptives, five weeks for IUDs, two weeks for condoms, and three weeks for injectables.

A **histogram** is a type of bar chart that compares variables within a single data category, and compares the number of occurrences based on a continuous variable, such as *the actual lead time for orders of oral contraceptives placed in the last two years; in other words, the number of orders of* ***oral contraceptives (single data category)****, graphed in terms of the* ***number of weeks (continuous variable)*** *it took to receive each order.* Since the continuous variable (number of weeks) has a natural sequence (lowest to highest number of weeks), the variable on the horizontal axis of the histogram is ordered sequentially from one to six.

A histogram displays the distribution of data and reveals how much the data vary. There will always be a pattern in the variation, and a histogram allows you to see the pattern. *The sample histogram shows that the number of weeks that it takes for orders to arrive has varied over the last two years, but the pattern reveals that the lead time for oral contraceptives is most likely to be closer to 4 weeks, rather than the 3 weeks promised by the distributor.* Discovering (and displaying) this variation will greatly increase the team's knowledge about a process. In this case, the clinic manager might want to increase the order quantity for pills, to ensure that the clinic doesn't run out of pills while waiting for a new supply to arrive.

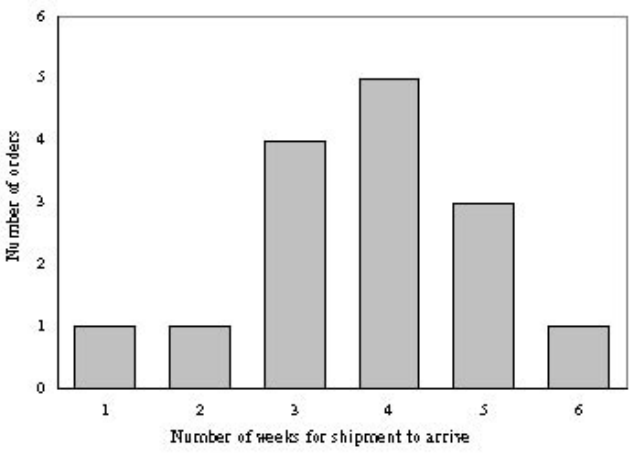
Sample Bar Chart

Lead Time Promised by the Distributor for Each Contraceptive Method Offered by the Clinic



Sample Histogram

Actual Lead Time for Delivery of Oral Contraceptives (1990–1992)



Pareto Analysis

The "Pareto" analysis originates from the work of an Italian economist, Vilfredo Pareto. The Pareto principle states that only a *few* factors are responsible for producing *most* of the result (positive or negative result). This principle was later applied to quality improvement theory by Dr. Joseph Juran, who stated that these "vital few" factors need to be identified so that quality improvement resources can be concentrated in those areas.

The goal of any quality improvement effort is to improve the "vital few" causes of problems in a process, and in so doing, achieve breakthroughs in the overall performance of a process. Focusing on the "vital few" achieves the greatest potential gain from quality improvement efforts. Like a bar chart, the Pareto analysis shows the frequency of responses, or occurrences, of different data categories (or different causes of a problem); except in a Pareto diagram the responses are ordered from the highest to lowest number of responses tallied. In addition, for each response, the Pareto analysis shows the cumulative percentage of the total problem contributed by each additional response. This allows the team not only to see which two or three factors (causes) are responsible for most of the problem, but also to quantify how much of the total these "vital few" factors represent.

How to . . .

Perform a Pareto Analysis

1. Divide the data into categories, *such as each reason given for not using contraception.* Count and record the number of times each reason was cited.
2. Construct a frequency table by ordering the responses from the one most frequently given to the one least often given. Fill in the number of times each reason was given. Then total the number of all the responses at the bottom.
3. For each data category (or reason), calculate the percentage of the total responses it represents, and round to the nearest whole percent. *In this example, a total of 84 responses were counted. Of these 84 total responses, 35 responses (42 percent) referred to a lack of information about family planning (35 divided by 84 = .416 or 42%). The next highest number of responses, 25 (.297 or 30%), indicated a lack of access to family planning services.*
4. Calculate and record the cumulative percentages. Begin by recording the response with the highest percentage *(in this example, 42%)* at the top of the third column. Add to it the percent contribution of the next type of response *(for example 42% plus 30% = 72%)* and record the cumulative percent (72%) in the third column. Continue to record the cumulative percentages for each additional type of response to complete the table.
5. Using the data from the frequency table, construct a bar chart that presents the number of times (frequency) that each response was given, ordered from the most common response (on the left), to the least mentioned response (on the right). The vertical y-axis on the left indicates the number of times (from zero to the maximum) the response was given, and the vertical y-axis on the right marks the cumulative percentages (zero to 100%). Plot the cumulative percentages for each additional type of response, and draw a line to connect the points.

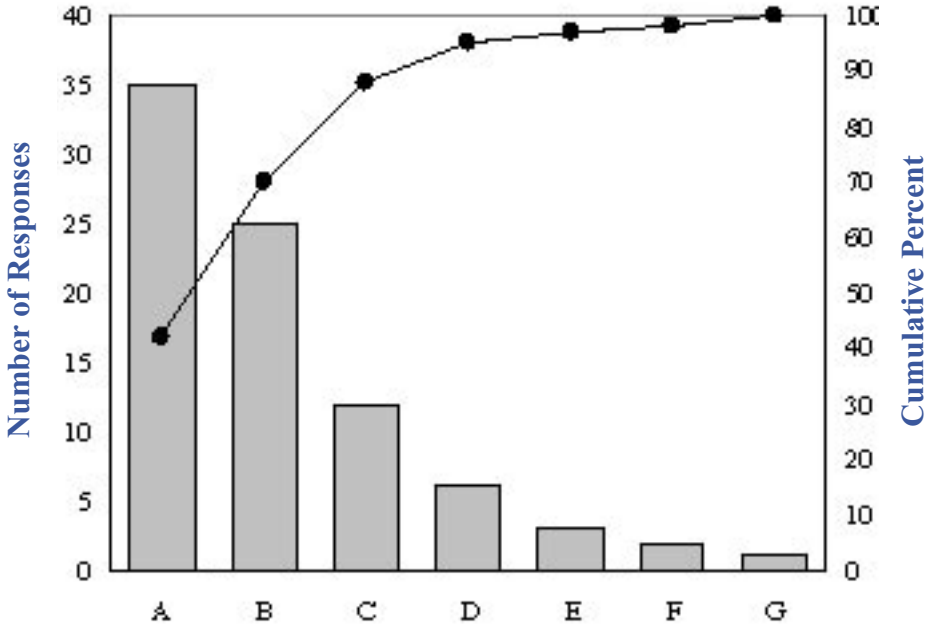
In any CQI effort, the team members should ask themselves, "Which few factors are contributing most to the overall problem?" The Pareto analysis is a technique for finding the answer to this question. *In the sample Pareto analysis, two reasons for not using contraceptives—lack of information and no access to contraceptives—account for 72 percent of the problem. In this example, the CQI team should focus their efforts on those two causes of the problem.* The Pareto analysis is generally used at Step 5 in the CQI process, but it can be used any time during the CQI process when graphing data might help the team to better understand a problem and its causes.

Sample Pareto Analysis

Reasons Given for Not Using Contraceptives
By Eligible Couples in the Community

Reason for Nonuse (Ordered by frequency of occurrence)	Frequency		Cumulative Percent
	Number of Times Cited	% of Total Responses (rounded)	
A. Lack information	35	42	42
B. Have no access to contraceptives	25	30	72
C. Concerned about safety of contraceptives	12	14	86
D. Don't think pregnancy will occur	6	7	93
E. Partner objects	3	4	97
F. Desire pregnancy	2	2	99
G. Other	1	1	100
Total	**84**	**100**	**100**

Reasons for Not Using Contraceptives and
Percent Contribution to the Problem



Legend

A. Lack information
B. No access to contraceptives
C. Safety concerns
D. Don't think pregnancy will occur
E. Partner objects
F. Desire pregnancy
G. Other

Benchmarking

By comparing the process followed in your organization with that of another family planning or health services organization, a technique called "benchmarking," you can develop new ideas about how to modify and improve the process that you have selected to study. Not all CQI efforts will require using the benchmarking technique. Whether or not you decide to take the time and resources to conduct a benchmarking exercise will depend, in part, on the size and complexity of the problem you are studying, and how critical that process is to achieving the goals of your organization. This technique can be used during Step 6 in the CQI process, when you are deciding what actions to take to correct a problem.

How to . . .

Use the Benchmarking Technique

To determine whether benchmarking would provide useful ideas for changing the process that you have selected for improvement, you should ask the following questions:

- Does the process produce one of your most important services?
- Are clients dissatisfied with the service they receive as a result of the process?
- Will improvement of the process support the program's overall strategy?
- Can the necessary data be obtained to analyze this process, so that comparisons can be made with other organizations?

Designate a benchmarking travel team. Include in the team someone who has expertise in the process you are trying to improve. Team members could also include: a person who has been designated to implement changes in your organization, a person made responsible for coordinating the benchmarking process and, if appropriate, a program client. Designate one person as the team leader.

Select another organization to use as a "benchmark" for your organization. Identify an organization that provides family planning or health services (ideally, a non-competitor), or a leader in the process you are benchmarking who will be likely to share information with you. For example, to benchmark your contraceptive supply system, choose an acknowledged leader in warehousing and distribution, or choose an organization that has effective methods for storing, tracking, distributing, and ordering contraceptive supplies.

Contact the benchmark organization to explain the purpose of your proposed visit, gain their support for the visit, and set a date for the visit.

Make a site visit to collect data. Determine in advance the kind of information that you want. Send a list of your questions to your benchmark contact, so that he or she can prepare for your visit. Agree on an agenda for the visit. Arrange a meeting, tour the benchmark organization, and obtain answers to your questions. Ask about the organization's future plans for the process you are investigating, and be prepared to share comparable information about your own organization.

Determine any important differences between the process used by your organization and the process used by the benchmark organization.

Present your findings to the team, set new goals, and use the results to propose improvements in the process.

This supplement has described some of the fundamental tools and techniques that can be useful in implementing CQI in your organization. For more detailed information about these and other techniques that can be used in implementing CQI, please refer to the references section on page 19 of this issue of *The Family Planning Manager,* "Using CQI to Strengthen Family Planning Services."

Checklist for Using the Manager's Toolbox for CQI

Tool or Technique	When to Use	Reason for Using
Selection Matrix	Step 1	To help the CQI team select an area for improvement to focus on first, by developing and using a set of selection criteria.
Flowcharting	Steps 2-3	To show the sequence of activities (the process) that occurs in the problem selected for improvement.
Brainstorming	Step 4	To generate ideas about all the possible causes of a problem. This technique encourages creative thinking among team members because all ideas are considered valid.
Cause-and-Effect Diagrams	Step 4	To organize ideas generated from a brainstorming meeting and to define the primary and secondary causes of a problem.
Client Flow Analysis	Step 5	To analyze client waiting time in a clinic and to determine the causes of the long waits.
Tally Sheets	Step 5	To easily and efficiently count, record, and organize data.
Bar Charts and Histograms	Step 5	To display data in graphic format so that trends can be seen and comparisons made.
Pareto Analysis	Step 5	To analyze and identify the "vital few" causes of a problem, so that resources can be focused in those specific areas. (This analysis assumes that there are usually only a few factors that are responsible for causing most of the problem.)
Benchmarking	Step 6	To compare the processes followed in your organization with the processes of an acknowledged leader in the same field.

The Family Planning Manager is designed to help managers develop and support the delivery of high-quality family planning services. The editors welcome any comments, queries, or requests for free subscriptions. Please send to:

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