HEALTH MANAGER'S GUIDE

Monitoring the Quality
of Primary Care

Contents

Monitoring the Quality of Primary Care

Dr. Bruno Bouchet

Abstract

The growing use of evidence-based clinical guidelines for the Integrated Management of Childhood Illness, essential obstetric care, HIV/AIDS and other critical health services has heightened interest in systems to document compliance with guidelines and monitor healthcare quality. Written for midlevel managers in charge of improving the quality of care at the level of primary care facilities, this guide explains how to establish monitoring systems to assess the quality of primary care by measuring the performance of providers and how facilities comply with standards of care. The guide describes a three-step quality monitoring approach to assess the quality of patient care: (a) determining the systems of care to be monitored and defining performance standards and indicators, (b) choosing appropriate data collection methods and designing and testing monitoring tools, and (c) analyzing and applying quality data. Methods described in the guide include direct observation of service encounters, exit interviews with patients, interviews with service providers, and reviews of medical records. Each element of the quality monitoring approach is illustrated using a running case example of the design of a quality monitoring system for the case management of acute respiratory infections in children under five years of age.

The establishment of an effective quality monitoring system depends on the involvement of local managers and providers in designing and assuming ownership of the monitoring process and commitment on the part of the leadership to use quality information to make improvements. Quality monitoring is only one part of a comprehensive approach to improving the quality of healthcare which must also include providing feedback to health workers, training and motivating staff to undertake quality improvements, and designing solutions to fill the quality gap.

Purpose of the guide

This reference guide is designed for use by health facility managers who wish to establish a formal system for assessing and improving the quality of primary care delivered at their facilities. The guide describes how managers can use compliance with standards of care to monitor the performance of health care providers and health facilities. In addition, it provides a step-by-step process for designing and implementing a quality monitoring system and aims to build user involvement and ownership by designing tools that best meet user needs.

Assessing quality of care involves collecting information on different dimensions of medical services (see Table 1). This guide focuses mainly on the first dimension—healthcare providers' performance as a key determinant of quality and, to a lesser extent, on their technical competence and the effectiveness of the care they deliver.

The primary audience consists of **midlevel managers** in charge of improving the quality of primary care at the facility level—regional medical officers, district medical officers, hospital directors, or their respective teams. Hospital managers will find the guide useful, particularly for monitoring the quality of care delivered by their outpatient departments.

Quality monitoring issues

In developing monitoring systems, there are a number of important issues to consider.

The importance of a systems view

A systems view fosters identification of the resources and activities needed to produce the desired effects. In a systems view, the resources are called *inputs*, the activities are *processes,* and effects are *outcomes.* Table 2 presents a systems view for three health programs: a training session for community healthcare workers, a diarrhea control program, and drug supply.

The outcomes of one system can become the inputs of another. For example, competent community healthcare providers are the outcomes of training but are also the inputs of the diarrhea control program. The availability of drugs at the health facility is the outcome of

Table 1: Dimensions of Quality of Care

Dimensions	Definitions
Technical performance	The degree to which the tasks carried out by health workers and facilities meet expectations of technical quality (i.e., comply with standards)
Effectiveness of care	The degree to which desired results (outcomes) of care are achieved
Efficiency of service delivery	The ratio of the outputs of services to the associated costs of producing those services
Safety	The degree to which the risks of injury, infection, or other harmful side effects are minimized
Access to services	The degree to which health care services are unrestricted by geographic, economic, social, organizational, or linguistic barriers
Interpersonal relations	Trust, respect, confidentiality, courtesy, responsiveness, empathy, effective listening, and communication between providers and clients
Continuity of services	Delivery of care by the same health care provider throughout the course of care (when appropriate) and appropriate and timely referral and communication between providers
Physical infrastructure and comfort	Physical appearance of the facility, cleanliness, comfort, privacy, and other aspects that are important to the clients
Choice	When appropriate, client choice of provider, insurance plan, or treatment

the drug supply system but is also the input for all programs involving pharmaceutical treatment. In other words, all these interrelated systems are subsystems of a more comprehensive healthcare system.

The advantages of a systems view are numerous. A systems view helps to: a) identify process elements that are often overlooked, b) show explicit links among inputs, processes, and outcomes, c) provide a framework for a structured analysis of quality issues in the design of the monitoring system, and d) explore causes of poor performance.

Developing clinical guidelines and growth in quality of care emphasis

Quality of care is a priority concern all over the world. All countries are trying to improve the effectiveness and efficiency of the care that their medical systems deliver. As a result, the use of evidence-based clinical guidelines is becoming widespread. These guidelines explain the different steps of the process of managing specific health conditions. Clinical evidence-based guidelines have been developed for the Integrated Management of Childhood Illness (IMCI), sexually transmitted diseases (STDs), delivery of essential obstetric care, and tuberculosis, among other health conditions. The official endorsement of clinical guidelines reinforces the need for healthcare facility managers to document compliance.

Measuring compliance with standards

The existence of explicit standards, whether for inputs, process, or outcomes, makes assessment of the quality of care easier. Standards provide a reference point for assessing provider performance or system performance. By identifying the current level of quality and the expected level, compliance can be measured easily.

Table 2: Systems View of Health-Related Programs			
	Inputs	**Processes**	**Outcomes**
Training of the Community Health Workers (CHWs)	■ Community health workers ■ Training material	■ Training session	■ Competent CHWs
Diarrhea Control Program	■ Trained CHWs ■ Oral rehydration salts	■ Education sessions for the mothers	■ Children treated with oral rehydration therapy
Drug Supply	■ Pharmacist ■ Drugs	■ Stock management	■ Drugs available in health facilities

Striking a balance between measurement and improvement

Monitoring the quality of care is only one part of a more comprehensive approach to improving healthcare quality that includes feedback to the providers on their performance and designing solutions to fill the quality gap. Since monitoring is an essential component of the healthcare system, quality monitoring makes sense for all programs, even in the poorest countries.

The risk of all measurement systems is that they can develop a life of their own. The amount of data that one may be tempted to collect could grow quickly to an unmanageable level. A monitoring system should collect data to improve the quality of care. The monitoring system is not an end in itself, just a necessary intermediate step. One should also consider that quality of care might improve without formally collecting and reporting written data. This controversial point is illustrated by situations in which supervisors informally observe care and provide their oral feedback and, therefore, may contribute to improving the quality of care even though a report is never written.

Introduction to monitoring

Definition of a monitoring system

A monitoring system consists of a process for regular collection and analysis of a core set of indicators. The system provides data that can be used for assessing problems, making decisions to improve the situation, and monitoring progress. An effective monitoring system should meet the following criteria:

- Data are used to identify the presence and causes of performance problems

- Data are collected regularly to monitor the trend of indicators over time

- Data are used to guide management decisions

- Data collection is a routine activity integrated into daily tasks

Familiar to most healthcare personnel, the traditional health information system is a type of monitoring system that focuses on the resources and effects of primary care. These include:

- Medical equipment at the facility

- Demographic data on the catchment area population

- Number and list of new cases of diseases or symptoms seen at the health facility

- Utilization of services (number of clinics) and number of visits

- New and previous patients registered

- Outreach activities

- Coverage rates (immunization, etc.).

Typically, staff members who collect monitoring data do not make decisions based on the data. Managers, however, try to design information systems to facilitate using this data for making decisions by including process

indicators of quality (e.g., healthcare worker performance, compliance with guidelines, etc.). This data allows teams to assess their own performance and managers to identify performance problems and make corrections to ensure desired outcomes are achieved.

Monitoring system characteristics

A system that monitors quality not only collects information on inputs (structure) and outcome, but also focuses on process to determine if services meet defined standards.

The difference between monitoring and evaluation

Most experts would agree that monitoring systems differ from evaluation by the routine nature of the data collection and the system's more focused scope. An evaluation consumes more resources, is limited in duration, and has a broader scope.

Overview of the quality monitoring process: The road to quality monitoring

The different steps involved in designing and implementing a monitoring system appear in Figure 1. They are explained in more detail later.

An incremental approach to monitoring

The best way to establish a quality of care monitoring system is to proceed incrementally. Start with a simple system focused on one or a few services and expand it as experience and resources permit. Finally, sustain the system by providing adequate resources and making monitoring a routine part of the workload.

Start monitoring with a limited scope

Improving quality can be a unifying goal—one that can unite healthcare providers and managers for the benefit of the communities that they serve.

Figure 3-1: Quality Monitoring

Process	Steps
Decide what information you need	Select health service(s) to be monitored
	Describe the process of care
	Draw a systems view of the service(s)
	Make the critical standards explicit
	Develop performance indicators
Collect the data	Choose appropriate data collection methods
	Design monitoring tools
	Test monitoring tools
	Select monitoring strategy
	Collect data
Use the information and results	Tabulate results
	Analyze information
	Interpret and use results
	Design a data storage and retrieval system
	Disseminate information

A monitoring system, although initially limited in scope, serves as a map for the healthcare facility team, because it shows both a destination and the length of the journey. Providers will also appreciate the sense of control over their work that a monitoring system allows.

A quality monitoring strategy must be built on existing information systems so it will neither duplicate nor complicate information collection. Some of the needed information might already be available, in the facility's health information system or in medical records. However, existing data sources often do not provide information on the process of healthcare delivery. If this is the case, specific tools must be designed to collect the required information. Initially, the amount of information collected should be limited to what is the most essential.

An information system is a powerful tool for decision making and quality improvement. Knowledge of the existing situation will help the team set the right

priorities, monitor progress, and provide the documentation needed to justify the decisions made for improvement. Information should be used with the objective of improving performance within the health system without threatening the people whose performance is being assessed. Using monitoring information in this way enhances the manager's leadership and provides support for the manager's vision of the health system's potential achievements.

Expand the monitoring system

A monitoring system can be expanded in four different, yet complementary ways:

- Expansion in space: Increase the monitoring system's geographic coverage. If the quality initiative was started in the outpatient department of one hospital, a peripheral rural health center may be selected as the next site. In this way, the quality monitoring process can progress until all the area's health facilities are covered.

- Expansion in time: Adjust the frequency of monitoring by making the best compromise between resources available and needs. For example, the frequency of monitoring may be adapted according to a health facility's performance. The best performers need less attention, whereas the low performers need to be visited more often.

- Expansion in scope: Add or change activities that are being monitored. Health facilities deliver many services, and healthcare providers carry out many activities. It is often impossible for a monitoring system to capture information on all the services and activities. On the other hand, if one always monitors the same few services, it could have the unwanted effect of leading the healthcare providers to believe that these are the only activities worth improving. They may concentrate

only on those few services in order to demonstrate good performance. One possible way to avoid this "gaming" effect and still broaden the scope of the monitoring is to rotate the focus of attention by monitoring one or two essential services at a time. One obvious disadvantage of this practice is that managers have comparatively less data on the progress being achieved for the previously monitored activities. In reality, there is no simple solution to the challenge of monitoring all activities through rotation while continuously monitoring the performance for certain priorities.

■ Expansion in methods: Combine data collection methods. This approach creates more confidence in the validity of the results. For example, if the direct observation of the healthcare providers provides the same information as exit interviews of patients, one can be more confident of the accuracy of the data. However, combining data collection methods requires more resources and therefore is more costly. A compromise must be found between validity of data and the feasibility and cost of combining methods.

The decision to expand the monitoring system is context-specific and entirely dependent on the health manager's confidence that the system is able to absorb the additional workload. There are no special criteria to help decide when it is time to expand.

Sustain the monitoring system

Building sustainability into the monitoring system involves ensuring that adequate resources are devoted to monitoring, quality of care continues to be monitored, and the various steps in the monitoring process are performed adequately. In addition, the monitoring system must be periodically adjusted because of changing situations and needs. Otherwise, monitoring might become just an automatic task in which people focus on collecting data without making use of the information.

One way to sustain adequate monitoring of the quality of primary care is to integrate monitoring activities into the routine work of those in charge of improving the quality of care throughout the healthcare system—a district health management team, a hospital board, or a health center team. A good opportunity to monitor quality exists when managers make routine supervision visits to peripheral facilities. Thus, monitoring the quality of care can become a part of their scope of work and not merely an additional activity that is performed if time permits. The advantage of integrating monitoring activities into routine work is an increase in the data collection frequency.

Monitoring the quality of care should be considered among the priority functions of a healthcare system. To maintain a quality monitoring system, a specific budget should be allocated to this function and necessary personnel assigned. The share of the health budget that should be devoted to monitoring is difficult to determine; however, five percent seems to be a reasonable and conservative figure. Additionally, staff should allocate time to monitoring quality as part of their routine responsibilities.

Establishing the quality monitoring system: A step-by-step approach

Three of the major steps involved in establishing a quality monitoring system are to: (a) decide what information you need, (b) collect the data, and (c) use the information and results.

Most decisions involved in establishing a quality monitoring system require the involvement of several types of personnel. A team, rather than a single individual, should work on the design and establishment of a monitoring system. Consensus on topics and methods of monitoring will usually be reached

through brainstorming sessions and discussions. Decisions can be facilitated by looking at existing data (e.g., service statistics) and comparing them to monitoring needs.

Step one: Decide what information you need

Select health service(s) to be monitored

A given health system provides a large number of services. Due to limited time and resources within a health care facility, not all services can be monitored. Pick the health services that the manager or team believes are the most important. When choosing which health service(s) to monitor, the health manager should consider the kinds of situations that can occur, including the following:

- Priority activities identified. Some districts have a yearly action plan or a strategic plan that states their health priorities. In this case, the monitoring system should focus on these priorities.

- No priority activities identified, but the health facility knows the range of services that it is supposed to provide. Some health centers have identified an "essential or minimum package of activities." In this case, the monitoring system should focus on these activities.

- No priority activities defined, and health facilities are not clear on the services they should provide. In this case, one has to look at the service statistics to see which services are provided.

Criteria for prioritization may be helpful. One set of criteria that might be used to select those services are high volume, high risk, or problem-prone. Identify the health conditions or services that are the most common and/or the most serious (e.g., highest risks of mortality, complications, or disability) and/or the most difficult to manage (e.g., the most client complaints). The healthcare manager can select services or health conditions with existing protocols that are known and practiced by the health-care providers. Then, the quality of care can be monitored using these explicit standards.

A *prioritization matrix* is a conven-ient tool that can be used to select a health service to monitor. To build a prioritization matrix, list the health services to prioritize (in columns) and the prioritization criteria (in rows) in one table. Each team member votes on each health service. The service with the highest total score becomes the number one priority for monitoring, whether it is managing a specific health condition (e.g., an acute respiratory infection, adult tuberculosis) or deliver-ing a preventive service (e.g., prenatal care).
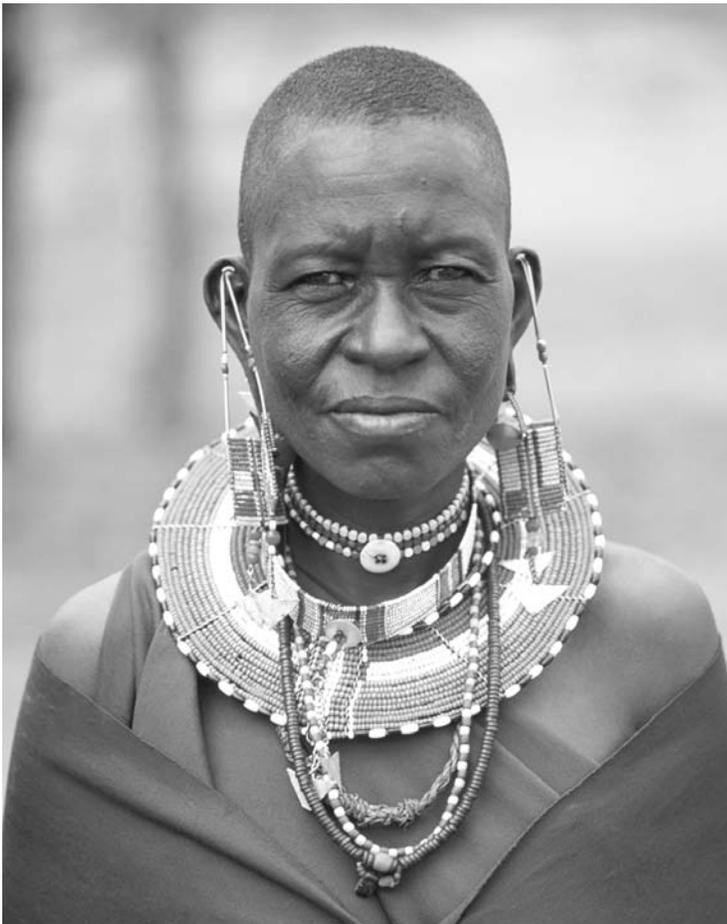
The case example that follows illustrates the first step in the prioritization process and the different steps in establishing a monitoring system. In this example, it is assumed that a district health management team wants to monitor the quality of some services provided by a network of health centers.

Describe the process of care

The primary care process to be monitored must be made explicit by listing, in sequence, the activities that must be conducted for the correct case management of a health condition or delivery of a healthcare service. To avoid a lengthy list, one must select the **critical activities** that are key for reaching the desired outcome. For example, counting the respiratory rate in children under five years of age who have a cough is key to identifying pneumonia.

Critical activities are usually selected according to one or a combination of the three methods that follow:

- Judgment based on the official policy: For example, the Ministry of Health in a country might have endorsed a special set of instructions (e.g., clinical guidelines, protocols, algorithms, etc.) for proper case management of some health conditions.

- Judgment based on the provider's research on international norms and standards and adapted to his or her situation.

- Judgment based on expert opinion when neither of the two previous methods is appropriate and a consensus is needed to make a decision.

The questions in Table 3 can be used to identify critical activities for the correct case management of a specific health condition or healthcare service.

To understand the care process taking place in health centers, some health managers find it useful to write one-line statements for each step of the process.

Select the health service(s) you want to monitor

The district health management team has looked at the essential package of services that health centers are supposed to deliver and has selected three priority services by consensus: prenatal care, case management of acute respiratory infections among children under five years of age, and case management of adult tuberculosis. The team decided that it did not have enough experience with monitoring systems to be able to monitor all three services at the start. The team then decided to start monitoring one service but could not reach a consensus on which service. The team also decided to build a prioritization matrix and voted on each service. The following results were obtained:

Prioritization Matrix

	Prenatal Care	Acute respiratory infections in children <5	Adult tuberculosis
Volume/frequency of services or health conditions	2	3	1
Risk associated with the service or health condition	1	2	3
Problematic case management process or delivery of service	1	3	3
TOTAL	**4**	**8**	**7**

Based on the scores in the matrix, the team selected case management of acute respiratory infections (ARI) among children under five years of age. ARI is defined as a child presenting with either a cough or having difficulty breathing.

The number of ARI cases seen by a healthcare provider in this district represents a high workload and a frequent cause of consultation for children under the age of five **(a high-volume situation)**. Most of the deaths attributable to ARI are due to pneumonia, which is caused by bacterial agents *(Streptococcus pneumonia and Haemophilus influenzae)* in the majority of the cases. Without timely treatment with an appropriate antibiotic, the risk of death is relatively high because the frequently associated chronic malnutrition and parasitic infections that accompany ARI weaken the child's natural immune defense system **(a high-risk situation)**.

Correct ARI case management requires that the healthcare provider knows the clinical signs, recognizes these signs, makes a correct diagnosis, prescribes appropriate treatment, and provides advice to the caretaker. The compliance of the healthcare providers with scientifically sound clinical practices is dependent on many factors **(a problem-prone situation)**, including the healthcare providers' training and the availability of drugs. Based on these criteria, the team decided to focus on the correct case management of pneumonia.

Table 3: Checklist to Identify the Process of Care

Case management of a health condition	Health care service
What are the key questions that the healthcare provider must ask the patient who presents with symptoms related to the selected health condition?	What are the key questions that the healthcare provider must ask the patient who is to receive this service?
What are the key physical examinations that the healthcare provider must conduct to make a correct diagnosis and assess the level of severity?	What are the key physical examinations that the healthcare provider must conduct to correctly provide the service?
What are the key lab exams, X-rays, and other tests that must be performed?	What are the key lab exams, X-rays, and other tests that must be performed?
What are the key diagnostic decisions that must be made?	What are the key decisions that must be made?
Which care or treatment should the healthcare provider prescribe or administer?	Which care or treatment should the healthcare provider prescribe or administer?
What are the key messages that the healthcare provider needs to tell the patient and/or the caretaker to explain the health problem, its level of severity, and its management/treatment?	What are the key messages that the healthcare provider needs to tell the patient and/or the caretaker?
What follow-up is recommended/needed?	What follow-up is recommended/needed?

A flow chart can also be a useful tool for mapping the main steps of the care process.

Draw a systems view of the services

A three-column table is useful for showing a systems perspective of the services that will be monitored and allowing one to understand the processes and identify critical inputs and expected outcomes. A team can use this tool to build consensus and define the ideal situation for the facility.

Support systems are an important input. They enable the healthcare provider to deliver high-quality clinical care. As explained previously, the outcomes of support systems become the inputs of the healthcare delivery system. Thus, they may influence the performance of healthcare providers indirectly and may be the source of problems that result in poor performance.

The support systems that most often are considered relevant to the quality of primary care are: (a) drug supply, (b) financial management,

(c) supervision, (d) training, (e) health information system, (f) referral system, and (g) transportation.

Make the critical standards explicit

Once systems elements are identified, one must define the standards as explicitly as possible. As mentioned above, a standard is a statement of expected quality. If quality means "*doing the right thing right, right away,*" then the standard should state who should be doing what, in what way, at which level of the health system, and at what time.

Standards must be set for each system component.

■ Input standards define the resources that must be supplied by the health system. For example: "*Each clinic must have at least one healthcare provider properly trained in tuberculosis case management.*"

■ Process standards describe the activities and the way they must be carried out. For example: "*Each patient hospitalized for cerebral malaria*

must have his or her temperature checked every four hours."

■ Outcome standards describe the direct output of the case management in terms of the units of care, the effect of the care on the individual patient, and the impact on health status (e.g., mortality rates). For example: "*The immunization coverage rate of the population must be at least 80 percent."*

Process standards are found mainly in two forms: **clinical standards** (e.g., clinical practice guidelines, protocols) and **managerial standards** (e.g., standard operating procedures). A clinical practice guideline is a set of straightforward and well-defined statements provided by agencies, such as an MOH, that enable the healthcare professional to understand the process of care and help practitioners make decisions about healthcare. These guidelines typically include all of the recommended steps involved in the management of a clinical condition.

For example, the WHO *Integrated Management of Childhood Illness Guidelines* guides the provider in the assessment, classification, treatment, counseling, and follow-up of children under five years of age with cough, diarrhea, fever, measles, malnutrition, and ear infection. Standard operating procedures state the organization's expected support activities and guide management or support staff in their work. Examples of the procedures discussed include: the management of essential drugs and vaccines, standards of hygiene in health facilities, relationships between patients and healthcare providers, management of human resources, and monitoring and supervision processes.

A good standard is one that is **valid, reliable, clear,** and **realistic**. A valid standard is one that is based on scientific evidence or other acceptable experience. A reliable standard leads to the same result every time it is

The care process for ARI[2]

The team identified the critical tasks and developed the following flow chart.
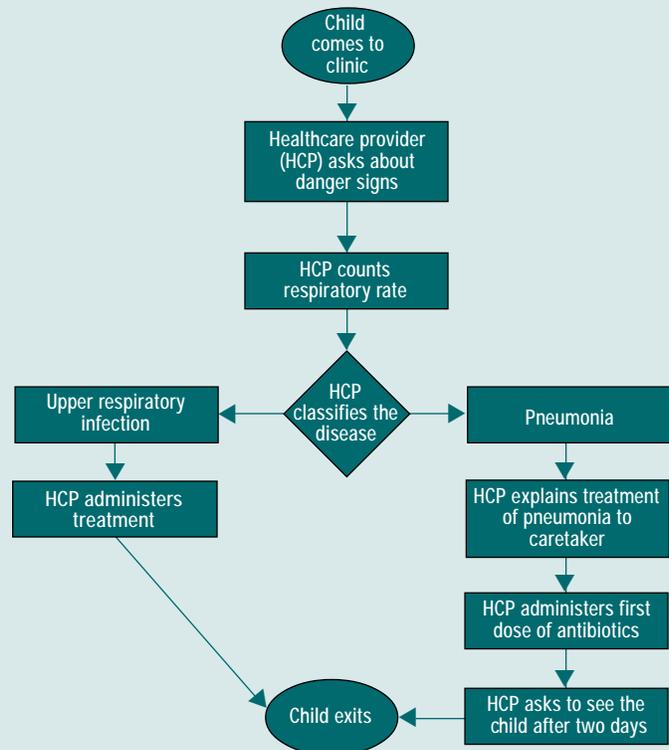
[2] The case management process of a child with ARI is given as an example.

Systems view of ARI case management

The district team identified the critical inputs and the expected outcomes of ARI case management from the elements of the process previously described in the flow chart. They obtained consensus on the most critical elements needed to monitor and develop their systems view of ARI case management as shown in the following table:

Inputs	Processes	Outcomes
■ Competent healthcare provider	■ Ask about danger signs	■ Pneumonia is recognized
■ Timer or watch	■ Count the respiratory rate	■ Child is under appropriate treatment
■ Antibiotics	■ Identify pneumonia and assess its severity	■ Caretaker knows diagnosis and treatment plan
■ Child's caretaker and child	■ Explain treatment to the caretaker	■ Severe pneumonia case is referred to hospital
	■ Administer antibiotic if pneumonia is diagnosed	■ Case fatality rate decreases
	■ Ask the caretaker and child to come back after two days if pneumonia is diagnosed	■ Child mortality rate decreases

Define the critical standards for ARI case management

The district standards for the correct case management of pneumonia in children under five years of age were adapted from the national health policy. The team carefully selected the standards they could appropriately monitor.[3] They eliminated some outcome standards (e.g., child mortality rate), because it would require doing a complex survey.

Process standards selected for monitoring:

■ The healthcare provider must ask the caretaker about the presence of three danger signs: Is the child able to drink or breast-feed? Does the child vomit everything? Has the child had any convulsions?

■ The healthcare provider counts the respiratory rate for at least one minute using a watch or a timer when the child is calm.

■ The healthcare provider explains the treatment for pneumonia to the caretaker.

■ The healthcare provider has the caretaker administer a first dose of cotrimoxazole or amoxycillin to the child diagnosed with pneumonia.

■ If pneumonia is diagnosed, the healthcare provider explains to the caretaker that the child must be brought back in two days.

Input standard selected for monitoring:

■ There has been no shortage of either cotrimoxazole or amoxycillin in the past three months.

Outcome standard selected for monitoring:

■ Severe pneumonia cases are appropriately referred to a hospital.

[3] The standards given here are examples and may not be universally accepted.

applied under the circumstances for which it was designed. A clear standard is understood in the same way by everyone concerned and is not subject to distortion or misinterpretation. A realistic standard can be followed or achieved with existing resources.

The best sources for each standard must be identified. One source could be the Ministry of Health. Other sources for standards could be a recognized international institution such as WHO or, an accreditation body. A set of standards developed by a local panel of experts could also be used. Examine reference documents already in use to see if they meet your needs.

Three common problems encountered when trying to identify standards are: (a) there are no written formal standards, (b) standards have not been communicated to healthcare providers or institutions, or (c) existing standards do not meet the definition of a good standard. All three situations could call into question the validity of the assessment results. When standards are not found or have not been well-communicated, healthcare professionals cannot be expected to follow them. If the standards are not good, staff may follow them, but the results may not represent good care. Recommendations for handling such situations follow:

■ Standards are not explicitly stated: The standards exist implicitly or do not exist at all. For example, in the case of supervision standards, the availability of inputs necessary for visiting the health units regularly may not be formally stated, but are easy to guess (e.g., supervisors, cars, etc.). Process standards, however, are more difficult to define: How often should the supervisor visit a health center? How should feedback on observation of the healthcare provider be given?

In these kinds of situations, the team involved should use the best available expert judgment to decide which standards to use. In some

cases, the development of a quality monitoring system provides the opportunity to develop standards.

- ■ **Standards exist, but have not been communicated.** If the standards are satisfactory, they should be used. Obviously, the quality assessment results might not be as good as they should be, but part of the solution to the problems uncovered will be to communicate existing standards to those who need them.

- ■ **Standards exist, but fail to meet essential criteria of good standards.** Here, the choice is either to improve or adapt the standards or to refer to internationally recognized standards (i.e., those from WHO and UNICEF). Standards that are not scientifically sound or potentially harmful should be discarded.

Develop performance indicators

The next step is to develop indicators for each standard selected. An indicator is the measurable variable that can be used to determine the degree of adherence to a standard. Indicators translate a qualitative statement (as expressed by the standard) into a quantitative one. For example, "*the proportion of healthcare providers who greet their patients*" measures the extent to which the standard for a quality reception is being met. Indicators allow evaluators to measure any gap between observed and expected performance.

Usually, indicators are expressed in the form of numbers (counts), averages, and ratios (proportion or rate). An indicator presented as a ratio consists of a denominator and a numerator. Generally, the denominator specifies the total population observed, and the numerator is the number of occurrences of the event. For example, "*The proportion of physicians who wash their hands between attending two patients is determined by the number of physicians observed who wash their hands (numerator) divided by the total number of physicians observed (denominator).*"

Performance indicators for ARI case management

The district team decided to keep the number of indicators[4] to a manageable level and designed the following indicator table:

Indicators	Numerators	Denominators
Proportion of children with ARI symptoms for which the healthcare provider asked about the presence of the three danger signs	Number of children with ARI symptoms for which the healthcare provider asked about the presence of the three danger signs	Total number of children with ARI symptoms
Proportion of children with ARI symptoms for which the healthcare provider counted the respiratory rate according to the standard	Number of children with ARI symptoms for which the health care provider counted the respiratory rate according to the standard	Total number of children seen with ARI symptoms
Proportion of presumptive pneumonia cases for which the healthcare provider explained the treatment correctly to the caretaker	Number of presumptive pneumonia cases for which the healthcare provider explained the treatment correctly to the caretaker	Total number of presumptive pneumonia cases
Proportion of children with pneumonia whose caretaker administered a dose of antibiotic at the health facility	Number of children with pneumonia whose caretaker administered a dose of antibiotic at the health facility	Total number of children with pneumonia
Proportion of caretakers of children with pneumonia who were told to bring the child back to the health facility in two days	Number of caretakers of children with pneumonia who were told to bring the child back in two days	Total number of children with pneumonia
Availability of antibiotics	Number of days of drug stockout in the past three months	
Proportion of severe pneumonia cases referred to a hospital in the past three months	Number of severe pneumonia cases referred to a hospital in the past three months	Total number of severe pneumonia cases recorded in the past three months

[4] The indicators presented here are examples.

Indicators can be defined for the three basic system components (input, process, and outcome). Some examples follow:

- "*Proportion of clinics that have at least one healthcare provider properly trained in TB case management*" is an **input indicator;** it states the human resources available for tuberculosis control.

- "*The number of times during a 24-hour period the temperature of a patient with cerebral malaria has been measured*" is a **process indicator;** it states whether the tasks are carried out with respect to the protocols.

- "*The immunization coverage rate of children between one and two years of age*" is an **outcome indicator;** it states the effect of the immunization activities.

When developing indicators, one must make sure that the data necessary will be "easily" available. Two critical questions need to be answered:

- What information is needed to calculate the indicators? For example, in the case of determining a ratio, what are the numerators and denominators? They must both be expressed and defined explicitly. For instance, the calculation of the immunization coverage rate requires that one knows the number of children who have received the appropriate vaccines on time (numerator) and the total number of children of that age group who were supposed to receive the vaccines in the same period of time (denominator).

- What are the information sources? To the extent possible, one should use the information found in the patients'

medical records, the facility's various logbooks, and the health information system reports. However, it is unlikely that all the desired data can be retrieved from these sources. One may have to design new forms or adapt existing ones to collect the appropriate information.

The information on indicators can be put in a table, such as the one presented in the case study. Reference documents, such as the PRICOR thesaurus[5] and the MAP module #5,[6] also include a list of indicators.

Step two: Collect the data

In the next stage of the process, the team should design the data collection methods, tools, and strategy, and then collect the data. The data collection approach described here focuses on healthcare provider performance.

Choose appropriate data collection methods

- Four methods are most frequently used to collect information: (a) direct observation, (b) exit interview with the patient, (c) interview with the healthcare provider, and (d) review of medical records.

  Direct observation: For this method, a supervisor or other designated person observes and records a healthcare provider's behavior (i.e., tasks being carried out) during a real patient-provider encounter. The observer may or may not tell the healthcare provider which disease case management he is observing, and may or may not repeat the clinical exam to confirm the diagnosis. Direct observation is an effective way to measure performance in a real working environment. It is easy to integrate this method into

---

[5] The Primary Health Care Operations Research (PRICOR) project developed a list of indicators for seven maternal and child healthcare services and their support systems. PRICOR, *Primary Health Care Thesaurus,* Volumes I & II. Bethesda, MD: Center for Human Services, 1988.

[6] The Primary Health Care Management Advancement Programme has developed a module on monitoring and evaluating programmes that lists indicators for 19 primary healthcare services. *Primary Health Care Management Advancement Programme.* Washington, DC: Aga Khan Foundation and University Research Corporation, 1993.

a supervision schedule because evaluation of a full range of competencies, including interpersonal skills, can be carried out.

The main limitation of this method is that the observer's presence may influence the healthcare providers' performance. Despite this limitation, however, direct observation often is considered the most reliable method and is often used as a reference point.

Exit interview with the patient: A trained interviewer asks a patient to describe what happened during the encounter. If the patient is a child, the accompanying caretaker should be interviewed. The interviewer uses either a checklist with "yes" or "no" answers about tasks performed by the healthcare provider and/or asks open-ended questions about the patient's or caretaker's degree of satisfaction. The interviewer may decide to examine the patient again to confirm whether the diagnosis was accurate. Although the exit interview may not disturb the patient-provider interaction, it may influence the healthcare provider's performance. The information collected through this method is limited by the patient's or caretaker's observation capacity, understanding of the situation, and memory of the consultation. The reliability of the information collected through an exit interview is sometimes decreased by a courtesy bias toward the interviewer (i.e., people do not necessarily want to express dissatisfaction). Some studies have shown differences between information that patients provide when they are interviewed after a consultation and information obtained by a focus group discussion later with the same patients.

Interview with the healthcare provider: This method involves interviewing the healthcare provider about how specific conditions are managed.

Choose the most appropriate data collection methods

To measure the selected indicators, the district team chose the data collection methods that follow:

- **Direct observation** provides information on whether the **healthcare provider:** (a) questioned the caretaker on the danger signs, (b) counted the respiratory rate, (c) correctly explained the treatment for pneumonia, and (d) told the caretaker to bring the child with pneumonia back in two days.

- **Exit interviews with the caretaker** provide information on the administration of the first dose of antibiotic.

- **Inspection of the pharmacy** provides information on the stock of antibiotics available.

- **Review of records** provides information on: (a) the number of pneumonia cases properly classified, and (b) the number of severe pneumonia cases referred to a hospital.

The interviewer asks the healthcare provider questions that follow the steps of the consultation. The questions can be presented on a checklist, with the responses recorded as either "yes" or "no." Open-ended questions avoid the risk of influencing the answers by asking specific questions about each step, e.g., "*What do you do if a child has a fever?*"

Sometimes healthcare providers tend to overreport their performance to please the interviewer and avoid being poorly evaluated, or because they really believe they conduct these tasks routinely when they actually do not do so. The interview provides a good opportunity to test competence, but may not measure actual performance.

Review of records: This method entails reviewing all of the records which detail primary care activities and patient health problems, including the patient's medical records, the data reporting forms for the health information system, the facility logbook, and the hospital file. The information found in medical records in developing countries is usually limited to symptoms, diagnosis, and treatment. Unless medical records are well designed, sufficiently detailed, and provide accurate information, they may not permit an accurate assessment of the patient care process because some of the desired information may not have been recorded. In this case, direct observation is the only way to get the information.

■ Two other methods can be used to elicit information that may help explain low levels of performance: testing healthcare provider knowledge and assessing resource availability.

Testing healthcare provider knowledge: Healthcare provider knowledge can be tested by conducting an interview or by giving a written test. Either method will provide information on healthcare provider competence which is one predictor of performance. Obviously, those employees who have been observed by managers and deemed good performers can be assumed to have appropriate knowledge and skills, and their competence does not have to be tested.

Assessing resource availability: This method involves some level of on-site inspection, although one might just analyze inventory records or reports. Usually, the focus of the attention is on drugs, supplies, medical equipment, and the facility itself.

The Center for Human Services has conducted two studies comparing the validity of different methods for collecting data on provider performance.[7, 8] The main findings are as follows:

■ If observers are well trained, direct observation is generally the most valid method for collecting information.

■ Exit interviews can provide valid data, but the results vary according to the task observed. The findings suggest that several factors contribute to these results, including the ability of patients to describe accurately what really happened, how much attention they were paying to what the healthcare provider was doing, and their expectations about what the healthcare provider should be doing.

■ Review of records provides adequate data on treatment provided but not much on other tasks. In developing countries, healthcare providers usually record only information on the treatment given and little else.

[7] Hermida, Jorge, David D. Nicholas, and Stewart Blumenfeld. *Comparative Validity of Three Methods for the Assessment of the Quality of Primary Health Care: Guatemala Field Study.* Bethesda, MD: Quality Assurance Project, Center for Human Services, 1993.

[8] Miller Franco, Lynne, Ciro Franco, and Newton Wilfred Nkhoma. *Malawi Field Study: Comparison of Methods for Assessing Quality of Health Provider Performance Related to the Management of Ill Children.* Bethesda, MD: Quality Assurance Project, Center for Human Services, 1996.

- Healthcare provider interviews do not always provide valid data on healthcare provider performance. Subjects may report doing tasks that they actually do not perform. Thus, the interview mainly tests their competence (knowledge) and not their actual performance in real working conditions. However, information on their specific knowledge of case management is useful and should not be overlooked.

Each method has its advantages and limitations, and none is adequate for all situations. For these reasons, using a combination of methods is usually more reliable. The selection of the right combination of methods will depend on the resources available (including time), the familiarity of data collectors with the method, and the information one is seeking. For each indicator, the team must identify the most feasible data collection method.

Design the monitoring tools

The next step is to design monitoring tools that will be used for collecting data and reporting findings. These tools (e.g., job aids, forms, checklists, or a list of questions) should be simple and self-explanatory.

- **Involve the users in designing the forms or tools**. Not only are the users' contributions important, but their involvement in the process creates a sense of ownership and can motivate them to do good work. If the monitoring will be integrated into routine supervision, then the supervisors would be the users.

- **Depending on the data collection methods chosen, the data recording tools could be either an observation checklist or a questionnaire**. A checklist includes tasks to observe, things to remember, or items to count, etc. Each observation leads to an answer recorded as "yes" or "no" or as a number. A questionnaire contains a list of questions that can be either

Design monitoring tools for ARI case management

The district team decided to design its own collection and reporting forms. These forms included:

- A checklist for the direct observation of the healthcare provider

- A questionnaire with open-ended questions for the exit interview with the caretaker

- A checklist for pharmacy inspection

- A checklist for the review of records

Checklist for the Direct Observation of the Healthcare Provider

---

ARI Case Management

Complete one form per child

Coding

General Information

1. Clinic identification: _____

2. Date of observation: _____

3. Name of observer: _____

4. Healthcare provider's name: _____

History Taking

5. Did the healthcare provider ask the caretaker:

   a. If the child is able to drink or breast-feed?   Yes [ ]   No [ ]

   b. If the child vomits everything?   Yes [ ]   No [ ]

   c. If the child has had any convulsions?   Yes [ ]   No [ ]   [ ]

Physical Examination

6. Did the healthcare provider count the respiratory rate?   Yes [ ]   No [ ]   [ ]

   If yes, did he or she (using a timer) do a one-minute count of the respiratory rate?   Yes [ ]   No [ ]   [ ]

Counseling

7. In case of pneumonia, did the healthcare provider correctly explain the treatment to the caretaker?   Yes [ ]   No [ ]   [ ]

Follow-Up

8. In case of pneumonia, did the healthcare provider ask the caretaker to bring the child back after two days?   Yes [ ]   No [ ]   [ ]

Comments: _____

_____

_____

_____

Questionnaire for the Exit Interview with the Caretaker

> **Pneumonia Case Management**
> *Complete one form per child/caretaker*
>
> *Coding*
>
> **General Information**
>
> 1. Clinic identification: _____
>
> 2. Date of observation: _____
>
> 3. Name of observer: _____
>
> 4. Healthcare provider's name: _____
>
> **Treatment**
>
> 5. Did you give the first dose of treatment to your child?   Yes [ ]   No [ ]   [ ]
>
> **Comments:**_____
>
> _____
>
> _____
>
> _____

Checklist for the Pharmacy Inspection

> **Pneumonia Case Management**
> *Complete one form per health facility*
>
> *Coding*
>
> **General Information**
>
> 1. Clinic identification: _____
>
> 2. Date of observation: _____
>
> 3. Name of observer: _____
>
> 4. Healthcare provider's name: _____
>
> 5. Number of days of amoxycillin or cotrimoxazole stockouts
>   in the past three months:_____ *(based on health facility stock records)*   [ ]
>
> Comments: _____
>
> _____
>
> _____
>
> _____

open-ended (i.e., each answer is recorded exactly as the respondent states it) or closed-ended questions (i.e., ones that provide exact responses such as "yes" or "no").

There are usually three parts to a data collection form: (a) the administrative part, (b) the technical part, and (c) the coding system. The administrative part is for recording information such as the topic, date, location, interviewer, interviewee, and sometimes the period during which the data are being collected. The technical part describes the technical area to observe or question.

A specific coding form, therefore, must be designed to allow correct and consistent input of data. A coding system facilitates quick analysis of observation results or responses to questions. In the event that a healthcare provider performs a task that is inappropriate and could lead to an incorrect decision or be harmful to a patient, the form must include space to record the error or mistake.

Using structured forms will decrease variation in the results between different observers whose performances can be influenced by knowledge, skills, abilities, memory, and observational ability. Without a structured form, results will vary, will be inconsistent, and oftentimes will be inaccurate. However, the form alone might not be sufficient to decrease unintended variation. The keys to achieving consistency of data are training and practice in the use of the form until acceptable levels of interobserver variability are achieved.

In some situations, the monitoring questions can be included in existing forms, such as those used for supervision activities. However, the topics may change as the monitoring system itself develops. New topics may have to be added (for example, if the focus of the supervisor has changed). This

may necessitate an ongoing review of existing forms as part of the monitoring process.

■ How do you build existing information and monitoring systems?
A quality monitoring system should complement any existing system and be integrated with ongoing monitoring activities. Before designing your quality monitoring system, first determine if existing systems capture the information you need. If not, see if it is feasible to adapt the existing monitoring tools to include your requirements for data collection on quality.

When suitable forms do not exist and need to be designed, it may be helpful to start with the forms developed by other programs, such as the Primary Healthcare Management Advancement Program (MAP). Module 6 of the MAP series is a good source of checklists and questionnaires for 21 primary healthcare services.[9]

Test the monitoring tools

If time and resources are available, it may be appropriate to test the tools. If not, revise them as appropriate. Two activities will help assure that the tools are properly used and help you revise them while at the same time contributing to the data collector's training.

■ Review the forms with the users. One session should be devoted to reviewing the forms (checklists and questionnaires) with all data collectors. Make sure that they understand what they are supposed to observe or which questions need to be asked. You can review all of the questions during a plenary session or through peer interviews with the observers. To test the clarity of a question, ask the data collectors to explain what they understand a question to mean, to rephrase it differently, and to give examples of possible answers. To

[9] Primary Health Care Management Advancement Programme, *Assessing the Quality of Service: Module 6, User's Guide.* Washington, DC: Aga Khan Foundation, 1993.

Checklist for the Record Review

> **Pneumonia Case Management**
> *Complete one form per health facility*
>
> *Coding*
>
> **General Information**
>
> 1. Clinic identification: _____
>
> 2. Date of observation: _____
>
> 3. Name of observer: _____
>
> 4. Healthcare provider's name: _____
>
> 5. What is the total number of severe pneumonia cases recorded in the past three months? _____
>
> 6. What is the total number of severe pneumonia cases referred to a hospital in the past three months? _____
>
> 7. Percent of severe cases referred to the hospital *(divide above item 6 by item 5 and multiply by 100 percent):* _____ % [ ]
>
> **Comments:**_____
> _____
> _____
> _____

Test the monitoring tools for ARI case management

To verify that the forms they had designed were easy to complete, the district team organized a session to review all the forms and test the questions on each other. They also field-tested the forms in the outpatient department of the district hospital. None of the supervisors had major problems with the forms; but a few reported having some difficulty understanding whether the healthcare provider's explanation to the caretaker of the treatment prescribed was accurate. The team decided to write the correct treatment on the form as a reminder of the standard. After this modification, data collectors felt comfortable using the forms.

check their understanding of a task to be observed, ask the data collectors to demonstrate the task they would expect the healthcare provider to perform.

■ **Test the use of the forms.** For test purposes, a small sample of real situations (e.g., patient-provider encounters or reviews of medical records) must be selected. Data collectors should go to the field and conduct an assessment. Upon their return, they should report the problems they had when observing or interviewing.

Once the field testing of the tools has been completed, a session should be organized with all the data collectors to determine the lessons learned and to gather suggestions on how to improve the data collection forms. Data collectors may suggest adding specific tasks to be observed or questions to be asked. In addition, other problems may be uncovered during this session. For example, a number of data collectors may report that respondents had difficulty understanding or answering a specific question. If so, that question should be rephrased or dropped altogether.

Select the monitoring strategy

The next task is to define the quality monitoring strategy. Answers are needed to the questions that follow:

■ **Whose performance is going to be monitored?**
It must be clear whose performance (e.g., individuals, facilities, districts, or regions) must be monitored—because this decision will influence the monitoring strategy. For example, (a) districts may want to monitor the performance of individual healthcare providers so they can target interventions for the workers most in need or use the information for staff promotion, (b) a district health officer may need to monitor the performance of health centers, and (c) regional medical officers may want to monitor the performance of the region's districts to identify best practices for dissemination to less effective districts.

The purpose(s) of the monitoring system will influence the choice about whether one must assess all healthcare providers or only a sample. For example, if assessment of an individual's performance will be used for decisions on promotion, then the information must be collected and analyzed for each person.

If the district is the unit of interest, however, a sample of health facilities or individual healthcare providers could be selected and the data pooled before analysis. This raises sampling issues that are beyond the scope of this manual, but if a sample is drawn, units should be selected randomly whenever possible.

■ **How do you build on existing information and monitoring systems?**
A quality monitoring system should complement any existing system and be integrated into ongoing monitoring activities. Before designing your quality monitoring system, determine first if existing systems capture the information you need. If not, check

whether it is feasible or not to adapt the existing monitoring tools to include your requirements for data collection on quality.

■ **What is the optimal frequency for data collection?**

There is no absolute answer to this question. In practice, it will depend on the time and resources available and the monitoring system's level of sophistication. For example, a supervisor in a rural district might be able to visit health facilities only once every six months, whereas a hospital director might assess the outpatient department performance monthly. The frequency of the data collection should also be adapted to system needs. Not all health facilities or healthcare providers need to be monitored with the same frequency. Obviously, the best performers need less support than the less proficient performers. A compromise must be found between the wide range of activities that one might like to monitor and the time and resources available.

■ **Who collects the data?**

Data can be collected by outsiders, by colleagues of healthcare providers through peer assessment, or by healthcare providers on themselves using self-assessment techniques.

An ***outsider,*** such as a supervisor or program manager, can assess the healthcare provider's performance during a periodic on-site visit (a well-trained observer usually collects reliable information). In this situation, the observer has some authority over the staff.

Healthcare providers can assess the performance of their colleagues. This method is called a ***peer assessment.*** Each healthcare provider may be an observer of his or her colleagues and at other times be observed by his or her colleagues. The observer's lack of authority over the healthcare provider relieves part of the stress of

Design the monitoring strategy for ARI case management

The district team decided to monitor the quality of ARI case management in the district by measuring the performance of a randomly selected sample: 10 of 23 nurses working in 15 rural healthcare centers and the two medical assistants in charge of the outpatient department of the district hospital. The team determined that the sample size would provide a sufficiently precise estimate of the quality of ARI case management in the district. Of the seven healthcare centers surveyed, four had one nurse each, and three had two nurses each.

The observation unit for this evaluation was to be the individual healthcare provider. Since none of the indicators of interest was readily available from the existing health information system, special forms were designed. The data collection took place during the district teams' routine supervision visits to healthcare facilities. Each supervisor was tasked with collecting information on each of the healthcare facilities he supervised. During the monitoring visit, each supervisor was to spend the morning at the healthcare facility and include in the monitoring all ARI cases seen that day.

being observed. Each party benefits by learning more about his or her individual performance and how it compares to others. This method can be limited by the potential lack of rigor between people who know each other, by the observer's lack of credibility from the provider's perspective, or by problems of transportation.

Healthcare providers can assess their own performance through ***self-assessment.*** The healthcare providers can complete the same type of checklist as previously described, and either keep it for themselves or share the results with others. However, because the shared data is not always

reliable, self-assessment is perceived more as a quality improvement strategy than a quality assessment strategy. Self-assessment has proven to be effective in improving performance in some situations and should not be excluded, especially in situations where visits from supervisors are not as frequent as desired. Self-assessment provides the healthcare providers an opportunity to be reminded of the standards of care and review their own practices. Obviously, this method requires motivated healthcare providers, but may have limited value as a monitoring system because the data may not be reliable or easily transmitted to supervisors.

■ What resources are needed for monitoring?

The resources made available for monitoring are related to the healthcare provider's commitment to establishing a monitoring system. If a provider does not perceive quality of care as a priority, then the healthcare facility or healthcare system involved might not allocate adequate resources for a monitoring system. A starting point might be to spend at least 5 percent of resources to monitor performance.

■ How do we validate data?

A monitoring system must collect valid data. There are two levels of validity to consider.

The *first level* of validation determines whether the task was performed correctly. For example, the observer may report that the healthcare provider assessed the dehydration level by pinching the skin of the child but did not double-check to ascertain if the classification of the level of dehydration was accurate. Such a check would require a repeat physical examination of the patient by the observer. This obviously complicates the monitoring process. The team must decide whether double-

checking is necessary and feasible for each task. Because of feasibility and cost issues, data validation by systematic verification is not required; instead, it must be used appropriately when a data collection method's reliability is questionable. In these cases, verification on a small sample is more cost-effective than one on the entire population.

The *second level* concerns the accuracy of the data reported by data collectors. It is always possible for an observer to fail to report something that actually happened. For example, the supervisor might report that the provider did not look for a hepatomegaly (enlargement of the size of the liver) because he or she was not close enough to see what the provider was doing. A supervisor's proximity to the provider may affect whether or not he sees the provider carries out a particular task. This is especially true of tasks that require only observation of the provider (e.g., looking for signs of lethargy).

To prevent such reporting errors, the observer could ask the providers to describe what they are doing when they examine a patient. Observers also may overreport. This is why it is important to train observers and also to use several methods to validate observations.

■ How many cases need to be monitored for one healthcare provider?

The monitoring system does not require the use of statistical tests, nor does it necessitate the observation of a minimum number of patient-provider encounters for each healthcare provider. Useful information can be obtained with only one observation, but a definitive judgment on an individual's performance should not be made on this basis alone. Natural variations in performance require repeated observations of the same provider. However, one must remain pragmatic because the num-

ber of cases of a specific health condition that will be seen at a health facility on a specific day is difficult to predict. Therefore, making a final judgment on performance of a healthcare provider or facility should be based on repeated observations over time, while making the most of individual observations by providing constructive feedback immediately after each monitoring visit.

Reporting on a small number of cases allows only a low level of statistical precision. A discussion of the computation of confidence limits is beyond the scope of this manual. Also, when the number of cases is very small, expressing one provider's compliance level as a percentage is not appropriate. In such cases, one can increase the denominator of an indicator by looking at the compliance of one provider when performing all tasks (instead of task by task) or by pooling data from several healthcare providers.

Collect data

Once a quality monitoring strategy is designed, its implementation needs to be planned carefully. The following actions can help prevent last-minute problems and ensure successful implementation of the monitoring system:

- Advise the healthcare providers in advance of the day they will be monitored.

- Ensure that appropriate vehicles are available and running (i.e., they have been inspected and have sufficient fluids and gas, as well as spare tires and tools in good shape and drivers available who know the route) if the team must travel to another location. Respect the departure time so the team can arrive in time to carry out the activity.

- Bring enough forms (more than needed), as well as the coding lists and office supplies needed (pencils, etc.).

Collect data on ARI case management

The district team planned its first round of quality monitoring with the aid of a checklist they designed. Given the number of vehicles available and the number and location of healthcare facilities in the district, supervision visits were organized for a two-week period. All healthcare facilities were told of the new monitoring focus of the supervision and of the dates of the visits. During data collection, each healthcare facility monitored had at least one child under five years of age who was brought in for a cough or difficult breathing. The majority were diagnosed with upper respiratory infections, but enough pneumonia cases were observed to permit assessing the performance of this district's healthcare providers in diagnosing and treating pneumonia.

- Identify the roles and responsibilities of each team member.

- Identify a team leader.

- Bring a detailed agenda of the monitoring visit (i.e., introduction to the monitoring staff and the data collection process, provision of feedback, and use of results for problem solving, etc.).

- Ensure that the team leader consults other staff members regularly during data collection to resolve any problem that the staff may encounter.

- Have the team leader make certain that the staff is respectful of both the healthcare providers and the patients being monitored.

- Conduct data collection in an unobtrusive and nonthreatening manner.

- Remain nonjudgmental. Do not argue with the healthcare provider in the presence of a patient in the event of a disagreement on case management.

- Visit local authorities as required.

- End the monitoring visit with an expression of thanks to the healthcare staff for their cooperation, provide feedback on their performance, and provide details on the next activities in the monitoring process.

The above list of recommendations is mostly appropriate for assessment by an outsider, not for a self-assessment.

Step three: Use the information and results

After data collection is completed, data must be tabulated, analyzed, and stored in an accessible format. The data should be used to identify problems in performance so that actions can be taken to improve care.

Tabulate results

After the data have been collected, one must tabulate the results and calculate the indicators. This involves calculating the frequencies, rates, or rations for the chosen indicators.

There are two ways to present the results: in disaggregated or aggregated form. Disaggregated data are presented in terms of each task performed by an individual or a group of healthcare providers. Aggregated data use one measure that describes the overall performance for all tasks combined.

- When results are disaggregated, indicators are presented for each task observed in terms of the frequency of its execution. For example: "*Healthcare provider checks the*

Table 4-1: Scoring One Family Planning Nurse's Performance

Questions/Tasks	Results	Weight	Score
Did the provider:	*Number of times the answer is "yes" N = 20 observations*	*On a scale of 1 to 5*	*Results times weight*
■ greet the client in a respectful manner?	12	1	12
■ ask the client about the contraceptive method currently used?	8	2	16
■ present the choice of contraceptive methods to the client?	15	2	30
■ use visual job aids?	5	1	5
■ check client's understanding of HIV/AIDS transmission?	2	3	6
■ assist the client in selecting a method?	13	5	65
TOTALS:	**55**		**134**

child's temperature in 50 percent of the cases." The results could also be presented for the group of healthcare providers observed. For example: "*Twenty percent of the healthcare providers of the district systematically check the child's temperature.*"

■ **When results are aggregated**, a global score is calculated. Such a global score is sometimes called an ***index.*** For example, observation of the management of 20 cases of the same health condition by the same healthcare provider indicates that the level of compliance varies from task to task. How can one rate the overall performance of this healthcare provider? One possibility is to calculate a global score on a specific scale. Although all selected tasks are important, some may be more important than others. In this case, a weighting system could be used. Each task would be weighted according to its importance. An example of such a scoring system is presented in Table 4-1. The design of a scoring system does not follow any specific rule except that a consensus should be reached on the weight assigned to each task. It is permissible to give the same weight to all the tasks.

In Table 4-1, the maximum score possible for each task is 20. Thus, the maximum total score is $(20x1 + 20x2 + 20x2 + 20x1 + 20x3 + 20x5) = 270$. The final score is $134/270 = 0.49$, or $4.9/10$.

Note that to obtain consistent results, a questionnaire must pose questions or state tasks in such a way that desirable behaviors will be coded in a similar fashion. It is more difficult to code, score, and interpret answers if the questions are understood differently by different participants. An example of inconsistent coding is presented in Table 4-2. With all desirable behaviors in the list coded "yes," it would be easy for a coder to also check "yes" for the undesirable behavior.

Tabulate results

After the supervision visits, the district team pooled the data together for the 10 nurses working in healthcare centers. The results presented below pertain to both the nurses and the medical assistants.

■ The nurses asked the caretaker about the presence of the three danger signs in 26 percent of the cases, whereas medical assistants posed the question 63 percent of the time.

■ The nurses counted the respiratory rate 52 percent of the time, whereas the medical assistants counted it 20 percent of the time.

■ The nurses explained the correct treatment for pneumonia to 78 percent of caretakers compared to 45 percent by the medical assistants.

■ Of the children treated for pneumonia by the nurses, 60 percent had the first dose of antibiotic administered by the caretaker versus 81 percent of the children treated by medical assistants.

■ The nurses asked 48 percent of the caretakers to bring the child with pneumonia back in two days, whereas medical assistants gave the message 83 percent of the time and checked understanding in 53 percent of the cases.

■ The average number of days of stockout of cotrimoxazole and amoxycillin combined was 20 in the past three months for the health centers and zero for the outpatient department. Of the seven health centers, all had experienced some drug stockout in the past three months.

■ Nurses referred 74 percent of the severe pneumonia cases to the hospital, whereas medical assistants did so 98 percent of the time.

The district team did not calculate a global score at this time but planned to do so later so members could monitor trends in individuals' performances.

In this situation, the more "yes" answers to questions a, b, c, and e, the higher the quality of care; conversely, the more "no" answers to question d, the higher the quality. In scoring the answers, one has to calculate the proportion of "yes" answers for questions a, b, c, and e and the proportion of "no" answers to question d. At that point, a global score can be computed without any mistake. Because this kind of coding makes for a more difficult and error-prone scoring system, question d, as shown in Table 4-2, might be rephrased as follows: "*The HCW explains to the caretaker the importance of keeping the immunization card.*"

A global score (or index) allows one to follow overall progress by a healthcare provider or a health institution; data are more difficult to interpret if the performance on some tasks is increasing, while for others it is decreasing. Another advantage of a global score is that it allows one to compare healthcare providers or facilities easily by identifying the outliers (the "best" and the "worst" performers) thus focusing attention on those which need improvement. A global score also might be

easier to use to inform the healthcare system's administration of a change in quality. The disadvantage of a global score is the loss of information provided by the results for individual tasks and its implications for identifying the areas needing improvement.

There is no need to make an exclusive choice between aggregated and disaggregated results. Both may be necessary.

Analyze information

To decrease the perceived threat associated with performance monitoring by an outsider, it may be appropriate to involve staff whose performance was assessed in the analysis of the results. However, sometimes such involvement may not be feasible or even recommended (i.e., sharing information might raise privacy issues).

The information analysis should answer the following questions:

- What is the performance level of the healthcare provider or facility? Performance statements can be expressed in very different ways, according to the level of detail considered appropriate for decision making and quality improvement. For example, one can say, "*The performance of a particular healthcare provider for case management of malaria has improved dramatically; the overall score has gone from 3.5 to 8 in six months.*" Or, one can describe in greater detail the performance for specific tasks. For example, "*In the case management of diarrhea, the healthcare provider did well in asking questions about the duration of the disease and advising the caretaker on how to use oral rehydration salts. However, he checked the degree of dehydration in only 40 percent of cases and correctly assessed it in only 60 percent of the cases.*"

- Who are the best and worst performers? It is important to sort out the two extremes because the identification

Table 4-2: Inconsistent Coding of Interpersonal Skills of a Healthcare Provider

How did the healthcare provider counsel the mother on immunization of her child?

(a)	The provider explains the purpose of the immunization	\<Yes\>	\<No\>
(b)	The provider explains the possible side effects	\<Yes\>	\<No\>
(c)	The provider tells the mother when to bring the child back	\<Yes\>	\<No\>
(d)	The provider criticizes the mother for losing her card	\<Yes\>	\<No\>
(e)	The provider checks to see if the mother has understood	\<Yes\>	\<No\>

of the best performers can aid in understanding the reasons for good performance, whereas the worst performers will be candidates for priority intervention. Good performers also can be used as resource persons to improve the performance of others. To identify these two extremes, one can decide to set performance limits (or thresholds) below which the lower performers fall and above which the best performers rise.
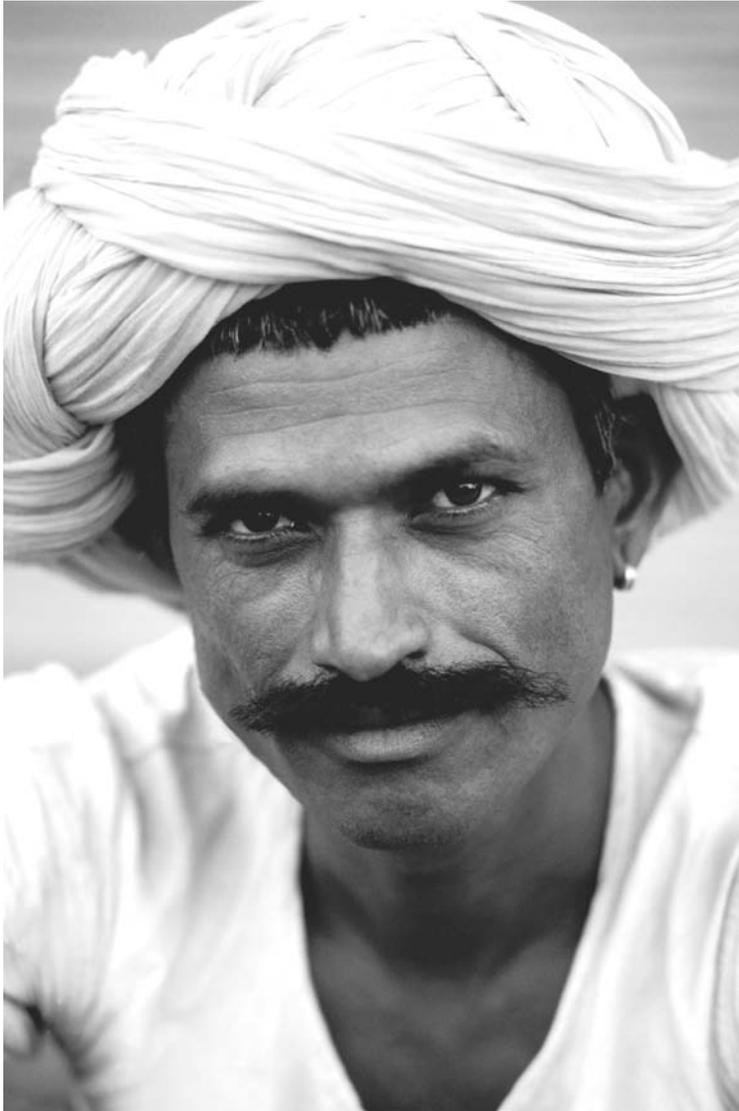
Thresholds must be set before data collection begins so that they are not influenced by the results. There are no specific rules for setting thresholds; it is a matter of consensus among members of the monitoring team. However, one must be careful when using thresholds because even if all performers exceed the thresholds, there is always room for improvement. Another categorization method is to rank the performers and divide them into three groups: the high tier has the best performers, the low tier has the worst performers, and the middle tier has the average performers.

■ **Is there a consistent pattern of performance among healthcare providers?** One must find out whether the areas where performance is weak are consistently the same among healthcare providers or facilities. This finding may indicate a need for focused training. For example, if the data indicate that none of the five district hospitals prescribes a sputum examination for patients with a cough lasting more than two weeks, there may be a common cause for this deficiency. Either these hospitals do not know the standards for suspecting tuberculosis, or they do not have the resources to do the sputum tests. When there is no consistent pattern, specific situations must be analyzed on a case-by-case basis.

Analyze information: The district team decided that the quarterly staff meeting was a good opportunity to discuss the data captured through the newly-established monitoring system. All health facilities were represented at the staff meeting. In this way, the ones monitored would get more detailed feedback on their performance, while the others also would benefit from the information by becoming sensitized to a particular issue of ARI case management. The district team believed that using a participatory approach to analyzing the results would remind the healthcare providers of the standards of care and make them more committed to comply with the standards.

The district team decided to present the indicators to the staff and then divide them into working groups in which participants could analyze results. Each group tried to answer one of the following questions: What is the level of performance for case management of ARI? Who are the best and worst performers? Is there a consistent performance pattern among healthcare providers? Then the groups presented their results. In the plenary session, all participants discussed the possible causes of poor performance. The combined results of the working groups follow:

■ **History taking:** Medical assistants were better than the nurses at asking the caretaker for the presence of danger signs. However, this task was frequently omitted by all providers; the practice is far from being systematic and, given its importance, is a major weakness in performance. There was not a significant difference among nurses, and no outliers could be identified. This pattern was quite consistent. The staff explained that neglecting to ask about danger signs was due to a lack of knowledge of the specific danger signs for which the healthcare provider should be looking. Also, the nurses pointed out that they could easily recognize a lethargic child and did not need to ask the caretaker about it.

■ **Physical examination:** The nurses counted the respiratory rate more often than the medical assistants, and there was a group of nurses that did it more consistently. The difference was explained by the fact that the high-performing group of nurses received training in ARI case management in which counting the respiratory rate was emphasized. The other group did not understand the importance of looking for this sign. The medical assistants explained that they relied more on the auscultation of the chest for which they had been trained.

■ **Counseling:** Nurses explained pneumonia treatment well to the caretakers, and medical assistants performed less well. Among the nurses, only two of 10 were not consistent with regard to this activity. Medical assistants explained that they relied on the assisting nurse to give the correct explanations. They admitted that they did not check to see if the assisting nurse did it correctly.

■ **Treatment:** The medical assistants tended to involve the caretaker in initiating the treatment, whereas the nurses preferred to handle it themselves. However, the medical assistants did not actually do it themselves but had their assisting nurses do it. The nurses in the healthcare centers felt that they should do it themselves so they could show the caretaker how to do it and admitted that it was also a matter of prestige for them to administer the first dose.

■ **Follow-up:** Nurses asked caretakers to bring the child back less often than the medical assistants. This was a consistent pattern among nurses, and they could not find an explanation other than "it slipped their minds."

■ **Drug availability:** Most healthcare facilities experienced drug shortages. This was a major concern for the group. The staff explained that the drug supply system was having a lot of problems and that they rarely received the quantity they ordered from the central level and did not know why. In addition, there was an insufficient amount of antibiotics available to treat all of the pneumonia cases seen between drug deliveries which took place every two months. The medical assistants were in a better situation because of their proximity to the hospital medical store.

■ **Referral system:** Appropriate referral of the severe cases was quite high in both groups, but there were clearly two "outliers" among the nurses who almost never referred. They explained this situation by citing the lack of access to transportation for the community and the reluctance to pay for the hospital costs. The group expressed some doubts about the validity of this explanation because other nurses who work in similar conditions have found that referral is accepted and possible. Medical assistants easily referred severe cases because of the privileged links of the outpatient department with the hospital.

explanation for poor performance. Poor performance is sometimes explained by a lack of knowledge and skills (i.e., competence). Obviously, some root causes are easier to address than others, and the overall performance gap might be due to a mix of factors. For example, one might find that despite all resources being in place and healthcare providers possessing the correct knowledge and skills, they do not perform well because of low self-motivation. In this case, the factors that influence motivation must be explored, although the adverse ones may be difficult to remedy.

Competence is necessary but not sufficient to ensure good performance because other factors influence performance in addition to healthcare provider motivation: incentive systems, peer pressure, availability of resources, and effectiveness of support services. Sometimes the monitoring of quality of care can include questions that get at the reason for poor performance. In other cases, a special analysis is necessary that requires collecting additional data.

One needs to test the competency of the healthcare provider(s) identified as poor performers. If this is not sufficient to explain the performance gaps, assess the support systems and resources related to the activities of special interest. If the assessment still does not provide an adequate explanation, one has to look at the personal factors that influence performance.

How do we improve performance gaps? Quality is unlikely to improve without designing a specific intervention, but it is beyond the scope of this manual to describe all the possible ways to improve quality. Possible interventions include:

■ Provide feedback to the healthcare providers on their performance

■ **What is the trend in performance?** A monitoring system is designed to monitor change in performance. Because performance varies naturally over time, the trend is more important than the absolute performance at one specific time.

Interpret and use results

After identifying performance gaps, one needs to identify the root causes of poor performance and address them through quality improvement strategies.

What are the root causes of poor performance? The results of the monitoring system may not offer adequate

- Deliver competency-based training. Additional provider training is often chosen as a response to poor performance. However, when lack of competency is not the cause of poor performance, training will have little impact

- Provide additional resources

- Develop job aids

- Involve healthcare providers in problem-solving or process improvement techniques

- Provide incentives to motivate staff

Design a data storage and retrieval system

Once data are collected regularly and available, they must be stored for retrieval. A computerized database can produce graphics that represent a trend over time and can easily calculate and prepare the analysis. However, a computerized system may be beyond the resources and capacity of most districts in developing countries. In such cases, specific forms must be designed to organize the information by unit of analysis (e.g., healthcare provider, health care facility, district, or region). A file cabinet is a good place to store hard copies.

Regular updates need to be made to include the information from repeated assessments of the same health condition over time or new information collected on the management of other health conditions. Such a system must be user-friendly, with one person specifically assigned to this task.

Information accessibility is of paramount importance. Information is meant to be used and must be readily accessible. This raises the question of who should be users of the information and how one can make sure that the users know how to access it. A retrieval system must be established with clear instructions on its operation.

Interpret and use results in ARI case management

During the quarterly staff meeting, the district team, working with the healthcare provider staff, identified the next steps to improve the quality of ARI case management in children under five years of age. They selected four interventions as follows:

1. **Explore the root causes further.** The staff perceived that the issues related to the support systems (i.e., drug supply and referral systems) were not clear and that a specific, in-depth analysis would be necessary before interventions could be designed. The district team suggested that a problem-solving methodology be applied and two teams work on each system.

2. **Provide on-the-job training.** The staff suggested that the supervisors spend some time during their next visit to reinforce the importance of counting the respiratory rate by demonstrating how to do it correctly and explaining how treatment decisions are based on the result.

3. **Develop job aids.** The staff identified the need to have some job aids that could remind them to accomplish three specific tasks: (a) asking the caretaker about the danger signs, (b) explaining the diagnosis, treatment, and follow-up to the caretaker, and (c) having the caretaker administer the first dose of antibiotic.

4. **Organize continuing staff training sessions.** The staff suggested updating their knowledge and skills in ARI case management by attending a one-week training course at the hospital. They believed this would help them to assess the severity of pneumonia correctly.

The staff also noted that the review and analysis of results already had had a positive impact by increasing their awareness of the standards of care and their performance and stimulating their desire to improve.

Design a data storage and retrieval system for quality data monitoring

The district health team in charge of maintaining the monitoring system decided to set up a system for storing the information on quality of care in a way that made it easy to access and process. They did not have a computer but identified a room where the files could be stored. They organized the files by health facility and by topic. The data collection recording forms were put into each healthcare facility folder with the summary form of the individual healthcare provider's performance on top. This summary form listed the results for each indicator. Then the information was filed by topic as a summary form titled, "ARI case management." This also included the conclusions of the quarterly review. The system made it easy to access information on the performance of a specific healthcare facility, healthcare provider, or a specific topic.

To follow up on the performance data, the district team designed trend forms in which the different results of measurement on a specific topic were recorded by date. To do this in a more comprehensive way, the team was also working on the creation of a global score called the "quality index." All supervisors were trained in the storage system's organization and were responsible for filing their reports in the healthcare facility folders. The district health information specialist was in charge of maintaining the filing system and completing the summary forms when new data became available.

To limit access to the information, the district team organized a system to restrict access to the district team and all the supervisors. The healthcare providers were allowed to have access to their own files but not to others. Files could not be removed from the room without authorization from the person in charge of the health information system. Each time a person took a file, it was recorded on a special form.

Disseminate information

The district health team identified three ways to disseminate the information on quality of care in their district.

1. **On-site feedback.** The data collection forms were designed to allow supervisors to calculate the indicators quickly and be in a position to discuss the results with the healthcare providers immediately after the assessment.

2. **Group feedback.** The district quarterly review meetings were used as an opportunity to address the quality of care issues by presenting the assessment results to the whole group. This process did not put the blame on individuals, but instead focused on systemic problems.

3. **Distribution of a newsletter.** The district initiated the production of a quarterly newsletter, called "Quality Focus," that summarized the quarterly review meetings on quality of care issues. This newsletter was targeted to an audience of 200 people, including healthcare staff, administrative authorities, community leaders, and politicians.

Disseminate information

There are two dissemination levels: feedback to the staff and dissemination to other audiences.

■ Feedback of the results to the staff whose performance was assessed is a mandatory step. The people or institution whose performance was assessed want and need to know the results. A good strategy for quality assessment must include a presentation of results to all the people involved in the assessment. This can be done as a group presentation, at which several levels of the health system are represented and will complement the first feedback that the supervisor gives at the end of the visit. It is essential to devote enough time for feedback so the potential reasons for poor performance can be explored and the evaluation team can start working with the healthcare providers on possible solutions. An effective supervisor asks questions as part of the monitoring process to understand why healthcare providers do not comply with standards.

One major impact that feedback might have is that people will start taking action to improve their performance. The fact that they know which areas are weak provides an incentive to correct them. For the feedback to be effective, it has to be given in a positive way. This may sound obvious, but if results are presented harshly, people may get discouraged. The feedback should start with the good news (i.e., the tasks that are executed well and for which quality is satisfactory). Then, when it comes to pointing out the quality gaps, one should do so in a non-threatening way.

For example, supervisors should tell healthcare providers that they will support them and help them improve their performance. The supervisor should be more a coach than an inspector. Most

of the time, problems lie in a poorly-designed process or system and are not a specific individual's fault. However, staff performance evaluation is always a sensitive issue because value judgments are made on an individual's competence. Supervisors should be as diplomatic as possible in these sessions and should make an effort to talk about the assessment in such a way that it will not damage the healthcare provider's self-image.

■ Disseminating the monitoring results to an external audience may be done for various reasons. Some examples follow:

a) Recognize the best performers, motivate the others, and encourage healthy competition among other providers to do better. This might be accomplished through the publication of best practices.

b) Tie performance data to a specific reward and incentive system. An effective monitoring system might represent an objective source of data for making fair decisions regarding staff promotions.

A number of **dissemination strategies** can be used: (a) a dissemination workshop can be used as a forum to present and discuss the results of the monitoring system, (b) the performance of the health units can be a discussion topic for management meetings, (c) performance results can be used during a program review, either as a baseline or to assess the impact of specific interventions, and (d) newsletters and other materials can constitute a vehicle to raise awareness among various levels of the healthcare system on quality issues captured by the monitoring system.