What is M&E?

What Is Monitoring and Evaluation?

When you read that the prevalence of low birth weight in a country is 20%, have you ever wondered how this calculation was derived?

Or when you hear that the percentage of married women of reproductive age in a rural area using a modern contraceptive method rose from 52% to 73%, do you wonder how they know this?

These types of statistics and other similar information result from "monitoring and evaluation" or "M&E" efforts. M&E is the process by which data are collected and analyzed in order to provide information to policy makers and others for use in program planning and project management.

What Is Monitoring?

Monitoring of a program or intervention involves the collection of routine data that measure progress toward achieving program objectives. It is used to track changes in program performance over time. Its purpose is to permit stakeholders to make informed decisions regarding the effectiveness of programs and the efficient use of resources.

Monitoring is sometimes referred to as process evaluation because it focuses on the implementation process and asks key questions:

- How well has the program been implemented?
- How much does implementation vary from site to site?
- Did the program benefit the intended people? At what cost?

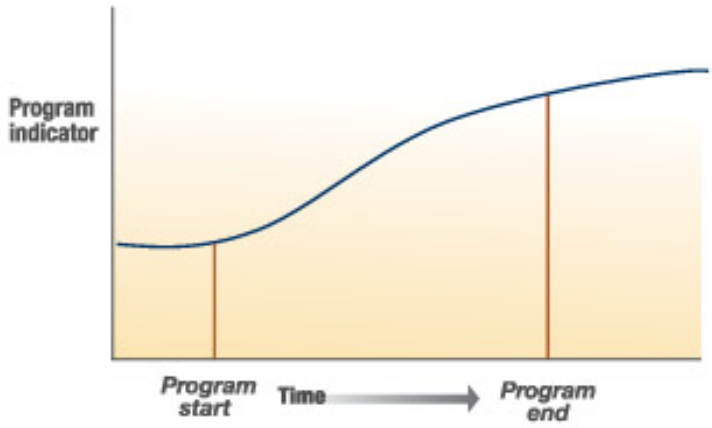
Glossary Term:
Monitoring
Process Evaluation

Highlights

Examples of program elements that can be monitored:

- Supply inventories
- Number of vaccine doses administered monthly
- Quality of service
- Service coverage
- Patient outcomes (changes in behavior, morbidity, etc.)

What Is Monitoring? (continued)



A graphic illustration of program monitoring over time could look like this. The program indicator being measured on the "Y" axis could be any element of the program that needs tracking, such as the cost of supplies, the number of times the staff provide certain information to clients, or the percentage of clients who are pleased with the services they received.

Monitoring:

- is an ongoing, continuous process;
- requires the collection of data at multiple points throughout the program cycle, including at the beginning to provide a baseline;
- can be used to determine if activities need adjustment during the intervention to improve desired outcomes.

Highlights

Monitoring usually pertains to *counting*, *tracking*, and *collecting*, for example:

- Counting clients seen or health workers trained
- Tracking condoms distributed
- Collecting data on clinic clients

What Is Evaluation?

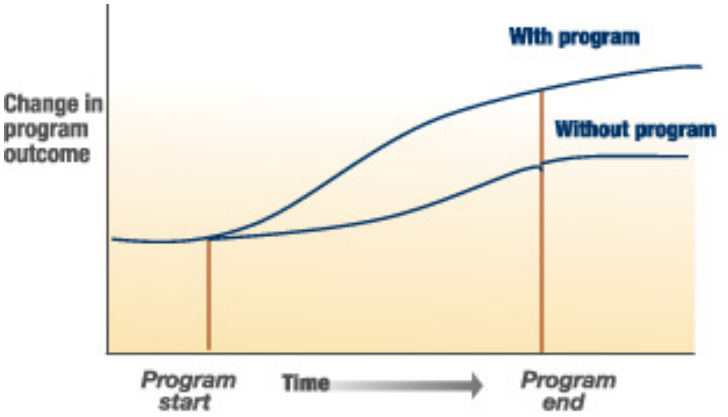
Evaluation measures how well the program activities have met expected objectives and/or the extent to which changes in outcomes can be attributed to the program or intervention. The difference in the outcome of interest between having or not having the program or intervention is known as its "impact" and is commonly referred to as "impact evaluation."

Glossary Term:
Evaluation

Did you know?

Evaluation is fundamentally an exercise to help decision-makers understand how, and to what extent, a program is responsible for particular, measured results.

What Is Evaluation? (continued)



A graphic illustration of program impact would look like this.

Evaluations require:

- Data collection at the start of a program (to provide a baseline) and again at the end, rather than at repeated intervals during program implementation
- A control or comparison group in order to measure whether the changes in outcomes can be attributed to the program
- A well-planned study design

Monitoring or Evaluation?

Check to see if you know whether the following situations call for "monitoring" or "evaluation."

- The National Council of Population and Development wants to know if the programs being carried out in province A are reducing unintended pregnancy among adolescents in that province.
- USAID wants to know how many sex workers have been reached by your program this year.
- A country director is interested in finding out if the postabortion care provided in public clinics meets national

standards of quality.

Go to the next page for the answers.

Monitoring or Evaluation? (continued)

Here are the answers:

- The National Council of Population and Development wants to know if the programs being carried out in province A are reducing unintended pregnancy among adolescents in that province.
  *This is **evaluation** because it is concerned with the impact of particular programs.*
- USAID wants to know how many sex workers have been reached by your program this year.
  *This is **monitoring** because it is concerned with counting the number of something (sex workers reached).*
- A country director is interested in finding out if the postabortion care provided in public clinics meets national standards of quality.
  *This is **monitoring** because it requires tracking something (quality of care).*

Why Is M&E Important?

Monitoring and evaluation helps program implementers:

- Make informed decisions regarding program operations and service delivery based on objective evidence
- Ensure the most effective and efficient use of resources
- Objectively assess the extent to which the program is having or has had the desired impact, in what areas it is effective, and where corrections need to be considered
- Meet organizational reporting and other requirements, and convince donors that their investments have been worthwhile or that alternative approaches should be considered

Highlights

Examples of questions that M&E can answer:

- Was the program implemented as planned?
- Did the target population benefit from the program and at what cost?
- Can improved health outcomes be attributed to program efforts?
- Which program activities were more effective and which less effective?

When Should M&E Take Place?

M&E is a continuous process that occurs throughout the life of a program.

To be most effective, M&E should be planned at the design stage of a program, with the time, money, and personnel that will be required calculated and allocated in advance.

Monitoring should be conducted at every stage of the program, with data collected, analyzed, and used on a continuous basis.

Evaluations are usually conducted at the end of programs. However, they should be planned for at the start because they rely on data collected throughout the program, with baseline data being especially important.

Did you know?

One rule of thumb is that 5-10% of a project budget should be allocated for M&E.

M&E Plans

The M&E Plan

Every project or intervention should have a monitoring and evaluation (M&E) plan. This is the fundamental document that details a program's objectives, the interventions developed to achieve these objectives, and describes the procedures that will be implemented to determine whether or not the objectives are met. It shows how the expected results of a program

relate to its goals and objectives, describes the data needed and how these data will be collected and analyzed, how this information will be used, the resources that will be needed, and how the program will be accountable to stakeholders.

M&E plans should be created during the design phase of a program and can be organized in a variety of ways. Typically, they include:

- The **underlying assumptions** on which the achievement of program goals depend
- The **anticipated relationships** between activities, outputs, and outcomes
- Well-defined conceptual **measures and definitions**, along with baseline values
- The **monitoring schedule**
- A list of **data sources** to be used
- **Cost estimates** for the M&E activities
- A list of the **partnerships and collaborations** that will help achieve the desired results
- A plan for the **dissemination and utilization** of the information gained

Glossary Term:
Monitoring and Evaluation (M&E) Plan

Highlights

An M&E plan should be considered a living document and revised whenever a program is modified or new information is needed.

Why Are M&E Plans Important?

M&E plans:

- State how a program will measure its achievements and therefore provide accountability
- Document consensus and provide transparency
- Guide the implementation of M&E activities in a standardized and coordinated way
- Preserve institutional memory

M&E Plan Components

Typically, the components of an M&E plan include:

- The introduction
- The program description and framework
- A detailed description of the plan indicators
- The data collection plan
- A plan for monitoring
- A plan for evaluation
- A plan for the utilization of the information gained
- A mechanism for updating the plan

Glossary Term:
Framework
Indicators

M&E Plan Components: Introduction

The introduction to the M&E plan should include:

- Information about the purpose of the program, the specific M&E activities that are needed, and why they are important
- A development history that provides information about the motivations of the internal and external stakeholders and the extent of their interest, commitment, and participation

M&E Plan Components: Program Description and Frameworks

The program description should include:

- A problem statement that identifies the specific problem to be addressed. This concise statement provides information about the situation that needs changing, who it affects, its causes, its magnitude, and its impact on society.
- The program goal and objectives:
  - The goal is a broad statement about a desired long-term outcome of the program. For example, *improvement in the reproductive health of adolescents or a reduction in unwanted pregnancies in X population* would be goals.
  - Objectives are statements of desired specific and measurable program results. Examples of objectives would be *to reduce the total fertility rate to 4.0 births by year X* or *to increase contraceptive prevalence over the life of the program*.
- Descriptions of the specific interventions to be implemented and their duration, geographic scope, and target population
- The list of resources needed, including financial, human, and those related to the infrastructure (office space, equipment, and supplies)
- The conceptual framework, which is a graphical depiction of the factors thought to influence the problem of interest and how these factors relate to each other.
- The logical framework or results framework that links the goal and objectives to the interventions.

We will discuss frameworks in more detail in the next section of this course.

Glossary Term:
Problem Statement
Goal
Objectives
Conceptual Framework
Logical Framework
Results Framework

Program Description: SMART Objectives

The objectives listed in the program description should be "SMART," an acronym that stands for:

Specific: Is the desired outcome clearly specified?

Measurable: Can the achievement of the objective be quantified and measured?

Appropriate: Is the objective appropriately related to the program's goal?

Realistic: Can the objective realistically be achieved with the available resources?

Timely: In what time period will the objective be achieved?

Here is a sample objective. Do you think it is SMART (i.e., meets all of the criteria above)?

Increase contraceptive prevalence by 15% in women 30-49 years of age

Go to the next page for the answer.

Program Description: SMART Objectives (continued)

Is this objective SMART?
Increase contraceptive prevalence by 15% in women 30-49 years of age

Specific: Yes, the intended outcome of the program is specified.

Measurable: Yes, contraceptive prevalence is measurable.

Appropriate: Unknown, because the program's goal would need to be provided in order to know whether the objective relates logically to it.

Realistic: Unknown, because the resources available to the program would need to be known.

Timely: No, the time within which the objective is to be achieved is not specified.

So this objective is not "SMART" because, although it meets some of the criteria, it does not meet them all.

M&E Plan Components: Indicators

Indicators are clues, signs or markers that measure one aspect of a program and show how close a program is to its desired path and outcomes. They are used to provide benchmarks for demonstrating the achievements of a program.

One of the most critical steps in designing an M&E system is selecting appropriate indicators. The M&E plan should include descriptions of the indicators that will be used to monitor program implementation and achievement of the goals and objectives.

We will discuss the selection and use of indicators later in this course.

Glossary Term:
Indicators

Highlights

Examples of indicators include:

- Number of health workers trained in IUD insertion in the past 12 months
- Percentage of women of reproductive age who are using a contraceptive method at a particular point in time
- The number of maternal deaths per 100,000 live births in a specified period

M&E Plan Components: Data Sources and Data Collection Plan

Data sources are sources of information used to collect the data needed to calculate the indicators.

The data collection plan should include diagrams depicting the systems used for data collection, processing, analysis, and reporting. The strength of these systems determines the validity of the information obtained.

Potential errors in data collection, or in the data themselves, must be carefully considered when determining the usefulness of data sources. We will discuss data sources, data collection and data quality later in this course.

Glossary Term:
Data Sources

Highlights

Examples of data sources include:

- Patient records
- Birth registers
- Sentinel/demographic surveillance
- Censuses
- Focus groups
- Household surveys

M&E Plan Components: Monitoring Plan

The monitoring plan describes:

- Specific program components that will be monitored, such as provider performance or the utilization of resources
- How this monitoring will be conducted
- The indicators that will be used to measure results

Because monitoring is concerned with the status of ongoing activities, output indicators, also known as process indicators, are used. For example, these indicators might be:

- *How many children visit a child health clinic in one month?*
  and

- *How many of these children are vaccinated during these visits?*

M&E Plan Components: Evaluation Plan

The evaluation plan provides the specific research design and methodological approaches to be used to identify whether changes in outcomes can be attributed to the program.

For instance, if a program wants to test whether quality of patient care can be improved by training providers, the evaluation plan would identify a research design that could be used to measure the impact of such an intervention.

One way this could be investigated would be through a quasi-experimental design in which providers in one facility are given a pretest, followed by the training and a posttest. For comparison purposes, a similar group of providers from another facility would be given the same pretest and posttest, without the intervening training. Then the test results would be compared to determine the impact of the training.

M&E Plan Components: Information Dissemination and Use

How the information gathered will be stored, disseminated, and used should be defined at the planning stage of the project and described in the M&E plan. This will help ensure that findings from M&E efforts are not wasted because they are not shared.

The various users of this information should be clearly defined, and the reports should be written with specific audiences in mind.

Dissemination channels can include written reports, press releases and stories in the mass media, and speaking events.

M&E Plan Components: Implementation and Mechanism for Update

The capacities needed to implement the efforts described in the M&E plan should be included in the document.

A mechanism for reviewing and updating the M&E plan should also be included. This is because changes in the program can and will affect the original plans for both monitoring and evaluation.

Standards for M&E Plans

M&E plans should serve the information needs of the intended users in practical ways. These users can range from those assessing national program performance at the highest central levels to those allocating resources at the district or local level.

M&E plans should convey technically accurate information and should be realistic, prudent, diplomatic, and frugal.

The activities described in M&E plans should be conducted legally, ethically, and with regard to those involved in and affected by them.

Frameworks

What Are Frameworks?

Frameworks are key elements of M&E plans that depict the components of a project and the sequence of steps needed to achieve the desired outcomes. They help increase understanding of the program's goals and objectives, define the relationships between factors key to implementation, and delineate the internal and external elements that could affect its success. They are crucial for understanding and analyzing how a program is supposed to work.

There is no one perfect framework and no single framework is appropriate for all situations, but several common types will be discussed here:

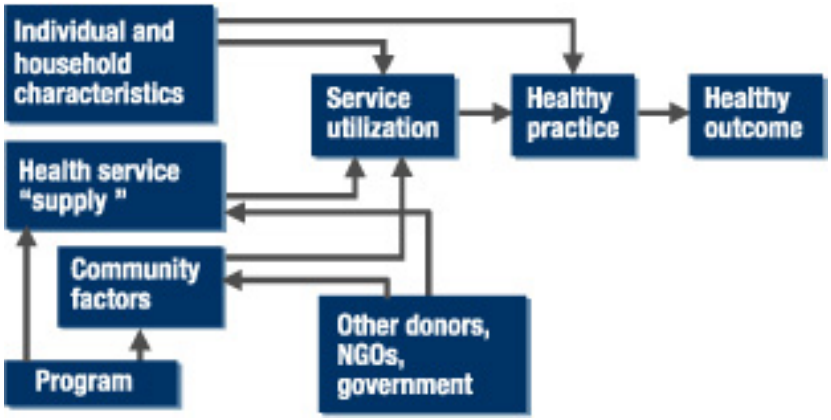
- Conceptual framework
- Results framework
- Logic model

Glossary Term:
Conceptual Framework
Results Framework
Logic Model
Logical Framework

Did you know?

A fourth common type of framework, not discussed in this course, is a logical framework, a diagram or matrix that illustrates the linear relationships between key program inputs, activities, immediate results/outputs, and desired outcomes.

Conceptual Frameworks



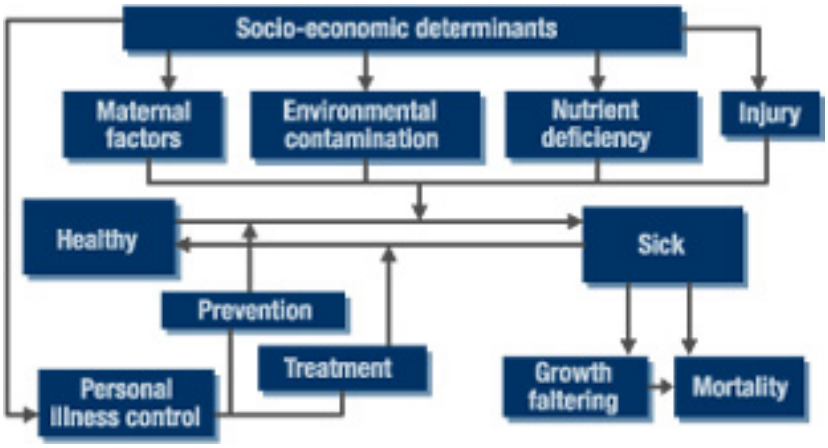
A conceptual framework, sometimes called a "research framework," is useful for identifying and illustrating the factors and relationships that influence the outcome of a program or intervention.

Conceptual frameworks are typically shown as diagrams illustrating causal linkages between the key components of a program and the outcomes of interest. For instance, in this example, the program, in addition to other donors, is supplying health services, in order to increase service utilization, with the ultimate outcome of improved health.

By identifying the variables that factor into program performance and depicting the ways that they interact, the results that can reasonably be expected from program activities are outlined. Clarifying this process permits program designers to develop valid measures for evaluating the success of the outcomes and also guides the identification of appropriate indicators.

We will discuss the selection and use of indicators in the next section of this course.

Conceptual Frameworks (continued)



Another example of a conceptual framework, the Mosley-Chen Framework, is commonly used in the study of child survival. In this framework, socio-economic determinants act through five "proximate" or biological determinants to impact child health.

- Maternal factors (age, parity, birth interval)
- Environmental contamination (air, food, water, soil, insect vectors)
- Nutrient deficiency (calories, proteins, vitamins, minerals)
- Injury (accidental or intentional)
- Personal illness control (preventive measures and medical treatment)

Highlights

The is no standard format for conceptual frameworks, but the two examples shown here are typical.

Results Frameworks

Results frameworks, sometimes called "strategic frameworks," diagram the direct causal relationships between the incremental results of the key activities all the way up to the overall objective and goal of the intervention. This clarifies the points in an intervention at which results can be monitored and evaluated.

As can be seen in this example, results frameworks include an overall goal, a strategic objective (SO) and intermediate results (IRs).

- An SO is an outcome that is the most ambitious result that can be achieved and for which the organization is willing to be held responsible.
- An IR is a discrete result or outcome that is necessary to achieve an SO.

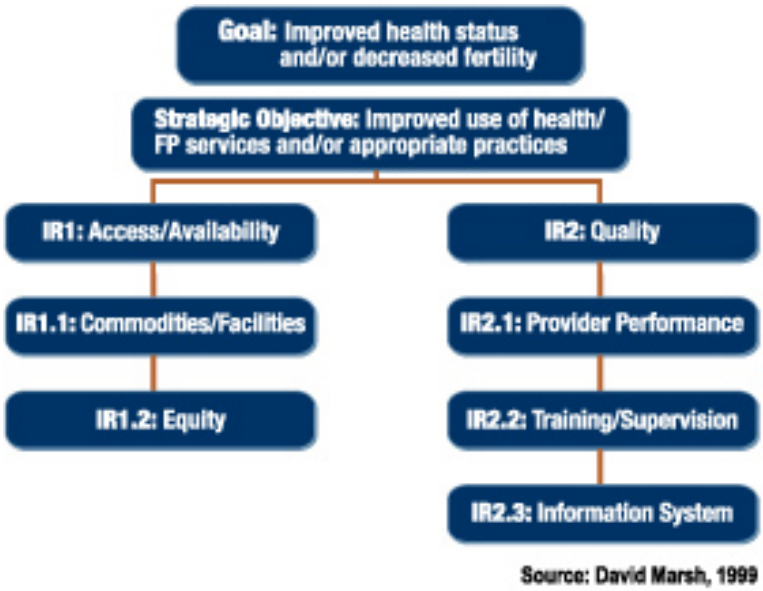
Notice that the goal and strategic objective appear at the top of the framework. Before achieving this broader strategic objective, a set of "lower level" intermediate results must first be reached. Under each IR are subordinate intermediate results or sub-IRs that relate directly to the intermediate results. For example, under IR1, you will see IR1.1 and IR 1.2. IR1.1 and IR 1.2 are sub-IRs.

Glossary Term:
Results Framework
Strategic Objective (SO)
Intermediate Result (IR)

Did you know?

Results frameworks are the type of framework used by USAID in what is called Performance Monitoring Plans, or PMPs.

Results Frameworks (continued)



Here is a portion of the same results framework with the information filled in. For example, as you can see under IR2, the information system, training and supervision of clinicians, and provider performance are factors that lead to improved quality of health services.

Notice that IRs and sub-IRs need to be measurable; in other words, indicators can be developed for them and data can be collected to calculate them.

Did you know?

Please note that actual frameworks contain more information than appears here in these abbreviated examples.

Logic Models

A logic model, sometimes called an "M&E framework," provides a streamlined linear interpretation of a project's planned use of resources and its desired ends.

Logic models have five essential components:

Inputs - the resources invested in a program, for example, technical assistance, computers, condoms, or training

Processes - the activities carried out to achieve the program;s objectives

Outputs - the immediate results achieved at the program level through the execution of activities

Outcomes - the set of short-term or intermediate results at the population level achieved by the program through the execution of activities

Impacts - the long-term effects, or end results, of the program, for example, changes in health status. In this context, the term "impact" refers to the health status or conditions that the program is intended ultimately to influence (mortality, morbidity, fertility, etc.), as measured by appropriate indicators. Measuring "impact" in this way, however, should be distinguished from impact evaluation which is a specific type of evaluation activity that focuses on examining how much of an observed change in outcomes or "impact" can be attributed to the program.

In other words, inputs (or resources) are used in processes (or activities) which produce immediate intermediate results (or outputs), ultimately leading to longer term or broader results (or outcomes) and impacts.

This example presents a straightforward view of a project designed to reduce population morbidity by increasing the number of clients served by trained health care providers. As you can see, it does not try to account for all factors that may be influencing operations and results as a conceptual framework would, but instead focuses specifically on the project's activities and impacts. This narrow focus assists program managers and M&E planners as they clarify the direct relationships between elements of particular interest within a particular program effort.

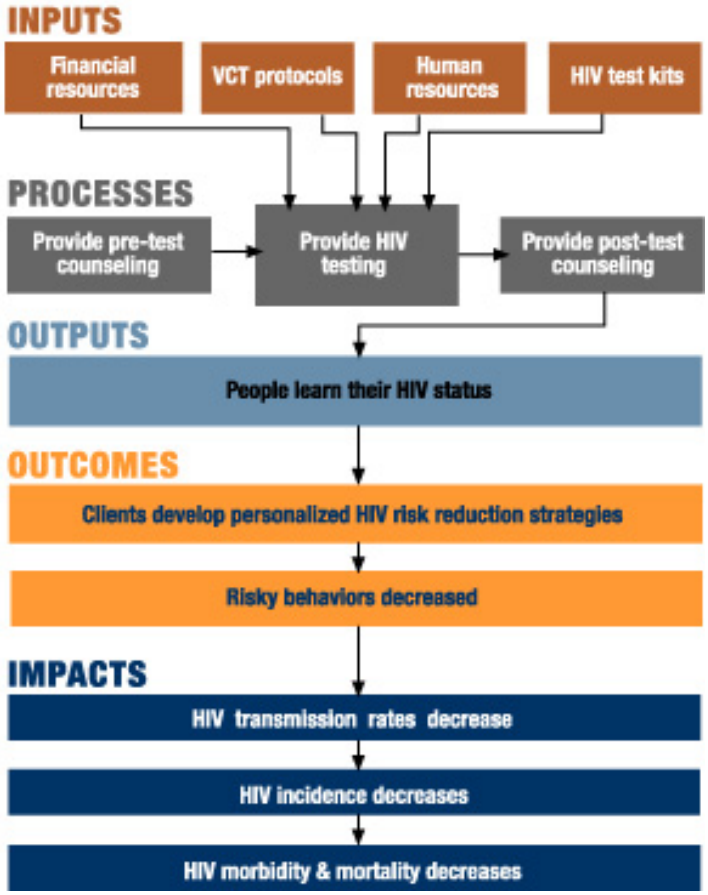
Glossary Term:

Logic Model
Processes
Outcomes
Indicator

Did you know?

A logic model is also referred to as a program impact pathway (PIP). It is a graphical representation of the relationship between the strategic program elements and the assumptions of risk that influence success or failure of the program. The PIP should describe the main components of the program and how they are intended to work together to reach measurable objectives within the context. Click here for more on PIP.

Logic Models (continued)



This is a small portion from a logic model for an HIV voluntary counseling and testing (VCT) program.

It is important to remember that, within a program, several activities can have their own inputs and outputs. Collectively the outputs of the activities contribute to the program outcomes and impacts.

In some cases the output of one program activity could be an input for another activity. For example, if an activity is to develop guidelines, the output of that activity is the guidelines, which are an input in this overall logic model for VCT service delivery.

Summary of Frameworks

Using frameworks is one way to develop a clearer understanding of the goals and objectives of a project, with an emphasis on identifying measurable objectives, both short-term and long-term.

Frameworks, such as the three types discussed in this course, also help define the relationships between factors key to the implementation and success of a project, both internal and external to the program context. This design process deepens the understanding of managers, implementers, and other partners in many practical ways, including serving as the foundation for selecting appropriate, useful M&E indicators.

Summary of Frameworks (continued)

Type of Framework and Brief Description	Program Management	Basis for Monitoring and Evaluation?
Conceptual- Interaction of various factors	Determines which factors the program will influence	No. Can help to explain results.
Results- Logically linked program objectives	Shows the causal relationship between program objectives	Yes – at the objective level
Logic model- Logically linked inputs, processes, outputs, and outcomes	Shows the causal relationship between inputs and the objectives	Yes – at all stages of the program from inputs to process to outputs to outcomes/ objectives

The **conceptual framework** places the health problem in a wider context, one that considers the various factors that can affect the program or intervention, clarifies the causal relationships between these factors, and identifies those that the intervention may affect. It is used for program design rather than for program M&E.

Results frameworks show the causal relationships between the various intermediate results that are critical to achieving the strategic objective. The effectiveness of these activities can be measured at each step along the way.

Logic models help to show the logical connections between the inputs, processes, and outputs of an activity and how they link to the program's objectives (outcomes) and goals (impacts). They also clarify the linear relationships between program decisions, activities, and products.

Programs should use the types of frameworks that best suit their needs.

Highlights

USAID-funded programs tend to use results frameworks, but many other donors, such as the UK Department for International Development (DFID) and the United Nations, use other types of frameworks.

Indicators

What Is an Indicator?

An indicator is a *variable* that *measures one aspect* of a program or project that is directly related to the program's objectives.

Let's take a moment to go over each piece of this definition.

Highlights

Examples of indicators include:

- Percentage of clinic personnel who have completed a particular training workshop
- Number of radio programs about family planning aired in the past year
- Percentage of clinics that experienced a stockout of condoms at any point during a given time period

What Is an Indicator? (continued)

An indicator is a *variable* whose value changes from the baseline level at the time the program began to a new value after the program and its activities have made their impact felt. At that point, the variable, or indicator, is calculated again.

Secondly, an indicator is a *measurement*. It measures the value of the change in meaningful units that can be compared to past and future units. This is usually expressed as a percentage or a number.

Did you know?

A full, complete, and appropriate set of indicators for a given project or program should include at least one indicator for each significant aspect of the program's activities.

What Is an Indicator? (continued)

Finally, an indicator focuses on a *single aspect* of a program or project. This aspect may be an input, an output, or an overarching objective, but it should be narrowly defined in a way that captures this one aspect as precisely as possible.

A reasonable guideline recommends one or two indicators per result, at least one indicator for each activity, but no more than 10-15 indicators per area of significant program focus.

Highlights

More examples of indicators:

- Percentage of women allowed to go alone to the clinic
- Percentage of facilities that maintain acceptable storage conditions for condoms
- Number of trained providers who perform to established standards

Quantitative and Qualitative Indicators

Indicators can be either be quantitative or qualitative.

Quantitative indicators are numeric and are presented as numbers or percentages.

Qualitative indicators are descriptive observations and can be used to supplement the numbers and percentages provided by quantitative indicators. They complement quantitative indicators by adding a richness of information about the context in which the program has been operating. Examples include "availability of a clear, strategic organizational mission statement" and "existence of a multi-year procurement plan for each product offered."

Why Are Indicators Important?

Indicators provide M&E information crucial for decision-making at every level and stage of program implementation.

- Indicators of program inputs measure the specific resources that go into carrying out a project or program (for example, *amount of funds allocated to the health sector annually*).
- Indicators of outputs measure the immediate results obtained by the program (for example, *number of multivitamins distributed* or *number of staff trained*).
- Indicators of outcomes measure whether the outcome changed in the desired direction and whether this change signifies program "success" (for example, *contraceptive prevalence rate* or *percentage of children 12-23 months who received DTP3 immunization by 12 months of age*).

Glossary Term:
Outcomes

What Is a Metric?

An important part of what comprises an indicator is the metric, the precise calculation or formula on which the indicator is based. Calculation of the metric establishes the indicator's objective value at a point in time. Even if the factor itself is subjective or qualitative, like the attitudes of a target population, the indicator metric calculates its value at a given time objectively.

Here is an example:

- Indicator: Percentage *of urban facilities scoring 85-100% on a Quality of Care Checklist*
  Note that because this indicator calls for a percentage, a fraction is required to calculate it.
- Possible metrics:
  - Numerator, or top number of the fraction: *number of urban facilities scoring 85-100% on a Quality of Care Checklist*
  - Denominator, or bottom number of the fraction: *total number of urban facilities checked and scored*

Glossary Term:

Metric

Highlights

Defining good metrics is crucial to the usefulness of any M&E plan because it clarifies the single dimension of the result that is being measured by the indicator.

Clarifying Indicators

In many cases, indicators need to be accompanied by clarifications of the terms used. For instance, let's look at the indicator: *number of antenatal care (ANC) providers trained.*

If such an indicator were used by a program, definitions would need to be included. For example, *providers* would need to be defined, perhaps as *any clinician providing direct clinical services to clients seeking ANC at a public health facility*. For the purposes of this indicator then, *providers* would not include clinicians working in private facilities.

Trained would also need to be defined, perhaps as *those staff who attended every day of a five-day training course and passed the final exam with a score of at least 85%*.

Clarifying Indicators (continued)

Another indicator for this program could be *percentage of facilities with a provider trained in ANC.*

In this example, because the indicator is a proportion or fraction, a numerator and a denominator are needed to calculate it.

- The numerator would be the number of public facilities with a provider who attended the full five days of the ANC training and scored at least 85% on the final exam. Note that the numerator must still specify that the facilities are public and that the providers must have attended all five days and passed the exam in order to be counted. This information need not be included in the indicator itself as long as it is in the definitions that accompany it.
- The denominator would be the total number of public facilities offering ANC services. This requires that this number be obtainable. If it is not known and it is not possible to gather such information, this percentage cannot be calculated.

In this example, it is also necessary to know at which facility each trained provider works. This information could be obtained at the time of the training. If it is not, all facilities would have to be asked if they have any providers who attended the training.

You decide

To calculate the indicator in this example, let's say there were 100 public facilities with an ANC provider who completed the five-day training and scored at least 85% on the exam out of 500 facilities total. What would the indicator show?

Scroll down to see answer...

ANSWER: The indicator would be 100 facilities with a trained provider/500 facilities total, which means 1/5 or 20% of public facilities have a provider trained in ANC.

Characteristics of Indicators

A good indicator should:

- Produce the same results each time it is used to measure the same condition or event
- Measure only the condition or event it is intended to measure
- Reflect changes in the state or condition over time
- Represent reasonable measurement costs
- Be defined in clear and unambiguous terms

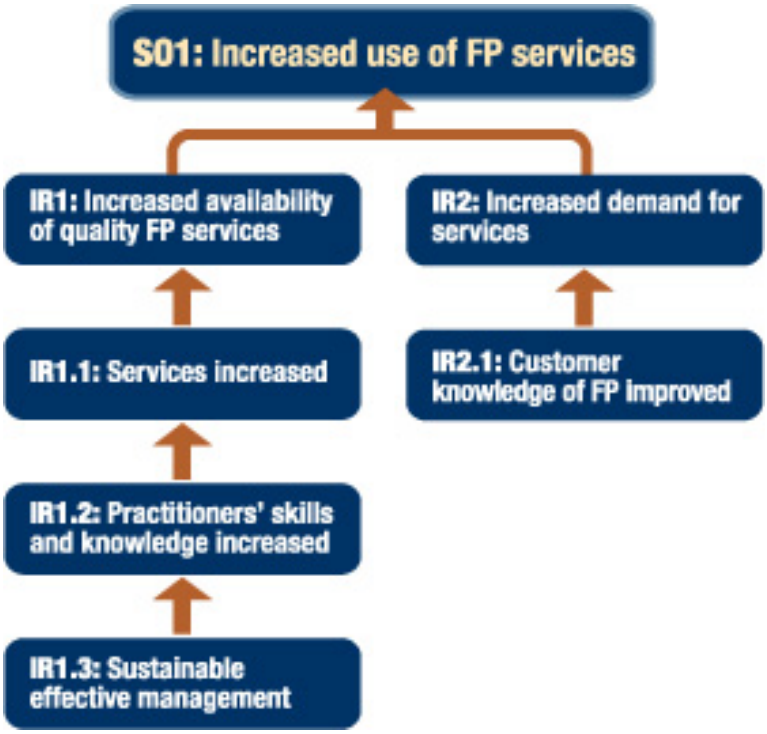
Indicators should be consistent with international standards and other reporting requirements. Examples of internationally recognized standardized indicators include those developed by UNAIDS and those included in the UNDP Millennium Development Goals.

Indicators should be **independent**, meaning that they are non-directional and can vary in any direction. For instance, an indicator should measure *the number of clients receiving counseling* rather than *an increase in the number of clients receiving counseling*. Similarly, *the contraceptive prevalence rate* should be measured, rather than *the decrease in contraceptive prevalence*.

Indicator values should be easy to interpret and explain, **timely**, **precise**, valid, and reliable. They should also be **comparable** across relevant population groups, geography, and other program factors.

Glossary Term:
Valid
Reliable

Linking Indicators to Frameworks

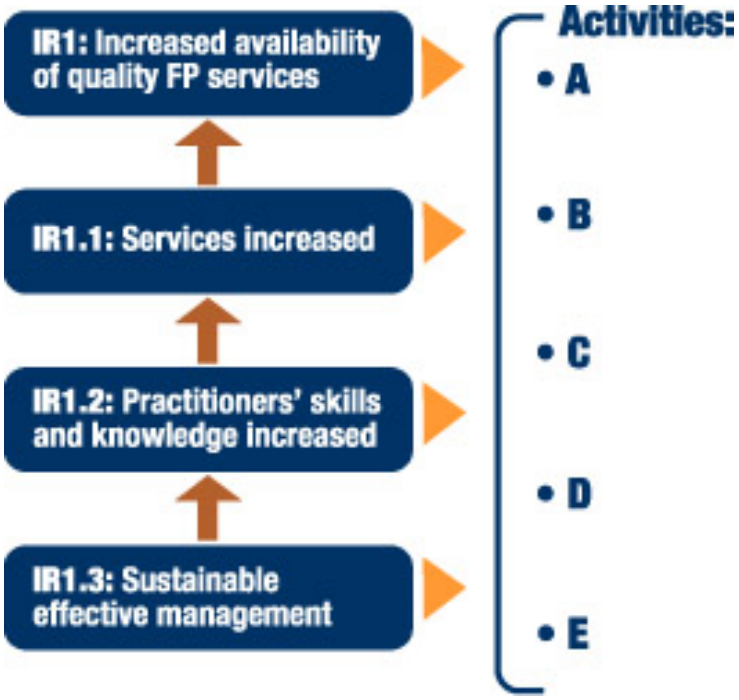


Let's use this generic results framework for a family planning program to demonstrate how indicators are linked to frameworks.

For this program, the strategic objective (SO) is to increase the use of family planning services. There are two intermediate results (IRs) feeding into this objective.

- Under the IR of increasing availability of quality services, there are three sub-intermediate results (sub-IRs): services increased, practitioners' skills and knowledge increased, and sustainable effective management.
- Under the other IR (increasing demand for services), the only sub-IR listed is to improve customer knowledge of family planning.

Linking Indicators to Frameworks (continued)



In order to develop indicators for this framework, the activities to be undertaken by the program must first be recognized.

This portion of the results framework shows what activities are planned in order for the program to achieve IR1 and its sub-IRs. These activities are:

A. Provision of support and supplies to community-based distributors

B. Expanding family planning services to additional clinics

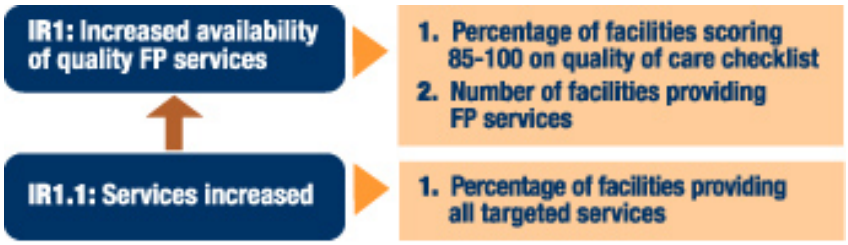
C. Clinical training for providers

D. The development of a checklist to monitor the quality of care

E. Management training for supervisors

Note that some of these activities can affect several of the sub-IRs.

Linking Indicators to Frameworks (continued)

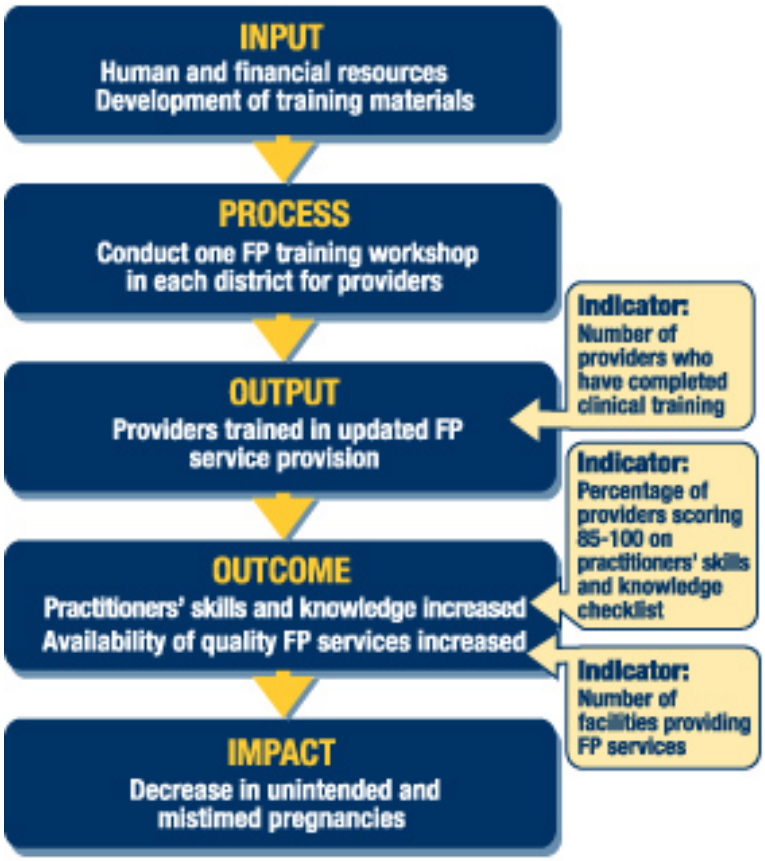


Next, indicators that measure these activities would be identified. Here you can see the indicators that are linked to the IR and sub-IR1. Other indicators would be linked to the other sub-IRs.

Although it is important to avoid assigning so many indicators that their measurement becomes unachievable, it is risky to rely on a single indicator to measure the significant effects of a project. If the data for that one indicator became unavailable for some reason, it would be difficult to document a significant impact on that result. Therefore, some diversification of indicators tends to strengthen M&E plans.

> **Did you know?**
>
> Note that the indicators in these examples are not necessarily "perfect" indicators, just examples to suggest the connections between activities, results, and possible indicators.

Linking Indicators to Logic Models



This example depicts how indicators are related to logic models. Here is a logic model for the same activity that was just depicted in the results framework.

Three indicators are linked with this activity:

- *Number of providers who have completed clinical training* is linked to the output of having trained providers. This indicator can provide information about whether the program is meeting its targets for training providers.
- *Percentage of providers scoring 85-100 on the practitioners'skills and knowledge checklist* relates to the intended outcome of improving the knowledge and skills of practitioners.
- *Number of facilities providing family planning services* links to the intended outcome of increasing the availability of services. The assumption is that increasing the skills and knowledge of more providers will result in more facilities being able to offer services.

Challenges to Selecting Indicators

We will now look at some common challenges to selecting indicators.

Choosing an indicator that the program activities cannot affect

For instance, imagine a program that planned to train health care providers in AIDS prevention and treatment services in an effort to expand access to these services.

The authors of the M&E plan selected the UNAIDS indicator *the proportion of health care facilities with adequate conditions to provide care.* However, many elements can affect this indicator, such as supervision, availability of supplies and equipment, and the drafting of appropriate treatment protocols. None of these factors would be addressed by the planned training program. In using this global indicator, the planners overlooked the fact that it did not accurately reflect their program activities.

Better indicators would be *the number of clinicians trained* or *the number of facilities with a trained provider.*

Challenges to Selecting Indicators (continued)

Choosing an indicator that is too vague

For example, imagine a radio campaign aimed at dispelling specific myths about HIV/AIDS transmission. Although the goal of the campaign is ultimately to increase knowledge about HIV/AIDS, the indicator *percentage of the population with knowledge about HIV/AIDS* does not specify the exact area of knowledge in question.

A better indicator would be one that measured precisely the objective of the campaign: *percentage of the population not*

believing myths X and Y about HIV/AIDS transmission.

Selecting an indicator that relies on unavailable data

For instance, a program working on drug supply issues selected an indicator that stated *percentage of days per quarter that service delivery points have stock-outs of drugs.* However, information on stock-outs may not be collected often enough to provide this information.

A better indicator would be *percentage of service delivery points that experienced a stock-out of drugs at some time during the last quarter.*

Population-level data may also be unavailable or difficult to collect. For example, baseline numbers for immunization coverage in a certain population may be unknown.

Challenges to Selecting Indicators (continued)

Selecting an indicator that does not accurately represent the desired outcome

For instance, if an IR states *expanded access to antiretroviral (ARV) treatment for pregnant women to prevent mother-to-child transmission (PMTCT) of HIV*, what would an appropriate indicator be?

Would the indicator *percentage of women on ARVs who are pregnant* be appropriate?

Go to the next page for the answer.

Challenges to Selecting Indicators (continued)

Answer:
No, this would not be an appropriate indicator because it tells us how many women are pregnant out of all women on ARVs, rather than how many HIV-positive pregnant women are on ARVs.

In other words, the numerator for this indicator is the number of women on ARVs who are pregnant and the denominator is the number of women who are on ARVs. Let's say that there were 100 pregnant women on ARVs and a total of 400 women on ARVs. The percentage would be 100/400 or 1/4 or 25%.

If the denominator increased, that is, if more non-pregnant women received treatment for HIV but the number of pregnant women receiving treatment stayed the same, the indicator would decrease. For instance, if 1000 women were on ARVs, the percentage would become 100/1000 or 1/10 or 10%. The indicator would reflect this change, but this change is irrelevant to the desired outcome of the program,which is increasing the number of pregnant women on ARVs.

Similarly, if the indicator increased, for instance if the percentage of women on ARVs who were pregnant out of all women on ARVs went from 25% to 50%, this may be because more pregnant women received ARV treatment (the desired outcome) but it also could be because fewer non-pregnant women were on ARVs, which would not be related to the desired outcome of the program. Because it is not clear which change occurred, this would not be a good indicator to use.

Let's try another example. Would the indicator *percentage of people on ARVs who are pregnant women* be appropriate?

Go to the next page for the answer.

Challenges to Selecting Indicators (continued)

Answer:
No, this also would not be an appropriate indicator.

Here the numerator is the number of pregnant women on ARVs (let's say it is 100 again) and the denominator is the total number of people on ARVs, including all men and women and children receiving treatment (let's say it's 5000). In other words, this indicator would tell us, of all the people on ARVs, the percentage who are pregnant women is 100/5000 or 1/50 or 2%.

If this indicator increased over time, say from 2% to 20%, it could be because more pregnant women were receiving ARV treatment (1000/5000, the desired effect of the program) but it could also be because fewer people overall were receiving this treatment (100/500) and the number of pregnant women receiving treatment did not actually change.

Similarly, if the indicator decreased, it might be because more people overall were receiving treatment or because fewer women were HIV positive or because there were fewer pregnant women. So the information provided by this indicator would be difficult or impossible to interpret accurately.

Let's try one more example: Would the indicator *percentage of HIV-positive pregnant women who are on ARVs* be appropriate?

Go to the next page for the answer.

Challenges to Selecting Indicators (continued)

Answer:
Yes, this indicator would provide the needed information.

Here the numerator is the number of HIV-positive pregnant women who are on ARVs and the denominator is the total number of HIV-positive pregnant women.

With this indicator, interpretation is not complicated by factors unrelated to the IR, such as a decrease in HIV prevalence among pregnant women or the number of non-pregnant women receiving ARVs.

Guidelines for Selecting Indicators

Some general guidelines for the selection of indicators are:

- Select indicators requiring data that can realistically be collected with the resources available.
- Select at least one or two indicators (ideally, from different data sources) per key activity or result.
- Select at least one indicator for each core activity (e.g., training event, social marketing message, etc.).
- Select no more than 8-10 indicators per area of significant program focus.
- Use a mix of data collection sources whenever possible. (We will discuss data sources in the next section of this course.)

Data Sources, Collection, and Use

Types of Data Sources

Data sources are the resources used to obtain data for M&E activities. There are several levels from which data can come, including client, program, service environment, population, and geographic levels. Regardless of level, data are commonly divided into two general categories: routine and non-routine.

Routine data sources provide data that are collected on a continuous basis, such as information that clinics collect on the patients utilizing their services. Although these data are collected continuously, processing them and reporting on them usually occur only periodically, for instance, aggregated monthly and reported quarterly.

- Data collection from routine sources is useful because it can provide information on a timely basis. For instance, it can be used effectively to detect and correct problems in service delivery.
- However, it can be difficult to obtain accurate estimates of catchment areas or target populations through this method, and the quality of the data may be poor because of inaccurate record keeping or incomplete reporting.

Non-routine data sources provide data that are collected on a periodic basis, usually annually or less frequently.

- Using non-routine data avoids the problem of incorrectly estimating the target population when calculating coverage indicators. Another advantage is that both those using and those not using health facilities are included in the data.
- Non-routine data have two main limitations: collecting them is often expensive, and this collection is done on an irregular basis. In order to make informed program decisions, program managers usually need to receive data at more frequent intervals than non-routine data can accommodate.

Glossary Term:
Data Sources
Routine data sources
Non-routine data sources

Highlights

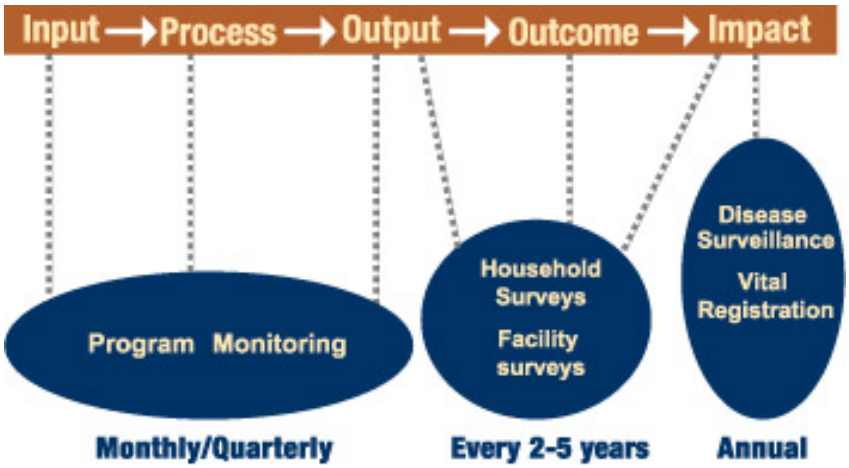
Examples of routine data sources:

- Vital registration records
- Clinic service statistics
- Demographic surveillance

Examples of non-routine data sources:

- Household surveys, such as DHS
- National censuses
- Facility surveys

Different Sources, Same Indicator



Data from different sources can be used to calculate the same indicator, although changes to the metric may be necessary. This illustration depicts one way that routine and non-routine data can be used together to provide for an effective M&E system.

Different Sources, Same Indicator (continued)

For example, when calculating the coverage rate for the first dose of a Diphtheria-Tetanus-Pertussis (DTP) vaccine:

If *population-based survey* data are used, the definition could be *proportion of children age 12-23 months who were immunized with the first dose of DTP vaccine before age 12 months*.

- Numerator: *Number of children age 12-23 months who were immunized with the first dose of DTP vaccine before age 12 months*
- Denominator: *Total number of children age 12-23 months surveyed*

If a *routine data source* is used, such as clinic records, the definition could be *proportion of infants 0-11 months of age in a specified calendar year who were immunized with the first dose of DTP vaccine in that calendar year*.

- Numerator: *Number immunized by age 12 months with the first dose of DTP vaccine in a given year*
- Denominator: *Total number of surviving infants less than 12 months of age in the same year*

Highlights

Whenever several options for data sources exist, the advantages and disadvantages of each should be weighed when selecting which to use.

Data Collection

The M&E plan should include a data collection plan that summarizes information about the data sources needed to monitor and/or evaluate the program.

The plan should include information for each data source such as:

- The timing and frequency of collection
- The person/agency responsible for the collection
- The information needed for the indicators
- Any additional information that will be obtained from the source

Data Quality

Throughout the data collection process it is essential that data quality be monitored and maintained. Data quality is

important to consider when determining the usefulness of various data sources; the data collected are most useful when they are of the highest quality.

It is important to use the highest quality data that are obtainable, but this often requires a trade off with what it is feasible to obtain. The highest quality data are usually obtained through the triangulation of data from several sources. It is also important to remember that behavioral and motivational factors on the part of the people collecting and analysing the data can also affect its quality.

Some types of errors or biases common in data collection include:

- *Sampling bias*: occurs when the sample taken to represent population values is not a representative sample
- *Non-sampling error*: all other kinds of mismeasurement, such as courtesy bias, incomplete records, or non-response rates
- *Subjective measurement*: occurs when the data are influenced by the measurer

Data Quality (continued)

Here are some data quality issues to consider:

- *Coverage:* Will the data cover all of the elements of interest?
- *Completeness:* Is there a complete set of data for each element of interest?
- *Accuracy:* Have the instruments been tested to ensure validity and reliability of the data?
- *Frequency:* Are the data collected as frequently as needed?
- *Reporting Schedule:* Do the available data reflect the time periods of interest?
- *Accessibility:* Are the data needed collectable/retrievable?
- *Power:* Is the sample size big enough to provide a stable estimate or detect change?

Data Use

The term data refers to raw, unprocessed information while information, or strategic information, usually refers to processed data or data presented in some sort of context.

Collecting data is only meaningful and worthwhile if it is subsequently used for evidence-based decision-making. To be useful, information must be based on quality data, and it also must be communicated effectively to policy makers and other interested stakeholders.

M&E data need to be manageable and timely, reliable, specific to the activities in question, and the results need to be well understood.

Data Use (continued)

The key to effective data use involves linking the data to the decisions that need to be made and to those making these decisions.

The decision-maker needs to be aware of relevant information in order to make informed decisions. For example, if sales data from a program to provide insecticide-treated bednets show that the program is successfully increasing bednet distribution, the decision-maker may decide to maintain the program as is. Alternatively, the data may prompt the implementation of a new distribution system and could spur additional research to test the effectiveness of this new strategy compared to the existing one.

When decision-makers understand the kinds of information that can be used to inform decisions and improve results, they are more likely to seek out and use this information.