

Indicators

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In this lecture, I will talk about an important element of every M&E plan: indicators. I will cover what indicators are, why they are important, and qualities of a good indicator. I will also discuss different types of indicators and what they are used to measure.

As a project manager, you will want to ensure your project has a solid M&E plan to help you and your team determine whether you have achieved your desired results (outputs, outcomes). This requires that you choose reliable indicators, as well as measure these indicators in an organized way. Without reliable indicators linked to the outputs and outcomes of your activities, you risk misinterpreting the effects of your intervention. You may decide that it has had no effect when it actually has generated positive results, or you may determine that it had a positive effect when, in fact, it yielded no results at all—a more common and dangerous mistake.

Let's begin by defining an indicator. An indicator is a specific, observable, and measurable characteristic that can be used to show changes or progress towards a specific result. Indicators provide evidence that something has happened—usually they tell you what happened, but not necessarily why those things happened. (The “why” is answered best by an evaluation, which I talked about in the last lecture). Think of indicators as tools to help you figure out whether your work is making a difference.

For example, let's say that one of your project activities is to “provide malaria diagnosis training to healthcare providers.” You look at your logic model and see the corresponding output is “healthcare providers trained on malaria diagnosis,” and one of the outcomes is “health care providers increase their knowledge on diagnosing malaria.” What would “indicate” that health care providers enhanced their knowledge? What could you measure to tell you if there was a change or not?

Perhaps we would look for increased scores on pre- and post-tests from the training, so our indicator might be “average percentage increase from pre- to post-test results of healthcare providers who completed malaria diagnosis training.” But this indicator alone does not tell us how high their scores were; it only tells us the average amount of change. The average increase might be 30%, which sounds like a lot; however, if pre-test scores only averaged 20% at the outset, that means the post-test scores were still not very high. Therefore, we might need two indicators. We could also measure “the proportion of healthcare providers who completed the malaria diagnosis training who achieve 80% or above on the post-test.” This helps us understand not only the average amount of ‘change’ that occurred, but also whether that change was great enough to indicate a satisfactory level of knowledge acquired.

Note that indicators are different than the specific tools used to collect data, though the indicator

may reference a particular tool. For example, “number of participants who attain a score above 80% on a certification examination” is an indicator, while the certification examination is the tool.

When you develop indicators for your M&E plan, there are several tips that can help you to do so more effectively. Let’s consider some of the qualities that make a good indicator. Indicators should **be valid, reliable, specific, discrete, comparable, feasible, relevant, and ethical**. I’d like to talk about each of these in more detail.

An indicator is **valid** if it accurately reflects the concept it is supposed to measure. Indicators are substitutes for the truth, so we want to choose indicators that get us as close to the truth as possible. Valid indicators are those that accurately measure the given output or outcome. For example, if you give students an exam to assess their knowledge, the questions on the test should accurately reflect what they have been taught in the class in order for the test scores to be valid indicators of their knowledge levels. It’s important to note that an indicator that is valid in one context may be less valid in another. That is, it might not be appropriate to transfer indicators from one setting or location to another or from one project to another. For example, the existence of electricity and running water may be an indicator of high socioeconomic status in a rural area, but may not be valid in an urban area in the same country.

Another quality of a good indicator is if it is **reliable**, meaning that measurement of the indicator should be the same no matter who is doing the measuring or how many times measurement is carried out. If the indicator does not yield consistent results, then it is not a good indicator. For example, if two outreach workers measure “household cleanliness” on a four-point scale, they should both come up with the same rating. And, if they come back in six months and the house is in the same condition, the rating each outreach worker gives should be the same as it was on the previous visit.

An indicator is **specific** when it is defined in clear, precise terms so that it can be measured. The indicator may be qualitative or quantitative, so long as it is clearly measurable. If indicators are ambiguous, you may end up with different people interpreting them in unique ways, leading to different results for each. It is not enough, for instance, to use “percentage of underweight children” as an indicator because we don’t know what “underweight” means, nor do we know which children are being measured. A better indicator would be a ratio such as:

(numerator) “Number of children under 5 years of age whose weight-for-age is below -2 standard deviations of the WHO Child Growth Standards median

(denominator) “Total number of children under 5 years of age who were measured”

Discrete is another quality of good indicators. By discrete, I mean that the indicator captures a single component or aspect of a more complex result. It measures only one thing, not a set of things. Let’s say your indicator is “percentage of participants who desired additional training on data entry and report writing.” In order to better inform improvements to your intervention, you should separate the data entry and report writing aspects of the training. Determining the

“percentage of participants who desire additional training on data entry” may yield a very different figure than the “percentage who desire additional training on report writing,” which is useful information to know.

I also mentioned **timely** as being a quality of good indicators. Timely means that the indicator can be measured at appropriate time intervals according to the availability of data. Time intervals should be relevant and appropriate for project goals and activities. For instance, if you are supposed to deliver a specific number of test kits to facilities every month, and you are tracking the percentage of test kits delivered at each facility, you’d want to collect and analyze your data monthly. That way, the information can inform your intervention. If you only analyzed the data annually and there was a stockout issue at one facility, you might fail to notice the problem in a timely manner. Indicators measuring behavior change, on the other hand, might be collected less frequently if you do not expect to see immediate change from your intervention.

A **comparable** indicator means that, when possible, the indicator avoids narrow or unique definitions whose values would be difficult to compare with other results. If there is an existing indicator commonly used in the particular field in which you are doing work, your project should use the same indicator to ensure comparability with other interventions or population groups. To find comparable indicators, you should seek expert input and research the subject area. Most health-related fields have well-established core indicators that your project can adopt. For example, if you want to assess the effect of your family planning intervention on girls and women who are of reproductive age, you should define “reproductive age” in line with the commonly accepted WHO definition of 15-49 years. If your indicator defined this differently, you would not be able to compare the results with other interventions.

Another quality is **feasibility**, which means that data for the indicator are readily available or easy to collect from a credible source and relatively inexpensive (or at least affordable within your organization’s resources). Let’s say, for instance, you decide you want to assess the quality of tutors’ teaching skills following a training on teaching methods by doing classroom observations, but your project does not have time, money, or expertise (such as expert observers to observe and rate all the interactions or budget for travelling to all sites where tutors teach). Then this indicator is not feasible, and you can’t collect related indicators in your M&E plan.

Note that in field settings, direct measures of some variables may not be practical, making it necessary to rely on indirect, or “**proxy**” indicators. For example, the most accurate way to test for vitamin A deficiency is to measure the retinol in blood samples. This approach, however, may not be possible for a large-scale, field-based project. Instead, project staff often rely on less sensitive indicators like clinical signs of vitamin A deficiency (e.g., night blindness) or proxy indicators like dietary intake data. Proxy measures are appropriate if they meet the other criteria of a good indicator, particularly if they are both valid and reliable.

Relevant indicators should yield pertinent information about the project. Do not collect information that is “nice to know”; instead, collect information that you “need to know” to

determine whether an output or outcome has been achieved. Extraneous information only costs more time and money to collect and analyze—stick to what you **need**. For example, if you're interested in knowing how participants felt about the training materials because one of your activities is to update the materials in the future, then it makes sense to develop indicators to assess this. But if there is no way those materials are going to change, and you can't put those data to use, then the indicators are irrelevant and should not be collected. It's also important to note that sometimes what you "need to know" is predetermined by your project's reporting requirements (e.g., PEPFAR indicators).

Finally, let's talk about **ethical** indicators. An indicator data should be ethically obtained and managed. Remember, when you question people about personal information, it's important to respect their confidentiality and security. You should tell them how you will be using the information and who will have access to it. You should always use informed consent (i.e., get informant's verbal or written permission to proceed with data collection).

I want to move on and talk about **quantitative and qualitative indicators**. You already learned about the difference between quantitative and qualitative data in the module on Gathering and Using Data, but now let's examine these two types of data in the specific context of indicators. Indicators may be quantitative or qualitative. Including both types of indicators can help to provide a more comprehensive picture of a given situation.

Quantitative indicators measure "how much," "how many," and "how often." They include numbers associated with a project, such as a ratio, proportion, percentage, rate, mean, or median.

Examples of quantitative indicators include:

- Number of nurses trained in safe injection practices,
- Number of curricula developed,
- Percentage of participants who score 90% or more on post-test,
- Number of bed nets distributed,
- Proportion of households with running water, and
- Percentage of health facilities with a provider trained in advanced HIV/AIDS care.

Numbers do not tell the whole story of positive or negative impact. This can sometimes lead to an overconfident sense of reliability and validity. For example, your indicators may show that providers are offering services, but they might be rude or insensitive while doing so. In order to have a better sense of the quality of services, you could accompany this quantitative data with qualitative indicators assessing levels of patient satisfaction.

Qualitative indicators assess non-quantifiable aspects of the intervention that contribute to its

effect, such as attitudes, judgments, perceptions, quality, motivation, and behavior. These types of indicators can answer questions about how well the project elements are being carried out—for instance, clients receiving caring and supportive post-test counseling versus simply tracking the number of clients counseled. Often, a scale or index (such as a Likert scale) needs to be created to measure a qualitative variable in quantitative terms. For example, clients’ perceptions about the quality of post-test counseling they received might be measured by the qualitative indicator “Percentage of clients who ‘strongly agreed’ or ‘agreed’ that providers doing their post-test counseling at Hospital X were supportive.”

Other examples of qualitative indicators are:

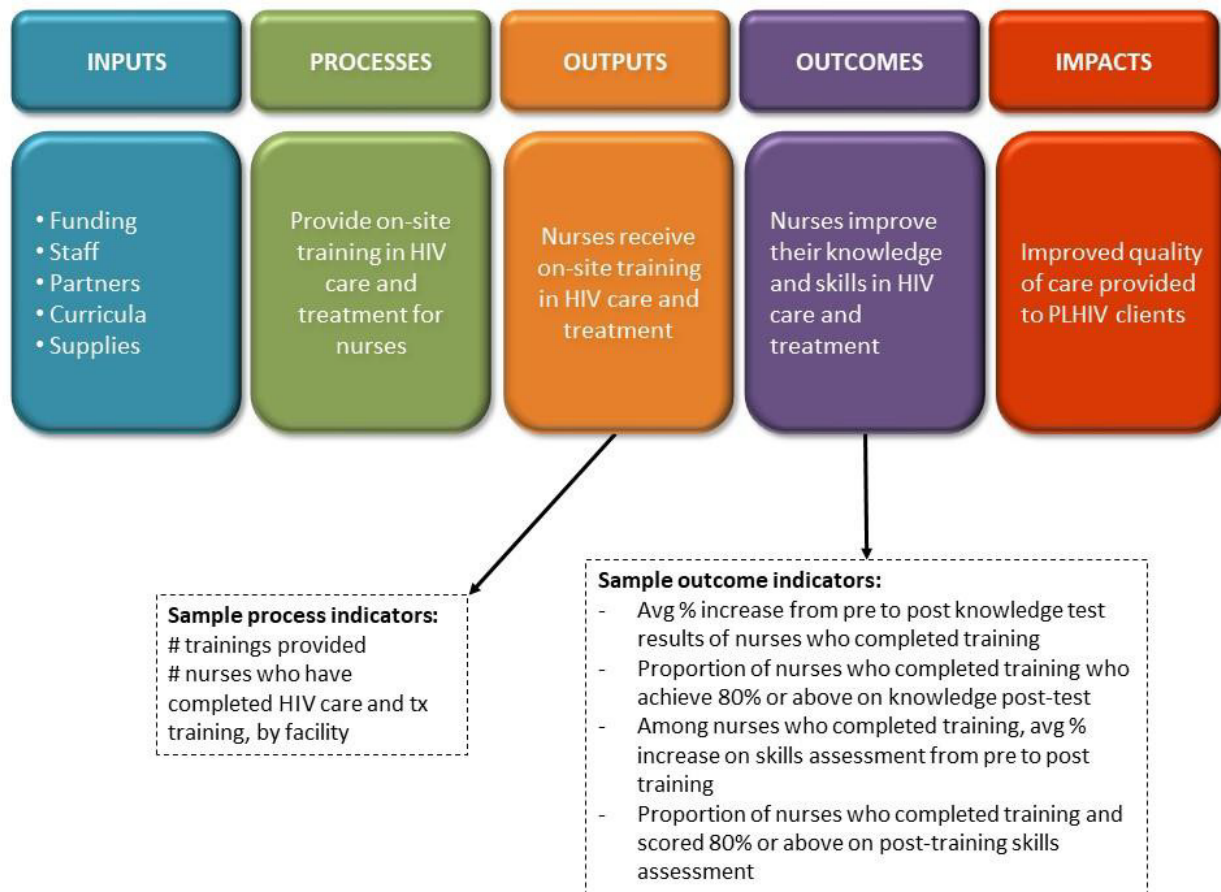
- Percentage increase in proper hand-washing practices (behavior);
- Percentage of clients who described their level of satisfaction with services as “extremely satisfied” (judgment);
- Proportion of men involved in the family planning education program who demonstrated an improved attitude toward condom use (attitude); and
- Percentage decrease in key populations (men who have sex with men, commercial sex workers) feeling discriminated against in HIV clinics in Region Y (perception).

Let’s talk for a minute about **process vs. outcome indicators**. As I mentioned in the last lecture, logic models can help guide the selection of your M&E plan’s indicators. Two common types of indicators are process indicators and outcome indicators. Both are important to measure in your M&E plan and each serves a unique purpose.

Process indicators are associated more with monitoring, and, therefore, with the left side of the logic model. They measure the project’s outputs (which are tied to inputs and activities—the left side of the logic model) and the degree to which they are contributing towards the project’s intermediate results and objectives. They indicate whether the project is being implemented as planned. If these indicators suggest the activities are not being implemented with fidelity, then the project risks not being able to achieve its intended outcomes. Process indicators are often quantitative because they are related to resources or services that can be counted (e.g., number of people trained, percentage of funds expended, number of workshops held).

Outcome indicators are associated with evaluation, and, therefore, the right side of the logic model. They measure whether the project is achieving its intended effects. Because outcome indicators measure changes that occur over time, these indicators should be measured at least at baseline (before the project begins) and at the end of the project. For example, for the outcome “increased use of prevention of mother-to-child transmission services” the outcome indicators might be “percentage of pregnant women who are HIV tested” or “percentage of women living with HIV who receive a complete course of treatment.” At the outcome indicator level, it’s common to have either quantitative or qualitative indicators, or, ideally, both.

Let's take a look at a very basic logic model with some sample process and outcome indicators. As you can see, the process indicators are tied to the output that "nurses receive on-site training in HIV care and treatment" and will tell you if your project completed the training activities that it set out to conduct (fidelity). The effects of the training ("nurses improved their knowledge and skills in HIV care and treatment") are then measured by outcome indicators such as those seen here. They give you information on whether there was a measurable improvement following the intervention (change over time).



A frequent question that comes up when developing M&E plans is, "How many indicators should my project have?" In short, the answer is, "It depends." What does it depend on? That usually comes down to several factors, such as the complexity of your goal and objectives, the resources required for data collection and analyses, the expected benefits and practical use of M&E results at different levels (from internal project use to local and national level stakeholders' use).

The tendency is to collect an excessive number of indicators. A reasonable rule of thumb might be to collect 1 or 2 indicators per result, but that also depends on how finely detailed your results are. You should definitely have at least 1 or 2 indicators for every major activity (e.g., training, behavior change campaign, distribution of supplies). Keep in mind that M&E's purpose is to monitor performance and evaluate outcomes of *your project*, so focus your indicators accordingly!

In summary, you learned in this lecture what indicators are and how they are useful to your projects, particularly your M&E plans. I covered the qualities of an effective indicator: valid, reliable, specific, discrete, comparable, feasible, relevant, and ethical. Remember, including both quantitative and qualitative indicators can give you a better picture of how your project is doing in reaching its goal and objectives. Finally, I covered outcome indicators (associated with evaluation) and process indicators (associated with monitoring).